Gloucester

DB# TBD9 **Almonesson Creek Bridge**

AQCODE: SDX

A concept development study will be conducted as part of DVRPC's Local Concept Development Program for this project. Primary tasks will include data collection, purpose and need statement, development of alternatives including project costs, community outreach, selection of PPA, and NEPA classification.

The Almonesson Creek Bridge is listed as a Functionally Obsolete Bridge with numerous repair issues.The design issues such as the bridge width, type and required improvements to maintain access to the public lake need to be investigated as part of the Local Concept Development phase prior to entering design.

CMP:

Municipalities: Deptford Township

CIS Program Subcategory:

Project Manager: Voltaggio, Vincent

Mileposts:

Improvement Type: Bridge Repair/Replacement

Planning Center: None

CIS Program Category:

IPD:

Sponsor: Gloucester County

Local Project: Y **Mapped: Y**

		TIP Program Years ($ millions)				Later Fiscal Years ($ millions)					
Phase	**Fund**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
LCD	STBGP-PHILA	0.000									
Fiscal Year Total		**0.000**									
		Total First Four Years			***0.000***		**Total Later Fiscal Years**				

DB# 18386 **Route 44, Barker Avenue to Billingsport Road/Swedesboro (CR 653)**

AQCODE:

Pavement resurface renewal is needed at Route 44, Barker Avenue to Billingsport Road/Swedesboro (CR653)

CMP: Not SOV Capacity Adding

Adding Subcorr(s): 6J

Municipalities: Logan Township; Greenwich Township

CIS Program Subcategory:

Project Manager: Obidike, Tony

Mileposts: 0.00-5.03

Improvement Type: Roadway Rehabilitation

Planning Center: None

CIS Program Category: Road Assets

IPD:

Sponsor:

Mapped: Y

		TIP Program Years ($ millions)				Later Fiscal Years ($ millions)					
Phase	**Fund**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
CD		0.000									
Fiscal Year Total		**0.000**									
		Total First Four Years			***0.000***		**Total Later Fiscal Years**				

Total for Gloucester:

0.000			
Total First Four Years	***0.000***	**Total Later Fiscal Years**	

Gloucester County
Office of the County Engineer
1200 North Delsea Drive, Building A, Suite 3
Clayton, NJ 08312-1000

BRIDGE RE-EVALUATION SURVEY REPORT

STATE STRUCTURE NO. 0803K03
COUNTY STRUCTURE NO. 3-K-3
CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake
Deptford Township
GLOUCESTER COUNTY

CYCLE No. 21

APRIL 11, 2018

NOTE: This Bridge Re-Evaluation Report shall be filed immediately after the 20th Cycle Inspection Report.

Prepared By:

JOHNSON, MIRMIRAN & THOMPSON

1200 Lenox Drive, Suite 101
Trenton, NJ 08648-2329

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N.J.D.O.T.
STRUCTURAL EVALUATION AND BRIDGE MANAGEMENT
BRIDGE RE-EVALUATION SURVEY REPORT

CYCLE NO. 21

STRUCTURAL DATA:

Bridge No.: 0803K03

County Structure No.: 3-K-3

Route No.: 00706

Mile Point: 0001.100

Municipality: 0802 - Deptford Township

County: 015 - GLOUCESTER COUNTY

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake

Structure Type: Single span, reinforced concrete arch culvert below fill

Special Equipment Used: None

Year Built: 1926 Widened/Rehab: 0000

Length: 000020 ft Width: 045.8 ft

Date of this Evaluation: 04/11/2018

By: J07 - Johnson, Mirm & Thom

Date of Previous Evaluation: 04/27/2016

By: J07 - Johnson, Mirm & Thom

FCM/ PH Inspection Dates

FCM By:

P/H By:

Date of Underwater/Fathometric Inspection:

By:

Date of Special Testing:

Date of Elec./Mech. Inspection (Level: II):

Scour Critical: No

WORK DONE: Heavy approach embankment erosion was repaired and stabilized with asphalt at the southeast and northeast embankments. Settled and collapsed southeast bituminous sidewalk repaired with asphalt. New 4.0' high chain link fence installed at the southeast, northeast and northwest embankments.

OVERALL PHYSICAL CONDITION: The structure is in fair condition due to the condition of the culvert.

OVERALL CONDITION (ITEM 67): 5 - Somewhat better than minimum adequacy

Inspection Team Leader: Patrick Saint-Eloi, EIT **Initials:** PSE

Certifying Engineer: James C. Lane, PE

N.J. P.E. Number: 24GE02859100

I certify that this report is an accurate description of the subject structure, to the extent determinable by visual inspection and testing performed.

Signature: James C Lane

Date: 9/26/18

CONCLUSIONS AND RECOMMENDATIONS:

The overall condition of the structure is fair due to the condition of the arch culvert.

The culvert condition rating is fair due to shallow spalls at the arch soffit exposing rusted rebars with heavy to severe section loss and one broken bar. The north spandrel wall has heavy delaminated concrete at both the west and east ends. There is also settlement of the northeast wingwall. It is rotated outward 3½" at the top and is anchored by several deadmen. The northwest wingwall exhibits an outward rotation (up to ¾" at the top of the parapet) near the spandrel wall and is anchored by several deadmen. The vertical face of the arch invert slab cut-off wall at the north arch opening is exposed due to scour. See Photo(s) 2, 8, 13, 14, 16, 17

The channel/channel protection condition rating is fair due to heavy erosion with exposed, undermined tree roots, leaning trees, and fallen trees at the downstream banks. There is heavy scour at the downstream channel embankments that exposes the vertical face of the arch invert slab cut-off wall. See Photo(s) 2, 7

Since the previous inspection the condition of the structure has generally remained the same. The roadway condition rating has been upgraded from fair to good due to new stabilized backfill repair to eroded embankments at the southeast and northwest embankments, and repairs to the settled and collapsed asphalt sidewalk at the southeast corner.

No conditions exist that warrant load rating revisions. However, no load factor ratings were previously performed for the special hauling or emergency vehicles, and no LRFR ratings wre previously performed for any vehicles.

Based on the Bridge Scour Evaluation Program data provided by NJDOT, dated August 2007, the structure is NOT scour critical. This inspection revealed that heavy scour has occurred at the downstream channel embankments and exposed the vertical face of the arch invert slab cut-off wall. No footings are exposed. SI&A Item 113 is coded 8 and remains unchanged.

The bridge is Functionally Obsolete due to the substandard deck geometry (Item 68 = 3). Therefore, we recommend the following remedial action: Roadway Widening.

a. Demolition: Remove north curb and fill adjacent to parapet. Lump sum	= $ 15,000
b. Widening (Includes fill sub-base, paving and curbs):	
20 LF x 6.17' = ±125 SF @ $312/SF (2018)	= $ 39,000
c. Approach Roadway work (including drainage):	
100 LF x 2 approaches = 200 LF @ $500/LF	= $100,000
	Subtotal = $154,000
d. MPT (+20% of a, b and c)	= $ 30,800
	Subtotal = $184,800
e. Preliminary Engineering (+15%)	= $ 27,800
	Total = $212,600

The new roadway width will yield a deck geometry rating of 4. Costs are from the NJDOT "Cost Guide for Bridge Repairs 2003" and increased 3% per year.

While no maintenance repairs are recommended as set forth by this report, the owner should remedy defects listed in the field notes.

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

Note: The NBIS length for this structure is 20.2' and it qualifies.

We recommend that the following priority repair(s) be made to retard further deterioration, preserve the structural integrity of the bridge, improve safety and extend its useful life:

None

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

1 - STRUCTURAL DATA

IDENTIFICATION

8 Structure No.: 0803K03 *M32 County Bridge No.:* 3-K-3 *M83 Municipal Bridge No.:*

(AB) Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake

1 State Code:

(1A) State Code 34 - New Jersey

(1B) Region Code 2 - Region 2 - New York/New Jersey

2 Highway Agency District: DISTRICT 03 (SOUTH)

4 Place Code: 17710 - Deptford (Township of)

3 County Code: 015 - GLOUCESTER COUNTY

(A) Town: 0802 - Deptford Township

5A Inventory Route (On/Under): 1: Route carried "on" the structure

9 Location: 0.3 MI WEST OF NJ RT 41

5B Inventory Route Signing Prefix: 4 - COUNTY HIGHWAY

5C Level of Service: 1 - MAINLINE

11 Mile Point: 0001.100

5D Inventory Route Number: 00706

(AA) Inventory Route: 9008 - Gloucester County

5E Directional Suffix: 0 - NOT APPLICABLE

(FV) Inventory Route Milepoint:

6 Features Intersected: ALMONESSON CREEK

(AC) Non-Inventory Feature: WW: Roadway and/or railroad over waterway

(AD) Adm. Juris. Non-Inv Feature: 1: State

7 Facility Carried by Structure: CR 706 (COOPER ST)

(AE) Alternate Agency:

16 Latitude: 394904.94

(AF) Alternate Structure Number:

17 Longitude: -750547.58

98 Border Bridge Code:

M84 Latitude (Degrees): 39.81804

(98AA) State Code:

M85 Longitude (Degrees): -75.09655

(98AB) Region Code

(98B) % Resp.:

99 Border Bridge Structure Number:

M142 GPS Location: Southwest Corner

CLASSIFICATION

21 Maintenance Responsibility: 02 - County Highway Agency

26 Func. Class. of Inv. Route: 16 - Urban - Minor Arterial

M94 Maint. Resp.:

37 Historical Significance: 5 - Not eligible

22 Owner: 02 - County Highway Agency

M91 On/Off System: 1

M93 Owner:

M96 Comments Ownership:

M95 Ownership Resolved:

101 Parallel Structure Designation: N - No parallel structure

(BB) Orphan Bridge:

103 Temporary Struct. Designation:

(BP) Bridge Demolition:

104 Highway System of Inv. Route: 0 - Structure/Route is NOT on NHS

(CP) Federal Report: _ - Highway carrying NBIS bridges included in reports to FHWA

112 NBIS Bridge Length: Yes

(CR) Off-Route Bridge: N

Agency Admin. Area:

(FX) Federal Error Cannot be Corrected:

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

STRUCTURE TYPE AND MATERIAL

43A Main Span Material: 1 - Concrete
43B Main Span Design: 19 - Culvert (includes frame culverts)
44A Approach Span Material:
44B Approach Span Design:
45 Number of Main Spans: 01
46 Number of Approach Spans: 0
(AJ) Type of Slope Protection:
(AK) Type of Abutment:
(AL) Type of Pier:
(AT) Special Material 1:
(AT) Special Material 2:
(AU) Additional Structure Type 1:
(AU) Additional Structure Type 2:
Fracture Critical Details: Z - None -- No fracture critical details

M143 Structure Type Primary: 11 - Arch - Deck
M144 Structure Type Secondary:
M97 Struct. Mat. Type Desc:
107 Deck Structure Type: N - Not Applicable
108A Wearing Surface: N - NA
108B Membrane: N - NA
108C Deck Protection: N - NA
(AV) Widened Structure Type:
1st Widened Material:
1st Widened Design:
2nd Widened Material:
2nd Widened Design:

AGE AND SERVICE

27 Year Built: 1926
28A Lanes On Structure: 02
28B Lanes Under Structure: 00
106 Year Reconstructed: 0000
42A Type of Service On: 5 - Highway-pedestrian
42B Type of Service Under: 5 - Waterway

GEOMETRIC DATA

32 Approach Roadway Width (w/ shoulders): 31.000 ft
33 Bridge Median: 0 - No median
34 Skew: 00 deg
35 Structure Flared: 0 - No flare
M98 Str. is Standalone or Connected:
M99 Length of Portion Included: ft
M101 Total Structure Opening: ft²
M145 Design Vertical Inside Opening: ft
M146 Available Vertical Inside - South or West End: ft
M147 Available Vertical Inside - North or East End: ft

48 Length of Maximum Span: 0020 ft
49 Structure Length: 000020 ft
M141 Effective CoMBIS Width: ft
50A Left Curb/Sidewalk Width: 06.2 ft
50B Right Curb/Sidewalk Width: 06.2 ft
51 Bridge Roadway Width, Curb-to-Curb: 030.0 ft
52 Deck Width, Out-to-Out: 045.8 ft
(AM) Depth of Fill over Structure: 02.8 ft
Total length: 20.20 ft
Deck Area: 925.16 ft²

NAVIGATION DATA

38 Navigation Control: 0 - No navigation control on waterway (bridge permit not required)
39 Navigation Vertical Clearance: 000 ft
40 Navigation Horizontal Clearance: 0000 ft
111 Pier/Abutment Protection: _ - Not Applicable
116 Min. Nav. Vertical Clearance under Lift Bridge: 000 ft
(AP) Fender System:

UTILITIES AND APPURTENANCES

(HA) Bridge Noise Barrier:

Type of Material 1:

Type of Material 2:

Barrier Height 1: ft

Barrier Height 2: ft

(AO) Utilities:

Utilities 1:

Utilities 2:

Utilities 3:

Utilities 4:

Sign Structures:

(GS) Overhead Sign Structure:

(GT) Cantilever Sign Structure:

(GU) Fascia Mounted Sign Structure:

RAILROAD

(BC) USRA Code:

(BE) Rail Milepost:

(BD1) Rail On:

(BD2) Rail Under:

TEMPORARY STRUCTURES

(GV) Bridge:

(GW) Shoring:

(GZ) Cond. Desc.:

(GY) Measures:

(GX) Repairs:

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

2 - LOAD RATING AND POSTING

Load Rating Review Recommended: ☐
41 Posting Status: A - Open
31 Design Load: 0 - Unknown
(CG1) Posted Load Type:
(CG2) Posted Load Limit: tons
(AI) Speed Limit Posting: mph

Load Rating Engineer:
70 Posting: 5 - Equal to or above legal loads
Rating Date 01/01/1996
(BK) Overstress %:
(CH1) Load Rating/Posting Combo: L: Load Factor Rating
(CH2) Load Rating/Posting Combo: tons
(AN) Plans Available: Yes, plans are readily available.

65 Inventory Rating Method: 1 - Load Factor (LF)

63 Operating Rating Method: 1 - Load Factor (LF)

66 Inventory Rating: 99.9 tons

64 Operating Rating: 99.9 tons

RATING (TONS)					RATING FACTOR (Code only for LRFR)		
Type	Inventory		Operating		Type	Inventory	Operating
HL93:	( )		( )		HL93:	(CW)	(CX)
H15/H20:	(BQ)	63	(CA)	114	H15/H20:	(BQ2)	(CA2)
HS20:	(BR)	123	(CB)	206	HS20:	(BR2)	(CB2)
3:	(BS)	146	(CC)	244	3:		(CC2)
NJ3S2:	(BT)	233	(CD)	390	NJ3S2:		(CD2)
3-3:	(BU)	284	(CE)	475	3-3:		(CE2)
Military:	(BV)		(CF)		Military:	(BV2)	(CF2)
SU4:	(BW)		(CS)		SU4:		(CS2)
SU5:	(BX)		(CT)		SU5:		(CT2)
SU6:	(BY)		(CU)		SU6:		(CU2)
SU7:	(BZ)		(CV)		SU7:		(CV2)

ALTERNATE LOAD RATINGS

Alt. Design Load:
Alt. Rating Date

Alt. Inventory Rating: tons
Alt. Operating Rating: tons

Type	Inventory	Operating
HL93:	( )	( )
H15:	( )	( )
HS20:	( )	( )
3:	( )	( )
NJ3S2:	( )	( )
3-3:	( )	( )
Military:	( )	( )

Posting	Inventory	Operating
Truck 1:		
Truck 2:		
Truck 3:		

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

3A - INSPECTION INFORMATION

APPRAISAL ITEMS

Structurally Deficient/Functionally Obsolete: FO

Sufficiency Rating: 65.7

67 Structural Evaluation: 5 - Somewhat better than minimum

68 Deck Geometry: 3 - Intolerable - high priority of corrective

69 Underclearances, Vertical & Horizontal: N - Not applicable

70 Bridge Posting: 5 - Equal to or above legal loads

71 Waterway Adequacy: 6 - Occasional Overtopping of Approaches

72 Approach Roadway Alignment: 8 - Equal to present desirable criteria

EXISTING BRIDGE CONDITION

58 Deck: N - Not Applicable

(BA) Approach Roadway Condition: 7: Good Condition - minor defects such as cracking of approach roadway, small spalls in approach roadway, minor settlements (less than 1") or minor collision damage to guide rails.

59 Superstructure: N - Not Applicable

60 Substructure: N - Not Applicable

61 Channel/Channel Protection: 5 - Bank eroded.. major damage

62 Culvert: 5 - Moderate to major deterioration

113 Scour Critical Bridge: 8 - Stable for scour conditions

63 Operating Rating Method: 1 - Load Factor (LF)

64 Operating Rating: 99.9 tons

65 Inventory Rating Method: 1 - Load Factor (LF)

66 Inventory Rating: 99.9 tons

CONDITION REMARKS

Deck Distress/Unrepaired Spalls: ft²

(BF) Deck:	(BG) Superstructure:	(BH) Substructure:
1.	1.	1.
2	2	2
3	3	3
4.	4.	4.
5.	5.	5.

(BI) Channel:

1. J: Heavy Scour
2. M: Embankment degradation

(BJ) Culvert:

1. D: Small to large spalls with exposed rebars
2.

HIGHWAY SAFETY/FENCING

36A Bridge Rail: 0 - Does not meet acceptable standards/safety

36B Transition: 0 - Does not meet acceptable standards/safety

36C Approach Rail: 0 - Does not meet acceptable standards/safety

36D End Treatments: 0 - Does not meet acceptable standards/safety

(AG) Type of Bridge Rail: 08: Solid Wall (Concrete)—Includes NJ Barrier

(AH) Height of Bridge Rail: 3.42 ft

(AQ) Chain Link Fence Height: ft

(FN) Fencing Warranted: NO - Conditions DO NOT warrant chain link

(FO) Pedestrian Traffic Fencing Status: N: Not applicable or fencing is not

(FP) Fencing Improvement Cost: $ 0

SCOUR EVALUATION

*113 Scour Critical Bridge: 8 - Stable for scour conditions

(FA) FHWA Scour Category: 01: Assessed (Old bridge)

(FB) Date of Stage 1 Scour Eval.:

(FF) Date of Stage 2 Scour Eval.:

(FC) Stage 1 Scour Eval. Consultant:

(FG) Stage 2 Scour Eval. Consultant: _ - Not Applicable

(FH) Scour Critical Elements:

(FD) Stage 1 Scour Eval. Prioritization Category:

(FE) Stage 1 Scour Eval. Sufficiency Rating:

Structure No.: 0803K03 Route: 9008 Cycle No.: 21

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

SCOUR COUNTERMEASURES

(FJ) Scour Countermeasures Cost: $

(FL) Scour Monitoring Required/Type:

(FI) Recommended Scour Countermeasures:

(FK) Scour Countermeasures Installed/Type:

1. J: Concrete slab/Pavement
2.
3.

PROPOSED IMPROVEMENTS

75A Type of Work: 33 - Widening - No Deck Rehab

75B Work To Be Done By: 1 - Work to be done by contract

76 Length of Structure Improvement:	20 ft	95 Roadway Improvement Cost:	$ 100000
(BO) Owner's Maintenance Cost:	$ 0	96 Total Project Cost:	$ 212600
94 Bridge Improvement Cost:	$ 39000	97 Year of Improvement Cost Estimate:	2018

Structure No.: 0803K03 Route: 9008 Cycle No.: 21

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

3B - INSPECTION INFORMATION

INSPECTION DATES

Inspection Report Author: Saint-Eloi, Patrick

Primary Type of Inspection: Regular Inspection

Previous Cycle Inspection Date: 04/27/2016

90 Inspection Date: 04/11/2018

91 Inspection Frequency (in months): 24

Next Inspection Date: 04/11/2020

Pontis Element Inspection Date: 04/11/2018

Pontis Element Frequency (in months): 24

Next Pontis Element Inspection Due: 04/11/2020

(AW) Date of Mechanical/Electrical inspection: 1/1/1901

(AW1) Mechanical Insp. Type:

(AW2) Electrical Insp. Type:

(AW3) Traffic Safety Insp. Type:

(AW4) Mechanical Insp. Date:

(AW5) Electrical Insp. Date:

(AW6) Traffic Safety Insp. Date:

(AW7) Movable Bridge Type:

(AX) Date of Deck Condition Survey:

M132 Confined Space Entry: No

M105 Description of Inspection Type:

93A FC Inspection Date:

92A FC Inspection Frequency (in months):

Next FC Inspection Date:

93B UW Inspection Date:

92B UW Inspection Frequency (in months):

Next UW Inspection Date:

UW Inspected By:

93C SI Date:

92C SI Frequency (in months):

Next SI Date:

(AR) Special Equipment:

(AR) Special Equipment:

(AR) Special Equipment:

Special Inspection By:

(AS) Special Testing Type:

(AS) Special Testing Type:

(AS) Special Testing Type:

(AY) Date of Special Testing:

PAINT CONDITIONS AND DATE

(GD) Fascia Beam:

(GE) Fascia Bottom Flange:

(GF) Interior Beam:

(GH) Interior Bottom Flange:

(GI) Beam Ends:

(GJ) Connections:

(GK) Bracings:

(GL) Bearings:

(GM) Substructure:

(GN) Above Deck Superstructure:

(GO) Railings/Fence:

(GA) Is Painting Required? No: No parts of the structure require painting

(GB) Environment:

(GC) Date of Current Paint Inspection:

(GR) Date of Last Painting:

(GP) Remarks 1:

(GQ) Remarks 2:

(AZ) FATIGUE DETAIL

Location 1:

Location 2:

Location 3:

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

IN-DEPTH FRACTURE CRITICAL/PIN-HANGER

(FY) Special FCM Insp. Required: ☐

(FZ) Special P/H Insp. Required: ☐

(FS) FCM's Inspected:

(FT) Combo In-Depth Fracture Critical/Pin-Hanger Inspection:

(FQ) Latest In-Depth FC/ Pin-Hanger Inspection Date: 1/1/1901

(FQ1) Special FCM Insp. Date:

(FQ2) Special P/H Insp. Date:

(FR1) Special FCM Insp. Consultant:

(FR2) Special P/H Insp. Consultant:

CYCLE DATA

(P1) Group Number: 08C6

(P2) Work Spec Number:

(CI) Cycle Number: 21

(CJ) Inspection Type: R: Regular Inspection

(CM) Current Consultant: J07 - Johnson, Mirm & Thom

(CO) Previous Consultant: J07 - Johnson, Mirm & Thom

M87 Contract State Agreement No.: 2016B1069A

Agreement Modification Number:

Contract ID: 16-50815

Contract Date: 04/11/2016

(BM) Federal Job Number: STP NBIS(774)

(BN) State Job Number: 2206472

(P3) NTP Date:

Funding Category: Federal - STP OnSystem

(P4) State Project Manager:

(P5) State Assistant PM:

County Project Manager:

M130 Project Name:

STRUCTURE STATUS

Bridge Status: 3 - Active

Bridge Lifecycle Phase: 1 - Service

Data Last Updated: 04/11/2018

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

4A - ROADWAY DATA

ROADWAY IDENTIFICATION

Roadway Name: CR 706 (COOPER STREET)

Bridge ID/Structure Number: 0803K03

Roadway SRI: 08000706__

NBI Roadway?: Yes

5A Position of Route (On/Under): 1: Route carried "on" the structure

5B Route Signing Prefix: 4 - COUNTY HIGHWAY

5C Level of Service: 1 - MAINLINE

5D Route Number: 00706

5E Directional Suffix: 0 - NOT APPLICABLE

HIGHWAY NETWORKS AND SERVICE CLASSIFICATION

11 Milepoint: 0001.100

12 Base Highway Network: Inventory Route is not on the Base Network

13A LRS inventory Route:

13B Subroute Number:

13R Ramp Code:

20 Toll Facility: 3 - On free road. The structure is toll-free and carries a toll-free highway.

26 Functional Classification: 16 - Urban - Minor Arterial

100 STRAHNET Highway Designation: 0 - Not a STRAHNET route

102 Traffic Direction: 2 - 2-way traffic

104 NHS System: 0 - Structure/Route is NOT on NHS

105 Federal Lands Highways:

0 - Not Applicable

110 Designated Truck Highway Network: Inventory route not on network

School Bus: ☐ Transit Route: ☐ Emergency Route: ☐

TRAFFIC DATA

28 Number of Lanes: ON 02 UNDER 00

Number of Medians: 0

Roadway Speed Limit: 35 mph

19 Bypass/Detour Length: 1 miles

Detour Speed: 35 mph

(FM) Incidents Reported:

Accident Count: Rate:

ADT Class: ADT Class 4

29 ADT Total: 8871

30 Year of ADT: 2018

114 Future ADT: 10645

115 Year of Future ADT: 2038

109 Truck ADTT (%): 4

(FW) Estimated ADT: Yes

VERTICAL AND HORIZONTAL CLEARANCES

10 Vertical Clearance: 99.99 ft

53 Minimum Vertical Clearance over Bridge: 99.99 ft

54A Minimum Vertical Underclearance Ref.: N - Feature not a highway or railroad

54B Minimum Vertical Underclearance: 00.00 ft

(DJ) Minimum Vertical Underclearance (including shoulders): 00.00 ft

32 Approach Roadway Width: 31.000 ft

47 Inventory Route, Total Horizontal Clearance: 30.0 ft

51 Bridge Roadway Width, Curb-to-Curb: 030.0 ft

55A Minimum Lateral Underclearance Ref: N - Feature not a highway or railroad

55B Minimum Lateral Underclearance on Right: 00.0 ft

56 Minimum Lateral Underclearance on Left: 00.0 ft

Element Inspection

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
241 - Reinforced Concrete Culvert	3 - Mod.	20	ft.	0	0	18	2
1080 - Delamination/Spall/Patched Area		10		0	0	10	0
1090 - Exposed Rebar		10		0	0	8	2
331 - Reinforced Concrete Bridge Railing	3 - Mod.	40	ft.	38	2	0	0
1080 - Delamination/Spall/Patched Area		1		0	1	0	0
1900 - Distortion		1		0	1	0	0
802 - Concrete Curbs/Sidewalks	3 - Mod.	40	ft.	37	3	0	0
1080 - Delamination/Spall/Patched Area		2		0	2	0	0
1090 - Exposed Rebar		1		0	1	0	0
842 - Reinforced Concrete Wingwall	3 - Mod.	80	ft.	20	60	0	0
1080 - Delamination/Spall/Patched Area		15		0	15	0	0
1090 - Exposed Rebar		5		0	5	0	0
4000 - Settlement		40		0	40	0	0
846 - Reinforced Concrete Headwall	3 - Mod.	40	ft.	18	0	22	0
1080 - Delamination/Spall/Patched Area		20		0	0	20	0
1090 - Exposed Rebar		2		0	0	2	0
892 - Bridge Drainage	3 - Mod.	2	each	0	1	0	1
8002 - Clogging (Bridge Drainage)		2		0	1	0	1

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

LOAD RATING SUMMARY SHEET (LRSS)

(Form NJ-BI-101 Created 1/14/2010)

Project Information:

Group: 08C2 Agreement No.: Unknown Contract ID: Unknown Agree/Mod No.: _____

Rating Information:

Method: LRFR: No LFR: Yes ASR: No Engineering Judgment: No
Other (Specify): NA

Rating Date: 01/01/1996 Computer Software Used: STAAD III Version: 21.0W

Load Testing: No Cycle Rating Performed: 10 Design Load: Unknown

Structure Information:

Plans Available? Yes Contract Designation: _____

Overlay? Yes Considered in Rating? Unknown Type/Thickness: B.C./ unknown

Section Losses? No Considered in Rating? Unknown Item 59/62: 5

For LRFR Use Only:

Surface Roughness Factor: NA Condition Factor: NA System Factor: NA

ADTT (one direction): NA Resistance Factor: NA FCM: No

Load Rating Engineer (LRE):

Name: NA Firm: NA Initial: NA

Load Rating Reviewer (LRR) certification as per the NBIS Title 23 CFR Section 650.309(c):

Name: NA N.J.P.E. No.: NA

Firm: NA

I certify that this rating is an accurate representation of the subject structure, considering all deterioration and/or changes to loading conditions, to the extent determinable by research and visual inspection and testing performed. I am charged with the overall responsibility for bridge capacity evaluation for the above mentioned structure.

NA
Sign

NA
Date

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

LOAD RATING SUMMARY SHEET (LRSS)

(Form NJ-BI-101 Created 1/14/2010)

Rating Comments:

None.

The defects noted on the arch culvert are not significant enough to affect the load ratings.

The load ratings, computed in accordance with the then current versions of FHWA directives, the AASHTO Manual for Bridge Evaluation, and the AASHTO Bridge Design Manual as modified by the NJDOT Highway Bridge Load Rating Manual, and Section 43 of the NJDOT Design Manual, Bridges and Structures, as of the Load Ratings Date shown on the previous page, are as follows:

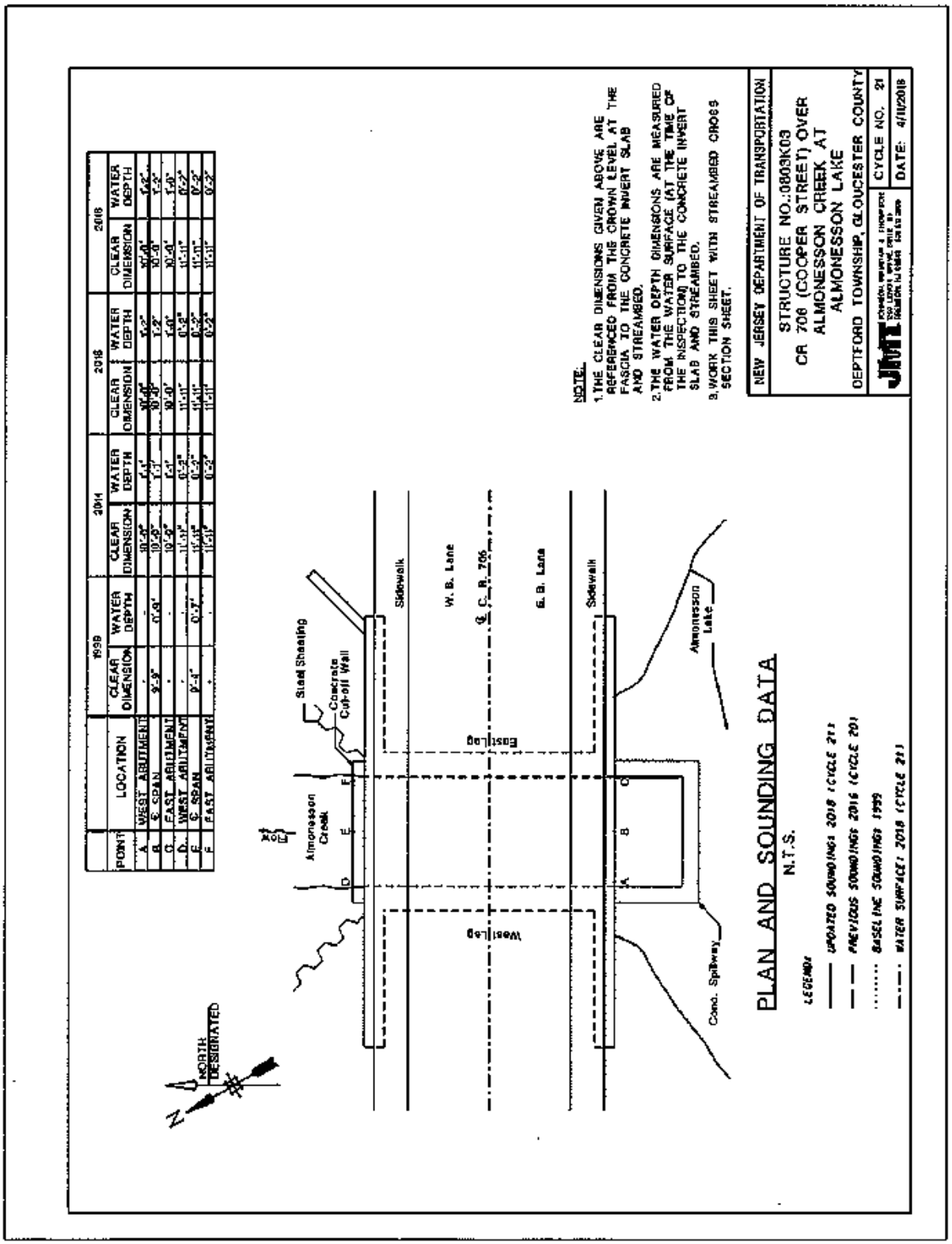
Material	Compressive Strength f'c	Tensile Strength	Allowable Stresses (Psi) Yield	Inventory	Operating
Concrete (Beam)	2,500			1,000	1,500
Reinforced Steel			33,000	18,000	25,000

Member	Truck Type (Tons)		Rating (Tons) / Rating Factor — Load Factor: As-Built Inv.	As-Built Op.	As-Insp. Inv.	As-Insp. Op.	As-Built Inv.	As-Built Op.	As-Insp. Inv.	As-Insp. Op.
Member:	HL93	NL								
Reinforced Concrete Arch (Shear at Springline)	H15/H20	(15T)	63	114	63	114				
	HS-20	(36T)	123	206	123	206				
	3	(25T)	146	244	146	244				
	NJ3S2	(40T)	233	390	233	390				
	3-3	(40T)	284	475	284	475				
Condition Rating 5	SU4	(27T)								
Sect. Loss Location: NA	SU5	(31T)								
Sect. Loss Extent: NA	SU6	(35T)								
	SU7	(39T)								

Structure No.: 0803K03 Route: 9008 Cycle No.: 21

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

Soundings Sketch

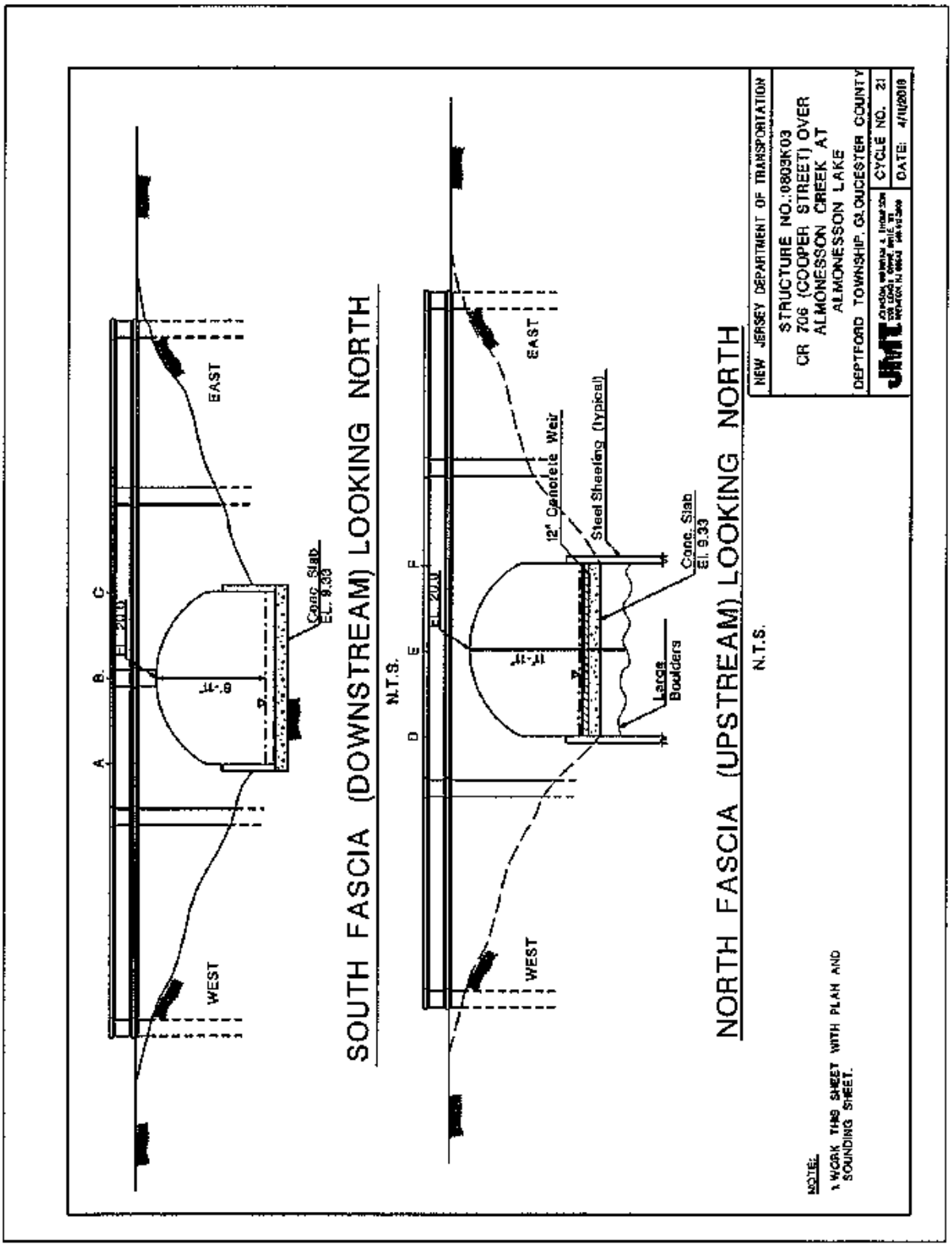


POINT	LOCATION	1999 CLEAR DIMENSION	1999 WATER DEPTH	2014 CLEAR DIMENSION	2014 WATER DEPTH	2016 CLEAR DIMENSION	2016 WATER DEPTH	2018 CLEAR DIMENSION	2018 WATER DEPTH
A	WEST ABUTMENT	-	-	10'-0"	1'-1"	10'-0"	1'-2"	10'-0"	1'-2"
B	℄ SPAN	9'-9"	0'-9"	10'-0"	1'-1"	10'-0"	1'-2"	10'-0"	1'-2"
C	EAST ABUTMENT	-	-	10'-0"	1'-1"	10'-0"	1'-0"	10'-0"	1'-0"
D	WEST ABUTMENT	-	-	11'-11"	0'-3"	11'-11"	0'-3"	11'-11"	0'-2"
E	℄ SPAN	9'-4"	0'-7"	11'-11"	0'-3"	11'-11"	0'-3"	11'-11"	0'-2"
F	EAST ABUTMENT	-	-	11'-11"	0'-3"	11'-11"	0'-3"	11'-11"	0'-2"

Structure No.: 0803K03 Route: 9008 Cycle No.: 21

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

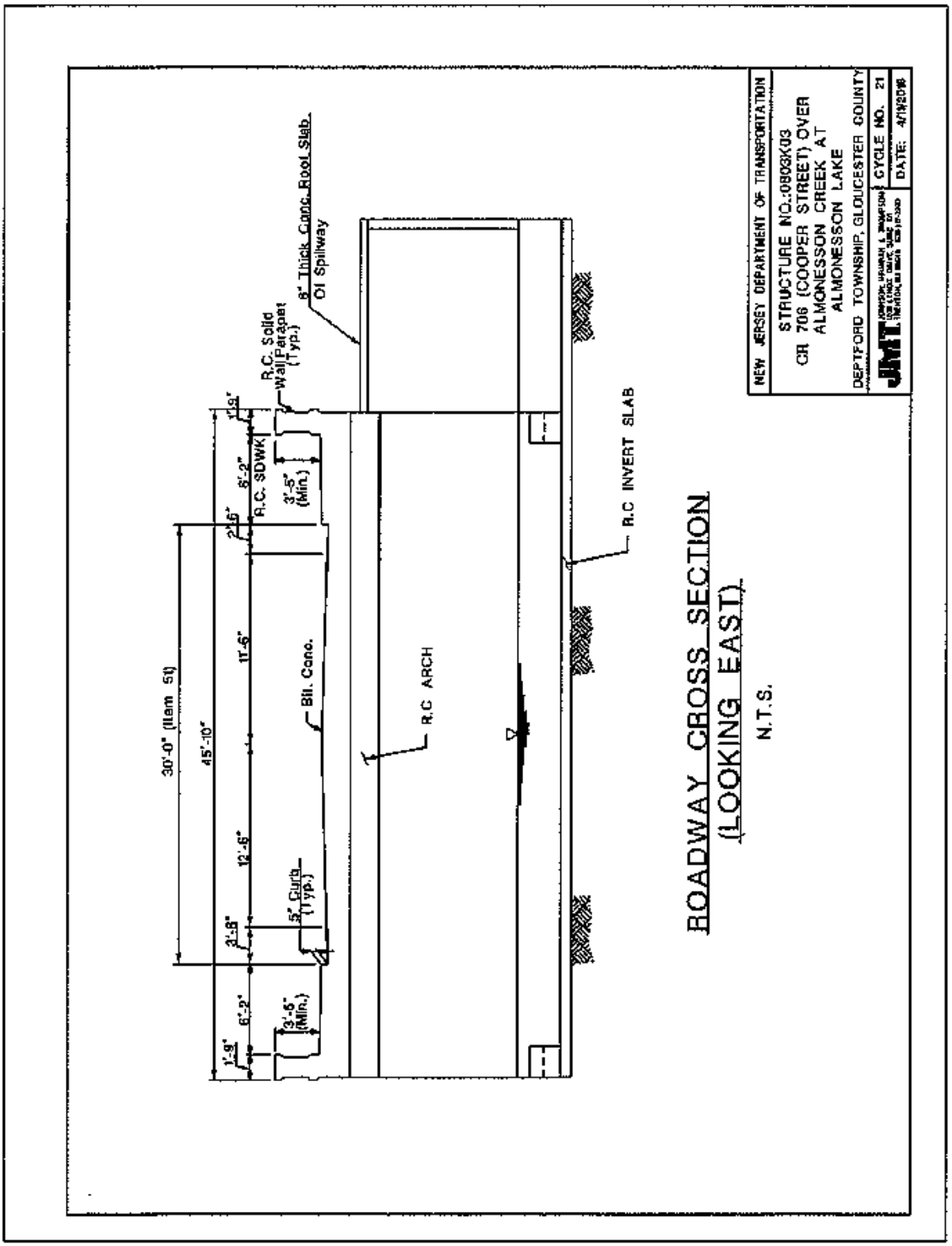
Soundings Sketch



Structure No.: 0803K03 Route: 9008 Cycle No.: 21

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

Deck Cross Section Sketch



Structure No.: 0803K03 Route: 9008 Cycle No.: 21

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

Photo 1	Category:	00 - General View
	Description:	South elevation, looking north.

Photo 2	Category:	37 - Probing/Scour/Exposed Footing, 00 - General View
	Description:	North elevation, looking south. Note heavy scour of the downstream channel has exposed the vertical face of the arch invert slab cut-off wall. This creates a waterfall.

Structure No.: 0803K03 Route: 9008 Cycle No.: 21

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

Photo 3	Category:	03 - Roadway, 00 - General View
	Description:	West approach, looking east. General view.

Photo 4	Category:	00 - General View, 03 - Roadway
	Description:	East approach, looking west. General view.

Photo 5	Category:	00 - General View, 38 - Waterway Features/Embankments
	Description:	Thalweg, looking south. General view upstream.

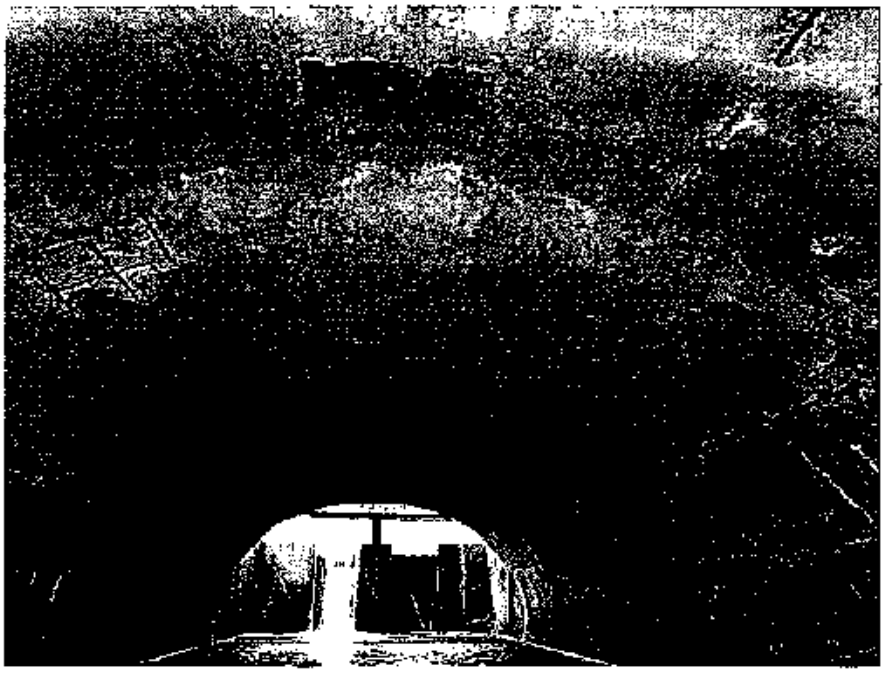


Photo 6	Category:	00 - General View, 38 - Waterway Features/Embankments
	Description:	Dam spillway, looking south. General view upstream. Note the dam exhibits gaps in the timber panels allowing flow-through.

Photo 7	Category:	00 - General View, 38 - Waterway Features/Embankments
	Description:	Thalweg, looking north. General view downstream. Note erosion with exposed, undermined tree roots, leaning trees, and fallen trees.

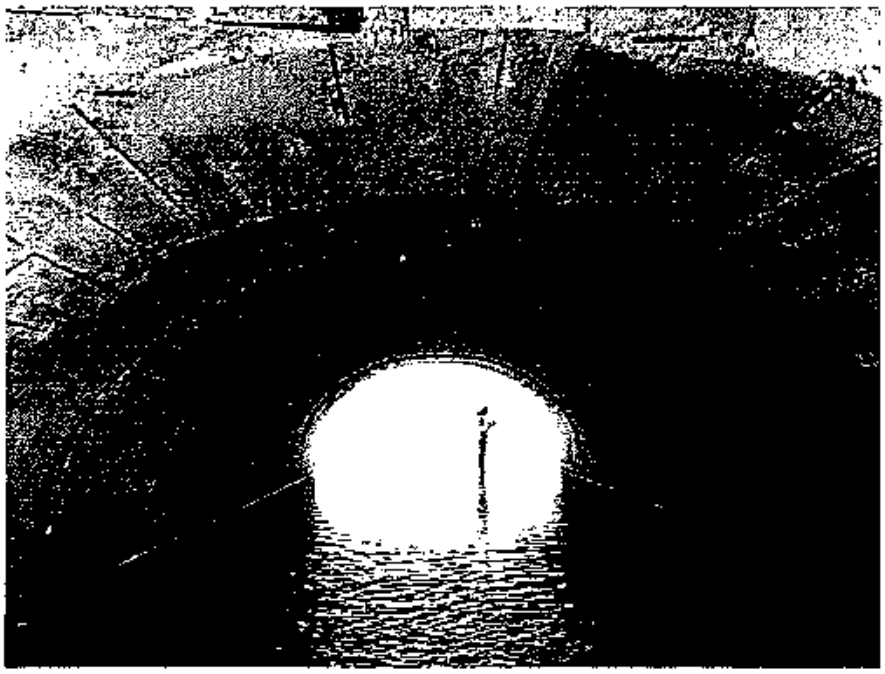


Photo 8	Category:	50 - Culverts/Frames/Arches, 00 - General View
	Description:	Concrete arch intrados, looking north. Shallow spalls with exposed rusted rebars throughout the intrados.

Photo 9	Category:	05 - Sidewalks/Safetywalks/Curbs
	Description:	South sidewalk and curb at east corner, looking southwest. Both are settled and crack.

Photo 10	Category:	05 - Sidewalks/Safetywalks/Curbs
	Description:	South sidewalk and curb, looking southwest. Curb exhibits spalls with exposed rebar and settlement. Note the spall at the center of sidewalk and the settlement at the curb inlet.

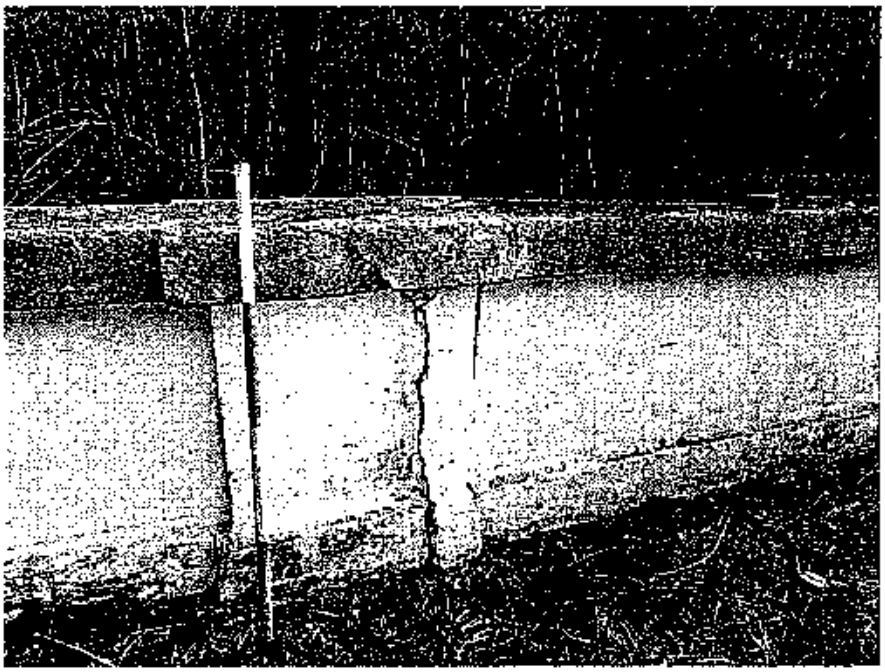


Photo 11	Category:	06 - Parapets/Balustrades/Median/Railings
	Description:	North parapet at west end, looking northeast. Wide crack and incipient spall due to rotation (1½" gap at top) (Typical at northeast corner).

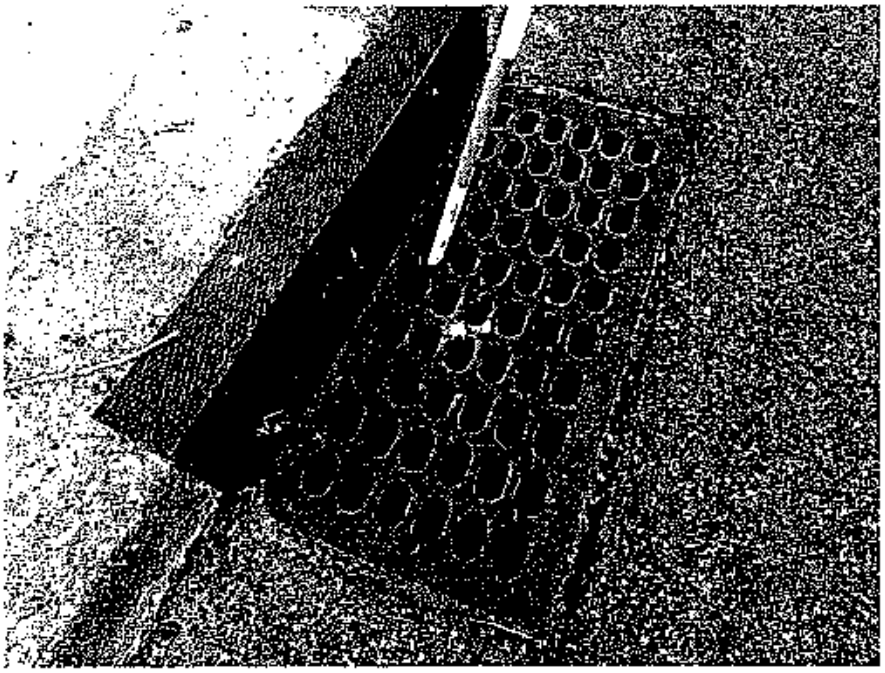


Photo 12	Category:	05 - Sidewalks/Safetywalks/Curbs
	Description:	South curb inlet, looking southwest. The inlet drain above the arch is clogged with debris.

Photo 13	Category:	50 - Culverts/Frames/Arches
	Description:	Northeast intrados of arch, looking southeast. Shallow spalls with exposed rusted rebar. Note section loss on rebar.

Photo 14	Category:	50 - Culverts/Frames/Arches
	Description:	Northeast spandrel wall, looking southwest. Large spall with severely rusted exposed rebar. Note the heavy delamination and the shallow spall with exposed rebar on the wingwall.

Photo 15	Category:	50 - Culverts/Frames/Arches
	Description:	Concrete spillway roof slab, looking south. Large spalls with exposed rusted rebar at east end of roof slab. Also note the vegetation growth due to the accumulation of debris on the roof slab.

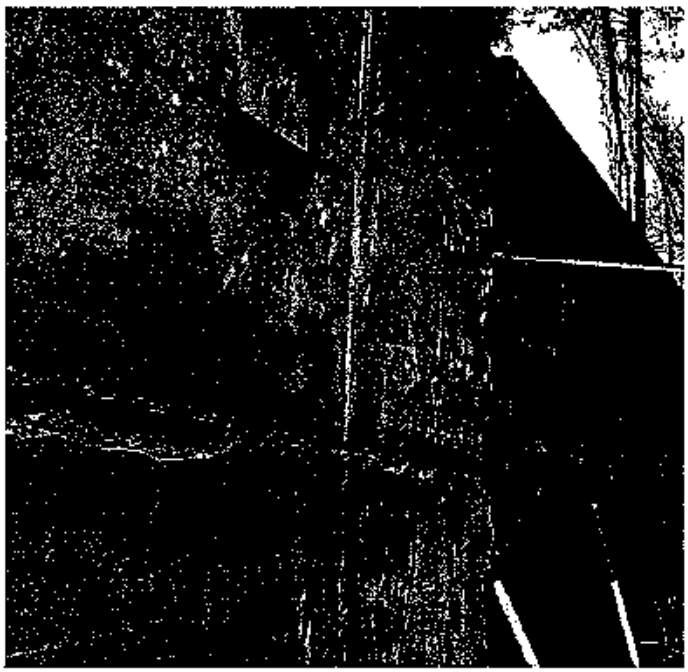


Photo 16	Category:	50 - Culverts/Frames/Arches
	Description:	Northwest wingwall, looking west. The wingwall has settled and is leaning out at the top. It was previously stabilized with deadmen. Note the spalled section.

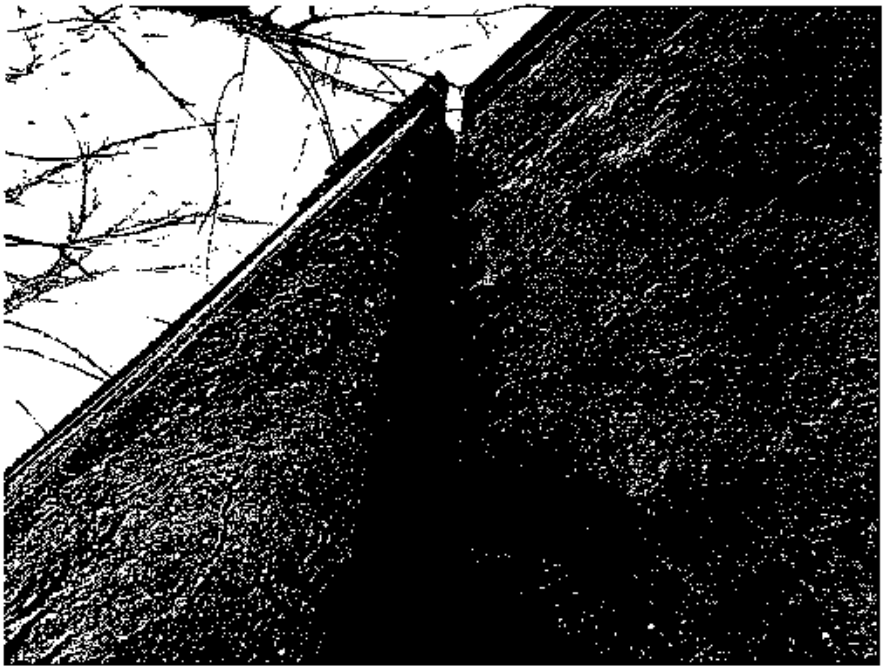


Photo 17	Category:	50 - Culverts/Frames/Arches
	Description:	Northeast wingwall, looking southeast. The wingwall has settled and is leaning out at the top. It was previously stabilized with deadmen. Note the large spall.

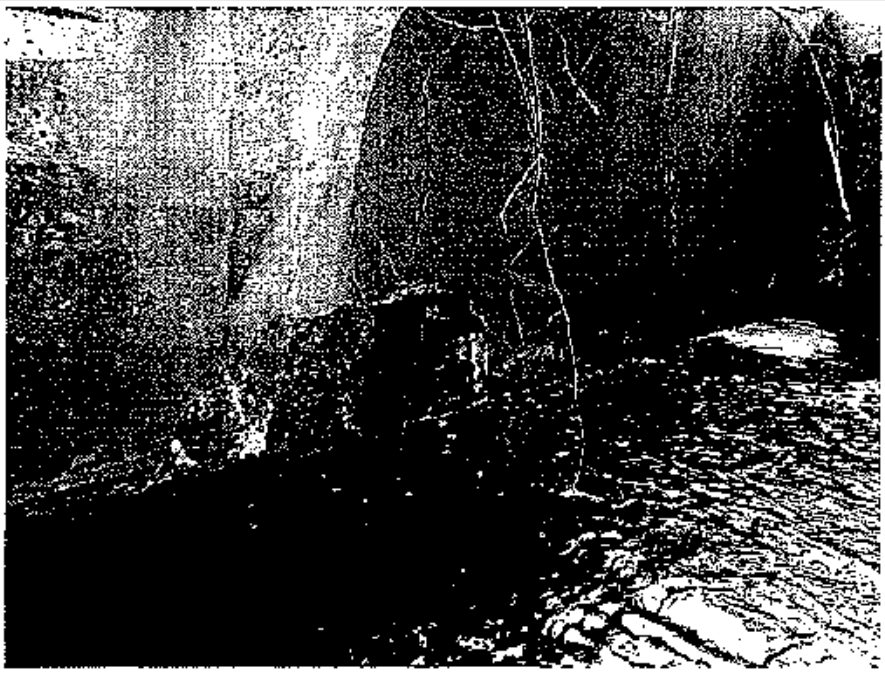


Photo 18	Category:	50 - Culverts/Frames/Arches
	Description:	Southeast retaining wall exhibits large delaminating and spalled concrete parging at the waterline.

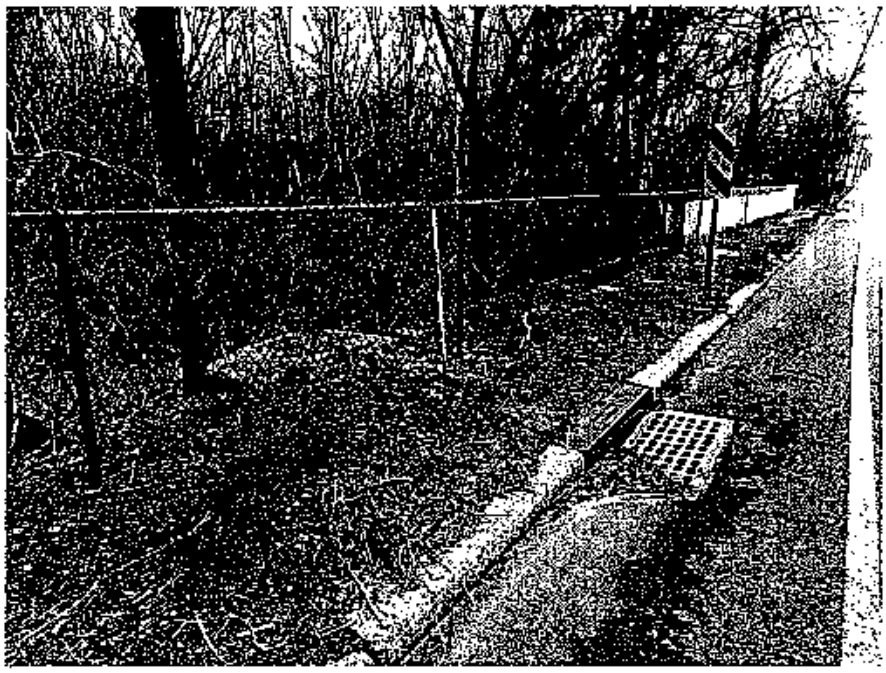


Photo 19	Category:	61 - Work Done
	Description:	West approach, north embankment, looking northeast. Work Done: The heavy erosion behind the curb drain inlet has been backfilled and stabilized, and the collapsed bituminous sidewalk has been repaired. Note new chain link fence installed.

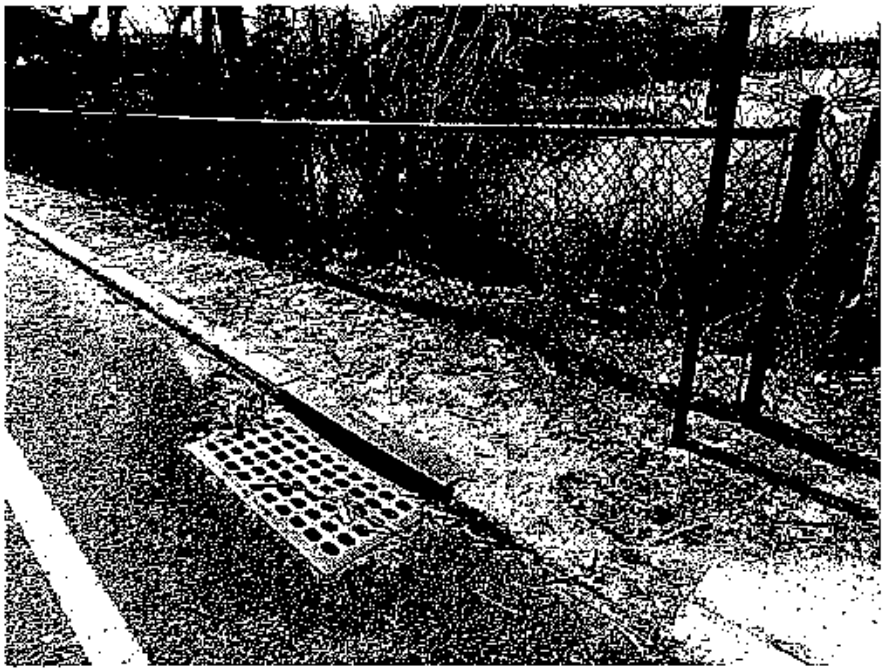


Photo 20	Category:	61 - Work Done
	Description:	East approach, south embankment, looking southeast. Work Done: The south embankment has been backfilled and stabilized, and a new chain link fence is installed.

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

NEW JERSEY DEPARTMENT OF TRANSPORTATION
STRUCTURAL EVALUATION AND BRIDGE MANAGEMENT
FIELD NOTES
County Highway Agency

Inspectors: John Nettuno

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake

Crew Chief: Saint-Eloi, Patrick Weather: Clear

Temperature: 40 °F Special Equipment Used: None

RATINGS:

N Not applicable.
9 Excellent Condition.
8 Very Good Condition - no problems noted.
7 Good Condition - some minor problems.
6 Satisfactory Condition - some minor deterioration of structural elements.
5 **Fair Condition - minor section loss to primary structural elements.**
4 Poor Condition - advanced section loss to primary structural elements.
3 Serious Condition - seriously deteriorated primary structural elements.
2 Critical Condition - facility should be closed until repairs are made.
1 Imminent Failure Condition - facility closed. Study of repairs is feasible.
0 Failed Condition - facility is closed and beyond repair.

GPS COORDINATES		
@ Southwest Corner		
Lat.	N	39.81804
Long.	W	-75.09655

GENERAL

Type of Bridge: Single span, reinforced concrete arch culvert below fill

Year Built: 1926 Year of Widening/Major Repairs: 0000

No. of Lanes: On 02 Under 00

Vertical Clearances: Over Deck: 99.99 ft

Minimum Under: 00.00 ft

Maximum Under (Item 10): 99.99 ft

Horizontal Underclearance: Total Horizontal Clearance: 30.0 ft Curb to curb

Right 00.0 ft

Left 00.0 ft

Overall Physical Condition of Structure: The structure is in fair condition due to the condition of the culvert.

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

ROADWAY

SI&A Item BA Rating: 7
SI&A Item 72 Rating: 8

RATING	COMPONENT	REMARKS
7	Top of Roadway	Bituminous Concrete No significant defects
6	Curbs	Reinforced Concrete (5" curb reveal). Settled at the northeast (0" reveal) & southeast (1" reveal) quadrants. Small spall at the center of south curb with exposed rebar (1 LF) (1 SF) and at the south curb inlet above the arch (1 LF). [See Photo(s): 9, 10]
6	Sidewalks	Reinforced Concrete at south only. Bituminous Concrete at SE approach corner. South- Spall at the center of south sidewalk with settlement at the south curb inlet (2 LF) (2 SF) Work Done: Southeast corner- The settled and collapsed bituminous sidewalk has been repaired and stabilized with asphalt. [See Photo(s): 9, 10, 20]
N	Median	
6	Parapets	Reinforced Concrete. North: incipient spall at NW corner adjacent to section above arch (1 LF) @ 4 SF due to rotation (1½" gap at top). NE corner has 3½" gap at joint with section above the arch. South: No significant defects [See Photo(s): 11]
N	Railings	
N	Guide Rail Condition	
	Approach Roadway Vertical & Horizontal Alignment	Vertical: Slight downgrade slope to the bridge (west approach roadway) then level (bridge and east approach). Horizontal: Tangent Roadway Speed: 35 MPH. No speed reduction required.
6	Approach Roadway Embankment	Retaining Wall and Sloped Fill. Northeast: Steep slope; moderate vegetation. Moderate erosion between fence and curb has exposed the back face of the curb, 3" to 7" high, for 50 LF. Southwest: Minor slope; light vegetation; stable. Southeast: Work Done: Heavy erosion behind curb has been backfilled. Moderate erosion between fence and curb has exposed the back face of the

ROADWAY

SI&A Item BA Rating: 7
SI&A Item 72 Rating: 8

		curb, 5" high, for 25 LF Northwest: Work Done: Heavy erosion behind the curb drain inlet has been backfilled. Low concrete retaining wall beyond parapet is leaning slightly outward (3½") secured by tie rod, then moderate to steep slope with moderate vegetation. It was previously stabilized with deadmen. [See Photo(s): 19, 20]
6	Utilities	Aerial wires along both sides. Utility poles at all 4 corners. Manhole at NE embankment. North drainage above arch- moderate debris but open, functional. South drainage above arch- clogged with debris. Curb drain inlets: SE- open and functional. SW- minor debris but functional. NE- Heavy debris with partial opening. NW- minor debris but functional. [See Photo(s): 12]
8	Fencing	Chain Link Fence. SW- Chain link fence: No significant defects Work Done: New 4' high chain link fence at SE, NE and NW corners. No significant defects. [See Photo(s): 19, 20]
7	Object Traffic Marker Signs	NW, NE and SE corners- No significant defects SW- None

Additional Remarks:

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

Culvert (SUPERSTRUCTURE)

SI&A Item 62 Condition Rating: 5

(ARCH)

SPAN # 1

RATING	COMPONENT	REMARKS
5	Intrados of Arch (Soffit) Arch Ribs	Reinforced Concrete. Shallow spalls with exposed rusted rebars (30 SF) @ 10 LF. Rebar has heavy to severe section loss and one broken bar. Heavy abrasion at and below the waterline at base of soffit, at north and south ends. [See Photo(s): 8, 13]
N	Spandrel Columns/Extrados	
5	Spandrel Walls	Reinforced Concrete. North: Heavy abrasion (20 SF x up to 6" deep) at the west end @ 10 LF. Large spall with delaminated concrete (25 SF x up to 12" deep) and 3 exposed severely rusted rebars (up to 80% section loss) at the east end @ 10 LF. Three (3) medium to wide cracks at north half arch base (4' spacings). [See Photo(s): 14]
4	Concrete Spillway Roof slab	Reinforced Concrete. SE corner-Large spalls (up to full depth) with exposed rusted rebar (25 SF) and shallow spall (4 SF). SW corner- Spalls with exposed rebar and broken section (spall) (8 SF) [See Photo(s): 15]
N	Others	

Additional Remarks:

Inlet at the south soffit is clogged with debris.
[See Photo(s): 12]

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

Culvert (SUBSTRUCTURE)

SI&A Item 62 Condition Rating: 5

(Arch/Frame)

WEST ABUTMENT

RATING	COMPONENT	REMARKS
N	Footings	Below grade not visible
5	Wingwalls & Retaining Walls	Concrete. Northwest – Shallow spalls with exposed rebar (10 SF) @ 4 LF. Southwest – Shallow spalls and moderate delaminating concrete at waterline (12 SF) @ 10 LF. Northwest Retaining wall: Outward rotation (up to 1" at the top of the parapet) near the spandrel wall @ 5 LF (no change). [See Photo(s): 16, 18]
7	Invert Slab and Cut-off wall (Concrete)	Concrete. No significant defects
N	Others	

Additional Remarks:

The leaning of the northwest wingwall has been stabilized with tie rods.

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

Culvert (SUBSTRUCTURE)

SI&A Item 62 Condition Rating: 5

(Arch/Frame)

EAST ABUTMENT

RATING	COMPONENT	REMARKS
N	Footings	Below grade not visible
5	Wingwalls & Retaining Walls	Concrete. Northeast – Small spalls with exposed rebar (30 SF) @ 6 LF with 1 exposed rebar adjacent to the spandrel wall. Southeast – Small spalls with exposed rebar (4 SF) @ 2 LF. Heavy delamination, full length, along the waterline. Northeast Retaining wall: Outward rotation (up to 3½" at the top of the parapet) near spandrel wall @ 20 LF (no change). [See Photo(s): 14, 17, 18]
7	Invert Slab and Cut-off wall (Concrete)	Concrete. No significant defects
N	Others	

Additional Remarks:

The leaning of the wingwall has been stabilized with tie rods.

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

Culvert (SUBSTRUCTURE/SCOUR)

SI&A Item 62 Condition Rating: 5

Arch South Inlet (Upstream)

RATING	COMPONENT	REMARKS
		COUNTERMEASURES
	Description	Concrete invert slab below arch.
7	Condition	No significant defects
		PROBING/SCOUR
7	Findings	Item 113 = 8. Channel is a spillway controlled lake with reinforced concrete retaining walls and Concrete invert slab. The dam exhibits gaps in the timber panels that allow the lake to flow through. There is no scour. [See Photo(s): 6]
	Changes Since Prior Inspection	None
	Debris	None

Repair Quantities:

None

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

Culvert (SUBSTRUCTURE/SCOUR)

SI&A Item 62 Condition Rating: 5

Arch North Inlet (Downstream)

RATING	COMPONENT	REMARKS
		COUNTERMEASURES
	Description	Concrete invert slab below arch.
7	Condition	No significant defects
		PROBING/SCOUR
5	Findings	Item 113 = 8. Heavy scour has occurred at the downstream channel embankments and exposed the vertical face of the arch invert slab cut-off wall. [See Photo(s): 2]
	Changes Since Prior Inspection	None
	Debris	None

Repair Quantities:

None

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

WATERWAY/CHANNEL

SI&A Item No. 61: 5
SI&A Item No. 71: 6
Prioritization Category:
Scour Sufficiency Rating:

WATERWAY # 1

RATING	COMPONENT	REMARKS
	FLOW CONDITIONS	
	Direction	The flow is from south to north.
	Magnitude	The bridge opening constricts the normal channel, but is controlled by the spillway. The upstream channel is a spillway controlled lake.
	Velocity	Moderate; 1 ft/sec. There is heavy flow from the southwest portion of the weir to moderate velocity inside the channel.
	EMBANKMENTS	
7	Upstream	Both: Lake with well vegetated embankments.
5	Downstream	Both: Steep slope. Heavy erosion with exposed, undermined tree roots, leaning trees, and fallen trees. Heavy scour has occurred at the downstream channel embankments and exposed the vertical face of the arch invert slab cut-off wall. [See Photo(s): 2, 7]
7	Channel Countermeasures	The upstream spillway controls the lake outflow at north opening. There are gaps between the panels of the weir allowing water to flow through. Riprap along the northeast wingwall. Steel sheet pile wall at northeast and northwest corners of the bridge. Laminar corrosion along the waterline of the steel sheeting. [See Photo(s): 6]
	CHANNEL MOVEMENT AND CHANGES	
	Horizontal Location	There is a lake upstream and downstream is meandering.
	Cross Section	Level concrete floor slab. Stones and silt along the concrete floor slab.
	Alignment	The upstream flow approaches the structure on a straight alignment, is parallel to the substructure elements beneath the structure, and exits towards the northwest downstream.
	Changes Since Previous Inspection	None
	Navigation Clearances	Not applicable
	Waterway Opening	Inadequate due to heavy downstream scour
5	Debris in Channel	Fallen trees across the channel at downstream at 20'± from the bridge (5

WATERWAY/CHANNEL

SI&A Item No. 61: 5
SI&A Item No. 71: 6
Prioritization Category:
Scour Sufficiency Rating:

		CY) [See Photo(s): 7]

Repair Quantities:

Remove fallen trees (5 CY)

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

HIGHWAY SAFETY

Coding of SI&A Item 36: 0 0 0 0

RATING		COMPONENT	REMARKS
0		Bridge Railing	3'-5" high concrete parapet with snag potential. Due to the substandard design standards.
0	0	Transition to Bridge Railing	No guide rail system provided.
	1	Curb & Sidewalk Terminations	The curbs are continuous and the sidewalk (south only) is continuous into the west approach and end at end of the parapet at east approach.
0		Approach Guide Rails	No guide rail system provided.
0		Approach Guide Rail End Terminals	No guide rail system provided.

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

DECK GEOMETRY

SI&A Item 68 Rating: 3

COMPONENT	REMARKS
Bridge Cross Section	The approach roadway widths are consistent with the bridge roadway width
Adequacy of Lane/Shoulder Widths	2 lanes, 2-way traffic Curb-to-Curb = 30.0' 2018 Estimated ADT = 8871
Vertical Clearance over Deck	Unlimited

Posting for Load/Speed/Clearance Restrictions

- [x] None
- [ ] Posting for Load
- [ ] Posting for Speed
- [ ] Posting for Clearance
- [ ] Posting for Others

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

CLEARANCES

FEATURE ON STRUCTURE: CR 706 (COOPER STREET) SI&A SHEET 1

	Measured Clearance	Location
Minimum Vertical Clearance *(SI&A Item 10)*	99.99	
Total Horizontal Clearances *(SI&A Item 47)*	30.0	Curb to curb
CONTROLLING UNDERCLEARANCE DATA		
Minimum Vertical Underclearance *(SI&A Item 54)*	00.00	
Minimum Vertical Underclearance (including shoulders) *(SI&A Item DJ)*	00.00	
Lateral Right *(SI&A Item 55)*	00.0	
Lateral Left *(SI&A Item 56)*	00.0	

Structure No.: 0803K03 Route: 9008 Cycle No.: 21
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/11/2018

WORK DONE HISTORICAL DATA

CYCLE NO.	YEAR	WORK DONE SUMMARY
21	2018	Heavy approach embankment erosion was repaired and stabilized with asphalt at the southeast and northeast embankments. Settled and collapsed southeast bituminous sidewalk repaired with asphalt. New 4.0' high chain link fence installed at the southeast, northeast and northwest embankments.
CYCLE NO.	**YEAR**	**WORK DONE SUMMARY**
20	2016	Temporary steel plate and construction barrel have been placed above the heavy erosion behind the curb drain inlet.
CYCLE NO.	**YEAR**	**WORK DONE SUMMARY**
19	2014	Roadway milled and resurfaced in-kind with bituminous concrete.
CYCLE NO.	**YEAR**	**WORK DONE SUMMARY**
18	2012	Rip-rap placed on the northeast embankment.
CYCLE NO.	**YEAR**	**WORK DONE SUMMARY**
17	2010	None
CYCLE NO.	**YEAR**	**WORK DONE SUMMARY**
16	2008	Several large bituminous concrete patched areas in the eastbound lane, west approach roadway.

NJDOT Fracture Critical Member (FCM) Checklist

Structure Number: 0803K03 **Date of Inspection:** 04/11/2018

Name of Structure: CR 708 (Cooper Street) over Almonesson Creek at Almonesson Lake **Cycle Number:** 21

Type of Bridge: Single span, reinforced concrete arch culvert below fill

NOTE: For Definition of 'Fracture Critical Bridge', Refer to the 2012 BIRM and Section X.E from NJDOT Explanation of SOW.

Is the Structure Fracture Critical?: No

FC Member Type - 1: **FC Member Type - 2:** **FC Member Type - 3:**

Plans/Sketches showing FCM members provided for Fracture Critical Bridge?

Fracture Critical Member Identification Information:

Hand On Inspection Performed for FC Member: **Photo/s attached for Special Equipment used for Hands On Inspection?:**

Access Information for FC Member Hands On Inspection:

Fracture Critical Inspection Frequency Item (92A): **Fracture Critical Inspection Date Item (93A):**

NOTE: Special Testing & Special Testing Date is Applicable to Welded FC Member and Pin & Hanger FC Members only.

Special Equipment - 1: **Special Testing Type - 1:** **Date of Special Testing:**

Special Equipment - 2: **Special Testing Type - 2:**

Special Equipment - 3: **Special Testing Type - 3:**

Reason for Fracture Critical classified in the C&R Section?: **Comments on Condition Rating of FC Member:**

Additional Structure Type - 1: **Additional Structure Type - 2:**

Additional Structure Type Remarks:

Fatigue Detail - 1: **Fatigue Detail - 2:** **Fatigue Detail - 3:**

Fatigue Location - 1: **Fatigue Location - 2:** **Fatigue Location - 3:**

Comments on Load Induced Fatigue Details:

1. Pin & Hanger FCM Member: Additional Structure Type must be coded as 1, 2, or 3.
2. Welded FCM Member: Additional Structure Type must be coded as 4.
3. Riveted/Bolted FCM Member: Additional Structure Type must be coded as F.

Fatigue Detail/Location Remark:

(FQ) Latest In-Depth FC/Pin-Hanger Inspection Date: 1/1/1901 **FC Members Inspected:**

Special FCM Insp. Required: False **Special FCM Insp. Date:** **Special FCM Insp. Consultant:**

Special P/H Insp. Required: False **Special P/H Insp. Date:** **Special P/H Insp. Consultant:**

Structure No.: 0803K03 Route: 9008 Milepost:
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake

CoMBIS Priority Repair Form

In Progress Items

Item Number:	2016_02581	Maintenance Recommendation Type:	PR - Priority Repair 1 (High)
Current Work Spec.:		Maintenance Recommendation Category:	
Original Work Spec. Identified In:		Maintenance Recommendation Activity:	
Date Originally Entered:	06/24/2016	Originally Reported By:	Patrick Saint-Eloi
Date Closed:		Closed By:	

Inspector

Describe Deficiency: Group 08C6: Structure 0803K03, CR 706 (Cooper Street) over Almonesson Creek MP 1.10, Deptford Township

Note: Original email was sent to all parties on 4/29/2016.

As per our Scope of Work we are hereby sending this Priority Repair notification. During our inspection of the referenced bridge on April 27, 2016 we found the following defect:

The storm water drain inlet along the south curb in the east approach is fully blocked by debris and leaves. This has caused storm water run-off to erode the southeast embankment and cause partial collapse of the asphalt sidewalk in the vicinity of the bridge.

Description of Proposed Work: We recommend the following Priority 1 Repair:

1. Clear the storm water inlet and test water flow (½ Crew Day)
2. Back fill, tamp, and stabilize the southeast approach embankment (2.5 CY Fill)
3. Remove debris and rebuild the collapsed asphalt sidewalk (3 CF Asphalt)

Is Interim Work Needed:

Description of Interim Work Required to Maintain Structure Until Proposed Work can be Accomplished:

Date Email Sent: 06/27/2016 Email Sent By: Lane, James Email Sent To: jlane@jmt.com;dlubelsk@co.gloucester.nj.us;vvoltaggio@co.gloucester.nj.us;Imran.Ahmad@dot.nj.gov;Inam.Qadeer@dot.nj.gov;Ramy.Shamroukh@dot.nj.gov;JLane@jmt.com;WFaulkner@jmt.com;JPetre@jmt.com;JNettuno@jmt.com;PSaint-Eloi@jmt.com

Structure No.: 0803K03 Route: 9008 Milepost: _____

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake

CoMBIS Priority Repair Form

Estimated Quantity/Costs

Quantity: Unit:

Unit Cost: Man Hours:

Total Cost:

Bridge Owner - Engineering Section

Date Completed: Work Order # (NJDOT) Only):

Final Work Description:

Interim Work Description:

Date Email Sent: Email Sent By: Email Sent To:

Comments:

Date Final Work Verified as Completed:

Structure No.: 0803K03 Route: 9008 Milepost:

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake

CoMBIS Priority Repair Form

Bridge Owner - Maintenance Section

Beyond Capacity of Maintenance Dept. - Recommend Contractor Be Hired:

Contract Number: Date Work Assigned:

Personnel Assigned:

What Was Done/Materials Used:

Maintenance Comments:

Was Interim Work Completed: Date Interim Work Flagged as Complete:

Date Final Work Completed: Flagged as Complete By:

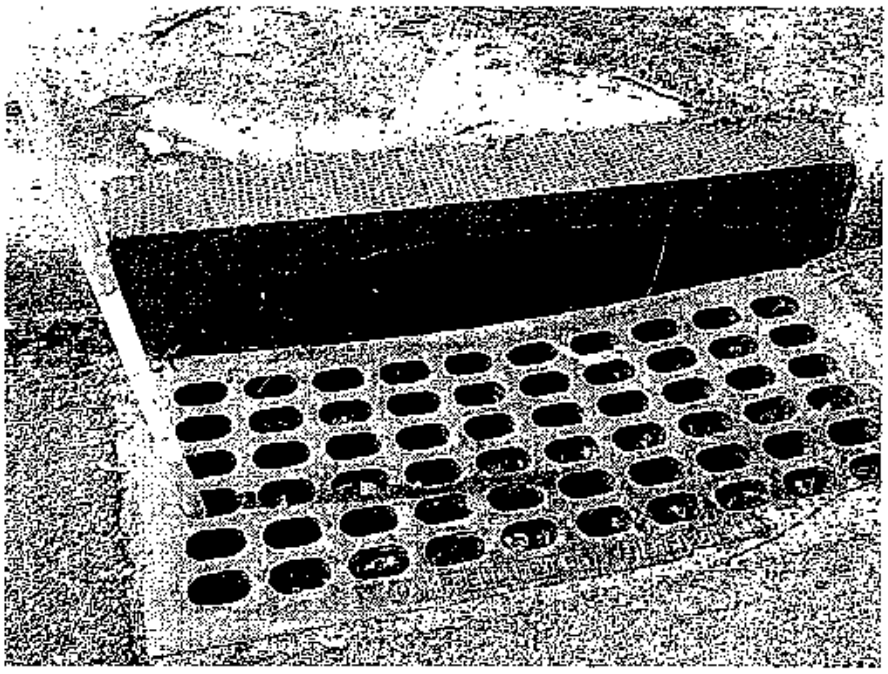


Photo 1	Category:	02 - Approaches, 60 - Priority Repair , 09 - Utilities/Light Poles
	Description:	East approach inlet along the south curb, looking south. The storm water inlet is full clogged with debris and leaves.

Structure No.: 0803K03 Route: 9008 Milepost:

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake

CoMBIS Priority Repair Form

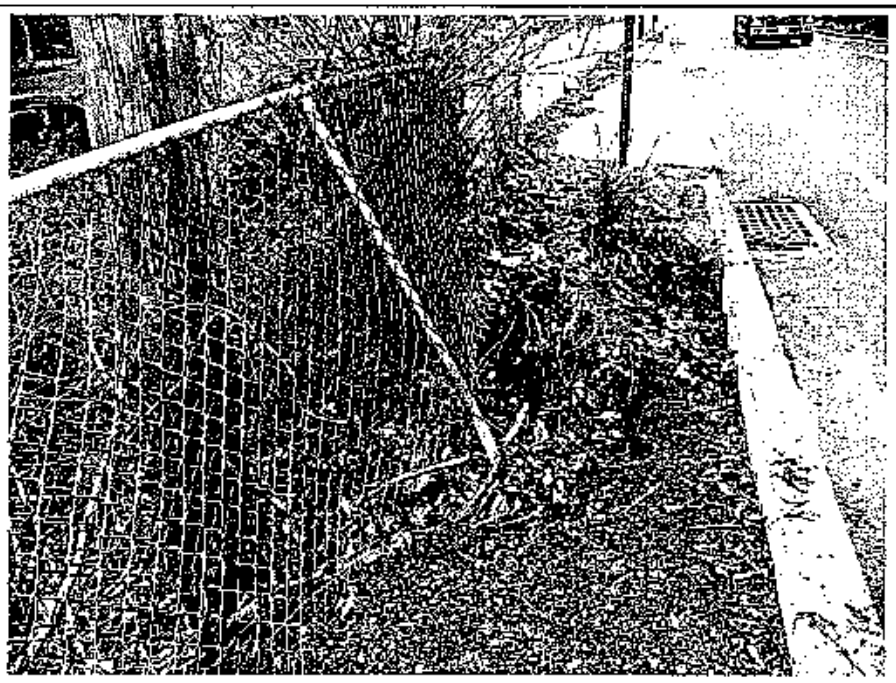


Photo 2	Category:	12 - Roadway/Approach Embankment, 05 - Sidewalks/Safetywalks/Curbs, 60 - Priority Repair
	Description:	East approach embankment and sidewalk along the south side, looking west. The embankment is eroded and has caused collapse of the asphalt sidewalk.

Structure No.: 0803K03 Route: 9008 Cycle No.: ~~20~~ 21

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: ~~04/27/2016~~ 04/11/2018

1 - STRUCTURAL DATA

IDENTIFICATION

8 Structure No.: 0803K03 *M82 County Bridge No.:* 3-K-3 *M83 Municipal Bridge No.:*

(AB) Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake

1 State Code:

(1A) State Code 34 - New Jersey

(1B) Region Code 2 - Region 2 - New York/New Jersey

2 Highway Agency District: DISTRICT 03 (SOUTH)

4 Place Code: 17710 - Deptford (Township of)

3 County Code: 015 - GLOUCESTER COUNTY

(A) Town: 0802 - Deptford Township

5A Inventory Route (On/Under): 1: Route carried "on" the structure

9 Location: 0.3 MI WEST OF NJ RT 41

5B Inventory Route Signing Prefix: 4 - COUNTY HIGHWAY

5C Level of Service: 1 - MAINLINE

11 Mile Point: 1.100

5D Inventory Route Number: 00706

(AA) Inventory Route: 9008 - Gloucester County

5E Directional Suffix: 0 - NOT APPLICABLE

(FV) Inventory Route Milepoint:

6 Features Intersected: ALMONESSON CREEK

(AC) Non-Inventory Feature: WW: Roadway and/or railroad over waterway

(AD) Adm. Juris. Non-Inv Feature: 1: State

7 Facility Carried by Structure: CR 706 (COOPER ST)

(AE) Alternate Agency:

16 Latitude: 394904.94

17 Longitude: -750547.58

M84 Latitude (Degrees): 39.81804

M85 Longitude (Degrees): -75.09655

(AF) Alternate Structure Number:

98 Border Bridge Code:

(98AA) State Code:

(98AB) Region Code

(98B) % Resp.:

99 Border Bridge Structure Number:

M142 GPS Location: Southwest Corner

CLASSIFICATION

21 Maintenance Responsibility: 02 - County Highway Agency

26 Func. Class. of Inv. Route: 16 - Urban - Minor Arterial

M94 Maint. Resp.:

37 Historical Significance: 5 - Not eligible

22 Owner: 02 - County Highway Agency

M91 On/Off System: 1

M93 Owner:

M96 Comments Ownership:

M95 Ownership Resolved:

101 Parallel Structure Designation: N - No parallel structure

(BB) Orphan Bridge: ~~N~~ B

103 Temporary Struct. Designation:

(BP) Bridge Demolition: ~~N~~ B

104 Highway System of Inv. Route: 0 - Structure/Route is NOT on NHS

(CP) Federal Report: 2 - Highway carrying NBIS bridges included in reports to FHWA

112 NBIS Bridge Length: Yes

(CR) Off-Route Bridge: ~~N~~ B

Agency Admin. Area:

(FX) Federal Error Cannot be Corrected: ~~N~~ B

Structure No.: 0803K03 Route: 9008 Cycle No.: 20
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/27/2016

STRUCTURE TYPE AND MATERIAL

43A Main Span Material: 1 - Concrete
43B Main Span Design: 19 - Culvert (includes frame culverts)
44A Approach Span Material:
44B Approach Span Design:
45 Number of Main Spans: 01
46 Number of Approach Spans: 0
(AJ) Type of Slope Protection:
(AK) Type of Abutment:
(AL) Type of Pier:
(AT) Special Material 1:
(AT) Special Material 2:
(AU) Additional Structure Type 1:
(AU) Additional Structure Type 2:
Fracture Critical Details: Z - None - No fracture critical details

M143 Structure Type Primary: 11 - Arch - Deck
M144 Structure Type Secondary:
M97 Struct. Mat. Type Desc:
107 Deck Structure Type: N - Not Applicable
108A Wearing Surface: N - NA
108B Membrane: N - NA
108C Deck Protection: N - NA
(AV) Widened Structure Type:
1st Widened Material:
1st Widened Design:
2nd Widened Material:
2nd Widened Design:

AGE AND SERVICE

27 Year Built: 1926
28A Lanes On Structure: 02
28B Lanes Under Structure: 00
106 Year Reconstructed: 0000
42A Type of Service On: 5 - Highway-pedestrian
42B Type of Service Under: 5 - Waterway

GEOMETRIC DATA

32 Approach Roadway Width (w/ shoulders): 31.000 ft
33 Bridge Median: 0 - No median
34 Skew: 00 deg
35 Structure Flared: 0 - No flare
M98 Str. is Standalone or Connected:
M99 Length of Portion Included: ft
M101 Total Structure Opening: ft²
M145 Design Vertical Inside Opening: ft
M146 Available Vertical Inside - South or West End: ft
M147 Available Vertical Inside - North or East End: ft

48 Length of Maximum Span: 20 ft
49 Structure Length: 20 ft
M141 Effective CoMBIS Width: ft
50A Left Curb/Sidewalk Width: 06.2 ft
50B Right Curb/Sidewalk Width: 06.2 ft
51 Bridge Roadway Width, Curb-to-Curb: 030.0 ft
52 Deck Width, Out-to-Out: 045.8 ft
(AM) Depth of Fill over Structure: 02.8 ft
Total length: 20.20 ft
Deck Area: 925.16 ft²

NAVIGATION DATA

38 Navigation Control: 0 - No navigation control on waterway (bridge permit not required)
39 Navigation Vertical Clearance: 000 ft
40 Navigation Horizontal Clearance: 0000 ft
111 Pier/Abutment Protection: ~~1 - Navigation protection not required~~ N/A
116 Min. Nav. Vertical Clearance under Lift Bridge: 000 ft
(AP) Fender System:

UTILITIES AND APPURTENANCES

(HA) Bridge Noise Barrier:
- Type of Material 1: ✓
- Type of Material 2: ✓
- Barrier Height 1: ✓ ft
- Barrier Height 2: ✓ ft

(AO) Utilities: ✓
- Utilities 1: ✓
- Utilities 2: ✓
- Utilities 3: ✓
- Utilities 4: ✓

Sign Structures:
- (GS) Overhead Sign Structure: ✓
- (GT) Cantilever Sign Structure: ✓

(GU) Fascia Mounted Sign Structure: ✓

RAILROAD

(BC) USRA Code: ✓
(BE) Rail Milepost: ✓
(BD1) Rail On: ✓
(BD2) Rail Under: ✓

TEMPORARY STRUCTURES

(GV) Bridge: ✓
(GW) Shoring: ✓
(GZ) Cond. Desc.: ✓
(GY) Measures: ✓
(GX) Repairs: ✓

Structure No.: 0803K03 Route: 9008 Cycle No.: 20
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/27/2016

2 - LOAD RATING AND POSTING

Load Rating Review Recommended: ☐

41 Posting Status: A - Open

31 Design Load: 0 - Unknown

(CG1) Posted Load Type:

(CG2) Posted Load Limit: tons

(AI) Speed Limit Posting: mph

Load Rating Engineer:

70 Posting: 5 - Equal to or above legal loads

Rating Date 01/01/1996

(BK) Overstress %:

(CH1) Load Rating/Posting Combo: L: Load Factor Rating

(CH2) Load Rating/Posting Combo: tons

(AN) Plans Available: Yes, plans are readily available.

65 Inventory Rating Method: 1 - Load Factor (LF)

63 Operating Rating Method: 1 - Load Factor (LF)

66 Inventory Rating: 99.9 tons

64 Operating Rating: 99.9 tons

RATING (TONS)

Type	Inventory		Operating	
HL93:	( )		( )	
H15/H20:	(BQ)	63	(CA)	114
HS20:	(BR)	123	(CB)	206
3:	(BS)	146	(CC)	244
NJ3S2:	(BT)	233	(CD)	390
3-3:	(BU)	284	(CE)	475
Military:	(BV)		(CF)	
SU4:	(BW)		(CS)	
SU5:	(BX)		(CT)	
SU6:	(BY)		(CU)	
SU7:	(BZ)		(CV)	

RATING FACTOR

Code only for LRFR

Type	Inventory	Operating
HL93:	(CW)	(CX)
H15/H20:	(BQ2)	(CA2)
HS20:	(BR2)	(CB2)
3:		(CC2)
NJ3S2:		(CD2)
3-3:		(CE2)
Military:	(BV2)	(CF2)
SU4:		(CS2)
SU5:		(CT2)
SU6:		(CU2)
SU7:		(CV2)

ALTERNATE LOAD RATINGS

Alt. Design Load:

Alt. Rating Date

Alt. Inventory Rating: tons

Alt. Operating Rating: tons

Type	Inventory		Operating	
HL93:	( )		( )	
H15:	( )		( )	
HS20:	( )		( )	
3:	( )		( )	
NJ3S2:	( )		( )	
3-3:	( )		( )	
Military:	( )		( )	

Posting

	Inventory	Operating
Truck 1:		
Truck 2:		
Truck 3:		

Structure No.: 0803K03 Route: 9008 Cycle No.: 20
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/27/2016

3A - INSPECTION INFORMATION

APPRAISAL ITEMS

Structurally Deficient/Functionally Obsolete: FO

Sufficiency Rating: 65.7

67 Structural Evaluation: 5 - Somewhat better than minimum

68 Deck Geometry: 3 - Intolerable - high priority of corrective

69 Underclearances, Vertical & Horizontal: N - Not applicable

70 Bridge Posting: 5 - Equal to or above legal loads

71 Waterway Adequacy: 6 - Occasional Overtopping of Approaches

72 Approach Roadway Alignment: 8 - Equal to present desirable criteria

EXISTING BRIDGE CONDITION

58 Deck: N - Not Applicable

(BA) Approach Roadway Condition: 5-Fair Condition - defects requiring minor rehabilitation such as approach slabs pushing against abutment, settlements (over 2") or minor collision damage to guide rails. 7

59 Superstructure: N - Not Applicable

60 Substructure: N - Not Applicable

61 Channel/Channel Protection: 5 - Bank eroded., major damage

62 Culvert: 5 - Moderate to major deterioration

113 Scour Critical Bridge: 8 - Stable for scour conditions

63 Operating Rating Method: 1 - Load Factor (LF)

64 Operating Rating: 99.9 tons

65 Inventory Rating Method: 1 - Load Factor (LF)

66 Inventory Rating: 99.9 tons

CONDITION REMARKS

Deck Distress/Unrepaired Spalls: ft²

(BF) Deck:
1.
2
3
4.
5.

(BG) Superstructure:
1.
2
3
4.
5.

(BH) Substructure:
1.
2
3
4.
5.

(BI) Channel:
1. J: Heavy Scour
2 M: Embankment degradation

(BJ) Culvert:
1. D: Small to large spalls with exposed rebars
2 ~~K~~ B

HIGHWAY SAFETY/FENCING

36A Bridge Rail: 0 - Does not meet acceptable standards/safety

36B Transition: 0 - Does not meet acceptable standards/safety

36C Approach Rail: 0 - Does not meet acceptable standards/safety

36D End Treatments: 0 - Does not meet acceptable standards/safety

(AG) Type of Bridge Rail: 08: Solid Wall (Concrete)—Includes NJ Barrier

(AH) Height of Bridge Rail: 3.42 ft

(AQ) Chain Link Fence Height: ft

(FN) Fencing Warranted: NO - Conditions DO NOT warrant chain link

(FO) Pedestrian Traffic Fencing Status: N: Not applicable or fencing is not

(FP) Fencing Improvement Cost: $ 0

SCOUR EVALUATION

*113 Scour Critical Bridge: 8 - Stable for scour conditions

(FA) FHWA Scour Category: 01: Assessed (Old bridge)

(FB) Date of Stage 1 Scour Eval.:

(FF) Date of Stage 2 Scour Eval.:

(FC) Stage 1 Scour Eval. Consultant:

(FG) Stage 2 Scour Eval. Consultant: ~~Not Applicable~~ Bp

(FH) Scour Critical Elements:

(FD) Stage 1 Scour Eval. Prioritization Category:

(FE) Stage 1 Scour Eval. Sufficiency Rating:

Structure No.: 0803K03 Route: 9008 Cycle No.: 20
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/27/2016

SCOUR COUNTERMEASURES

(FJ) Scour Countermeasures Cost: $

(FL) Scour Monitoring Required/Type:

(FI) Recommended Scour Countermeasures:

(FK) Scour Countermeasures Installed/Type:

1. J: Concrete slab/Pavement
2. ~~Not Applicable~~
3. Not Applicable

PROPOSED IMPROVEMENTS

75A Type of Work: ~~18 - Other Structural Work~~ 33

75B Work To Be Done By: 1 - Work to be done by contract

76 Length of Structure Improvement: 20 ft

(BO) Owner's Maintenance Cost: $ 0

94 Bridge Improvement Cost: ~~$ 36800~~ 39000

95 Roadway Improvement Cost: $ 100000

96 Total Project Cost: ~~$ 289500~~ 212600

97 Year of Improvement Cost Estimate: ~~2016~~ 2018

Structure No.: 0803K03 Route: 9008 Cycle No.: 20
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/27/2016

3B - INSPECTION INFORMATION

INSPECTION DATES

Inspection Report Author: Saint-Eloi, Patrick
Primary Type of Inspection: Regular Inspection
Previous Cycle Inspection Date: ~~06/25/2014~~ 04/27/2016
90 Inspection Date: ~~04/27/2016~~ 04/11/2018
91 Inspection Frequency (in months): 24
Next Inspection Date: ~~04/27/2018~~ 04/11/2020
Pontis Element Inspection Date: ~~04/27/2016~~ 04/11/2018
Pontis Element Frequency (in months): 24
Next Pontis Element Inspection Due: ~~04/27/2018~~ 04/11/2020
(AW) Date of Mechanical/Electrical inspection: ~~1/1/1901~~ BD
(AW1) Mechanical Insp. Type:
(AW2) Electrical Insp. Type:
(AW3) Traffic Safety Insp. Type:
(AW4) Mechanical Insp. Date:
(AW5) Electrical Insp. Date:
(AW6) Traffic Safety Insp. Date:
(AW7) Movable Bridge Type:
(AX) Date of Deck Condition Survey:
M132 Confined Space Entry: No
M105 Description of Inspection Type:

93A FC Inspection Date:
92A FC Inspection Frequency (in months):
Next FC Inspection Date:
93B UW Inspection Date:
92B UW Inspection Frequency (in months):
Next UW Inspection Date:
UW Inspected By:
93C SI Date:
92C SI Frequency (in months):
Next SI Date:
(AR) Special Equipment:
(AR) Special Equipment:
(AR) Special Equipment:
Special Inspection By:
(AS) Special Testing Type:

(AS) Special Testing Type:
~~None~~ BD

(AS) Special Testing Type:
~~None~~ BD

(AY) Date of Special Testing:

PAINT CONDITIONS AND DATE

(GD) Fascia Beam:
(GE) Fascia Bottom Flange:
(GF) Interior Beam:
(GH) Interior Bottom Flange:
(GI) Beam Ends:
(GJ) Connections:
(GK) Bracings:
(GL) Bearings:
(GM) Substructure:
(GN) Above Deck Superstructure:
(GO) Railings/Fence:

(GA) Is Painting Required? No: No parts of the structure require painting
(GB) Environment:
(GC) Date of Current Paint Inspection:
(GR) Date of Last Painting:
(GP) Remarks 1:

(GQ) Remarks 2:

(AZ) FATIGUE DETAIL

Location 1:
Location 2:
Location 3:

Structure No.: 0803K03 Route: 9008 Cycle No.: 20
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/27/2016

IN-DEPTH FRACTURE CRITICAL/PIN-HANGER

(FY) Special FCM Insp. Required: ✓ ☐
(FZ) Special P/H Insp. Required: ✓ ☐
(FQ) Latest In-Depth FC/ Pin-Hanger Inspection Date: ~~1/1/1901~~ B
(FQ1) Special FCM Insp. Date: ✓
(FQ2) Special P/H Insp. Date: ✓

(FR) Consultant: ~~x~~ B
(FR1) Special FCM Insp. Consultant: ✓
(FR2) Special P/H Insp. Consultant: ✓

(FS) FCM's Inspected: ✓
(FT) Combo In-Depth Fracture Critical/Pin-Hanger Inspection: ✓

CYCLE DATA

(P1) Group Number: 08C6 ✓
(P2) Work Spec Number:
(CI) Cycle Number: ~~20~~ 21
(CJ) Inspection Type: R: Regular Inspection ✓
(CM) Current Consultant: J07 - Johnson, Mirm & Thom ✓
(CO) Previous Consultant: J07 - Johnson, Mirm & Thom ✓
M87 Contract State Agreement No.: 2016BI069A ✓
Agreement Modification Number: 01
Contract ID: 16-50815 ✓
Contract Date: 04/11/2016 ✓

(BM) Federal Job Number: STP-NBIS (~~768~~) 774
(BN) State Job Number: ~~2206099~~ 2206472
(P3) NTP Date: ~~04/15/2016~~
Funding Category: Federal - STP OnSystem ✓
(P4) State Project Manager: ~~Imran Ahmad~~ Mula Reddy
(P5) State Assistant PM: ~~Ramy Shamsoulch/Imam Qadoor~~
County Project Manager:
M130 Project Name:

STRUCTURE STATUS

Bridge Status: 3 - Active ✓
Bridge Lifecycle Phase: 1 - Service ✓
Data Last Updated: ~~04/27/2016~~ 04/11/2018

Structure No.: 0803K03 Route: 9008 Cycle No.: 20
Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 04/27/2016

4A - ROADWAY DATA

ROADWAY IDENTIFICATION

Roadway Name: CR 706 (COOPER STREET)

Bridge ID/Structure Number: 0803K03

Roadway SRI: 08000706

NBI Roadway?: Yes

5A Position of Route (On/Under): 1: Route carried "on" the structure

5B Route Signing Prefix: 4 - COUNTY HIGHWAY

5C Level of Service: 1 - MAINLINE

5D Route Number: 00706

5E Directional Suffix: 0 - NOT APPLICABLE

HIGHWAY NETWORKS AND SERVICE CLASSIFICATION

11 Milepoint: 1.100

12 Base Highway Network: Inventory Route is not on the Base Network

13A LRS inventory Route:

13B Subroute Number:

13R Ramp Code:

20 Toll Facility: 3 - On free road. The structure is toll-free and carries a toll-free highway.

26 Functional Classification: 16 - Urban - Minor Arterial

100 STRAHNET Highway Designation: 0 - Not a STRAHNET route

102 Traffic Direction: 2 - 2-way traffic

104 NHS System: 0 - Structure/Route is NOT on NHS

105 Federal Lands Highways: 0 - Not Applicable

110 Designated Truck Highway Network: Inventory route not on network

School Bus: ☐ Transit Route: ☐ Emergency Route: ☐

TRAFFIC DATA

28 Number of Lanes: ON 02 UNDER 00

Number of Medians: 0

Roadway Speed Limit: 35 mph

19 Bypass/Detour Length: 1 miles

Detour Speed: 35 mph

(FM) Incidents Reported:

Accident Count: Rate:

ADT Class: ADT Class 4

29 ADT Total: ~~8704~~ 8871

30 Year of ADT: ~~2016~~ 2018

114 Future ADT: ~~10445~~ 10645

115 Year of Future ADT: ~~2036~~ 2038

109 Truck ADTT (%): 4

(FW) Estimated ADT: Yes

VERTICAL AND HORIZONTAL CLEARANCES

10 Vertical Clearance: 99.99 ft

53 Minimum Vertical Clearance over Bridge: 99.99 ft

54A Minimum Vertical Underclearance Ref: N - Feature not a highway or railroad

54B Minimum Vertical Underclearance: 00.00 ft

(DJ) Minimum Vertical Underclearance (including shoulders): 00.00 ft

32 Approach Roadway Width: 31.000 ft

47 Inventory Route, Total Horizontal Clearance: 30.0 ft

51 Bridge Roadway Width, Curb-to-Curb: 030.0 ft

55A Minimum Lateral Underclearance Ref: N - Feature not a highway or railroad

55B Minimum Lateral Underclearance on Right: 00.0 ft

56 Minimum Lateral Underclearance on Left: 00.0 ft

Inspector: Patrick Saint-Eloi

Inspection Date: ~~04/27/2016~~ 04/11/2018

NBIS Bridges Inspection Report

Structure Number: 0803K03

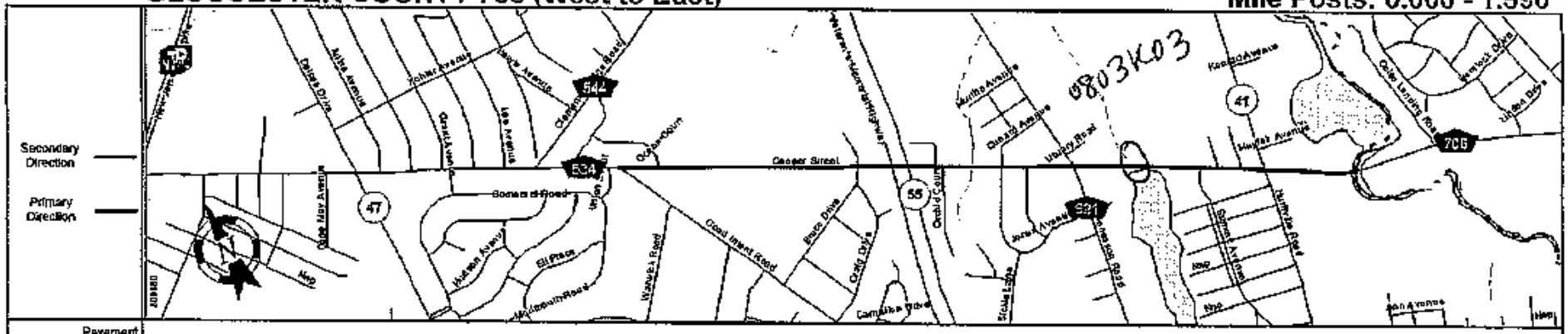
Facility Carried: CR 706 (COOPER ST)

Element Inspection

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
241 - Reinforced Concrete Culvert	3 - Mod.	20	ft.	0	0	2018	02
1080 - Delamination/Spall/Patched Area		10		0	0	10	0
1090 - Exposed Rebar		10		0	0	~~10~~ 8	2
331 - Reinforced Concrete Bridge Railing	3 - Mod.	40	ft.	38	2	0	0
1080 - Delamination/Spall/Patched Area		1		0	1	0	0
1900 - Distortion		1		0	1	0	0
802 - Concrete Curbs/Sidewalks	3 - Mod.	40	ft.	37	3	0	0
1080 - Delamination/Spall/Patched Area		2		0	2	0	0
1090 - Exposed Rebar		1		0	1	0	0
842 - Reinforced Concrete Wingwall	3 - Mod.	80	ft.	20	60	0	0
1080 - Delamination/Spall/Patched Area		15		0	15	0	0
1090 - Exposed Rebar		5		0	5	0	0
4000 - Settlement		40		0	40	0	0
846 - Reinforced Concrete Headwall	3 - Mod.	40	ft.	18	0	22	0
1080 - Delamination/Spall/Patched Area		20		0	0	20	0
1090 - Exposed Rebar		2		0	0	2	0
892 - Bridge Drainage	3 - Mod.	2	each	0	1	0	1
8002 - Clogging (Bridge Drainage)		2		0	1	0	1

GLOUCESTER COUNTY 706 (West to East)

Mile Posts: 0.000 - 1.530



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	

Interstate Route 295
US Route 22
NJ Route 33
County Road 636
Interchange Number 2
Grade Separated Interchange
Traffic Signal
Traffic Monitoring Sites WIM AVC VOL
Road Underpass
Road Overpass

Secondary Direction

Primary Direction

Deptford Twp, Gloucester Co

0803K03

BURLINGTON AVE (0.09) — GOOD INTENT RD (0.20) — E36 — ALLISON CR (0.32) — NORMER CT (0.32) — BRUCE DR — 55 (0.52) — MORTON-LYNN CT (0.59) — ORCHARD CT (0.71) — CUNARD AVE — (0.88) JONES AVE — (0.89) SCHOOLCREST AVE — 534 — ALLIMESSON ROAD (0.99) — 541 — SUMMIT AVE (1.26) — MAE-TANNA AVE (1.30) — (1.34) CHARLES AVE — 41 — HARRYFRUG ROAD (1.40) — Camden County Line

Deptford Twp, Gloucester Co

Units in miles

-1.0 0.0 1.0 2.0

Street Name		Cooper Street	
Jurisdiction		County	
Functional Class	8369 (2012)	Urban Minor Arterial	
Federal Aid - NHS Sy			
Control Section	1.06	67E	
Speed Limit	8871 (2018)	45 / 35	
Number of Lanes		2	
Med. Type	1.20	None	
Med. Width		0	
Pavement	106115 (2038)	22	36 / 22
Shoulder		4 / 2 / 10 / 4 / 2	0 / 2
Traffic Volume		8,369 (2012)	9,224 (201
Traffic Sta. ID		120902	120903
Structure No.			
Enlarged Views			

Begin Gloucester County 706 MP=0.00

End Gloucester County 706 MP=1.59

Page Created: June, 2015

SRI = 08000706

Date last inventoried: May 2011

County of Gloucester
Department of Public Works
1200 N. Delsea Drive
Clayton, NJ 08312

UNDERWATER BRIDGE EVALUATION SURVEY REPORT

STRUCTURE NO. 0803-K03
CR 706 (Cooper Street) over ALMONESSON CREEK at ALMONESSON LAKE
TONWSHIP of DEPTFORD
GLOUCESTER COUNTY

MARCH 29, 2019

Prepared By

CHURCHILL
Consulting Engineers
344 North Route 73, Suite A
Berlin, New Jersey 08009

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N.J.D.O.T. - STRUCTURAL EVALUATION AND BRIDGE MANAGEMENT
UNDERWATER BRIDGE EVALUATION SURVEY REPORT

STRUCTURAL DATA:

Bridge No.:	0803-K03	Year Built:	1926	Widened/ Rehab:	N/A
Route No.:	00706	Length:	20’	Width:	45.8’
Mile Point:	1.100	Date of this Evaluation:	03/29/2018		
Name:	CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake	By:	Churchill Consulting Engineers		
Structure Type:	Single span, reinforced concrete arch culvert below fill	Date of Previous Evaluation:	04/25/2016		
		By:	Johnson, Mirm, & Thom		

WORK DONE: None.

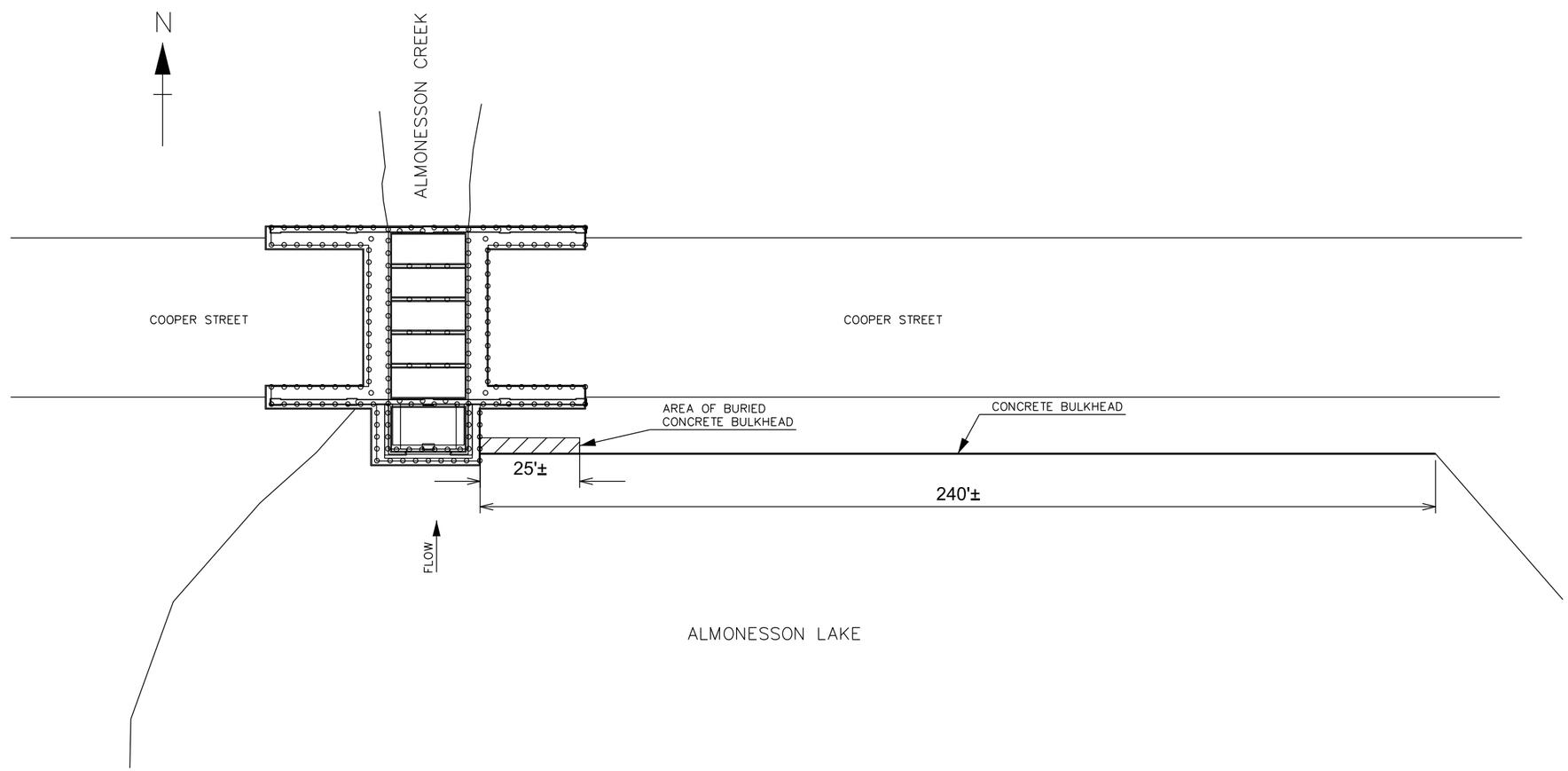
OVERALL PHYSICAL CONDITION: Fair

OVERALL CONDITION (ITEM 67): Fair

SUMMARY:

Number of Substructure Units in Water:	Abutments: 2	Piers: 0	
Type of Underwater Inspection:	NJDOT Type II		
Underwater Inspection Equipment Used:	Drysuit, handtools, sounding rod, small boat, digital camera		
Substructure Elements Cleaned:	10% where needed		
Water Flow Velocity:	Moderate	Soil Type:	Sand & soft silt
Diving Mode:	SSA	Dive Team Members:	Paul H. Stubee, P.E., Andrew Cashner
Diving Hazard Analysis / Assessment:	NH - No assessed hazards		
Reference Information:	2016 Inspection report was available for review prior to inspection.		

COMPONENT / MATERIAL	GENERAL REMARKS
ARCH (Reinforced Concrete)	**Intrados of Arch:** Intrados of the arch exhibits 70 SF of spalls with areas of exposed severely corroded rebar. Up to 100% section loss to rebar where exposed. Heavy concrete erosion along the waterline and base of soffit. **Spandrel Walls:** The spandrel walls exhibit heavy concrete erosion (20 SF x up to 6" deep) at west end. Large spall with delaminated concrete (25 Sf x up to 12" deep), and 3 exposed, severely corroded rebar (up to 80% section loss) at the east end. Three medium to wide vertical cracks observed at north half. **Concrete Spillway Roof Slab:** Large spalls with exposed corroded rebar (25 SF) and shallow spall (4 SF) observed at southeast corner. Spalls with exposed rebar and broken section (8 SF) observed at the southwest corner. **Concrete Spillway Side Walls:** The spillway side walls exhibit heavy scaling along the waterline and below water. Large spall (12 SF x 1" deep) observed at the north end of the east sidewall. **Wingwalls:** Northwest wingwall exhibits shallow spalls with exposed rebar (10 SF), and outward rotation (up to ¾" at the top of the parapet) near the spandrel wall. The southwest wingwall exhibits shallow spalls and delaminating concrete at the waterline (12 SF). The northeast wingwall exhibits small spalls with exposed rebar (30 SF), and outward rotation (up to 3 ½" at the top of the parapet) near the spandrel wall. The southeast wingwall exhibits small spalls with exposed rebar (4 SF).
PROBING/SCOUR	There is a concrete spillway slab below invert of arch with no observed scour. Heavy scour observed along the downstream embankments with exposed vertical face of the arch invert slab cut-off wall.
COUNTERMEASURES	There is a concrete spillway slab below invert of arch with no observed scour.
BULKHEADS	Old concrete bulkhead along the length of the southeast embankment (approx. 240 LF). Concrete exhibits severe scaling with exposed aggregate throughout. Water depths along the bulkhead range from 1.5' to 3.5' with scattered vegetation and minor debris along the full length. Bulkhead is buried from southeast corner of spillway for approximately 25' to the east.



PLAN VIEW

N.T.S

NOTES:

1. OLD CONCRETE BULKHEAD ALONG LENGTH OF SOUTHEAST EMBANKMENT. CONCRETE EXHIBITS SEVERE SCALING WITH EXPOSED AGGREGATE THROUGHOUT. WATER DEPTHS ALONG THE BULKHEAD RANGE FROM APPROXIMATELY 1.5' TO 3.5' WITH SCATEERED VEGETATION AND MINOR DEBRIS ALONG FULL LENGTH. BULKHEAD IS BURIED FROM SOUTHEAST CORNER OF SPILLWAY FOR APPROXIMATELY 25' TO THE EAST.

NEW JERSEY DEPARMENT OF TRANSPORTATION	
STRUCTURE NO. 0803-K03 CR 706 (COOPER STREET) OVER ALMONESSON CREEK AT ALMONESSON LAKE UNDERWATER INSPECTION REPORT DEPTFORD TOWNSHIP, MIDDLESEX COUNTY	
CHURCHILL CONSULTING ENGINEERS	CYCLE No. N/A
	DATE: 3-29-2019

Structure No.:	0803-K03	Route:	00706	Cycle No.:	N/A
Name:	CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake			Insp. Date:	03/29/2019

Photo No: UW-01

Location:	South elevation, looking north.
Description:	General view.

Photo No: UW-02

Location:	North elevation, looking south.
Description:	General view.

Structure No.:	0803-K03	Route:	00706	Cycle No.:	N/A
Name:	CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake			Insp. Date:	03/29/2019

Photo No: UW-03

Location:	Intrados of arch, looking southeast.
Description:	Typical spalls with exposed corroded rebar.

Photo No: UW-04

Location:	South elevation, looking north.
Description:	Area of buried concrete bulkhead.

Structure No.:	0803-K03	Route:	00706	Cycle No.:	N/A
Name:	CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake			Insp. Date:	03/29/2019

Photo No: UW-05

Location:	Downstream channel, looking north.
Description:	General view, note fallen trees across channel.

Photo No: UW-06

Location:	Southeast embankment, looking north.
Description:	Area of concrete bulkhead.

Photo No: UW-07

Location:	Concrete spillway, east sidewall, north end, looking east.
Description:	Large spall and delaminated concrete.

Photo No: UW-08

Location:	Concrete spillway, west sidewall, looking west.
Description:	Heavy scaling along waterline, and below water.

NEW JERSEY DEPARTMENT OF TRANSPORTATION STRUCTURAL EVALUATION AND BRIDGE MANAGEMENT FIELD NOTES

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake

Diver: Andrew Cashner

Company: Churchill Consulting Engineers

Team leader: Paul H. Stubee, P.E.

Company: Churchill Consulting Engineers

Temperature: 60ºF Weather: Cloudy

Equipment Used: Drysuit, handtools, sounding rod, small boat, digital camera

RATINGS:

N Not applicable.
9 Excellent Condition.
8 Very Good Condition – no problems noted.
7 Good Condition – some minor problems.
6 Satisfactory Condition – some minor deterioration of structural elements.
5 Fair Condition – minor section loss to primary structural elements.
4 Poor Condition – advanced section loss to primary structural elements.
3 Serious Condition – seriously deteriorated primary structural elements.
2 Critical Condition – facility should be closed until repairs are made.
1 Imminent Failure Condition – facility closed. Study of repairs is feasible.
0 Failed Condition – facility is closed and beyond repair.

GENERAL

Type of Bridge: Single span, reinforced concrete arch culvert below fill

Type of Substructure: Single span, reinforced concrete arch culvert below fill

No. of Lanes: On 2 Under N/A (waterway)

Number of substructure units in water: Abutments: 2 Piers: 0

Overall condition of substructure: Fair

WATERWAY:

Type: Non-tidal Velocity: Moderate

Streambed material: Sand & soft silt

Structure No.: 0803-K03 Route: 00706 Cycle No.: N/A

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 03/29/2019

SUPERSTRUCTURE (ARCH)

SI&A Item 59 Condition Rating: **5**

SPAN # 1

RATING	COMPONENT	REMARKS
5	Intrados of Arch (Soffit) Arch Ribs (Reinforced Concrete)	70 SF of spalls with areas of exposed severely corroded rebar. Up to 100% section loss to rebar where exposed. Heavy concrete erosion along the waterline and base of soffit.
N	Spandrel Columns / Extrados	None.
5	Spandrel Walls (Reinforced Concrete)	North: Heavy concrete erosion (20 SF x up to 6" deep) at west end. Large spall with delaminated concrete (25 Sf x up to 12" deep), and 3 exposed, severely corroded rebar (up to 80% section loss) at the east end. Three medium to wide vertical cracks at north half.
4	Concrete Spillway Roof Slab (Reinforced Concrete)	Southeast Corner: Large spalls with exposed corroded rebar (25 SF) and shallow spall (4 SF). Southwest Corner: Spalls with exposed rebar and broken section (8 SF).
N	Others	None.

Additional Remarks:

Structure No.: 0803-K03 Route: 00706 Cycle No.: N/A

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 03/29/2019

UNDERWATER DIVING INSPECTION

SUBSTRUCTURE (ARCH/FRAME)

SI&A Item 60 Condition Rating: **5**

ABUTMENT West

RATING	COMPONENT	REMARKS
N	Footings	Not visible for inspection.
5	Wingwalls/ Retaining Walls (Concrete)	Northwest: Shallow spalls with exposed rebar (10 SF) Outward rotation (up to ¾" at the top of the parapet) near the spandrel wall. Southwest: Shallow spalls and delaminating concrete at waterline (12 SF)
7	Invert Slab and Cut-off wall (Concrete)	No significant defects.
5	Concrete Spillway Side Walls (Reinforced Concrete)	Heavy scaling along waterline, and below water..
N	Others	None.

Additional Remarks:

ABUTMENT East

RATING	COMPONENT	REMARKS
N	Footings	Not visible for inspection.
5	Wingwalls/ Retaining Walls	Northeast: Small spalls with exposed rebar (30 SF). Outward rotation (up to 3 ½" at the top of the parapet) near the spandrel wall. Southeast: Small spalls with exposed rebar (4 SF)
7	Invert Slab and Cut-off wall (Concrete)	No significant defects.
5	Concrete Spillway Side Walls (Reinforced Concrete)	Heavy scaling along waterline, and below water. Large spall at north end of east sidewall (2' high x 6'long x 1" deep) with exposed corroded rebar.
N	Others	None.

Additional Remarks:

Structure No.:	0803-K03	Route:	00706	Cycle No.:	N/A
Name:	CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake			Insp. Date:	03/29/2019

UNDERWATER DIVING INSPECTION

SUBSTRUCTURE/SCOUR

SI&A Item 60 Condition Rating: **5**

ARCH South Inlet (Upstream)

RATING	COMPONENT	REMARKS
		COUNTERMEASURES
	Description	Concrete invert slab below arch.
7	Condition	No significant defects.
		PROBING/SCOUR
7	Findings	Channel is spillway controlled lake with reinforced concrete retaining walls and concrete invert slab. No scour observed.
	Changes Since Prior Inspection	None.
	Debris	None.

Repair Quantities:

ARCH North Inlet (Downstream)

RATING	COMPONENT	REMARKS
		COUNTERMEASURES
	Description	Concrete invert slab below arch.
7	Condition	No significant defects.
		PROBING/SCOUR
5	Findings	Heavy scour along the downstream embankments with exposed vertical face of the arch invert slab cut-off wall.
	Changes Since Prior Inspection	None.
	Debris	None.

Repair Quantities:

Structure No.: 0803-K03 Route: 00706 Cycle No.: N/A

Name: CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake Insp. Date: 03/29/2019

UNDERWATER DIVING INSPECTION

WATERWAY/CHANNEL

SI&A Item No. 61: **5**

SI&A Item No. 71: **6**

WATERWAY Almonesson Creek & Almonesson Lake

Prioritization Category:

SPAN(S) 1

Scour Sufficiency Rating:

RATING	COMPONENT	REMARKS
	FLOW CONDITIONS	
	Direction	South to north.
	Magnitude	Bridge opening restricts the normal channel, but is controlled by a spillway. Upstream channel is spillway controlled lake.
	Velocity	Moderate.
	EMBANKMENTS	
6	Upstream	Southwest: Lake with well vegetated embankments. Southeast: Lake with old concrete bulkhead along the length of the embankment (approx. 240 LF). Concrete exhibits severe scaling with exposed aggregate throughout. Water depths along the bulkhead range from 1.5' to 3.5' with scattered vegetation and minor debris along the full length. Bulkhead is buried from southeast corner of spillway for approximately 25' to the east.
5	Downstream	Both: Steep slope with heavy erosion and exposed, undermined tree roots, leaning trees, and fallen trees. Scour has exposed the vertical face of the arch invert slab cut-off wall.
7	Channel Countermeasures	Riprap along northeast wingwall. Steel sheet pile wall at northeast and northwest corners.
	CHANNEL MOVEMENT AND CHANGES	
	Horizontal Location	Lake upstream, meandering stream downstream.
	Cross Section	Level concrete floor slab.
	Alignment	Parallel to substructure units.
	Changes Since Previous Inspection	None.
	Navigation Clearances	Not applicable.
	Waterway Opening	Appears inadequate due to downstream scour.
6	Other/Debris in Channel	Fallen trees across downstream channel at approximately 20' from bridge.

Repair Quantities:

31-33, 34

FILE

DELAWARE RIVER BASIN
ALMONESSON CREEK,
GLOUCESTER COUNTY
NEW JERSEY

ALMONESSON LAKE DAM
NJ 00401

PHASE 1 INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

DEPARTMENT OF THE ARMY

Philadelphia District
Corps of Engineers
Philadelphia, Pennsylvania

February, 1979

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
CUSTOM HOUSE—2D & CHESTNUT STREETS
PHILADELPHIA, PENNSYLVANIA 19106

IN REPLY REFER TO

NAPEN-D

9 APR 1979

Honorable Brendan T. Byrne
Governor of New Jersey
Trenton, NJ 08621

Dear Governor Byrne:

Inclosed is the Phase I Inspection Report for Almonesson Lake Dam in Gloucester County, New Jersey which has been prepared under authorization of the Dam Inspection Act, Public Law 92-367. A brief assessment of the dam's condition is given in the front of the report.

Based on visual inspection, available records, calculations and past operational performance, Almonesson Lake Dam, initially listed as a high hazard potential structure but reduced to a low hazard potential structure as a result of this inspection, is judged to be in good overall condition. The dam's spillway is considered inadequate since 22 percent of the 100-year flood would overtop the dam. The decision to consider the spillway "inadequate" instead of "seriously inadequate" is based on the dam's low hazard classification, small size, and expectation that failure of the structure would probably result in no loss of life and very minimal economic loss. For the same reasons no further studies or increase of spillway capacity are recommended. To insure adequacy of the structure, the following actions, as a minimum, are recommended:

a. Within one year from the date of approval of this report, the following actions should be taken.

(1) Regrade and provide slope protection for the downstream embankment areas at the bridge wingwalls.

(2) Construct slope paving on the downstream embankment at the roadway profile low point to provide further protection should overtopping occur.

(3) Remove trees on the downstream embankment slope to lessen

the piping potential.

(4) Place additional riprap in the downstream stilling basin to provide scour protection.

(5) Construct curbs and additonal catch basins along the roadway gutters to better control the surface runoff.

A copy of the report is being furnished to Mr. Dirk C. Hofman, New Jersey Department of Environmental Protection, the designated State Office contact for this program. Within five days of the date of this letter, a copy will also be sent to Congressman James J. Florio of the First District. Under the provision of the Freedom of Information Act, the inspection report will be subject to release by this office, upon request, five days after the date of this letter.

Additional copies of this report may be obtained from the National Technical Information Services (NTIS), Springfield, Virginia 22161 at a reasonable cost. Please allow four to six weeks from the date of this letter for NTIS to have copies of the report available.

An important aspect of the Dam Safety Program will be the implementation of the recommendations made as a result of the inspection. We accordingly request that we be advised of proposed actions taken by the State to implement our recommendations.

Sincerely,

JAMES G. TON
Colonel, Corps of Engineers
District Engineer

1 Incl
As stated

Copies furnished:
Dirk C. Hofman, P.E., Deputy Director
Division of Water Resources
N. J. Dept. of Environmental Protection
P. O. Box CN029
Trenton, NJ 08625

John O'Dowd, Acting Chief
Bureau of Flood Plain Management
Division of Water Resources
N. J. Dept. of Environmental Protection
P. O. Box CN029
Trenton, NJ 08625

ALMONESSON LAKE DAM (NJ00401)

CORPS OF ENGINEERS ASSESSMENT OF GENERAL CONDITIONS

This dam was inspected on 6 December 1978 by Louis Berger and Associates, Inc. under contract to the State of New Jersey. The state, under agreement with the U. S. Army Engineer District, Philadelphia, had this inspection performed in accordance with the National Dam Inspection Act, Public Law 92-367.

Almonesson Lake Dam, initially listed as a high hazard potential structure but reduced to a low hazard potential structure as a result of this inspection, is judged to be in good overall condition. The dam's spillway is considered inadequate since 22 percent of the 100-year flood would overtop the dam. The decision to consider the spillway "inadequate" instead of "seriously inadequate" is based on the dam's low hazard classification, small size, and expectation that failure of the structure would probably result in no loss of life and very minimal economic loss. For the same reasons no further studies or increase of spillway capacity are recommended. To insure adequacy of the structure, the following actions, as a minimum, are recommended:

a. Within one year from the date of approval of this report, the following actions should be taken.

(1) Regrade and provide slope protection for the downstream embankment areas at the bridge wingwalls.

(2) Construct slope paving on the downstream embankment at the roadway profile low point to provide further protection should overtopping occur.

(3) Remove trees on the downstream embankment slope to lessen the piping potential.

(4) Place additional riprap in the downstream stilling basin to provide scour protection.

(5) Construct curbs and additonal catch basins along the roadway gutters to better control the surface runoff.

APPROVED: James G. Ton
JAMES G. TON
Colonel, Corps of Engineers
District Engineer

DATE: 9 April 1979

PHASE I REPORT
NATIONAL DAM INSPECTION PROGRAM

Name of Dam Almonesson Lake Dam Fed ID# NJ 00401 and NJ ID# 87

State Located New Jersey
County Located Gloucester
Coordinates Lat. 3949.0 - Long. 7505.8
Stream Almonesson Creek
Date of Inspection 6 December 1978

ASSESSMENT OF GENERAL CONDITIONS

Almonessen Lake Dam is assessed to be in an overall good condition and is recommended to be downgraded from a high hazard to a low hazard category. Overtopping of the highway crossing the dam would not significantly increase the danger of loss of life or property damage as the downstream flood plain is uninhabited. No detrimental findings were uncovered to render a significantly hazardous assessment. Remedial actions recommended to be undertaken in the future are 1) regrade and protect the downstream embankment areas at the bridge wingwalls, 2) construct slope paving on the downstream backslopes at the roadway profile low points 3) remove root systems on the downstream embankment slopes and 4) place additional riprap in the downstream channel. The debris that collects on the spillway should be removed as part of a regular maintenance program.

This dam has an inadequate spillway capacity, being able to accommodate only 21% of the 100 year design flood.

F. Keith Jolls P.E.
Project Manager

STATE OF KENTUCKY
F. KEITH
JOLLS
5432
REGISTERED
PROFESSIONAL ENGINEER

OVERVIEW OF ALMONESSON LAKE DAM

December 1978

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PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM
NAME OF DAM: ALMONESSON LAKE DAM, FED ID# NJ 00401

SECTION 1 - PROJECT INFORMATION

1.1 GENERAL

a. Authority

This report is authorized by the Dam Inspection Act, Public Law 92-367, and has been prepared in accordance with Contract FPM-36 between Louis Berger & Associates, Inc. and the State of New Jersey and its Department of Environmental Protection, Division of Water Resources. The State, in turn, is under agreement with the U.S. Army Engineer District, Philadelphia, to have this inspection performed.

b. Purpose of Inspection

The purpose of this inspection is to evaluate the structural and hydraulic condition of the Almonesson Lake Dam and appurtenant structures, and to determine if the dam constitutes a hazard to human life or property.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam and Appurtenances

Almonesson Lake Dam is an old earth highway embankment approximately 300 feet in length with a 50-year old bridge and spillway located about 80 feet from the west abutment. The road embankment carries Cooper Street across the entire north shore of Almonesson Lake and forms the dam structure. The spillway bridge has a total width of 42 feet face to face of parapet and is comprised of an eleven foot radius semi-circular arch concrete culvert. The wingwalls are 80 feet long overall and parallel the roadway centerline. The upstream

spillway is a three-sided concrete drop inlet structure with two sections of removable timber flashboards facing the reservoir. The spillway crest is approximately five feet below the bridge deck which forms the low point on top of the dam. The roadway embankment is about 42 feet wide with 1½H to 1V side slopes. A timber sheet piling cut-off wall is installed in the middle of the fill, according to the existing plans. The spillway bridge is approximately at the low point in a long sag roadway vertical curve that descends onto the dam from each end.

b. Location

Almonesson Lake Dam is located on Cooper Street (County Road 534) in Almonesson, Deptford Township, Gloucester County and is situated 1500 feet west of the intersection of Cooper Street and State Highway 41.

c. Size Classification

The maximum height of the dam is 23 feet at the spillway foundation and the maximum storage is estimated to be 257 acre-ft. Therefore, the dam is placed in the small size category as defined by the Recommended Guidelines for Safety Inspection of Dams.

d. Hazard Classification

Based upon the Corps of Engineers criteria and the fact that in the event of a failure little damage would take place to downstream property or endanger any lives, the classification of the dam is recommended to be downgraded to low hazard. With a clear downstream channel and all development well above the spillway crest, a failure would cause little damage except to the dam itself. Below the dam, Almonesson Creek flows thru a relatively broad and uninhabited flood plain with the next downstream road crossing about 1.3 miles below the dam.

e. Ownership

According to Division of Water Resources records, the dam is owned by Gloucester County as part of the road system. The County bridge designation is #3K3.

f. Purpose of Dam

The dam presently impounds a recreation lake.

g. Design and Construction History

The dam structure, as it exists today, was constructed in 1926 under supervision of the Gloucester County Engineer, Mr. William C. Cattell. The construction took place on the same alignment of an existing highway embankment that was overtopped and washed out during the spring of 1926. The bridge and spillway structure were constructed approximately 75' west of where this washout occured. The bridge was built inside a timber-sheeted cofferdam that was left in place according to available records. No apparent modifications have been made to the 1926 structure except for the replacement of the timber flashboards (in 1968).

h. Normal Operational Procedures

The roadway and bridge structure are operated as a part of the County road network system.

1.3 PERTINENT DATA

a. Drainage Area : 2.8 square miles

b. Discharge at Damsite

Maximum recorded flood at damsite : Unknown
Ungated spillway capacity : 810 cfs.

c. Elevation (ft. above MSL)

Top of dam (max. pool)	-	+29.0 (low point on roadway)
Design pool	-	+24.0

Recreation Pool (spillway crest) - +24.0
Streambed at centerline of dam - +16±
Maximum Tailwater - +12.5±

d. Reservoir

Length of recreation pool - 2,700 ft.
Length of maximum pool - 5,300 ft.

e. Storage

Recreation Pool - 125 acre-ft.
Maximum Pool (top of dam) - 257 acre-ft.

f. Reservoir Surface

Top of dam (Max. Pool) - 37± acres
Recreation Pool - 17.6 acres

g. Dam

Type - earth embankment with concrete spillway
Length - 300 feet
Height - 23 feet (to bottom of bridge foundation)
Top Width - 42 feet
Side slopes - 1.5H : 1V
Zoning & Core - Unknown
Cutoff - Wood sheet piling along axis of dam
Grout Curtain - none

h. Diversion and Regulating Tunnel

None

i. Spillway

Type - 3-sided narrow crested weir (drop inlet)
Overall Length - 44'
Crest Elevation - +24.0
Gates - None
U/S Channel - Almonesson Lake
D/S Channel - Almonesson Creek

j. Regulating Outlets

2 - sets of 4' wide removeable timber flashboards
Low invert elevation + 16.2 (all removed).

SECTION 2 - ENGINEERING DATA

2.1 DESIGN

The only design information located for review were two sheets of the 1926 construction plans attached herein. The work was designed by Mr. William C. Cattell, the County Engineer to his own County Specifications.

2.2 CONSTRUCTION

The structure and roadway embankment was built by E.P. Henry and Sons, General Contractors.

2.3 OPERATION

Records indicate that the 1926 construction replaced an earlier bridge that was washed out. The present structure appears to have operated satisfactorily as designed since its completion.

2.4 EVALUATION

a. Availability

In view of the size and hazard classification it is felt that sufficient engineering data is available except for the geotechnical make-up of the embankment.

b. Adequacy

The original plans indicate that the spillway arch culvert was carefully and conservatively designed and from the results of the field inspection, is built in accordance with the design plans. The available engineering data is therefore believed to be adequate for the subject inspection.

c. Validity

Based on field observations, the validity of the 1926 design plans is not challenged but further investigations would be required to

assess the permeability of the embankment zones (its structural stability is not questioned.)

SECTION 3 - VISUAL INSPECTIONS

3.1 a. General

Visual inspections were conducted on September 22, and December 6, 1978. The reservoir water level at the time of the latter inspection was about 3 inches above the top of the intake flashboards and was flowing freely.

b. Dam

The embankment portions were found to be substantially as designed and in moderately good condition in view of the age. The lake water level appears to be quite constant during most periods excepting for very heavy inflows as the banks are well stabilized and show little evidence of sloughing at the waterline. The 1:5 to 1 sideslopes are grassed over and have several good-sized trees placed along the sides. There is evidence of considerable pavement run-off in certain locations which have cut out erosion channels. These appear to have been repeatedly patched, particularly of the northeast corner of the bridge wingwall. There are numerous roadway curb drains and catch basins along the gutter lines. The upstream embankment slope is very irregular and it appears the lake has silted up considerably against the upstream face of the dam.

c. Appurtenant Structures

The reinforced concrete arch bridge is in excellent structural condition in view of its age. The wingwalls and parapets display minor cracking and spalled areas but the structurally important zones are in an integral condition. Several horizontal construction joints in the wingwalls are eroded and two sets of transverse tie-rods have been installed between the east wings but whether or not these were placed during the initial construction is not known (they do not show on

the 1926 plans). The semi-circular culvert opening has 11 foot intrados and 15 foot extrados radii and a clear span of 20 feet. The headroom above a reinforced concrete paved invert is about 8 feet. The paved invert which forms the culvert floor is founded on 8 x 8" timber mudsills which are supported on timber piling as are the main footings of the arch and wingwall retaining walls.

At the outfall invert of the culvert (on the north bridge fascia) there is a drop of about 4.5 feet to the downstream channel and vertical steel sheeting has been driven at roughly 45° angles from the fascia line to protect the toes of slope at the base of each wingwall. Some loose riprap has been dumped into the outfall channel (which replaces 2 x 8 timber lagging originally constructed in this area). The drop in the outfall appears to be the long term result of erosion and scour.

The spillway inlet is a 3-sided reinforced concrete frame built right into the bridge wingwalls. It is of a design seen frequently in Gloucester County on construction built in the 1920's and 30's and functions very well for the purpose intended. Two sets of timber flashboards four feet wide are set in vertical slots formed in the concrete on the upstream face and the inlet frame is overtopped with a concrete slab 2 feet above the top of flashboards. However, as can be seen in Section 5, this top slab somewhat limits the hydraulic capacity of the intake. From the size of lake and drainage area, it is doubtful that this was designed as an anti-vortex device but probably served merely as a maintenance platform.

d. Reservoir Area

Almonesson Lake has a regular well-defined shoreline that extends about 0.5 mile upstream to its headwaters at Blackwood Avenue. The reservoir is bounded on both sides with suburban development which includes

a recreation beach immediately to the east of the right abutment area. The lake is clear of debris and there is little evidence of silting except immediately adjacent to the dam face.

e. Downstream Channel

Almonesson Creek flows almost due north after passing the dam in a low marshy valley between 200 to 300 feet wide. Above the undeveloped flood plain, the wooded side banks gradually rise 20 to 30 feet where there are a small number of residences constructed at the tops of the slopes. The low water channel is fairly well-defined and is about 30 feet wide on the average. The channel banks are well stabilized and it appears that heavy discharges inundate considerable portions of the river valley.

SECTION 4 - OPERATIONAL PROCEDURES

4.1 PROCEDURES

Operational procedures were not physically observed by the inspection team. Discussions were held with personnel of the Gloucester County Road Department who handle the regular maintenance of the dam. There is little day-to-day operation as the sluice gates are infrequently adjusted.

4.2 MAINTENANCE OF DAM
4.3 MAINTENANCE OF OPERATING FACILITIES

The dam and reservoir are maintained by Gloucester County in a workmanlike fashion as part of their continual road program.

4.4 DESCRIPTION OF WARNING SYSTEM IN EFFECT

None exists except for monitoring by County and local Municipal personnel during heavy storms.

4.5 EVALUATION

The present operational procedures and safeguards are deemed to be adequate, in view of the position of the dam (no downstream residential areas) and the relatively small contributory area.

SECTION 5 - HYDRAULIC/HYDROLOGIC

5.1 EVALUATION OF FEATURES

a. Design Data

As described in Section 3, the spillway is a 3-sided concrete weir with 2 sets of timber flashboards, set a few inches below the top of concrete spillway. Two feet above the spillway crest is a maintenance slab which restricts the inflow for greater hydraulic heads. Based on the Recommended Guidelines for Safety Inspection of Dams, the spillway design flood (SDF) is either the 50 or 100-year frequency event. Inflow to the reservoir for the selected 100-year storm was computed utilizing precipitation data from Technical Publication 40 and Technical Memo NWS Hydro #35 by the HEC-1 program which gave a peak inflow of 5,085 cfs. Routing this storm through the reservoir reduced the peak discharge to 3,910 cfs. As the spillway capacity is 810 cfs, it can accommodate only 21% of the 100 year flood.

b. Experience Data

There are no stream flow records available for Almonesson Creek, but it was recorded that in 1926 a flood occurred that overtopped and washed out the road embankment. There is no evidence of recent overtoppings but it was felt that there was a considerable period of time (roughly two decades) for which the inspection team could not obtain any hearsay information.

c. Visual Observations

As a result of visual inspections and in view of the small drainage area, there is little danger from overtopping except that it could possibly occur immediately at the end of the bridge wingwalls and tend to concentrate there. As previously reported, the roadway is on a sag vertical curve.

d. Overtopping Potential

Employing the discharge and spillway capacities contained herein, overtopping would occur in the event of the 100-year frequency storm. Since the SDF considerably exceeds the spillway capacity, the overtopping potential was determined by calculating the overbank discharge which was determined to overtop the dam by approximately two feet. However, as pointed out in the preceding paragraph, the overtopping flow would initially be concentrated at the low point on the roadway and would most probably erode the downstream face of the embankment near the end of the bridge wingwall. It is unlikely that the discharge would damage the roadway itself except for possibly undercutting the edges of the pavement.

e. Drawdown

At the present time drawdown is not immediately possible as there is no practical method of removing all the stop logs. However, if in an emergency the planking were removed by force, the lake would take approximately one half day to drawdown from normal pool elevation (24.0) to the concrete sill (El. 16.2). There are no provisions to further dewater the lake.

SECTION 6 - STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

Based on the existing conditions inspected and the 1926 single source of design plans, the dam is deemed to be in moderately good condition except for the continual maintenance problem of roadway drainage at the end of the bridge wingwalls. Although no safety hazard is foreseen, a collapse of the culvert structure due to vehicular overloads could block the discharge channel and create a hydraulic blockage. However, in view of its structural condition, and depth of cover, this is quite unlikely. The roadway embankment is quite wide in relation to its height and as a water impounding structure, has adequate stability. The depth and limits of the timber sheet piling core (see Figure 2) are unknown but certainly contribute to the adequate length of the flow network. Although some evidence of seepage was observed on the natural terrain immediately northwest of the dam, it could not be ascertained that this was an evidence of percolation or the result of overland flows from the higher ground immediately to the east.

b. Design and Construction Data

Although no hydraulic or structural computations were located, a review of the original plans indicates that the concrete intake and arch culvert were conservatively designed and in spite of their age, are believed to be in a safe condition.

c. Operating Records

No records are available but the dam appears to be operating satisfactorily. There are no known instances where overtopping caused any appreciable damage.

d. Post Construction Changes

The only post-construction changes in evidence is the steel sheet piling that has been installed along the sides of the downstream channel. Further, some large riprap stone has been dumped in the outfall area immediately below the culvert.

e. Seismic Stability

The Almonesson dam is located in Zone 1 and due to its embankment width and spillway geometry, has negligible potential vulnerability regarding potential earthquake loadings. As experience indicates, dams in Zone 1 will have adequate stability under dynamic loadings if stable under static loading conditions.

SECTION 7 - ASSESSMENTS/RECOMMENATIONS/ PROPOSED REMEDIAL MEASURES

7.1 DAM ASSESSMENT

a. Safety

Subject to the inherent limitations of the Phase I visual inspection, the Almonesson Lake Dam is classified as being in a sound and satisfactory structural condition although the spillway is incapable of passing the design flood. The dam embankment was built of unknown composition but due to its broad width, timber cut-off wall and lack of any evidence of seepage, is felt to be of a sufficient impervious condition to withstand normal hydraulic heads. The present spillway capacity is inadequate and does not meet the requirements of the Recommended Guidelines for Safety Inspection of Dams, being able to accommodate only 21% of the design flood as calculated by Corps of Engineers criteria. However, the SDF is calculated to overtop the dam by only slightly more than two feet at the low points along the roadway and except for the probable erosion of the downstream slopes, it is felt that little other damage would occur. The major distressed areas of embankment are at the ends of the bridge wingwalls but this is of secondary importance vis a vis the overall stability of the dam.

b. Adequacy of Information

The information gathered for the Phase I inspection is deemed to be adequate regarding the structural stability of the dam. However, no recent surveys have been made.

c. Urgency

No urgency is attached to implementing further studies and it is recommended that the remedial measures enumerated below be taken under advisement in the future.

d. Necessity for Further Study

Due to the low hazard classification of the dam and the fact that no serious property damage is foreseen in case of a failure, further engineering studies are deemed unnecessary.

7.2 RECOMMENDATIONS/REMEDIAL MEASURES

a. Alternatives

On the basis of visual inspection, improvements to the present spillway are not warranted. Consideration could be given to removing a portion of the access slab which is constructed atop the spillway but this might do more structural damage to the old structure than it is worth hydraulically. The downstream face of the embankment at the extreme low point in the roadway profile could be further protected with slope paving and in effect, act as an auxiliary spillway should overtopping occur. Additionally, the embankment areas at the ends of all the bridge wingwalls should be regraded and protected with concrete or asphalt slope protection. Other remedial measures to be taken under advisement include:

1) removal of the trees on the downstream embankment to lessen the piping potential;

2) place additional riprap in the downstream stilling basin; and

3) construct curbs and additional catch basins along the roadway gutters to better control the surface run-off.

b. O&M Maintenance and Procedures

No additional procedures other than those presently in effect appear to be warranted in view of the above assessment.

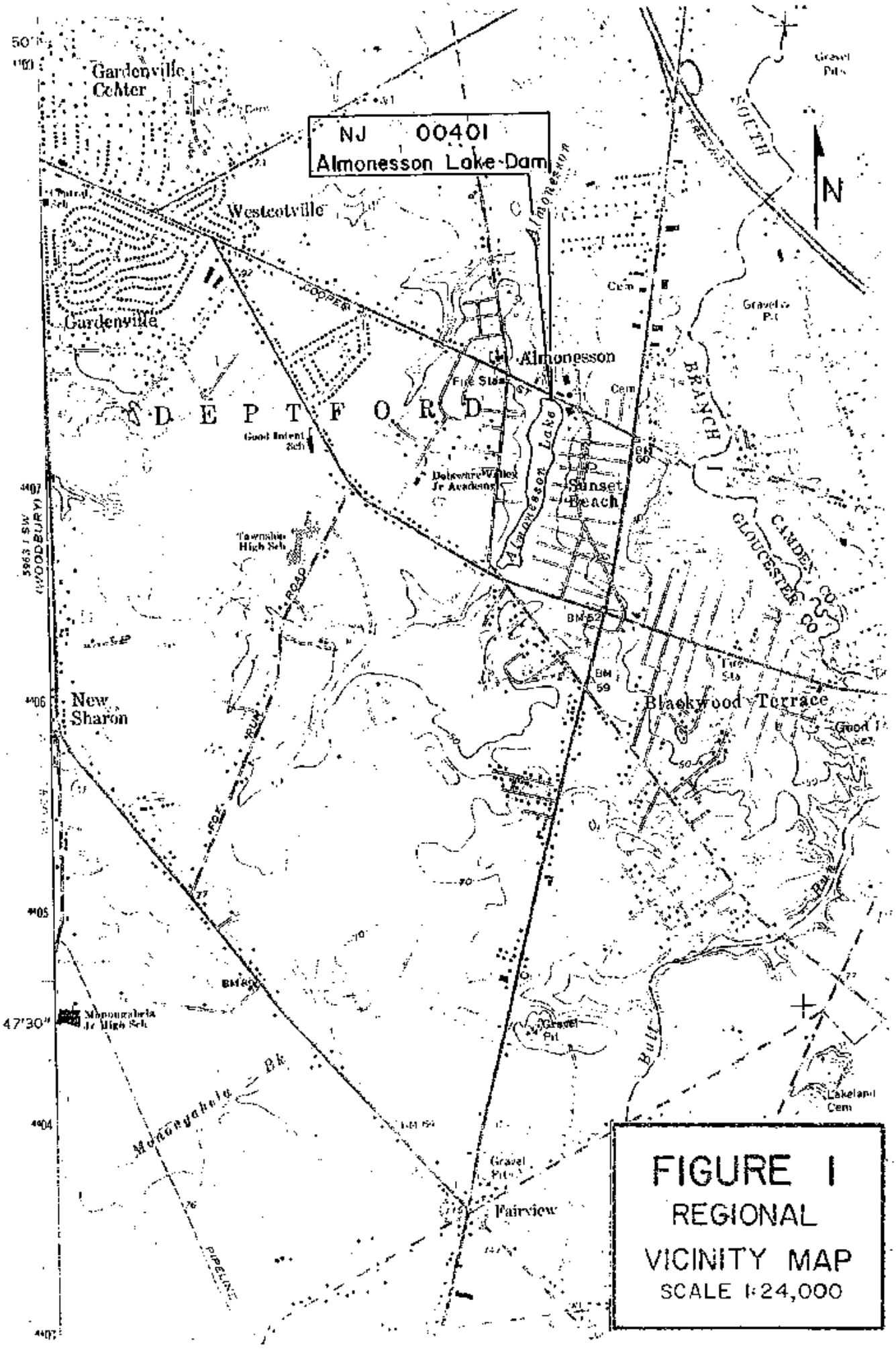


FIGURE 1
REGIONAL
VICINITY MAP
SCALE 1:24,000

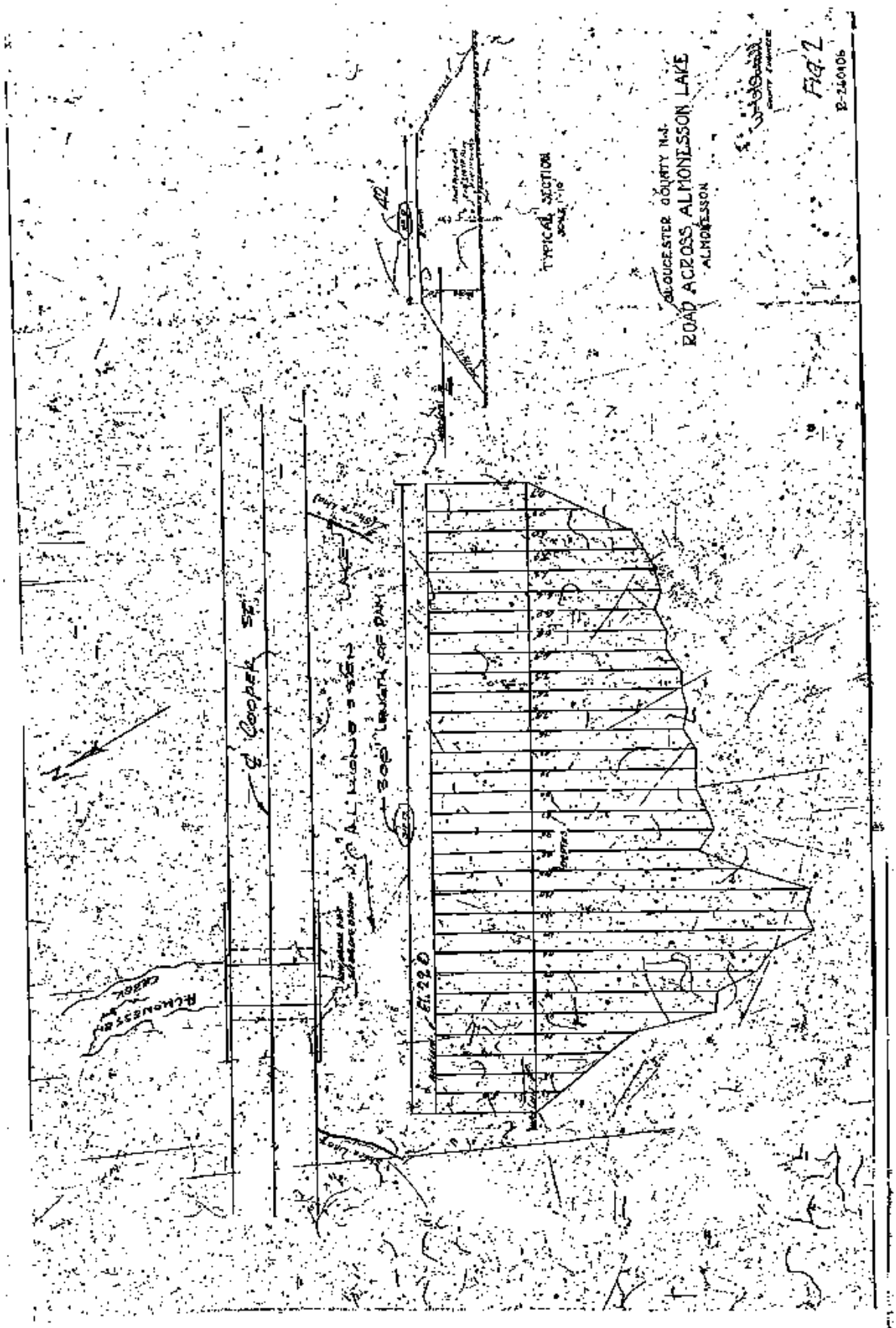


Fig. 2
B-240106
GLOUCESTER COUNTY N.J.
ROAD ACROSS ALMONESSON LAKE
ALMONESSON
TYPICAL SECTION
42
Cooper
Elev. 22.0
Almonesson Creek

FIGURE 2

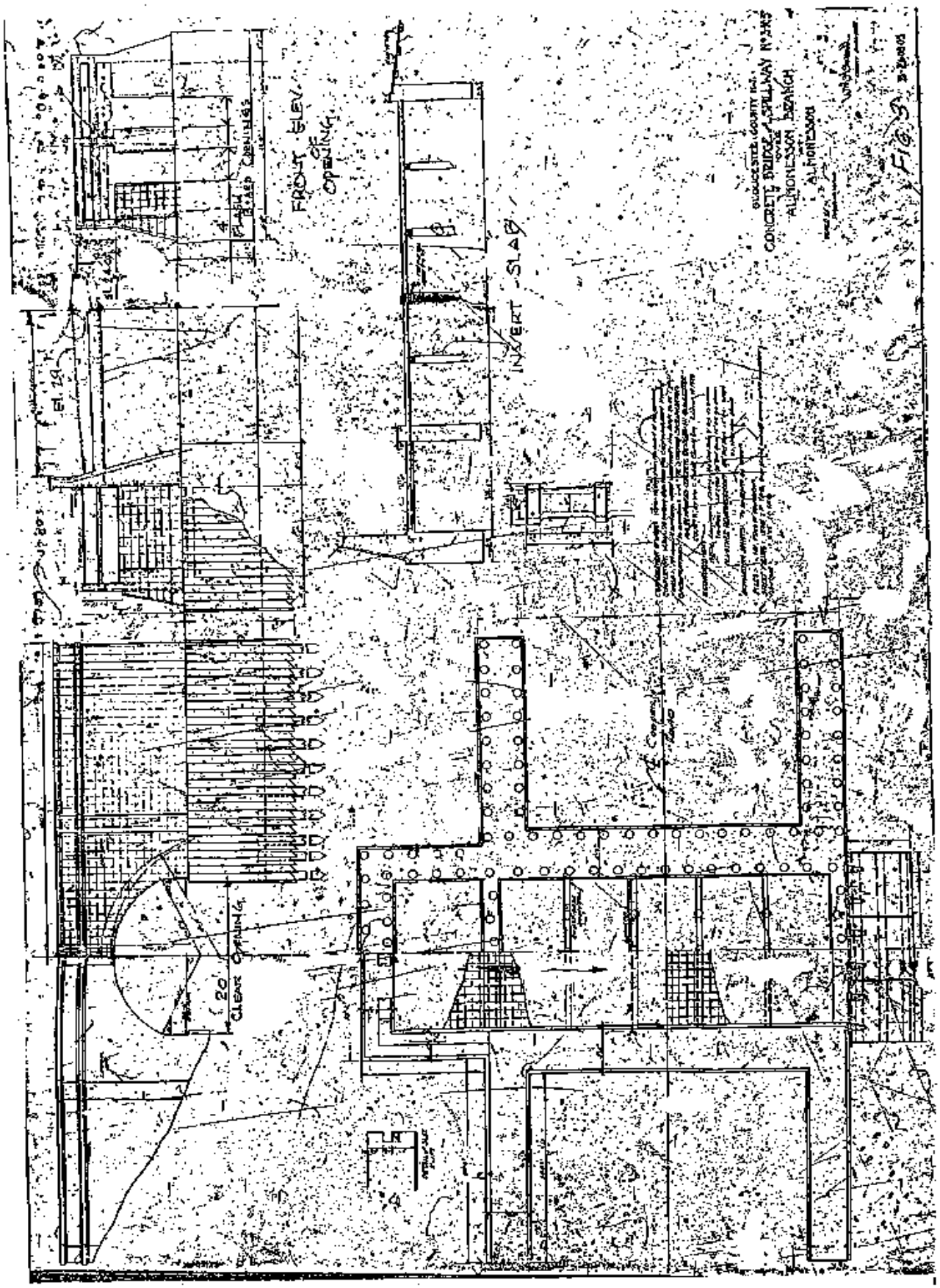

FRONT ELEV
OPENING
INVERT SLAB
CONCRETE BRIDGE & SPILLWAY
ALLIMONESSON BRANCH
ALLIMONESSON
20' CLEAR OPENING
EL 29
FIG 3

FIGURE 3.

Check List
Visual Inspection
Phase 1

Name Dam Almonesson Lake Dam County Gloucester State New Jersey Coordinators NJDEP

Date(s) Inspection Sept. 22, Dec. 6, 1978 Weather Clear Temperature 35°

Pool Elevation at Time of Inspection 24 M.S.L. Tailwater at Time of Inspection 12.5 M.S.L.

Inspection Personnel:

K. Jolls E. Simone

D. Lang

M. Carter

K. Jolls Recorder

Dam No. 00401

Original

CONCRETE/MASONRY DAMS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SEE PAGE ON LEAKAGE		
STRUCTURE TO ABUTMENT/EMBANKMENT JUNCTIONS	Satisfactory - small elevation differential at abutments (see road plans)	County Bridge No. 3K3 original condition
DRAINS	Several inlets on both sides of bridge from road catch basins and curb inlets.	
WATER PASSAGES	None	
FOUNDATION	Structure on timber pilings (see bridge plans)	

CONCRETE/MASONRY DAMS

VISUAL EXAMINATION OF	OBERSVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS CONCRETE SURFACES	Some spalling and deteriorated areas on inlet structure	
STRUCTURAL CRACKING	Yes Tierods installed between east wingwalls (condition good)	Horizontal cold joints show some efflorescence.
VERTICAL AND HORIZONTAL ALIGNMENT	Satisfactory	
MONOLITH JOINTS	None	
CONSTRUCTION JOINTS	Satisfactory	

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS	None observed	Entire top of dam asphalt-paved roadway (26' wide). Some curbed sections.
UNUSUAL MOVEMENT OR CRACKING AT OR BEYOND THE TOE	None observed	
SLOUGHING OR EROSION OF EMBANKMENT AND ABUTMENT SLOPES	Severe erosion at end of wingwall on Northeast corner of bridge (apparently due to roadway runoff). Asphalt slope protection placed near NE wingwall end.	
VERTICAL AND HORIZONTAL ALINEMENT OF THE CREST	Satisfactory - Roadway is on top of embankment, on a long sag vertical curve.	
RIPRAP FAILURES	None	Some large rock dumped in downstream channel at culvert outfall.

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
JUNCTION OF EMBANKMENT AND ABUTMENT, SPILLWAY AND DAM	Satisfactory (very ill-defined)	
ANY NOTICEABLE SEEPAGE	No	
STAFF GAGE AND RECORDER	None	
DRAINS	Roadway catch basins and curb inlets.	Road runoff scouring out ends of wingwalls.

OUTLET WORKS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CRACKING AND SPALLING OF CONCRETE SURFACES IN OUTLET CONDUIT	None	
INTAKE STRUCTURE		
OUTLET STRUCTURE		Steel sheeting driven along channel banks.
OUTLET CHANNEL	Natural stream channel - clear no obstructions. Approximately 10'-15' wide. Secondary growth on side banks.	
EMERGENCY GATE	None	

UNGATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE WEIR	2-4' wide notches in intake wall	Partially clogged by floating debris.
APPROACH CHANNEL	None - Almonesson Lake directly above bridge and spillway.	
DISCHARGE CHANNEL	See previous page	
BRIDGE AND PIERS	Bridge No. 3-K-3 on Cooper Street 80'± long, constructed 1926.	

GATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE SILL	N/A	
APPROACH CHANNEL	N/A	
DISCHARGE CHANNEL	N/A	
BRIDGE AND PIERS	N/A	
GATES AND OPERATION EQUIPMENT	N/A	

INSTRUMENTATION		
VISUAL EXAMINATION	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
MONUMENTATION/SURVEYS	None	
OBSERVATION WELLS	None	
WEIRS	None	
PIEZOMETERS	None	
OTHER	None	

RESERVOIR

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SLOPES	Flat	Recreation immediately Southeast of dam (just past catering service on corner).
SEDIMENTATION	Some about spillway. Banks well-defined.	Appears to be only minor fluctuation in lake level.

DOWNSTREAM CHANNEL

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONDITION (OBSTRUCTIONS, DEBRIS, ETC.)	Clear natural channel approximately 15' - 20' wide. Secondary growth on banks.	Clear channel = 30'±.
SLOPES	Natural erosion but banks are well established.	
APPROXIMATE NO. OF HOMES AND POPULATION	None in immediate vicinity. No danger of flood damage 1 mile ± downstream.	

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION

ITEM	REMARKS
PLAN OF DAM	Available
REGIONAL VICINITY MAP	Available
CONSTRUCTION HISTORY	Available
TYPICAL SECTIONS OF DAM	Available
HYDROLOGIC/HYDRAULIC DATA	Not available
OUTLETS - PLAN	Available
- DETAILS	Available
-CONSTRAINTS	Not available
-DISCHARGE RATINGS	Not available
RAINFALL/RESERVOIR RECORDS	Not available

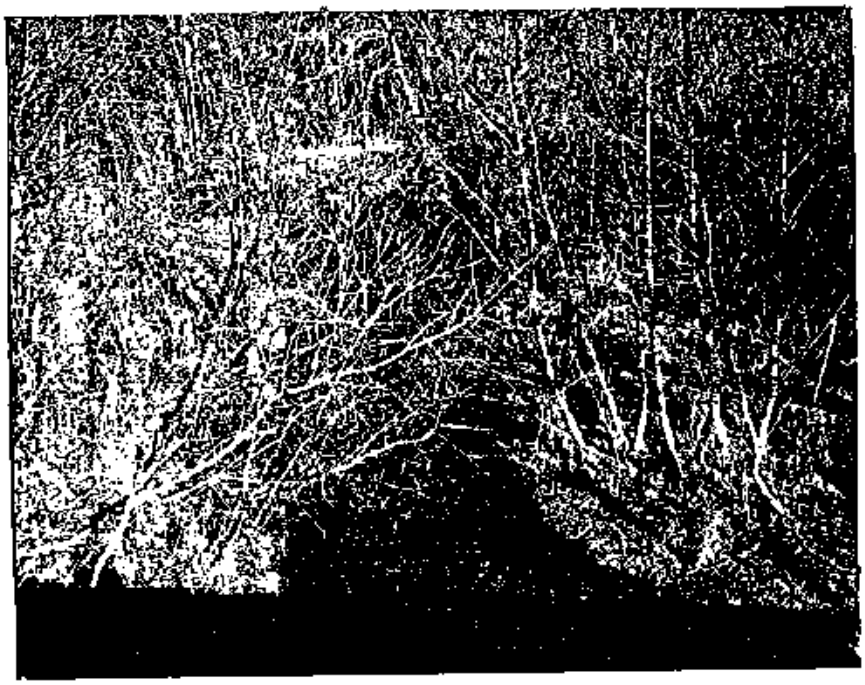
ITEM	REMARKS
DESIGN REPORTS	Not available
GEOLOGY REPORTS	Not available
DESIGN COMPUTATIONS HYDROLOGY & HYDRAULICS DAM STABILITY SEEPAGE STUDIES	Not available
MATERIALS INVESTIGATIONS	Not available
BORING RECORDS	Not available
LABORATORY	Not available
FIELD	Not available
POST-CONSTRUCTION SURVEYS OF DAM	Not available
BORROW SOURCES	Not available

ITEM	REMARKS
MONITORING SYSTEMS	None
MODIFICATIONS	None
HIGH POOL RECORDS	None available
POST CONSTRUCTION ENGINEERING STUDIES AND REPORTS	None available
PRIOR ACCIDENTS OR FAILURE OF DAM	Available
DESCRIPTION	Available.
REPORTS	Not available
MAINTENANCE	None available
OPERATION	None available
RECORDS	None available

ITEM	REMARKS
SPILLWAY PLAN	Available
SECTIONS	Available
DETAILS	Available
OPERATING EQUIPMENT PLANS & DETAILS	N/A

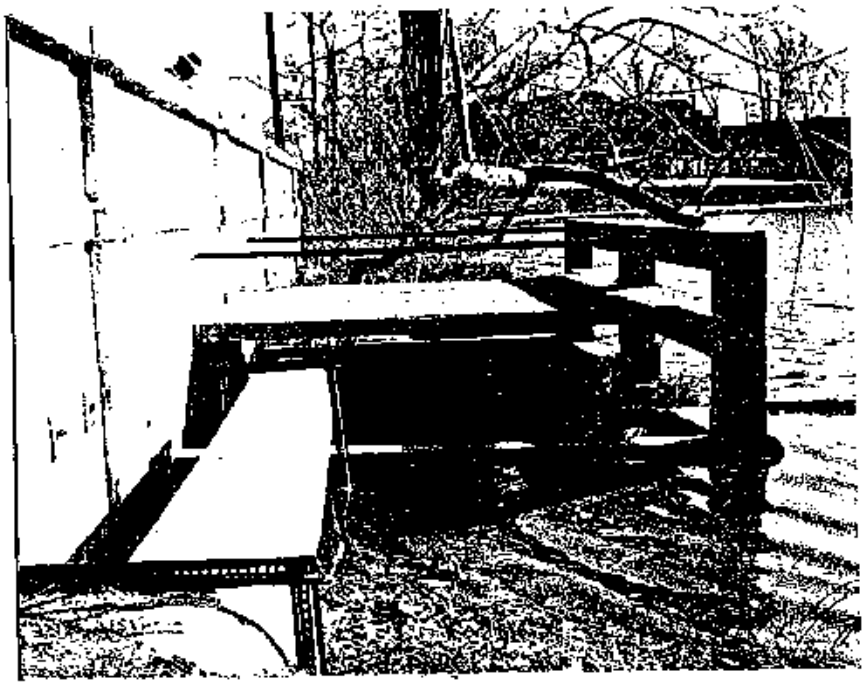
Almonesson Lake

December 1978



Downstream channel

December 1978

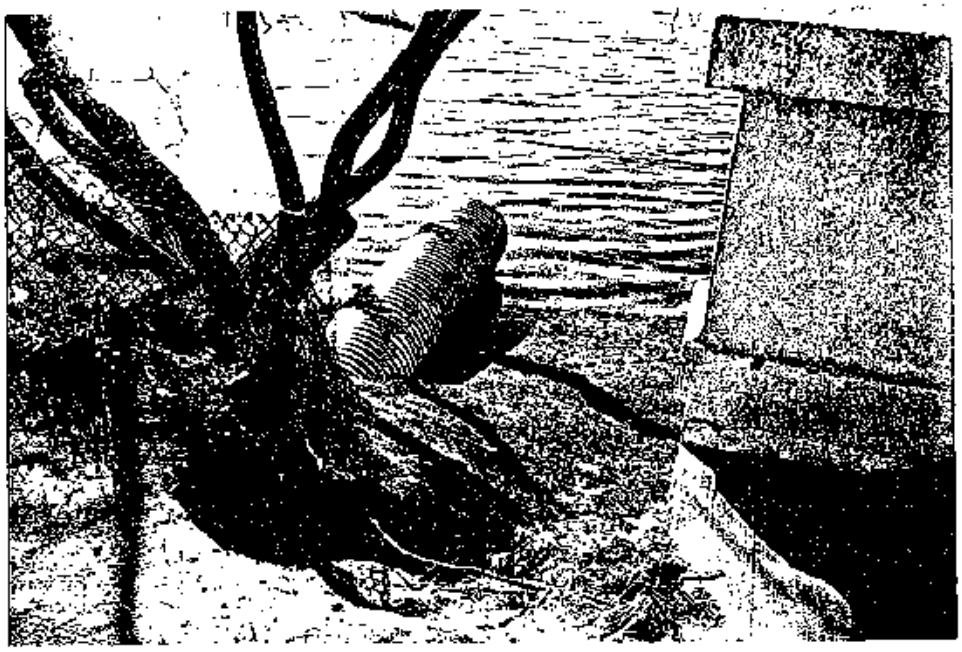


Spillway structure

December 1978

Downstream bridge opening (22' dia.)

December 1978

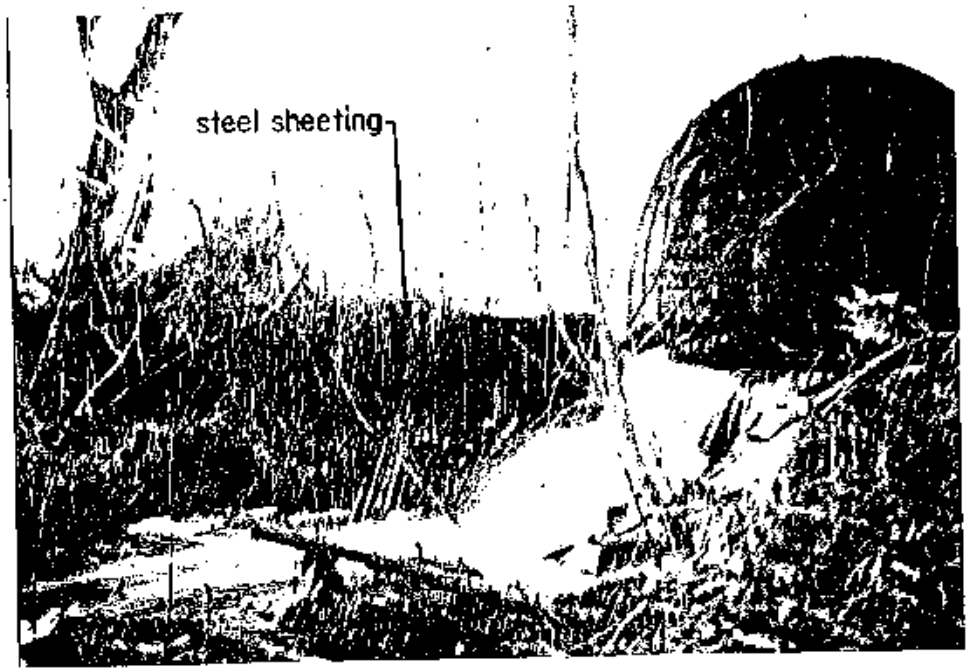


Roadway drain at S.E. wingwall

December 1978

View West along Cooper Street

December 1978



Downstream of bridge opening

December 1978

View S.E. from spillway of lake

December 1978

Dam No. 00401

CHECK LIST
HYDROLOGIC AND HYDRAULIC DATA
ENGINEERING DATA

DRAINAGE AREA CHARACTERISTICS: Drainage Area = 2.8 sq.mi.

ELEVATION TOP NORMAL POOL (STORAGE CAPACITY): 24 MSL (125 acre-feet)

ELEVATION TOP FLOOD CONTROL POOL (STORAGE CAPACITY): 29 (257 acre-feet)

ELEVATION MAXIMUM DESIGN POOL: 29.0

ELEVATION TOP DAM: 29.0

CREST:

a. Elevation 24.0 (MSL)
b. Type Sharp crested weir (3 sided drop inlet)
c. Width 1 foot
d. Length 44 feet (3 sides)
e. Location Spillover 80' from west end
f. Number and Type of Gates none

OUTLET WORKS: None

a. Type
b. Location
c. Entrance inverts
d. Exit inverts
e. Emergency draindown facilities Removeable flashboards

HYDROMETEOROLOGICAL GAGES: None

a. Type
b. Location
c. Records

MAXIMUM NON-DAMAGING DISCHARGE: 910 cfs

BY D.J.M DATE 12-78 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. A1 OF
CHKD. BY DATE ALMONESSON LAKE DAM INSPECTION PROJECT C226
SUBJECT UNITGRAPH DATA FOR HEC-1 INPUT

Time of concentration

CALIFORNIA CULVERT METHOD $L = 1$ mile
$H = 20'$

$$T_c = \left(\frac{11.9}{20}\right)^{0.385} = 0.82 \text{ hours}$$

From SCS Nomograph pg. 71 'Design of small Dams'

$T_c = 0.8$ hours

US. NAVY & TEXAS Highway department method

flow in watercourse

$$\text{Slope} = \frac{20}{5280} \times 100 = 0.4\% \quad \text{use } v = 2.0 \text{ ft s}^{-1}$$

$$\text{time} = \frac{5280}{2 \times 3600} = 0.73 \text{ hrs}$$

Overland flow $L \approx 1300'$ $H \approx 10'$

Slope $= 0.8\%$ use $v = 1.5$ ft s^{-1}

time $= 0.24$ hrs

Σ time $= 0.73 + 0.24 \approx 1$ hr.

Use $T_c = 1$ hour

BY D.J.M DATE 12-78 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. A2 OF
CHKD. BY DATE ALMONESSON LAKE DAM INSPECTION PROJECT C226
SUBJECT

$$T_p = \frac{0.25}{2} + 0.6 \times 1 = 0.73 \text{ hours}$$

$$Q_p = \frac{484 \times 2.8 \times 1}{0.73} = 1856$$

Time	T/T_p	Dimensionless ordinate (DO)	$D.O \times Q_p$
0.25	0.34	0.208	386
0.50	0.68	0.736	1366
0.75	1.03	1.000	1856
1.00	1.37	0.777	1442
1.25	1.71	0.483	896
1.50	2.05	0.300	557
1.75	2.40	0.18	334
2.00	2.74	0.1076	200
2.25	3.08	0.0688	128
2.50	3.42	0.0422	78
2.75	3.77	0.0263	49
3.00	4.11	0.0160	30
3.25	4.45	0.0099	18
3.50	4.79	0.0061	11

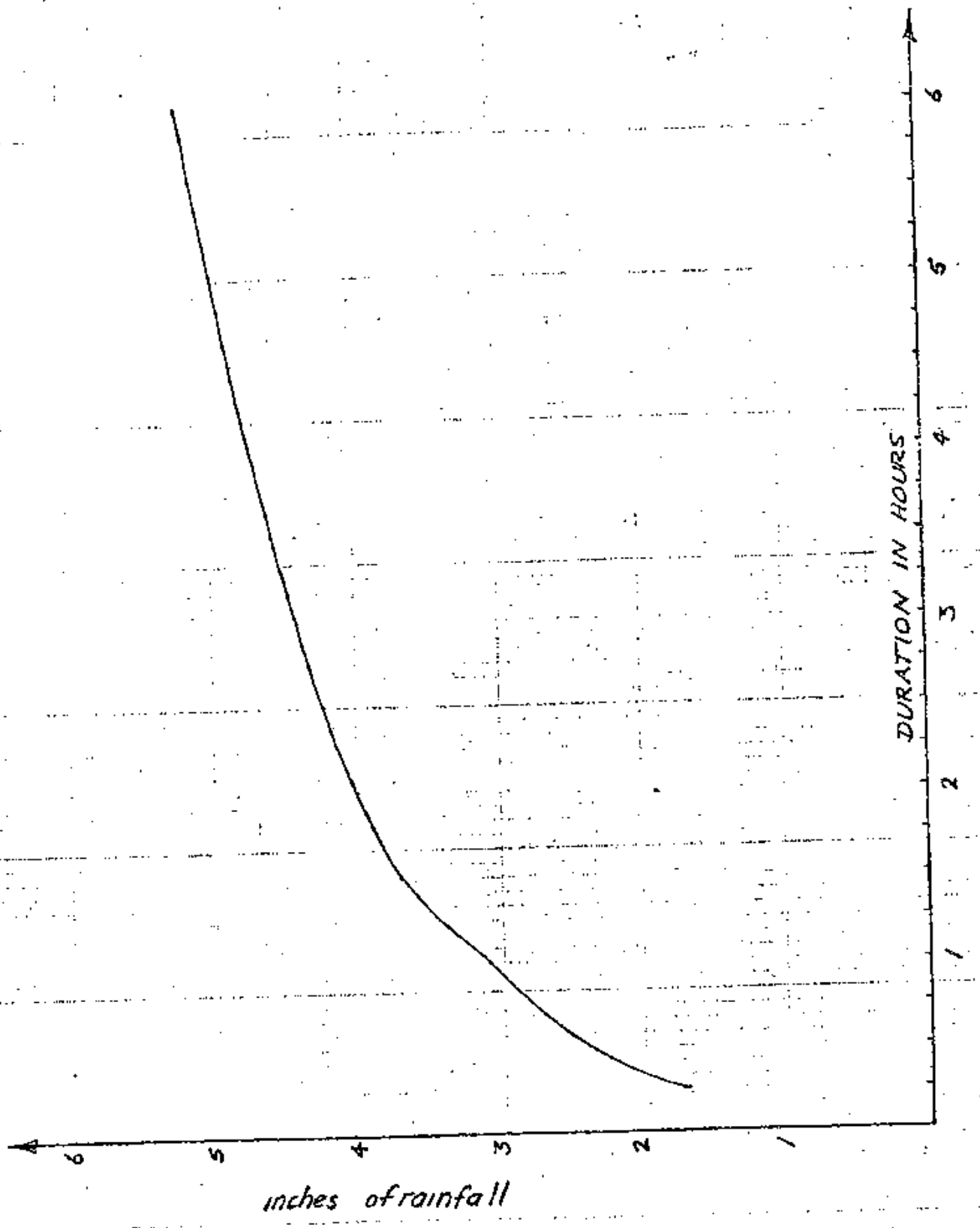
BY D.J.M. DATE 1-79 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. A3 OF
CHKD. BY _____ DATE _____ ALMONESSON LAKE DAM PROJECT 6227
SUBJECT _____

PRECIPITATION DATA FROM T.P 40 (see depth duration curve overleaf)
& HMR 35

Time	Precipitation	Δ	Rearrange
0.25	1.7	1.7	0.06
0.50	2.4	0.7	0.06
0.75	2.8	0.4	0.06
1.00	3.1	0.3	0.06
1.25	3.5	0.4	0.07
1.50	3.7	0.2	0.07
1.75	3.86	0.16	0.08
2.00	4.00	0.14	0.09
2.25	4.11	0.11	0.09
2.50	4.22	0.11	0.09
2.75	4.31	0.09	0.11
3.00	4.40	0.09	0.11
3.25	4.49	0.09	0.30
3.50	4.57	0.08	0.70
3.75	4.64	0.07	1.70
4.00	4.71	0.07	0.40
4.25	4.78	0.07	0.40
4.50	4.84	0.06	0.20
4.75	4.90	0.06	0.16
5.00	4.96	0.06	0.14
5.25	5.02	0.06	0.07
5.50	5.08	0.06	0.06
5.75	5.14	0.06	0.06
6.00	5.20	0.06	0.06

BY D.J.M DATE 1-79 SUBJECT T.P. 40 & H.M.R. 35 SHEET NO. A4 OF

CHKD. BY DATE DEPTH DURATION CURVE JOB NO. C227



BY D.L. DATE 12-78

CHKD. BY _____ DATE _____

SUBJECT _____

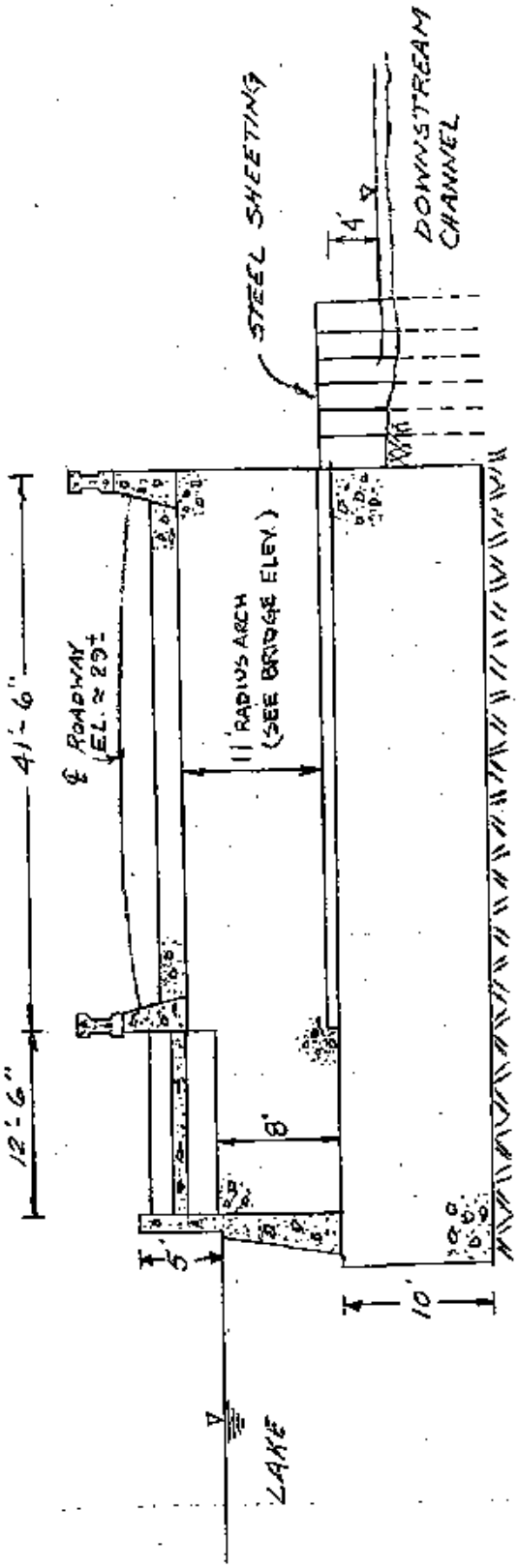
LOUIS BERGER & ASSOCIATES INC.

ALMONESSON LAKE DAM

SPILLWAY SECTION

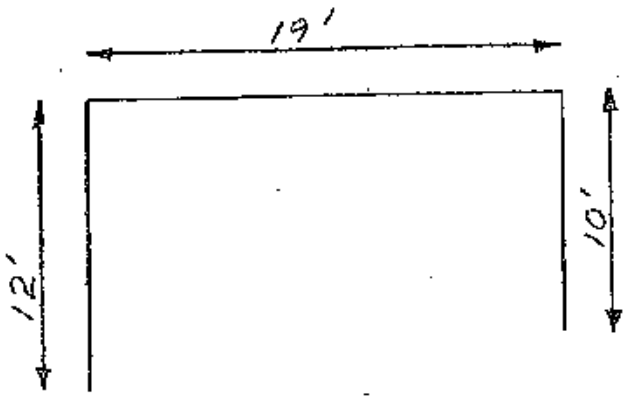
SHEET NO. A6 OF ___

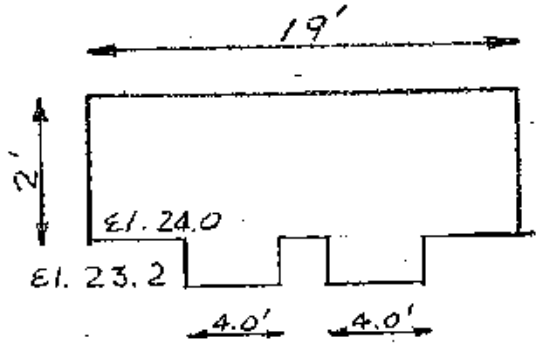
PROJECT C-226



SPILLWAY SECTION

BY D.J.M. DATE 12-78 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. A6 OF
CHKD. BY _____ DATE _____ ALMONESSON LAKE DAM INSPECTION PROJECT C226
SUBJECT _____





Assume control at inlet and that spillway acts as a weir for 2' then as a culvert

Discharge over crest
$L = 33'$

H	C	Q
1	3.0	99
2	3.0	280

Use $Q = ca\sqrt{2gH}$
$a = 33 \times 2 = 66$

3	468
4	530
5	592
6	649
7	701
8	749

over flashboards
$L = 8'$

H	C	Q
1.8	3.0	58
2.8	3.0	112

Use $C \approx 0.5$
$a = 8 \times 2.8 = 22.4$

3.8	175
4.8	197
5.8	216
6.8	237
7.8	251
8.8	266

overdam
$L \approx 300'$

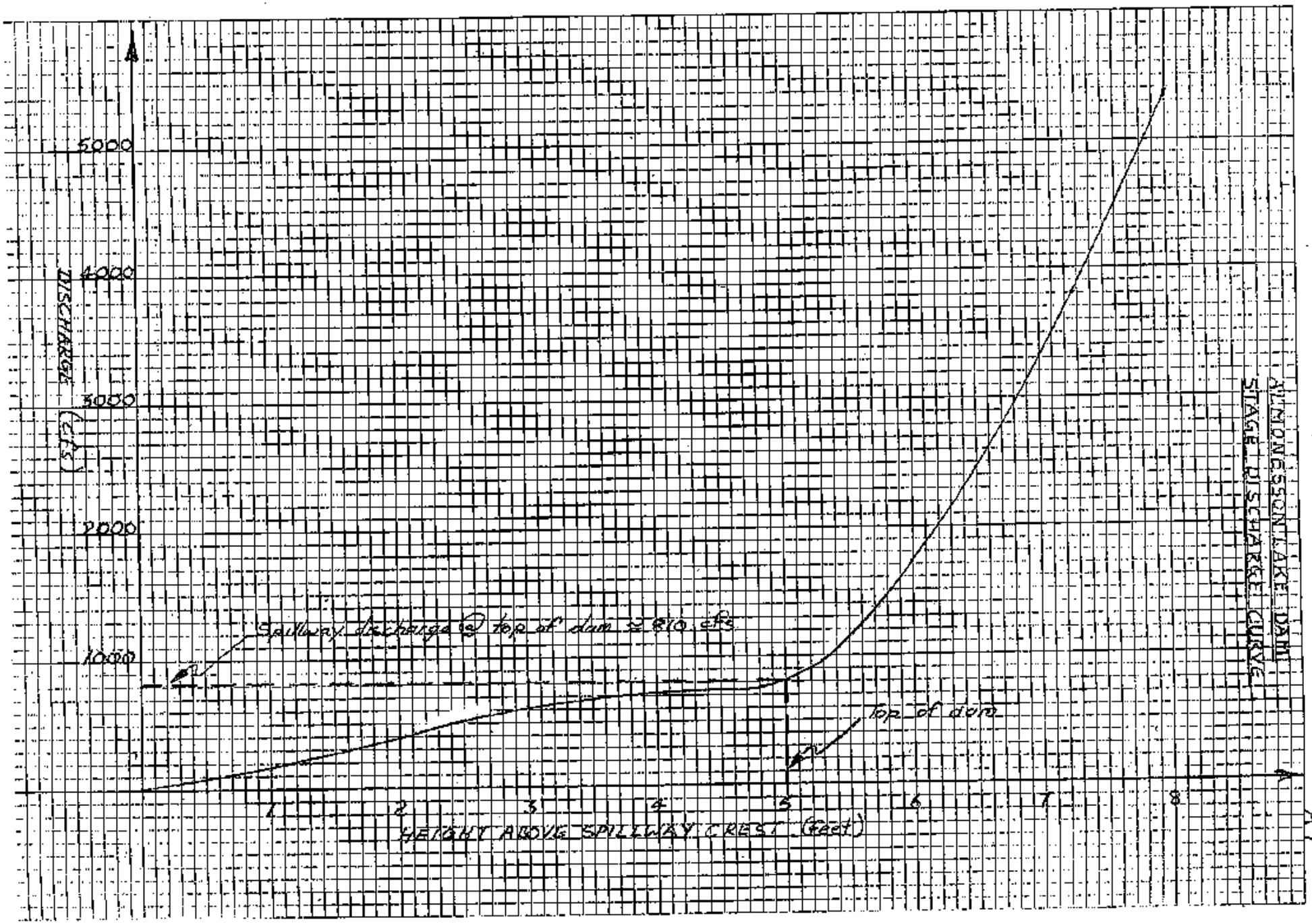
H	C	Q
1	2.8	840
2	2.8	2376
3	2.8	4365

H	Q
1	157
2	392
3	633
4	727
5	808
6	1723
7	3328
8	5380

Culvert under highway does not control

K+E 10 X 10 TO THE INCH • 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 0706



A7

BY D.J.M. DATE 12-78
CHKD. BY _____ DATE _____
SUBJECT _____

LOUIS BERGER & ASSOCIATES INC.

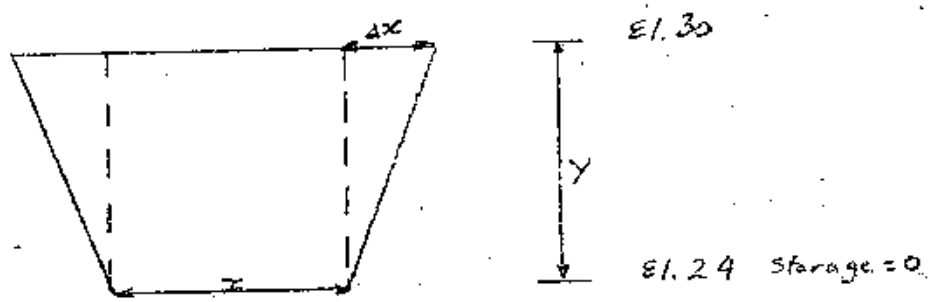
ALMONESSON LAKE DAM INSPECTION

SHEET NO. A8 OF ___
PROJECT C226

Stage storage data

Area of lake @ El. 24 ≈ 17.6 acres

Area of contour @ El. 30 ≈ 38.8 acres



Formula for each increment in storage.

$$\text{Volume} = (x + \Delta x) \times Y$$

Height feet	Storage in acre feet
1	19
2	42
3	69
4	99
5	132
6	169
7	210
8	254
9	302

K+E 10 X 10 TO THE INCH • 7 X 10 INCHES
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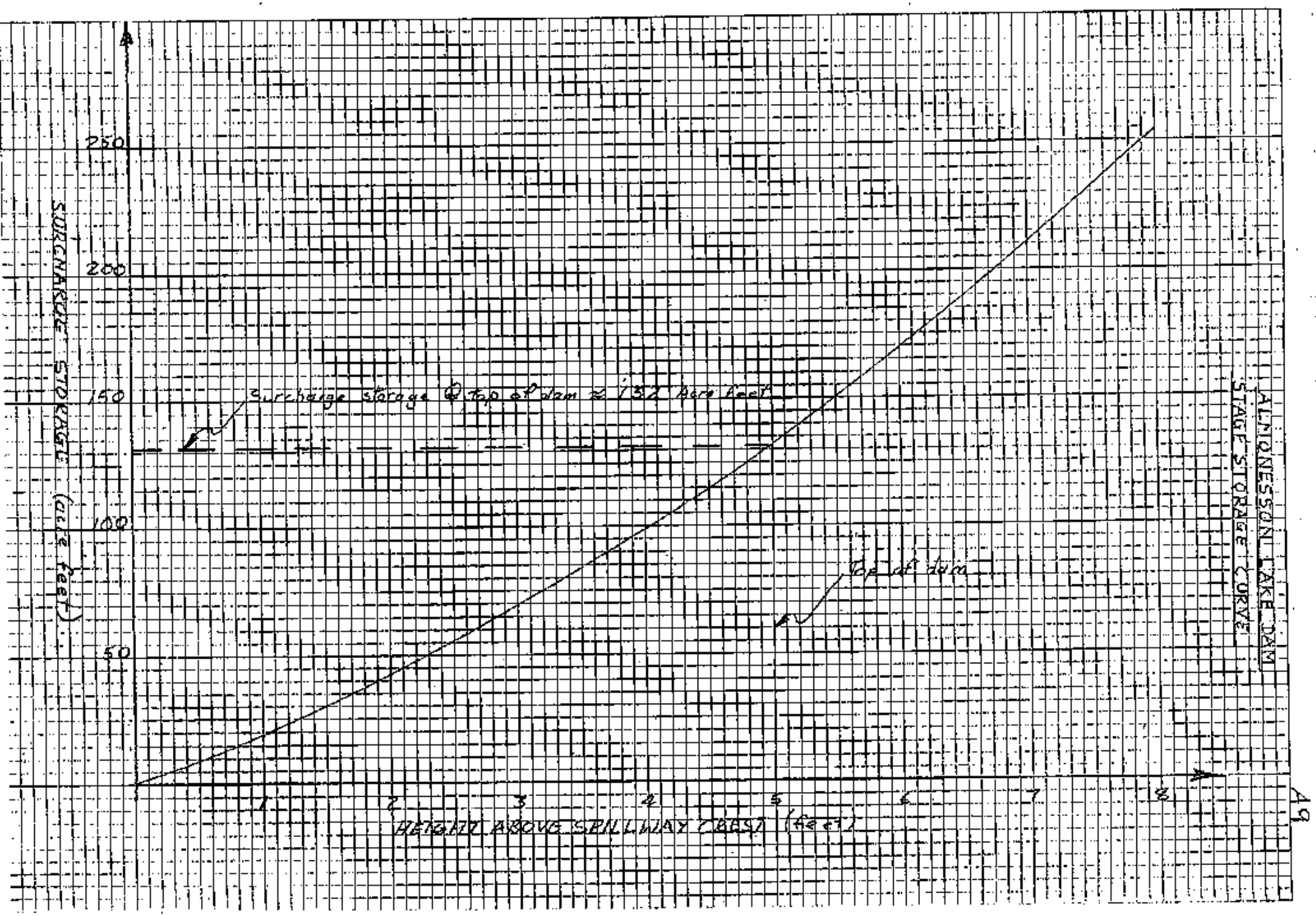
46 0706



A9

BY D.J.M. DATE 2-79 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. A10 OF...
CHKD. BY ____ DATE ____ ALMONESSON LAKE DAM INSPECTION PROJECT C226
SUBJECT Approximate drawdown calculations

Volume of lake between El. 24.0 & El. 16.2

≈ 125 acre feet

= 5445000

Assume drawdown under average head

$H \doteq 7.8/2 = 3.9'$

$Q = 3.9^{1.5} \times 3 \times 8 = 185$ cfs

$\therefore$ Time $\approx \dfrac{5,445,000}{185 \times 3600} \simeq 8.18$ hours

Say ½ day

assumes no inflow to reservoir & no tailwater

```
**********************
ALMONESSON LAKE DAM INSPECTION SOUTH GROUP C226
BY D.J.MULLIGAN
DECEMBER 1978

                          JOB SPECIFICATION
     NQ   NHR  NMIN  IDAY   IHR  IMIN METRC  IPLT  IPRT NSTAN
    100     0    15     0     0     0     0     0     0     0
                          JOPER   NWT
                              3     0

**********  **********  **********  **********  **********

                     SUB-AREA RUNOFF COMPUTATION

INFLOW HYDROGRAPH 100-YEAR FREQUENCY EVENT
     ISTAQ  ICOMP  IECON  ITAPE  JPLT  JPRT  INAME
         4      0      0      0     0     0      1

                          HYDROGRAPH DATA
    IHYDG  IUHG  TAREA  SNAP  TRSDA  TRSPC  RATIO  ISNOW  ISAME  LOCAL
        0    -1   2.80   0.0   2.80    0.0    0.0      0      0      0

                           PRECIP DATA
                      NP  STORM   DAU   DAK
                      24    0.0   0.0   0.0
                         PRECIP PATTERN
 0.05   0.05   0.06   0.06   0.07   0.07   0.08   0.09   0.09   0.09
 0.11   0.11   0.30   0.70   1.70   0.40   0.40   0.20   0.16   0.14
 0.07   0.06   0.05   0.05

                           LOSS DATA
    STRKR  ULTKR  RTIOL  ERAIN  STRKS  RTIOR  STRTL  CNSTL  ALSMX  RTIMP
      0.0    0.0   1.00    0.0    0.0   1.00   0.50   0.10    0.0    0.0

                      GIVEN UNIT GRAPH, NUHGQ=  14
 38.    1366.   1856.   1442.    896.    557.    334.    200.    128.     78.
 49.     30.     18.     11.
          UNIT GRAPH TOTALS  7351. CFS OR 1.02 INCHES OVER THE AREA

                          RECESSION DATA
              STRTQ=   0.0    QRCSN=   0.0    RTIOR= 1.00

                       END-OF-PERIOD FLOW
                 TIME  RAIN  EXCS  COMP Q
                    1  0.06  0.00     0.
                    2  0.06  0.00     0.
                    3  0.06  0.00     0.
                    4  0.06  0.00     0.
                    5  0.07  0.00     0.
                    6  0.07  0.00     0.
                    7  0.08  0.00     0.
                    8  0.09  0.04    14.
                    9  0.09  0.06    79.
```

BY D.J.M. DATE 2-79
CHKD. BY _____ DATE _____
SUBJECT _____

LOUIS BERGER & ASSOCIATES INC.

ALMONESSON LAKE DAM INSPECTION

SHEET NO. All OF _____
PROJECT C226

BY DJM DATE 2-79

CHKD. BY _____ DATE _____

SUBJECT _____

LOUIS BERGER & ASSOCIATES INC.

ALMONESSON LAKE DAM

SHEET NO. A12 OF ___

PROJECT _____

10	0.09	0.06	181.	
11	0.11	0.08	294.	
12	0.11	0.08	396.	
13	0.30	0.27	562.	
14	0.70	0.67	1023.	
15	1.70	1.67	2393.	
16	0.40	0.37	4245.	
17	0.40	0.37	5085.	
18	0.20	0.18	4510.	
19	0.16	0.13	3554.	
20	0.14	0.11	2667.	
21	0.07	0.05	1966.	
22	0.06	0.04	1425.	
23	0.06	0.04	1016.	
24	0.06	0.04	725.	
25	0.0	0.0	533.	
26	0.0	0.0	373.	
27	0.0	0.0	237.	
28	0.0	0.0	142.	
29	0.0	0.0	76.	
30	0.0	0.0	44.	
31	0.0	0.0	24.	
32	0.0	0.0	14.	
33	0.0	0.0	8.	
34	0.0	0.0	4.	
35	0.0	0.0	2.	
36	0.0	0.0	1.	
37	0.0	0.0	0.	
38	0.0	0.0	0.	
39	0.0	0.0	0.	
40	0.0	0.0	0.	
41	0.0	0.0	0.	
42	0.0	0.0	0.	
43	0.0	0.0	0.	
44	0.0	0.0	0.	
45	0.0	0.0	0.	
46	0.0	0.0	0.	
47	0.0	0.0	0.	
48	0.0	0.0	0.	
49	0.0	0.0	0.	
50	0.0	0.0	0.	
51	0.0	0.0	0.	
52	0.0	0.0	0.	
53	0.0	0.0	0.	
54	0.0	0.0	0.	
55	0.0	0.0	0.	
56	0.0	0.0	0.	
57	0.0	0.0	0.	
58	0.0	0.0	0.	
59	0.0	0.0	0.	
60	0.0	0.0	0.	
61	0.0	0.0	0.	
62	0.0	0.0	0.	
63	0.0	0.0	0.	
64	0.0	0.0	0.	
65	0.0	0.0	0.	
66	0.0	0.0	0.	
67	0.0	0.0	0.	

BY DJM DATE 2-79 LOUIS BERGER & ASSOCIATES INC.
CHKD. BY _____ DATE _____ ALMANESSON LAKE DAM
SUBJECT _____ PROJECT _____ SHEET NO. A13 OF _____

71	0.0	0.0	0.
72	0.0	0.0	0.
73	0.0	0.0	0.
74	0.0	0.0	0.
75	0.0	0.0	0.
76	0.0	0.0	0.
77	0.0	0.0	0.
78	0.0	0.0	0.
79	0.0	0.0	0.
80	0.0	0.0	0.
81	0.0	0.0	0.
82	0.0	0.0	0.
83	0.0	0.0	0.
84	0.0	0.0	0.
85	0.0	0.0	0.
86	0.0	0.0	0.
87	0.0	0.0	0.
88	0.0	0.0	0.
89	0.0	0.0	0.
90	0.0	0.0	0.
91	0.0	0.0	0.
92	0.0	0.0	0.
93	0.0	0.0	0.
94	0.0	0.0	0.
95	0.0	0.0	0.
96	0.0	0.0	0.
97	0.0	0.0	0.
98	0.0	0.0	0.
99	0.0	0.0	0.
100	0.0	0.0	0.
SUM	5.20	4.26	31507.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	5085.	1312.	328.	315.	31507.
INCHES		4.36	4.36	4.36	4.36
AC-FT		651.	651.	651.	651.

HYDROGRAPH ROUTING

ROUTING

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME
44	1	0	0	0	0	1

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAVE
0.0	0.0	0.0	1	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA
1	0	0	0.0	0.0	0.0	0.

STORAGE=	0.	19.	42.	69.	99.	132.	165.	210.	254.	0.
OUTFLOW=	0.	157.	392.	633.	727.	808.	1723.	3328.	5380.	0.

TIME	EOP STOR	AVG IN	EOP OUT
1	0.	0.	0.
2	0.	0.	0.
3	0.	0.	0.

BY DJM DATE 2-79 | **LOUIS BERGER & ASSOCIATES INC.** | SHEET NO. A 14 OF

CHKD. BY ______ DATE ______ | *Almonesson Lake Dam* | PROJECT ______

SUBJECT ______

4	0.	0.	0.
5	0.	0.	0.
6	0.	0.	0.
7	0.	0.	0.
8	0.	7.	1.
9	1.	44.	8.
10	3.	128.	27.
11	7.	230.	60.
12	13.	345.	105.
13	20.	474.	164.
14	31.	788.	283.
15	56.	1683.	532.
16	112.	3294.	760.
17	179.	4665.	2117.
18	218.	4798.	3704.
19	222.	4022.	3911.
20	211.	3100.	3384.
21	196.	2317.	2763.
22	180.	1696.	2198.
23	166.	1220.	1646.
24	153.	870.	1330.
25	142.	629.	1045.
26	132.	455.	806.
27	122.	305.	783.
28	110.	190.	753.
29	97.	109.	720.
30	84.	60.	679.
31	71.	34.	638.
32	59.	19.	542.
33	49.	11.	453.
34	40.	6.	375.
35	33.	3.	304.
36	28.	2.	246.
37	23.	1.	199.
38	19.	0.	161.
39	16.	0.	135.
40	14.	0.	114.
41	12.	0.	96.
42	10.	0.	81.
43	8.	0.	68.
44	7.	0.	57.
45	6.	0.	48.
46	5.	0.	41.
47	4.	0.	34.
48	4.	0.	29.
49	3.	0.	24.
50	2.	0.	21.
51	2.	0.	17.
52	2.	0.	15.
53	1.	0.	12.
54	1.	0.	10.
55	1.	0.	9.
56	1.	0.	7.
57	1.	0.	6.
58	1.	0.	5.
59	1.	0.	4.
60	0.	0.	4.
61	0.	0.	3.
62	0.	0.	3.
63	0.	0.	2.
64	0.	0.	2.

BY DJM DATE 2-79 CHKD. BY _____ DATE _____ SUBJECT _____

LOUIS BERGER & ASSOCIATES INC.

ALMONESSON LAKE DAM

SHEET NO. A15 OF _____ PROJECT _____

65	0.	0.	2.
66	0.	0.	1.
67	0.	0.	1.
68	0.	0.	1.
69	0.	0.	1.
70	0.	0.	1.
71	0.	0.	1.
72	0.	0.	0.
73	0.	0.	0.
74	0.	0.	0.
75	0.	0.	0.
76	0.	0.	0.
77	0.	0.	0.
78	0.	0.	0.
79	0.	0.	0.
80	0.	0.	0.
81	0.	0.	0.
82	0.	0.	0.
83	0.	0.	0.
84	0.	0.	0.
85	0.	0.	0.
86	0.	0.	0.
87	0.	0.	0.
88	0.	0.	0.
89	0.	0.	0.
90	0.	0.	0.
91	0.	0.	0.
92	0.	0.	0.
93	0.	0.	0.
94	0.	0.	0.
95	0.	0.	0.
96	0.	0.	0.
97	0.	0.	0.
98	0.	0.	0.
99	0.	0.	0.
100	0.	0.	0.
SUM			31507.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	3911.	1255.	328.	315.	31507.
INCHES		4.17	4.36	4.36	4.36
AC-FT		623.	651.	651.	651.

RUNOFF SUMMARY, AVERAGE FLOW

***** *****

		PEAK	6-HOUR	24-HOUR	72-HOUR	AREA
HYDROGRAPH AT	4	3065.	1312.	328.	315.	2.80
ROUTED TO	44	3911.	1255.	328.	315.	2.80

SCHOOR DEPALMA
Engineers and Design Professionals

October 31, 2001

RECEIVED
2002 APR 19 AM 11:19
ENGINEERING
& CONSTRUCTION

Mr. John H. Moyle, P.E.
Dam Safety Section
State of New Jersey
Department of Environmental Protection
PO Box 419
Trenton, NJ 08625-0419

RE: Almonesson Lake Dam
Almonesson, Deptford Township
Gloucester County, New Jersey
Our Project Number GDE0091

Dear Mr. Moyle:

Per your request, enclosed please find two (2) copies of a Dam Safety Inspection Report prepared by Schoor DePalma for your use.

Should you have any questions, please do not hesitate to call me.

Very truly yours,

SCHOOR DEPALMA INC.

Moustafa A. Gouda, P.E., F.ASCE
Senior Vice President

Enclosures
MAG:bc
c: Gloucester County Office, w/enclosures

N:\project\g\gde0091\geotech\correspondence\moyle-ltr-10-31-01.doc

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Figure 1 – Site Location Map

Appendix - Dam Photographs

1. DAM INSPECTION INTRODUCTION

This inspection report is prepared in response to the New Jersey Department of Environmental Protection (NJDEP) Dam Safety Section (DSS) requirement to prepare a Regular Inspection for the Almonesson Lake Dam, located in Almonesson, Township of Deptford, Gloucester County, NJ. This report is prepared in accordance with NJAC 7:20-1.8. The subject dam has been identified by the DSS as NJ ID# 00401. The subject dam was classified as Class III Dam (low hazard). This report documents the Regular Inspection of the Almonesson Lake Dam prepared by Schoor DePalma.

2. PROJECT DAM HISTORY

The following document was reviewed to prepare this inspection report:

1. Phase I Inspection Report, by Louis Berger and Associates, Inc. and Corps of Engineers, dated December, 1978.

The dam was designed by William C. Cattell (Gloucester County Engineer) for recreational purpose and was constructed in 1926. The complete design drawings and construction records of the dam were not available for our review. However, a typical section and plan of the earth dam and concrete spillway/culvert structures were available to us. The 1978 Phase I Inspection Regular Inspection Report determined that the dam was in **satisfactory** conditions although the existing spillway was found to be capable of handling about 21 percent of the 100-year flood, this condition could result in overtopping of the dam. Since the downstream flood plain was uninhabited, the overtopping of the dam was considered to result in little economic loss.

Additionally, the following actions were recommended in the 1978 report to insure the safety of the dam:

1. Provide slope protection for the downstream embankment area.
2. Place pavement course over the downstream embankment slope should overtopping occurs.
3. Remove trees on the downstream embankment to lessen piping potential.
4. Place additional riprap in the stilling basin (apron) to provide scour protection.
5. Construct additional catch basins along the roadway gutters to better control the surface runoff.

Noted that we were unable to confirm if these recommended actions were carried out.

3. INSPECTION REQUIREMENTS

Class I and Class II dam owners are required to have a regular inspection performed every two years and a formal inspection performed every six or ten years respectively. Class III and Class IV dam owners are required to have a regular inspection performed every four years but are not normally required to perform periodic formal inspections. On those years a formal inspection is performed, a regular inspection will not be required. All dams over 70 feet in height or which can potentially store more than 10,000 acre feet of water, regardless of hazard classification, are required to be inspected every year with a formal inspection conducted every third year. All dam inspections shall be performed from March through December. Based upon the fact that this dam is a Class III dam, the type of inspection required is a Regular Inspection.

4. TYPES OF INSPECTIONS

Formal Inspection - The inspection and performance evaluation of Class I and Class II dams under the supervision of a qualified, New Jersey licensed professional engineer to review and determine the safety and integrity of the dam and appurtenant structures. Formal inspections require a detailed field examination and should include a thorough review of the records on project design, construction, and performance. Where appropriate, a reanalysis employing advanced methods and modern design criteria and practices should be conducted in order to determine if the structure meets current design criteria. In addition, formal inspections require that the long-term behavioral patterns revealed by instrumentation and spillway discharges be closely examined. Detailed underwater inspections should be included as needed. A Department approved Emergency Action Plan and Operation and Maintenance Manual should be confirmed and their adequacy determined. Technical experts and specialists may be required to evaluate individual features and conditions; however, a qualified New Jersey licensed professional engineer must make the final coordinated evaluation. A review of prior regular and formal inspection reports should be undertaken to evaluate trends in performance.

Regular Inspection - The visual inspection of a dam by a qualified, New Jersey licensed professional engineer to detect any signs of deterioration in material, developing weaknesses or unsafe hydraulic or structural behavior. For Class I and Class II dams, a Department approved Emergency Action Plan should be confirmed and its adequacy determined. For all dams a Department approved Operation and Maintenance Manual should be confirmed and its adequacy determined. All instrumentation data should be reviewed and evaluated.

Informal Inspection - The visual inspection of the dam by the dam owner or operator to detect apparent signs of deterioration or other deficiencies of the dam structure or function. Informal inspections require that personnel conducting the inspection be knowledgeable about the dam and its appurtenances.

Emergency Inspection - An emergency inspection is an unscheduled inspection of a dam and its appurtenances necessitated by a potentially adverse natural event such as a large flood, earthquake, landslide or when a condition develops that appears to immediately threaten the safety of the dam. An emergency inspection is applicable to any hazard classification and requires immediate attention. Any required emergency repairs resulting from the emergency Inspection should be conducted in compliance with N.J.A.C. 7:20 - 1.4 (i).

5. DAM DESCRIPTION

The subject dam is located on Cooper Street (about 1,500 feet west of the intersection with State Highway 41) in Almonesson, Deptford Township, Gloucester County, New Jersey.

The dam is a 300 feet long earth embankment with a drop inlet box and an 11 feet radius semi-circular arch concrete culvert (transversing beneath the embankment). The embankment carries Cooper Street across the north shore of the Almonesson Lake. The crest of the dam (roadway) is about 42 feet wide from parapet to parapet. The lake is utilized for recreational purposes and is surrounded by residential areas.

The drop inlet box is a three-sided (about 12, 19 and 12 feet long on the west, south and east side, respectively) concrete structure with two sections of timber sluice boards (about 4 feet wide each) facing the lake. There is a concrete service slab about 2 feet above the crest level of the drop inlet box structure. The spillway crest (El +24) is about 5 feet below the roadway crest (El+29).

Based on the 1926 design drawings, the earth embankment had a side slope of 1.5H to 1V slope, timber sheet piling seepage cut-off wall was installed along the centerline of the earth dam and the concrete culvert and wing walls were supported by timber piles. The length and depth of the timber sheeting is unknown to us.

The concrete wing walls (upstream and downstream sides) extend about 23 feet from the culvert structure. The wing walls are about 14 feet high. The east wing wall on the downstream side has a 10 feet long extension nearly perpendicular to the main wall. The west wing wall on the downstream side has a 25 feet long extension with an anchor plate located near the junction with the wing wall. The upstream and downstream sides of the wing walls appeared to be tied with anchors (3 anchors) as this was evidenced by the anchor plates near the top of the walls. The catch basins along the roadway embankment gutters discharge the storm water through corrugated pipes onto the upstream and downstream slopes of the roadway embankment. Catch basins located directly above the culvert discharge storm water from the crown of the culvert.

There is a pair of askew (about 45 degrees from the centerline of the embankment) steel sheet pile wall about 22 feet long and 5 feet high, extending from the downstream face of

the concrete culvert to protect the stilling basin. The stilling basin is covered with concrete blocks and riprap as scour protection. The exit channel is about 10 to 20 feet wide and blends into the woods.

We have interviewed a resident located on the western side of the dam. We were told that during the Hurricane Floyd, the dam was not overtopped. During the springtime, the timber sluice boards were removed to draw down the lake for debris cleaning.

6. VISUAL INSPECTION CHECKLIST

VISUAL INSPECTION CHECKLIST

This general checklist should be used as an aid when examining all dams. This checklist may not, however, include all features or conditions found at a specific dam that are relevant to the safety of that dam. All features integral to the safety of the dam being examined should be inspected and their condition reported.

NJ INSPECTION YEAR: *2001*

TYPE OF INSPECTION: (formal, regular, informal): ***Regular***

DAM NAME: *Almonesson Lake Dam*

DAM FILE NO.: *Fed ID # NJ 00401, NJ ID # 87* — 31-33

LOCATION: *Almonesson, Deptford Township, Gloucester County, NJ*

OWNER: *Gloucester County, NJ.*

OPERATOR: *Same as owner*

DATE OF INSPECTION: *10-04-01*

RESERVOIR INFORMATION

Normal Reservoir Elevation (ft): *+24*

Reservoir Elevation at time of inspection (ft): *+24+/-*

WEATHER CONDITIONS (including recent rainfall): *Sunny, 75 F.*

INSPECTION PERSONNEL

New Jersey Licensed Professional Engineer(s):

Name	Affiliation	Area of Expertise

Moustafa Gouda, P.E.	*Schoor DePalma, Inc.*	*Geotechnical*
En-Huei Joe, P.E. (NY)	*Schoor DePalma, Inc.*	*Geotechnical*

Non-Licensed technical expert(s) and advisor(s):

Name	Affiliation	Area of Expertise
Larry Clevenger	*Schoor DePalma, Inc.*	*Geotechnical*

State Representative(s):

Name	Affiliation
N/A	

Dam Owner Representative(s):

Name	Affiliation
N/A	

Others:

Name	Affiliation
N/A	

GENERAL INFORMATION

Name of Dam: ***Almonesson Lake Dam***

Fed. I.D. No. *NJ 00401* N.J. Dam No.: *87*

River Basin: ***Almonesson***

Town: ***Deptford Township*** County: ***Gloucester***

Block: *199.3* Lot: *4*

Nearest Downstream City-Town: ***Almonesson***

Stream Name: ***Almonesson Creek*** Tributary of: ***Big Timber Creek***

Latitude (N): *3949.0* Longitude (W): *7505.8*

Type of Dam: ***Earth Dam with concrete spillway and culvert structure***

Purpose of Dam: ***Recreational use***

Hazard Category: ***Hazard Class III (low)*** Drainage Area (sqr mls): *2.8*

Height (ft): *24'* Length (ft): *300'*

Normal Surface (ac): *17.6 acre* Normal Capacity (af): *125 acre-ft*

Maximum Capacity (af): *257 acre-ft* Spillway Capacity (cfs): *803 cfs*

HISTORY

Date Constructed: *1926* Dates(s) Reconstructed: *N/A*

Designer: ***William C. Cattell, Gloucester County Engineer***

Constructed By: ***E.P. Henry and Sons***

Owner & Address: *1200 Norton Delsea Drive, Clayton , NJ 08312*

Owner/Operator present during inspection (yes or no): *No*

PREVIOUS INSPECTIONS (date of)

Last Inspection: *December, 1978* Last Regular Inspection: *Unknown*

Phase I Inspection: *December, 1978* Last Formal Inspection: *Unknown*

EMERGENCY ACTION PLAN (Required for all Class I and Class II dams) *No need for Class III dam*

Date of Approved Plan: *N/A*

Date of Plan Revision: *N/A*

Is the notification flowchart complete and current? *N/A*

Is inundation mapping or a description included? *N/A*

Are emergency materials and equipment identified? *N/A*
When was the plan last tested? *N/A*

DOWNSTREAM HAZARD CLASSIFICATIONS

Present Hazard Classification: *Low Hazard Class III*

Changes in Downstream Land Use and Habitation: *Downstream flood plain is uninhabited.*

Is present classification appropriate? *YES*

OPERATION AND MAINTENANCE

Date of Operation and Maintenance Plan: *1978+/-*

Are instructions adequate? *Yes*

Do operating personnel follow instructions? *Yes*

What are operating personnel capabilities? *Sufficient for level of responsibility.*

EXAMINATION OF EMBANKMENT DAM

THIS STRUCTURE IS NOT AN EMBANKMENT STRUCTURE
DESCRIPTION OF STRUCTURE

Embankment Material: *Earth*

Cutoff Type: *timber sheet piling (length and depth unknown)*

Impervious Core: *None*

Internal Drainage System: *None*

Movement (Horizontal and Vertical Alignment): *None*

Junctions with Abutments or Embankments: *Good*

Miscellaneous: *N/A*

CREST

Vertical Alignment: *Fair to good*

Horizontal Alignment: *Good*

Surface Cracks: *None other than minor ruts*

Settlement: *Minor settlements near catch basins*

Unusual Conditions: *None*

UPSTREAM SLOPE

Slope (Estimate) (H:V): *1.5H to 1V*

Trees, Undesirable Growth or Debris, Animal Burrows: *Heavy trees and bush growth*

Sloughing, Subsidence or Depressions: *None*

Slope Protection: *Grass cover*

Surface Cracks or Movement at Toe: *None evident*

Unusual Conditions: *None*

DOWNSTREAM SLOPE

Slope (Estimate) (H:V): *1.5 H to 1 V*

Trees, Undesirable Growth or Debris, Animal Burrows: *Heavy bush and tree growth*

Sloughing, Subsidence or Depressions: *Erosion and sloughing behind the east wing wall extension (downstream side).*

Surface Cracks or Movement at Toe: *None*

Seepage: *None*

External Drainage System (Ditches, Trenches, Blanket): *None*

Condition Around Outlet Structure: *Good*

Unusual Conditions: *None*

ABUTMENTS AND TOE AREA

Erosion at Contract: *None*

Seepage or Wet Area Along Contact: *None*

Signs of Movement: *None*

Depressions, Sinkholes: *None*

Unusual Conditions: *None*

SEEPAGE AND TOE DRAIN / RELIEF WELL FLOW SUMMATION *Not Applicable*

Location	Estimated Flow	Color (Turbidity)
None		

EXAMINATION OF CONCRETE AND MASONRY DAMS

DESCRIPTION OF STRUCTURE *NOT APPLICABLE*

Type of Dam (Gravity, Arch, etc.): *N/A*

Internal Drainage System: *N/A*

Movement (Horizontal and Vertical Alignment): *N/A*

Miscellaneous: *N/A*

UPSTREAM FACE *NOT APPLICABLE*

Condition of Concrete or Masonry: *N/A.*

Cracking: *N/A*

Location	Orientation	Length	Width	Type

DOWNSTREAM FACE *NOT APPLICABLE*

Condition of Concrete or Masonry: *N/A*

Cracking: *N/A*

Location	Orientation	Length	Width	Type

Leakage Through Dam (Location and Estimated Flow): *N/A*

CREST *NOT APPLICABLE*

Condition of Concrete or Masonry:

Cracking .

Location	Orientation	Length	Width	Type

Signs of Movement:

Differential Movement (Joint or Crack Separation or Offset):

GALLERIES *NOT APPLICABLE*

Cracking *N/A*

Location	Orientation	Length	Width	Type

Differential Movement (Joint or Crack Separation): *N/A*

Leakage into Galleries (Location and Estimated Flow): *N/A*

Condition of Gallery Drains: *N/A*

FOUNDATION *NOT APPLICABLE*

Condition of Rock or Concrete Lining:

Cracking:

Signs of Movement:

Seepage (Location and Estimated Flow):

ABUTMENTS AND TOE AREA *NOT APPLICABLE*

Seepage or Wet Areas:

Signs of Movement:

Cracking:

Erosion:

Unusual Conditions: *N/A*

EXAMINATION OF SPILLWAYS AND OUTLET WORKS

TYPE(S) AND DESCRIPTION OF SPILLWAY(S) **3-sided concrete drop inlet box (8 feet high and about 12, 19 and 12 feet long on each side)**

Primary: *As above*

Secondary (auxiliary): *No Secondary Spillway*

Emergency: *No Emergency Spillway*

Other:

FOR EACH SPILLWAY THE FOLLOWING ASPECTS MUST BE EXAMINED WHERE APPROPRIATE

ENTRANCE CHANNEL *Almonesson Lake is the entrance channel*

Description: *About 300 feet wide*

Vegetation (Trees, Bushes): *Vegetation and tree growth on the channel bank*

Debris: *Minor*

Channel Side-Slope Stability: *Good*

Slope Protection/Erosion: *Grass cover*

Unusual Conditions: *N/A*

SPILLWAY CREST - PRIMARY SPILLWAY

Description: *3-sided concrete drop inlet box (about 12, 19 and 12 feet long on each side), consists of 2 sections of timber sluice boards (4 feet wide each, regulate lake level from El +24 to El +16) on the south side, east and west sides without any sluice timber boards with crest level at El +24.*

Condition of Material: *Fair*

Signs of Movement: *None*

Joints: *Fair*

Unusual Conditions: *Minor leaking at the invert level near the junction with the culvert (western side). The concrete service slab above the drop inlet box has concrete spalling (eastern side).*

SECONDARY SPILLWAY CREST *None*

Description: *N/A*

Condition of Material: *N/A*

Signs of Movement: *N/A*

Joints: *N/A*
Unusual Conditions: *N/A*

DROP BOX *Same as primary spillway*

Description:

Condition of Material:

Signs of Movement:

Joints:

Floor:

Unusual Conditions:

SPILLWAY WING WALLS

Description: *Concrete wall about 8 feet high*

Condition of Material: *Concrete*

Signs of Movement: *None*

Joints: *Good Condition*

Drains: *None*

Unusual Conditions: *None*

DOWNSTREAM APRON

Description: *The apron area has concrete blocks and riprap as scour protection. There is a pair of askew steel sheet pile walls (about 22 feet long and 5 feet high) extending from the culvert to protect the apron area.*

Condition of Material: *Fair*

Signs of Movement: *None*

Unusual Conditions: *Minor tree growth in the apron area*

CULVERTS

Description: *The culvert is a 11 feet radius and 42 feet long semi-circular arch concrete structure transvesring beneath the roadway embankment. Concrete wing walls extend about 23 feet from the culvert (upstream and downstream sides).*

Condition of Material: *The culvert is in fair condition with localized concrete spalling.*

Joints: *The joint between the culvert and the east wing wall on the downstream side has an opening of about 2-inch and concrete spalling due to leaning of this wall toward downstream direction. The joint between the east wing wall (downstream side) and its wall extension has an opening of about 1.5-inch. The west wing wall extension (on the downstream side) leans about 2 inch toward the downstream direction.*

Signs of Movement: *None for the culvert*

Seepage: *Leaking at the junction of the culvert and drop inlet box (western side at invert level).*

Location	Estimated Flow	Turbidity
Western corner near invert level	*1 to 2 gpm*	*light brown color sediment*

Unusual Conditions:

TRASH RACKS *NOT APPLICABLE*

Description: *N/A*

Condition of Material: *N/A*

Unusual Conditions: *N/A*

CHUTES *NOT APPLICABLE*

Description: *N/A*

Condition of Material: *N/A*

Signs of Movement: *N/A*

Unusual Conditions: *N/A*

STILLING BASIN *Same as apron*

Description:

Condition of Material:

Signs of Movement:

Erosion:

Unusual Conditions:

EXIT CHANNEL *The exit channel is about 10 to 20 feet wide and has sandy soil cover. The exit channel is blended in the woods.*

Vegetation (Trees, Bushes): *Trees growth in the channel banks.*

Debris: *Minor debris.*

Channel Side-Slope Stability: *The stability of the side slopes in the exit channel is adequate.*

Erosion: *Minor to no erosion.*

Unusual Conditions: *No unusual conditions were noted.*

LOW LEVEL OUTLET *None*

Description:

Condition:

Trash Rack:

Leakage:

Location	Estimated Flow
N/A	

Unusual Conditions:

Was the low level outlet operated during the inspection?

Were there difficulties operating the low level outlet?

When was the low level outlet last operated and did this conform with the Operation and Maintenance procedures?

Miscellaneous:

STILLING BASIN FOR LOW LEVEL OUTLET *None*

Description: *N/A*

Condition of Material: *N/A*

Signs of Movement: *N/A*

Erosion: *N/A*

Unusual Conditions: *N/A*

EXIT CHANNEL FOR LOW LEVEL OUTLET *None*

Description (Trees, Bushes): *N/A*

Debris: *N/A*

Channel Side-Slope Stability: *N/A*

Slope Protection Erosion: *N/A*

Unusual Conditions: *N/A*

EXAMINATION OF OTHER FEATURES

INSTRUMENTATION (Monumentation/Surveys, Observation Wells, Weirs, Piezometers, Etc.) location, condition: *None*

RESERVOIR

Slopes: *Gentle and stable shore banks in general.*

Sedimentation: *None evident*

Unusual Conditions Which Affect Dam: *None*

Unusual Conditions: *None*

APPURTENANT STRUCTURES (Power House, Gatehouse, Penstocks, Water Supply, Other)

Description and Condition of each: *None*

CONCLUSION

I certify that the above dam was personally inspected by me and was found to be in (safe, ***Unsafe***) condition.
Circle One

I recommend the following repairs be made immediately:

1. ***Repair or rebuild the east wing wall (downstream side), which leans toward the downstream direction resulting in joint opening of 2-inch (at the culvert junction) and concrete spalling.***
2. ***Repair the west wing wall extension (downstream side), which leans toward the downstream direction by about 2-inch.***
3. ***The trees and bush growth on the upstream and downstream sides of the embankment should be removed. The tree growth adjacent to the spillway will hamper the flow to the spillway (east and west sides of the drop inlet box).***
4. ***The leak at the junction of the culvert and drop inlet box (western side and at invert level) should be sealed.***
5. ***The concrete spalling on the concrete service slab (above the drop inlet box) should be repaired.***
6. ***More riprap should be placed in the apron area to enhance the scour protection.***
7. ***The erosion behind the east wing wall extension should be backfilled with compacted soil. The east wing wall extension, which leans toward the exit channel should be repaired.***
8. ***The debris in front of the spillway should be cleared.***
9. ***The tree growth in the apron area should be cleared.***
10. ***Localized concrete spalling in the culvert should be repaired.***

The following long-term improvements should also be undertaken
:

1. ***Maintenance records should be kept of this facility.*** – spillway capacity & check to see if d.s. changes warrant upgrade to Class II

The following studies should also be undertaken: ***None***

Have the recommendations above included those from the Phase I Inspection Report or previous Regular or Formal Inspection Reports? If not, indicate why. ***N/A***

Does the Emergency Action Plan or the Operation and Maintenance Procedures require revisions?
Not needed for Class III Dam O & M reviewed & should be updated

Name of Professional Engineering Company/Consultant Representing the Owner:

Company/Consultant Address: ***Schoor Depalma, Inc.***
200 Route Nine
Manalapan, New Jersey 07226

Company/Consultant Telephone Number: ***732-577-9000***

New Jersey Licensed Professional Engineer representing the dam owner in responsible charge of the inspection:

Moustafa A. Gouda, P.E.

Sign Moustafa A Gouda Date 10/26/01

New Jersey Professional Engineer License Number ***20848***

SEAL

(Department use only)
Dam Name_____
N.J. Reference No._____ **Hazard Classification**_____
Engineer_____ **Date of Inspection**_____

7. DAM RECOMMENDATIONS

The following are the repair recommendations for this dam:

1. Repair or rebuild the east wing wall (downstream side), which leans toward the downstream direction resulting in joint opening of 2-inch (at the culvert junction) and concrete spalling.
2. Repair the west wing wall extension (downstream side), which leans toward the downstream direction by about 2-inch.
3. The trees and bush growth on the upstream and downstream sides of the embankment should be removed. The tree growth adjacent to the spillway will hamper the flow to the spillway (east and west sides of the drop inlet box).
4. The leak at the junction of the culvert and drop inlet box (western side and at invert level) should be sealed.
5. The concrete spalling on the concrete service slab (above the drop inlet box) should be repaired.
6. More riprap should be placed in the apron area to enhance the scour protection.
7. The erosion behind the east wing wall extension should be backfilled with compacted soil. The east wing wall extension, which leans toward the exit channel should be repaired.
8. The debris in front of the spillway should be cleared.
9. The tree growth in the apron area should be cleared.

10. Localized concrete spalling in the culvert should be repaired.

The following recommendation for the long term rehabilitation of the this dam is as follow:

1. Maintenance records should be kept of this facility.

8. SUMMARY AND CONCLUSIONS

In summary, the Almonesson Lake Dam is considered **unsafe** considering the east wing wall on the downstream side of the dam has leaned toward the downstream direction resulting in the joint opening of 2-inch at the culvert junction. The dam is in need of a repair to stop the movement of the east wing wall. The heavy tree and bush growth on the upstream side of the slope will hamper the flow to the spillway (east and west sides of the drop inlet box) and should be cleared. The leaking at the junction of the culvert and drop inlet box (invert level) should be sealed. In conclusion, this document has presented the Regular Inspection as required by NJAC 7:20 – Dam Safety Standards for the calendar year 2001 and has determined the dam to be in **unsafe** condition with the need for repair. The repair should be completed as soon as possible.

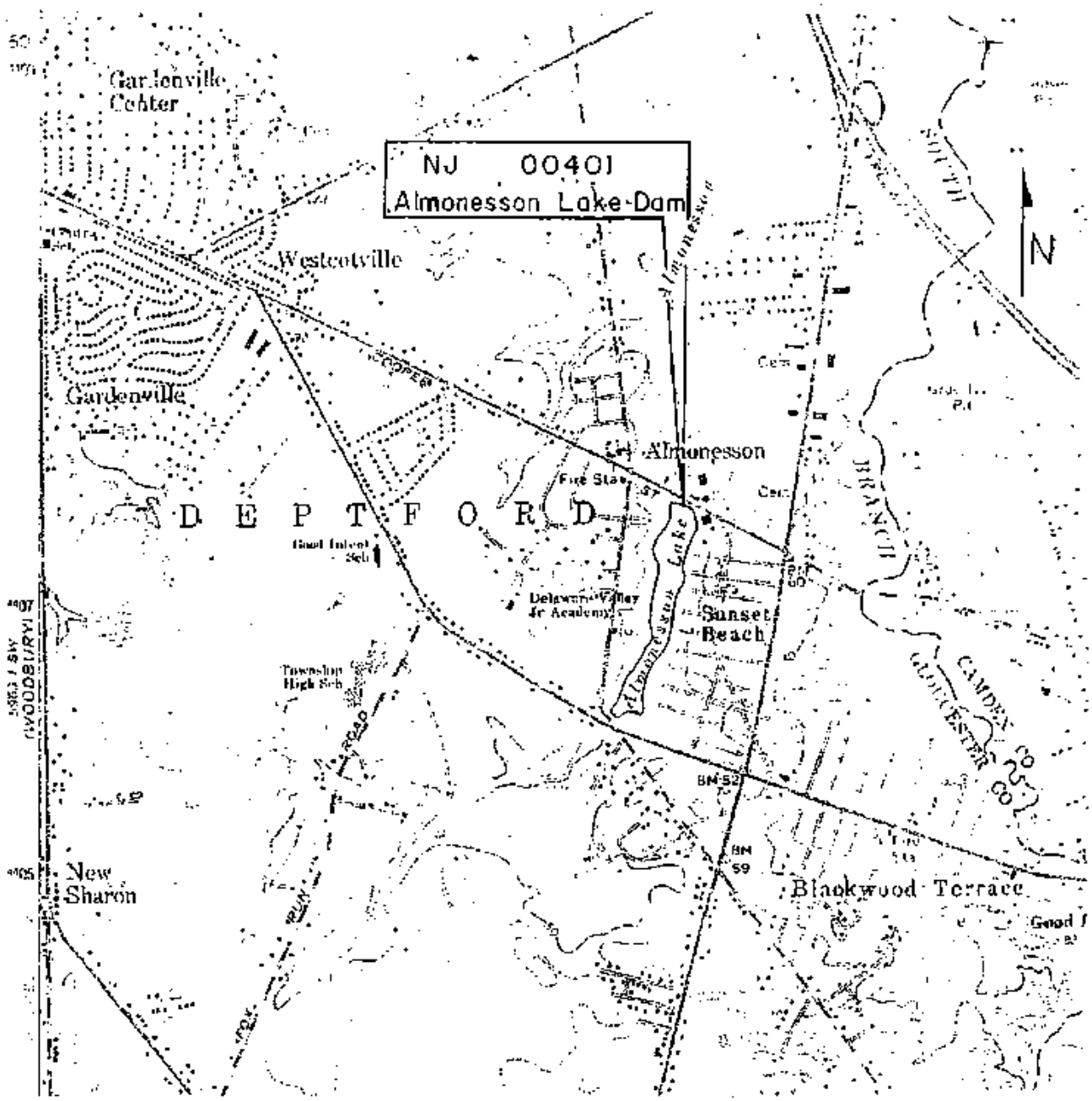

FIGURE 1

SITE LOCATION MAP

ALMONESSON LAKE DAM
DEPTFORD, NEW JERSEY

SCHOOR DEPALMA
Engineers and Design Professionals
200 STATE HIGHWAY NINE
P.O. BOX 900 MANALAPAN N.J. 07726-0900
TEL (732)577-9000 FAX. (732)577-9888

DATE	REVISIONS	ORDER NO.

SCALE	DATE	DRAWN BY	CHK'D BY	FILE NO.	FIELD BOOK
	10-25-01	DWN	CH	GDE0091	FB

APPENDIX

DAM PHOTOGRAPHS

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SSON LAKE DAM

N FOR DAM PHOTOS

GURE 2

OUCESTER COUNTY, NEW JERSEY

PROJECT NO	GDE0091.
SCALE	A SHOWN
DATE	10/26/01
FIELD BOOK	
SHEET NO.	1 of 1

PHOTO 1

DESCRIPTION: LOOKING NORTH

DROP INLET BOX (SPILLWAY) STRUCTURE FACING THE LAKE. NOTED: HEAVY TREE GROWTH ON THE UPSTREAM EMBANKMENT.

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PHOTO 2

DESCRIPTION: LOOKING SOUTH

VIEW OF THE ALMONESSON LAKE.

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PHOTO 3

DOWNSTREAM SIDE OF THE CULVERT. NOTED: STEEL SHEET PILING TO PROTECT THE STILLING BASIN. TREE GROWTH ON THE DOWNSTREAM SIDE OF THE EMBANKMENT.

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PHOTO 4

DOWNSTREAM SIDE OF THE CULVERT. NOTED: CONCRETE BLOCK & RIPRAP AS SCOUR PROTECTING.

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PHOTO 5

VIEW OF THE SEMI-SPHERICAL CULVERT STRUCTURE.

NOTED: THE TIMBER SLUICE BOARD AT THE FAR END OF THE CULVERT.

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PHOTO 6

VIEW OF THE TIMBER-SLUICE BOARD ABOUT 4' LONG @ THE SOUTH SIDE OF THE DROP INLET BOX.

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PHOTO 7

EXPOSED REBAR AT THE CONCRETE SERVICE SLAB LOCATED ABOVE THE DROP INLET BOX STRUCTURE.

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PHOTO 8

DESCRIPTION: WESTERN SIDE

NOTED: SEEPAGE AND SEDIMENT AT THE JUNCTION OF THE DROP INLET BOX AND CULVERT.

-NOTICE-

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SCALE	10/19/01	DDE	DDE	GDE0091	

PHOTO 9

DESCRIPTION: DOWNSTREAM SIDE

NOTED: EROSION AND SLOUGHING BEHIND THE EAST WING WALL EXTENSION.

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SCALE	10/19/01	DOE	DOE	GDE0091	

PHOTO 10

DESCRIPTION: DOWNSTREAM SIDE

NOTED: THE EXPOSED STORM SEWER PIPE BEHIND THE EAST WING WALL EXTENSION.

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SCALE	10/19/01	DDE	DDE	GDE0091	

PHOTO 11

DESCRIPTION: DOWNSTREAM SIDE

NOTED: THE OPENING OF THE JOINT BETWEEN THE EAST WING WALL & ITS EXTENSION WALL.

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PHOTO 12

NOTED: STORM SEWER PIPE AND TREE GROWTH ON THE DOWNSTREAM SIDE OF THE EMBANKMENT.

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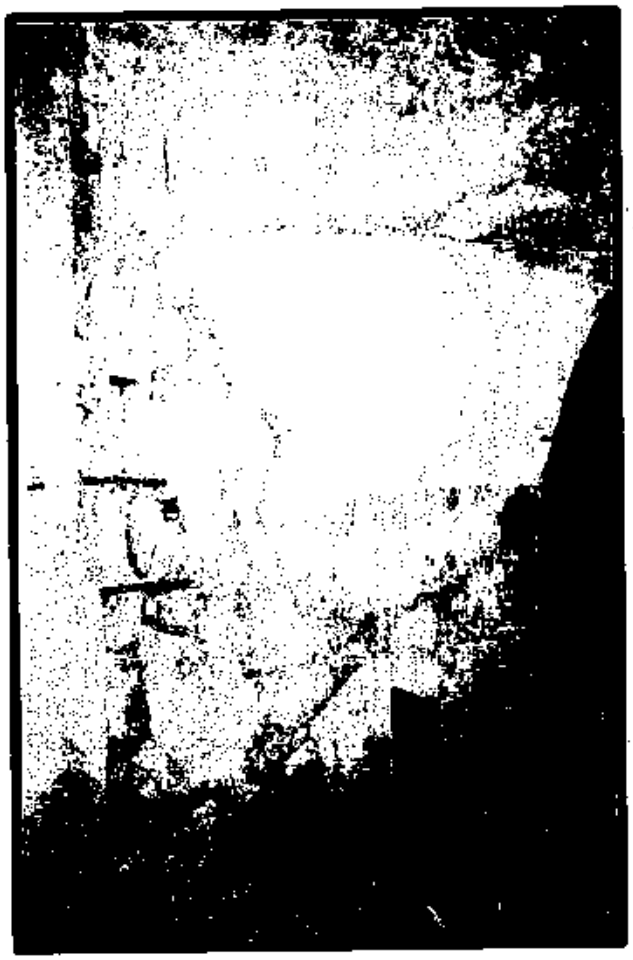

PHOTO 13

DESCRIPTION: DOWNSTREAM SIDE

NOTED: CONCRETE SPALLING AND EXPOSED REBAR AT THE JOINT OF THE CULVERT STRUCTURE AND EAST WINGWALL.

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PHOTO 14

NOTED: OPENING OF THE JOINT (2") BETWEEN CULVERT STRCUTURE AND THE EAST WING WALL, WINGWALL LEANS TOWRD DOWNSTREAM AND AWAY FROM CULVRT.

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PHOTO 15

NOTED: EAST WINGWALL HAS MOVED AWAY FROM CULVERT.

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PHOTO 16

NOTED: EAST WINGWALL (BACKGROUND) HAS MOVED DOWNSTREAM AND AWAY FROM THE CULVERT (FOREGROUND).

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SCALE	10/19/01	DDE	DDE		

PHOTO 17

NOTED: WEST WING WALL EXTENSION (RIGHT) LEANS TOWARDS DOWNSTREAM. WEST WING WALL ON THE LEFT.

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FRENCH & PARRELLO ASSOCIATES

Advancing Our Client's Vision
IMPROVING OUR WORLD

2019 REGULAR INSPECTION REPORT

Almonesson Lake Dam
NJDEP File No. 31-033

At Gloucester County Bridge 3-K-3
Township of Deptford, Gloucester County
New Jersey

Submitted to

GLOUCESTER COUNTY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE COUNTY ENGINEER
1200 N. Delsea Drive
Clayton, NJ 08312

Inspection Performed on
April 12, 2019

November 2019
FPA No. 13633.001

1800 Route 34, Suite 101 • Wall, NJ • 07719 • T 732.312.9800 • F 732.312.9801
Camden, NJ • Hackettstown, NJ • New York, NY• King of Prussia, PA
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Regional Offices
King of Prussia, Pennsylvania
Hackettstown, New Jersey
Camden, New Jersey
New York, New York

November 14, 2019

Mr. Vincent M. Voltaggio, PE
Director of Public Works & County Engineer
GLOUCESTER COUNTY DEPARTMENT OF PUBLIC WORKS
Office of the County Engineer
1200 N. Delsea Drive
Clayton, New Jersey 08312

Re: 2019 Regular Inspection of
Almonesson Lake Dam
NJ File No. 31-033
Deptford Township, Gloucester County, New Jersey
FPA No. 13633.001

Dear Mr. Voltaggio:

Pursuant to our proposal submitted to the Delaware Valley Regional Planning Commission (DVRPC) dated May 10, 2018, French & Parrello Associates (FPA) performed a Regular Inspection of Almonesson Lake Dam in accordance with the NJ Dam Safety Standards [N.J.A.C. 7:20]. Our work included the visual inspection of the dam, completion of the Dam Safety Visual Inspection Checklist and the preparation of this report. All references to left and right in this report assume one is looking downstream. All elevations reference the North American Vertical Datum of 1988 (NAVD88) unless noted otherwise.

Almonesson Lake Dam is classified as a Class II, Significant Hazard Dam and is designated as NJ File No. 31-033. It is our understanding that the dam is co-owned and co-operated by the Gloucester County and Deptford Township.

Based on available files, the existing dam was constructed in 1926, designed by William C. Cattell, County Engineer, and constructed by EP Henry and Sons, General Contractor.The dam is earthen embankment, approximately 300-feet in length, with a maximum height of 23-feet. The embankment, constructed across Almonesson Creek, carries Cooper Street (County Road 706) across the entire north shore of Almonesson Lake. The primary spillway is a concrete drop primary spillway structure which abuts Gloucester County Bridge No. 3-K-3.

VISUAL INSPECTION OF THE DAM

A visual inspection of the dam was made by John Ritchey, PE, and Christopher Marx, PE on April 12, 2019. The observations are detailed in the Visual Inspection Checklist presented in Appendix A and photographs taken during our site reconnaissance are presented in Appendix B.

Based on our observations, Almonesson Lake Dam is in **POOR** condition and in need of repairs, maintenance, and long term repairs. Recommended studies include a hydrologic and hydraulic analysis, stability analysis, and a failure/inundation analysis. It should be noted FPA has been retained by the Delaware Valley Regional Planning Commission (DVRPC) to prepare a Hydrologic and Hydraulic Analysis Report, which will be submitted to the Bureau of Dam Safety under separate cover. The recommendations based on our visual inspection are presented on page A-10 of the Visual Inspection Checklist.

CLOSING & LIMITATIONS

Our work was limited to a visual dam inspection and did not include any stability or hydraulic analyses, or any design services. Services performed by FPA during the referenced inspection have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. No other representation, expressed or implied, and no warranty or guarantee is included or intended in the services provided. It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Should you have any questions or comments or if we can be of service to you in the future, please contact us.

Sincerely,

FRENCH & PARRELLO ASSOCIATES

Christopher W. Marx, PE
Project Manager

REGIONAL LOCATION PLAN

Map data ©2019 Google

ALMONESSON LAKE DAM (NJDEP FILE No. 31-033)
DEPTFORD TOWNSHIP, GLOUCESTER COUNTY, NEW JERSEY

SCALE:	DATE:	JOB NO.:	DRAWING NO.
NTS	NOVEMBER 2019	13633.001	1

APPENDIX A

VISUAL INSPECTION CHECKLIST

VISUAL INSPECTION CHECKLIST

This general checklist should be used as an aid when examining all dams. This checklist may not, however, include all features or conditions found at a specific dam that are relevant to the safety of that dam. All features integral to the safety of the dam being examined should be inspected and their condition reported.

NJ INSPECTION YEAR: *2019*

TYPE OF INSPECTION: *REGULAR*

DAM NAME: ***Almonesson Lake Dam***

DAM FILE NO.: ***Fed ID No. NJ 00401***
NJ File No. 31-033

LOCATION: ***Almonesson, Deptford Township, Gloucester County, New Jersey***

CO-OWNER(S): ***Gloucester County, Deptford Township***

CO-OPERATOR: ***Gloucester County, Deptford Township***

DATE OF INSPECTION: ***April 12, 2019***

RESERVOIR INFORMATION

Normal Reservoir Elevation (ft): ***25.4 (NAVD88)***

Reservoir Elevation at time of inspection (ft): ***25.6 (NAVD88)***

WEATHER CONDITIONS (including recent rainfall): ***62º Overcast***
0.23 inches of rainfall on April 12, 2019

INSPECTION PERSONNEL

New Jersey Licensed Professional Engineer(s):

Name	Affiliation	Area of Expertise
Christopher W. Marx, PE	***French and Parrello Associates***	***Dam Engineering***

Non-Licensed technical expert(s) and advisor(s):

Name	Affiliation	Area of Expertise
John Ritchey, PE (DE)	***French and Parrello Associates***	***Dam Engineering***

State Representative(s):

Name	Affiliation
None.	

Dam Owner Representative(s):

Name	Affiliation
None.	

GENERAL INFORMATION

Name of Dam:	***Lake Almonesson Dam***		
Fed. I.D. No.	***00401***	N.J. Dam No.:	***87***
River Basin:	***Delaware***		
Town:	***Deptford Township***	County:	***Gloucester***
Block:	***245 (upstream slope)*** ***245 (lake, spillway)*** ***238 (downstream slope***	Lot:	***1 (upstream slope)*** ***2 (lake, spillway)*** ***1 (downstream slope)***
Nearest Downstream City-Town:	***Almonesson***		
Stream Name:	***Almonesson Creek***	Tributary of:	***Big Timber Creek***
Latitude (N):	***39°49'04.6"***	Longitude (W):	***75°05'46.2"***
Type of Dam:	***Earth Dam with concrete spillway and culvert structure.***		
Purpose of Dam:	***Recreational use.***		
Hazard Category:	***Class II – Significant Hazard***	Drainage Area (sqr mls):	***1.9***
Height (ft):	***24***	Length (ft):	***300***
Normal Surface (ac):	***17.6***	Normal Capacity (af):	***125***
Maximum Capacity (af):	***257***	Spillway Capacity (cfs):	***803***

HISTORY

Date Constructed:	***1926***	Dates(s) Reconstructed:	***N/A***
Designer:	***William C. Cattell, Gloucester County Engineer***		
Constructed By:	***E.P. Henry and Sons***		
Owner & Address:	**Gloucester County**, ***1200 Norton Delsea Drive, Clayton, New Jersey 08312*** ***Deptford Township, 1011 Cooper St., Deptford, NJ 08096***		

Owner/Operator present during inspection (yes or no): ***No.***

PREVIOUS INSPECTIONS (date of)

Last Inspection:	***October 4, 2001***	Last Regular Inspection:	***October 4, 2001***
Phase I Inspection:	***December 1978***	Last Formal Inspection:	***Unknown***

EMERGENCY ACTION PLAN (Required for all Class I and Class II dams)

No EAP Available

DOWNSTREAM HAZARD CLASSIFICATIONS

Present Hazard Classification:	***Class II – Significant Hazard***
Changes in Downstream Land Use and Habitation:	***Downstream floodplain is uninhabited. Buildings and Homes are elevated sufficiently above floodplain. Two road crossing (impact unknown) are located downstream of dam.***
Is present classification appropriate?	***Yes.***

OPERATION AND MAINTENANCE

Date of Operation and Maintenance Plan:	***2006 (DEP Approved 2007)***
Are instructions adequate?	***Not reviewed***
Do operating personnel follow instructions?	***Unknown***
What are operating personnel capabilities?	***County Road Crews with sufficient level of capability.***

EXAMINATION OF EMBANKMENT DAMS AND DIKES

DESCRIPTION OF STRUCTURE

Embankment Material:	***Earth.***
Cutoff Type:	***Timber sheet piling (2-inch x 8-inch tongue and groove, length and depth unknown).***
Impervious Core:	***Continuation of timber sheet piling for length of dam.***
Internal Drainage System:	***None.***
Movement (Horizontal and Vertical Alignment):	***None observed.***
Junctions with Abutments or Embankments:	***Good.***
Miscellaneous:	***Not applicable.***

CREST

Vertical Alignment:	***Vertical curve for roadway, low point at bridge structure***
Horizontal Alignment:	***Straight.***
Surface Cracks:	***Minor cracking in asphalt. Appears to be asphalt issue and not dam issue.***
Settlement:	***None observed.***
Unusual Conditions:	***Chain link fence located along entire length of dam, both upstream and downstream sides.***

UPSTREAM SLOPE

Slope (Estimate) (H:V):	***1.5H:1V***
Trees, Undesirable Growth or Debris, Animal Burrows:	***Heavy bush and tree growth. Not accessible for thorough inspection.***
Sloughing, Subsidence or Depressions:	***None observed.***
Slope Protection:	***Trees and brush growth do not allow for establishment of suitable ground cover.***
Surface Cracks or Movement at Toe:	***Submerged, but no evidence from surface.***
Unusual Conditions:	***None.***

DOWNSTREAM SLOPE

Slope (Estimate) (H:V):	***1.5H:1V***
Trees, Undesirable Growth or Debris, Animal Burrows:	***Heavy bush and tree growth.***
Sloughing, Subsidence or Depressions:	***Various locations where road drainage has exceeded storm drain capacity and has flowed over low point and down face of dam. One particularly bad area is***

	located directly behind the eastern end of the bridge structure. Attempts to repair these areas have been made with riprap, asphalt and broken asphalt.
Surface Cracks or Movement at Toe:	***None observed.***
Seepage:	***Potential seepage was located within the scour created by roadway drainage pipe which discharges mid-slope on the west side of the discharge channel. Also, signs of seepage from embankment behind the steel sheet pile wingwall at toe on east side of discharge channel. This seepage flows around end of wingwall to the stream. Both seepage locations were of insignificant amount and was laden with iron bacteria.***
External Drainage System (Ditches, Trenches, Blanket):	***None.***
Condition Around Outlet Structure:	***Debris and trees.***
Unusual Conditions:	***Sanitary sewer manhole in slope on east side of bridge structure. Road drainage discharges through CMP's on slope or toe on both eastern and western sides of bridge. Significant erosion at discharge of pipe on westerly side***

ABUTMENTS AND TOE AREA

Erosion at Contract:	***None noted***
Seepage or Wet Area Along Contract:	***None noted***
Signs of Movement:	***None noted***
Depressions, Sinkholes:	***None noted***
Unusual Conditions:	***18-inch CMP roadway drainage pipe is discharged at easterly downstream abutment area.***

SEEPAGE AND TOE DRAIN / RELIEF WELL FLOW SUMMATION

Location	Estimated Flow	Color (Turbidity)
West side at roadway Pipe discharge scour	***<0.5 gal/min***	***clear, w/ iron bacteria***
East side behind d/s steel Sheet pile wingwall	***<1 gal/min***	***clear, w/ iron bacteria***

EXAMINATION OF SPILLWAYS AND OUTLET WORKS

TYPE(S) AND DESCRIPTION OF SPILLWAY(S)

Primary: ***Drop inlet box with culvert outlet***

Secondary (auxiliary): ***No Secondary Spillway.***

Emergency: ***No Emergency Spillway.***

Other: ***None.***

FOR EACH SPILLWAY THE FOLLOWING ASPECTS MUST BE EXAMINED WHERE APPROPRIATE

ENTRANCE CHANNEL

Description**:** ***Almonesson Lake is the entrance channel. About 300-feet wide.***

Vegetation (Trees, Bushes): ***Vegetation and tree growth on the channel bank.***

Debris: ***Minor.***

Channel Side-Slope Stability: ***Good.***

Slope Protection/Erosion: ***Grass cover.***

Unusual Conditions: ***None noted***

SPILLWAY CREST

Description: ***Not Applicable – See "DROP BOX – PRIMARY SPILLWAY" section below.***

DROP BOX– PRIMARY SPILLWAY

Description: ***3-sided concrete drop inlet box (about 12, 19, 12-feet long on each side), consists of 2 sections of timber sluice boards (4-feet wide each, regulate lake level from El. +24 to El. +16) on the south side, east and west sides without any sluice timber boards with crest level at El. +24.***

Condition of Material: ***Concrete in poor condition with some areas of spalling. Appears that a surface coat may have been applied at one point which is breaking away near the base. Leaking from a spalled area at the junction of the culvert and drop inlet box.***

Signs of Movement: ***None***

Joints: ***Leakage noted at the joint between the dropbox and the culvert headwall on the westerly sided near the base of the spillway. Iron bacteria present.***

Unusual Conditions: ***The concrete service slab above the drop box inlet box has concrete spalling (eastern side). Roadway drainage discharge pipe sits atop the drop box crest on the western side, blocking approximately 2 feet of spillway weir length.***

SPILLWAY WING WALLS

Description: ***Not Applicable – No Spillway Wing Walls.***

DOWNSTREAM APRON

Description: ***The floor of the drop box and culvert are concrete. At the end of the culvert***

there is a steel sheet pile wall and a drop of approximately 3 feet to the stream bed. There is a scour hole at the toe of the steel sheet pile wall. The scour hole area has concrete blocks and riprap for protection. There is a pair of askew steel sheet pile walls (about 22-feet long and 5-feet high) extending from the culvert to protect the apron area.

Condition of Material: ***Concrete floor was submerged and unobserved. Bottom of scour hole was submerged and could not be observed for condition of riprap and concrete blocks.***

Signs of Movement: ***None noted***

Unusual Conditions: ***Minor tree growth in the scour hole area. One area just below the scour hole within the broken concrete and riprap, toward the westerly steel sheet pile wing wall there appeared to be a small boil. This boil had enough pressure to move material when disturbed, but when settled appeared to be flowing clear. Because tailwater submerged the toe outfall downstream of the spillway apron, the exact cause of the concentrated flow or boil could not be determined. There were no deposits of material located around the flow and with the settled condition with clear flow not immediate concern it raised.***

CULVERTS

Description: ***The culvert is an 11-foot radius and 42-foot long semi-circular arch concrete structure traversing beneath the roadway embankment. Concrete wing walls extend about 23-feet from the culvert (upstream and downstream sides). The easterly wingwall further extends in the downstream direction at a 45-degree angle.***

Condition of Material: ***The culvert is in fair condition with localized concrete spalling.***

Joints: ***Culvert joint appear to be in good condition. Three of the four joints for the culvert wingwalls (both upstream and the westerly downstream) are in fair condition with very minor movement and some spalling noted. The easterly downstream joint between the culvert and the wingwall possesses a severe crack and deterioration due to the movement of the wall as noted below.***

Signs of Movement: ***None for the culvert. The easterly downstream wingwall is displaying a significant amount of movement (1 ft +) in the downstream direction. The westerly downstream culvert wingwall displays slight movement (<2") in the downstream direction.***

Seepage:

Location	Estimated Flow	Color (Turbidity)

Unusual Conditions: ***None.***

TRASH RACKS

Not applicable – No Trash Racks at Almonesson Lake Dam.

CHUTES

Not applicable – No Chutes at Almonesson Lake Dam.

EXIT CHANNEL

Description: ***The exit channel is about 10 to 20-feet wide and has sandy soil cover. The exit channel is blended in the woods. Wide flat floodplain***

Vegetation (Trees, Bushes): ***Tree growth in the channel banks.***

Debris: ***Minor debris.***

Channel Side-Slope Stability: ***The stability of the side slopes in the exit channel is adequate.***

Erosion: ***Minor to no erosion.***

Unusual Conditions: ***Two failed low concrete dams exist downstream of the dam***

LOW LEVEL OUTLET

Not applicable – Timber spillway boards/slide gate in drop box structure.

STILLING BASIN FOR LOW LEVEL OUTLET

Not applicable – slide gates discharge directly to floor slab

EXIT CHANNEL FOR LOW LEVEL OUTLET

Not applicable - passes through culvert

EXAMINATION OF OTHER FEATURES

INSTRUMENTATION (Monumentation/Surveys, Observation Wells, Weirs, Piezometers, Etc.) location, condition:

None.

RESERVOIR

Slopes: ***Gentle and stable shore banks in general.***

Sedimentation: ***None evident.***

Unusual Conditions Which Affect Dam: ***None.***

Unusual Conditions: ***None.***

APPURTENANT STRUCTURES (Power House, Gatehouse, Penstocks, Water Supply, Other)

None.

CONCLUSION

DAM INSPECTION PROGRAM GUIDELINES

The following new guidelines have been established by the NJDEP Division of Dam Safety & Flood Control to help meet the requirements of the National Inventory of Dams condition assessment of existing dam structures. Please follow the guidelines/definitions below and select the appropriate checkbox.

SATISFACTORY
No existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all applicable loading conditions (static, hydrologic, seismic) in accordance with the applicable regulatory criteria. Minor maintenance items may be required.

FAIR
Acceptable performance is expected under all required loading conditions (static, hydrologic, seismic) in accordance with the applicable dam safety regulatory criteria. Minor deficiencies may exist that require remedial action and/or secondary studies or investigations.

POOR
A dam safety deficiency is recognized for any required loading condition (static, hydrologic, seismic) in accordance with the applicable dam safety regulatory criteria. Remedial action is necessary. POOR also applies when further critical studies or investigations are needed to identify any potential dam safety deficiencies.

UNSATISFACTORY
Considered unsafe. A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution. Reservoir restrictions may be necessary.

I certify that the dam structure referenced herein was personally inspected by me and was found to be in the following condition **(select one only):**

☐ SATISFACTORY

☐ FAIR

☒ POOR

☐ UNSATISFACTORY

CONCLUSION (continued)

I recommend the following repairs be made immediately:

- ***The trees and bush growth on the upstream and downstream faces of the embankment should be removed. A suitable grass cover should be established and maintained on the slopes. It is recommended that riprap protection be provided at the water level on upstream slope.***
- ***All areas of erosion on the downstream face should be repaired to establish a uniform slope to the face of the dam***
- ***Debris on the spillway, within the culvert and downstream scour hole and immediate downstream channel should be removed and the areas maintained free of debris.***
- ***Additional riprap should be placed in the apron area to enhance the scour protection.***
- ***The tree growth in the apron area should be cleared.***

The following long term repairs and related activities should be addressed:

- ***Repair or rebuild the east culvert wing wall (downstream side), which leans toward the downstream direction resulting in joint opening (at the culvert junction) and concrete spalling. The cause of the movement should be determined and addressed as necessary.***
- ***Storm drain discharge pipe on the westerly downstream face of dam should be extended and the eroded area backfilled and stabilized. The discharge point of the extended pipe should be protected with adequate conduit outlet protection. Consideration to the seepage at this location should be given in the design of the backfill material for the correction of the erosion.***
- ***Drainage should be improved on the crest of the dam to eliminate concentration and overflow of drainage onto slopes.***
- ***Service slab atop the drop inlet box should be removed and replaced with a catwalk in a manner so as not to impede flow through the spillway. Investigate improvements to the means to which remove the spillway boards.***
- ***Concrete deterioration of the spillway drop box should be investigated to determine if a repair is acceptable or if replacement will be necessary.***
- ***Seepage at the easterly downstream toe of dam must be addressed (collection and safe discharge, filter if necessary).***
- ***The storm drainage pipe on the upstream westerly side of the culvert should be redirected and the corrugated metal pipe removed from the crest of the spillway***
- ***Leak at the junction of the culvert and drop inlet box joint should investigated and repaired as necessary.***
- ***Localized concrete spalling in the culvert and on all culvert wingwalls should be repaired.***
- ***Ascertain the source of the "boil" in the scour hole apron area downstream of the dam and address accordingly if necessary.***

The following studies are recommended:	☒ Hydrologic and Hydraulic analysis ☒ Stability Analysis (of downstream spillway wingwalls) ☒ Failure/Inundation Analysis ☐ Other _____ ☐ None

Last known hydrologic and hydraulic (H&H) analysis was that which was included in the USACE Phase 1 report in 1978 where the dam was determined to have inadequate spillway capacity for the 100 year flood. FPA is has been retained by the Delaware Valley Regional Planning Commission to prepare an updated H&H Analysis Report which will be submitted to the Bureau of Dam Safety for review and approval under separate cover.

Stability Analysis of the downstream culvert wingwalls should be completed if they are not to be removed and replaced.

Impact to downstream road crossings as a result of dam failure is unknown and therefore a failure/inundation analysis should be completed to establish accurate inundation mapping for the Emergency Action Plan.

Have the recommendations above included those from the Phase I Inspection Report or previous Regular or Formal Inspection Reports? If not, indicate why.

Yes.

EMERGENCY ACTION PLAN (This section must be completed for all Class I & II dams)

Is the notification flowchart complete and current? (If the notification flow chart is not complete and current, all modifications, corrections, and additions must be made and replacement pages submitted with this report)

No EAP exists. EAP is required and must be developed and implemented.

Is inundation mapping or a description included?

No.

NJ Dam Safety Compliance Schedule Form (attached). This form must be completed or the Inspection Report will be deemed incomplete.

Name of Professional Engineering Company/Consultant Representing the Owner:

Company/Consultant Address: ***French & Parrello Associates***
1800 Route 34, Suite 101
Wall, New Jersey 07719

Company/Consultant Telephone Number: ***(732) 312-9800***

New Jersey Licensed Professional Engineer representing the dam owner in responsible charge of the inspection:

Sign _____ Date _____
Christopher W. Marx, PE

New Jersey Professional Engineer License Number 47776

New Jersey Dam Safety Compliance Schedule Form

Dam Name:	**Co-Owners:**	**Owner's Engineering Firm:**
Almonesson Lake Dam NJ File No. 31-033	Deptford Township Gloucester County	**Name:** French & Parrello Associates **Address:** 1800 Route 34, Suite 101 Wall, NJ 07719 **Phone:** (732) 312-9800

The purpose of this form is to allow the dam owner, through consultation with their engineer, to establish a time line for addressing the deficiencies identified in the inspection report for the dam and bringing the dam into compliance with the New Jersey Dam Safety Standards, N.J.A.C. 7:20-1.1 et seq.

Proposed time frame for submission of required information and implementation of recommended repairs:
(Engineer should check required sections and propose appropriate time frames. However, the Dam Safety Section reserves the right to require additional dates and/or information as needed.)

☒ **Performance of maintenance and repairs not requiring approval from the Dam Safety Section** (Such work includes grass mowing, brush removal, debris removal, filling of animal burrows, minor concrete repairs, minor gate repairs, filling of areas of minor surface erosion, etc. The Dam Safety Section must be notified upon completion of these activities.)

Work to be completed no later than: ***June 2020***

☒ **Engineering Report / Studies** (This work includes any required hydrologic and hydraulic analysis, structural analysis, alternative analysis, geotechnical investigations or dam breach analysis that may be recommended by your engineer and/or required by the Dam Safety Section.)

Studies to be submitted for review no later than: ***December 2020***

☒ **Permit Application:** (A permit application must be submitted for any construction activity at the dam. The permit application must address all deficiencies as identified in the inspection report and the subsequent engineering report / studies.)

Permit application to be submitted no later than ***8*** **months after the date of the Dam Safety Section's approval of any required studies. (Please provide date if no studies are required.)**

☒ **Construction to start no later than** ***12*** **months after the date of issuance of the permit by the Dam Safety Section.**

☒ **Operation and Maintenance Plan (O&M):** (An O&M is required for all dams. O&M's should be submitted with the permit application or sooner if possible. Existing O&M's may need to be updated if a dam is being rehabilitated. Please indicate if an O&M has already been submitted and approved.)

O&M Manual update if necessary to be submitted no later than: ***June 2020***

☒ **Emergency Action Plan (EAP):** (EAPs are required for all high and significant hazard dams and should be submitted as soon as possible. Existing EAPs should be reviewed on a yearly basis and revised as necessary. Please indicate if an EAP has already been submitted and approved.)

EAP to be submitted no later than: ***EAP Text should be establish and submitted by June 2020; inundation mapping can be added upon completion of above studies***

The dates provided above will be reviewed by the Dam Safety Section to determine if the schedule is acceptable to achieve compliance with the Dam Safety Standards. Requests for extensions to the accepted time frames outlined above must be submitted to this office in writing along with appropriate justification and will be considered on its merits on a case by case basis.

Signed: Dam Owner Date

Signed: Owner's Engineer Date

Signed: Date

Additional information including Dam Safety Section forms, standards and inspection guidelines as well and EAP guidelines and a sample O&M is available at http://www.state.nj.us/dep/damsafety or contact this office via e-mail at Damsafety@dep.state.nj.us or telephone at (609)984-0859. Please submit the completed form to: NJDEP, Dam Safety Section, P.O. Box 419, Trenton, NJ 08625

APPENDIX B

PHOTOGRAPHS

Photo 1: Overview of Almonesson Dam from left abutment, looking east. Note: Cooper Street (County Road 706) traverses the crest of the dam.

Photo 2: View of downstream crest wall looking east, from left abutment.

Photo 3: View of upstream slope to the left of the spillway, from the left abutment. Note: Heavy bush and tree growth observed.

Photo 4: Upstream slope to the right of the spillway looking west, from the right abutment. Note: Heavy bush and tree growth observed.

Photo 5: Vertical concrete wall on downstream slope.
Notes: Cracks and spalls observed the left of the exit channel.

Photo 6: Vertical concrete wall on downstream slope.
Notes: Large spall observed to the left of the exit channel.

Photo 7: Downstream slope of the embankment, to the left of the spillway. Note: Corrugated metal drainage pipe.

Photo 8: Corrugated metal drainage pipe discharging at the toe of the slope. Note: Significant erosion/scour observed downstream of the pipe.

Photo 9: Overview of downstream slope to the left of the spillway exit channel with sheet pile wing wall.

Photo 10: Toe of the down stream slope to the right of the spillway.
Note: Seepage observed (iron oxide) adjacent to sheet pile.

Photo 11: Sheet pile wing wall to the right of the exit channel.

Photo 12: Sheet pile wing wall to the left of the exit channel.

Photo 13: Seepage at the toe of the right embankment.

Photo 14: Seepage at the toe of the left embankment.

Photo 15: View of primary spillway from the crest of the dam, looking west towards the left abutment.

Photo 16: Primary spillway; debris observed.
Note: Opening in concrete for the flashboards; one board appears to be removed. Chains attached to flashboard for operation.

Photo 17: Concrete slab on top of the primary spillway.
Note: Chain connects to the flashboards in the spillway.

Photo 18: Concrete drop box at primary spillway.

Photo 19: Overview of concrete apron, downstream of primary spillway, looking upstream.

Photo 20: Inside concrete bridge culvert.
Note: Spalling, cracking, and exposed rebar observed.

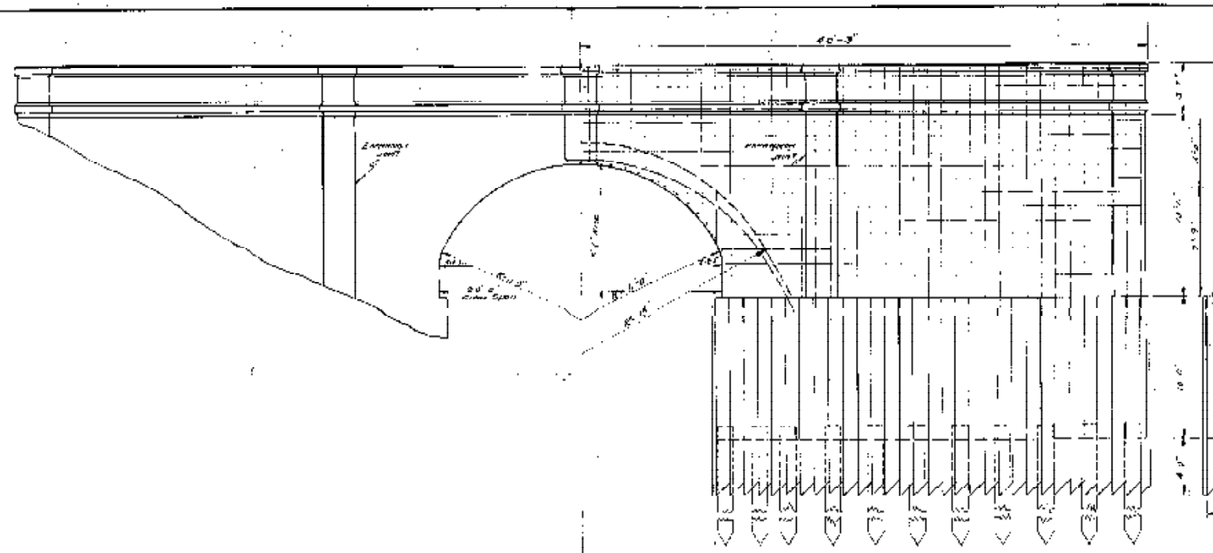
Photo 21: Exit channel downstream of main culvert.
Note: Debris observed in channel.

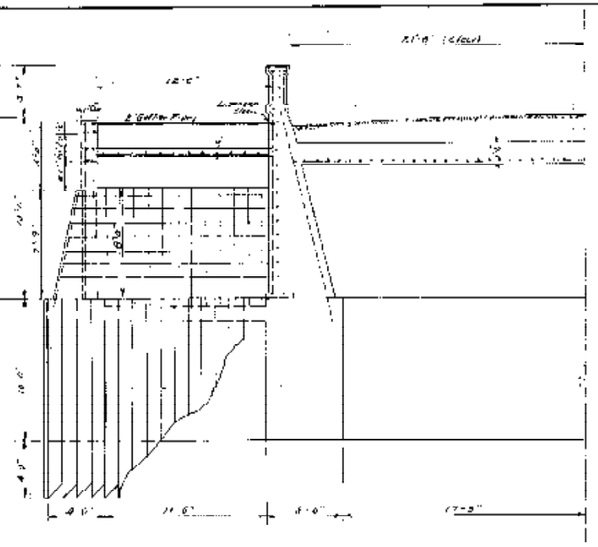
Photo 22: Downstream exit channel.

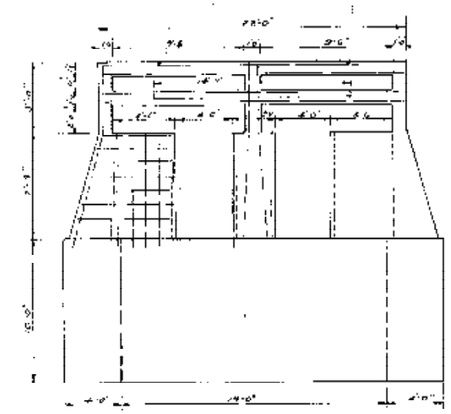
Photo 23: Flat floodplain observed downstream of Almonesson Dam.

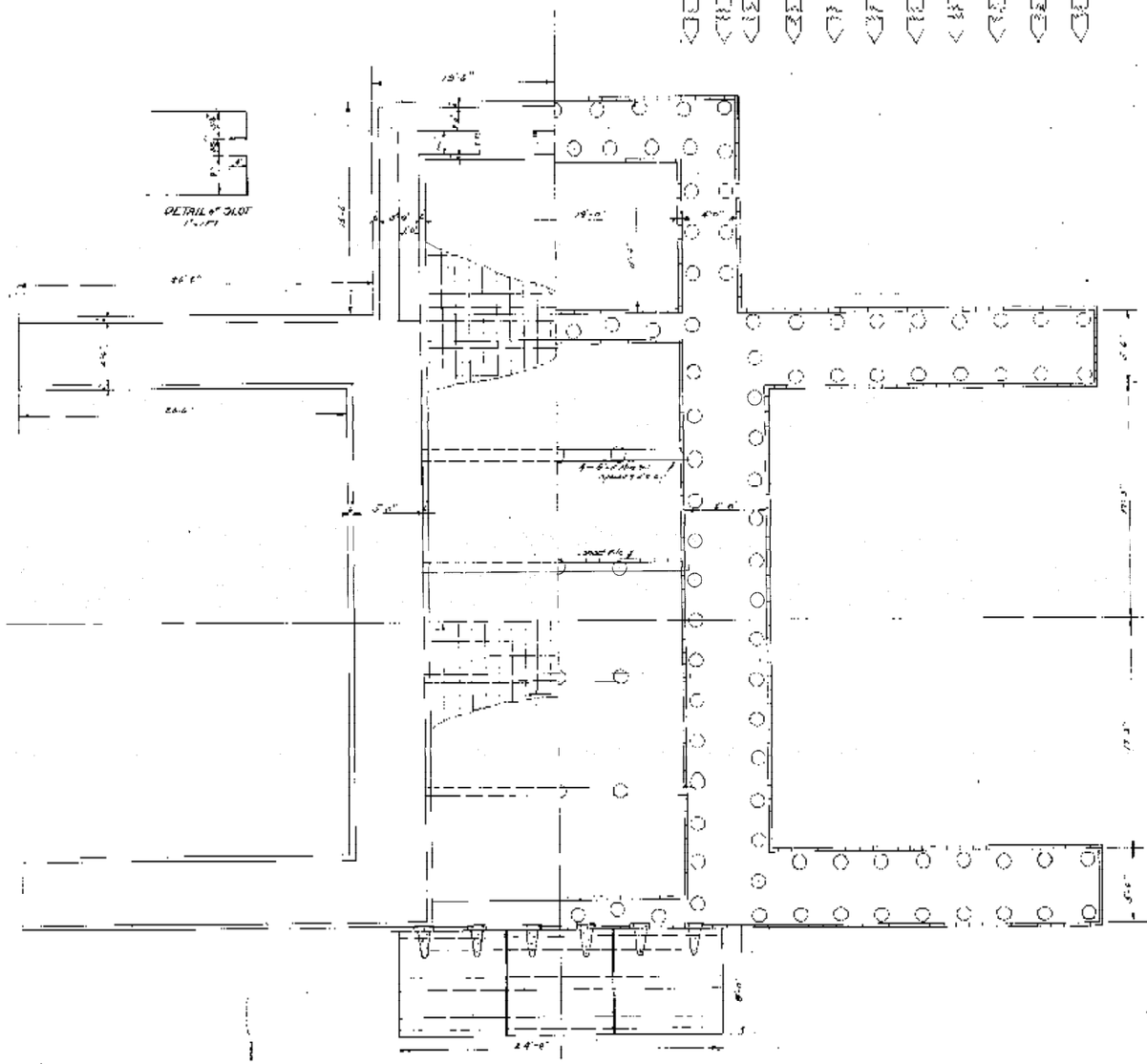
Photo 24: Structure downstream of Almonesson Lake Dam.
Note: Approximately 300 feet downstream of bridge.

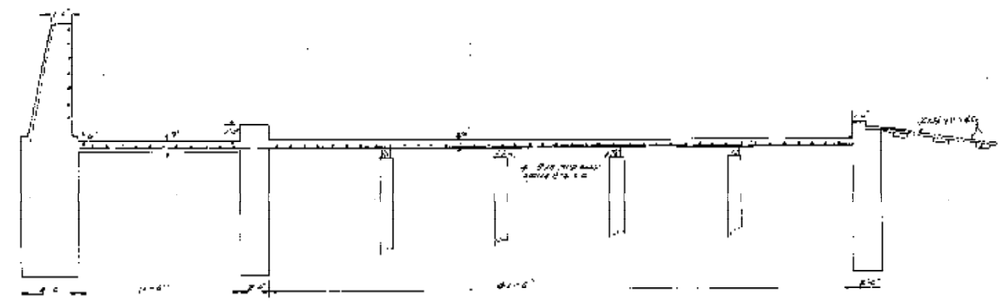
Photo 25: View of Almonesson Lake from the dam crest looking upstream (south).

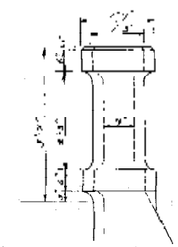


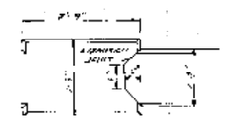












COMMENCEMENT OF WORK: Within 10 days from the award of the contract
COMPLETION: Within 90 working days from the commencement date of
FINISH: Afterward surfaces, except unexposed, to be finished to be "Type U"
SPECIFICATIONS: In accordance with "THE STANDARD SPECIFICATIONS FOR REINFORCED CONCRETE BRIDGES IN GLOUCESTER COUNTY" by Wm. C. Gasch, County Eng. Edition of 1948

REINFORCEMENT
FACE: Longitudinal 20 bars 3/4" Del. Bars 9" c.c. as shown
Vertical 24 bars 3/4" Del. Bars 12" c.c. as shown
FOR OTHER REINFORCEMENT 3/4" Del. Bars 12" c.c. except as otherwise shown

EXPANSION JOINTS To be placed as shown

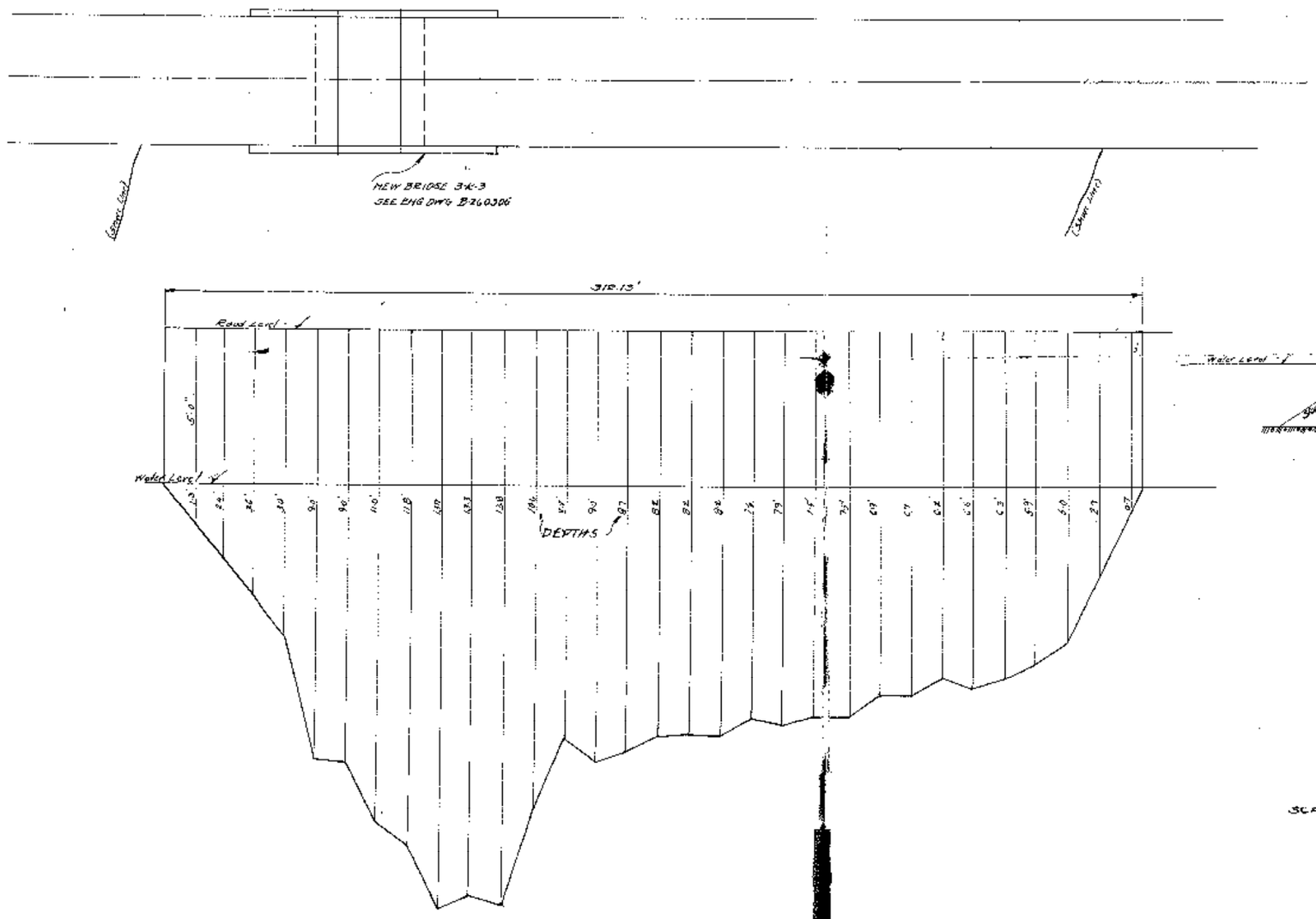
PILES. 181 Piles in foundation
SHEET PILING: 3x8" V.P. T&G. to be placed and left around entire foundation
[illegible] 2"x8" V.P. T&G.

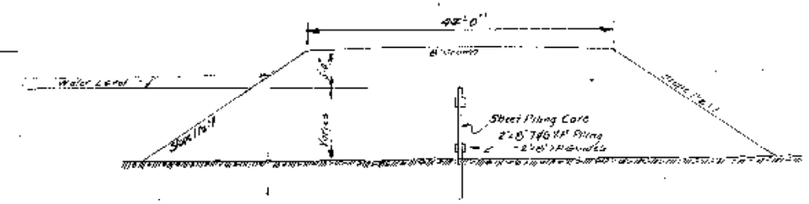
GLOUCESTER COUNTY N.J.
CONCRETE BRIDGE & SPILLWAY No 3-K3
OVER
ALMONESSON BRANCH
AT
ALMONESSON

SCALE 1/8" = 1'
Original drawing

Wm C Gasch
COUNTY ENGINEER

B-260305





TYPICAL SECTION
SCALE 1"=10'

GLOUCESTER COUNTY N.J.

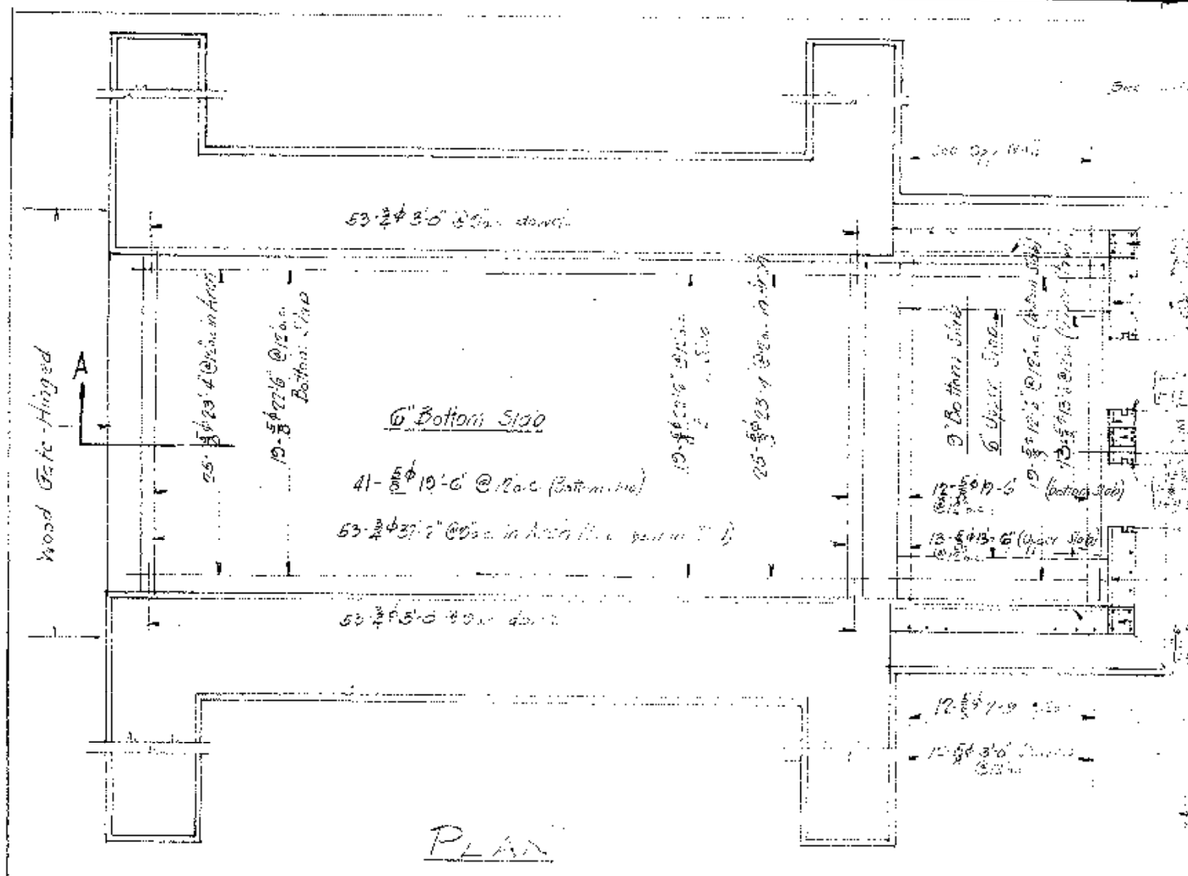
ROAD ACROSS ALMONESSON LAKE

ALMONESSON

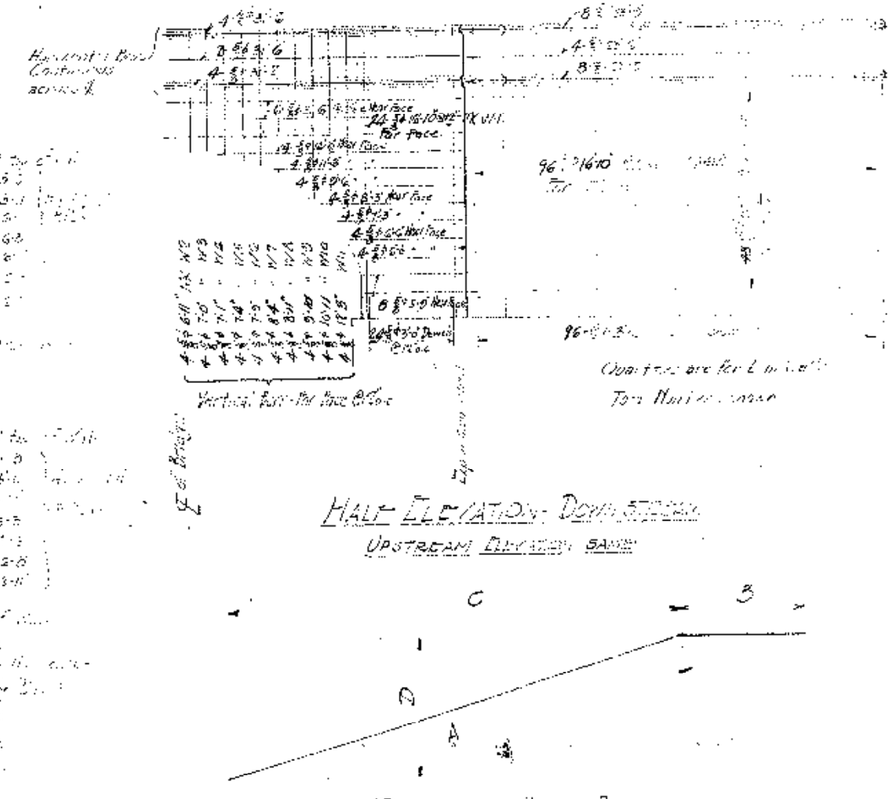
SCALE HOR. 1"=20'
VERT. 1"=2'

W. H. Gatell
COUNTY ENGINEER

R-260406



PLAN

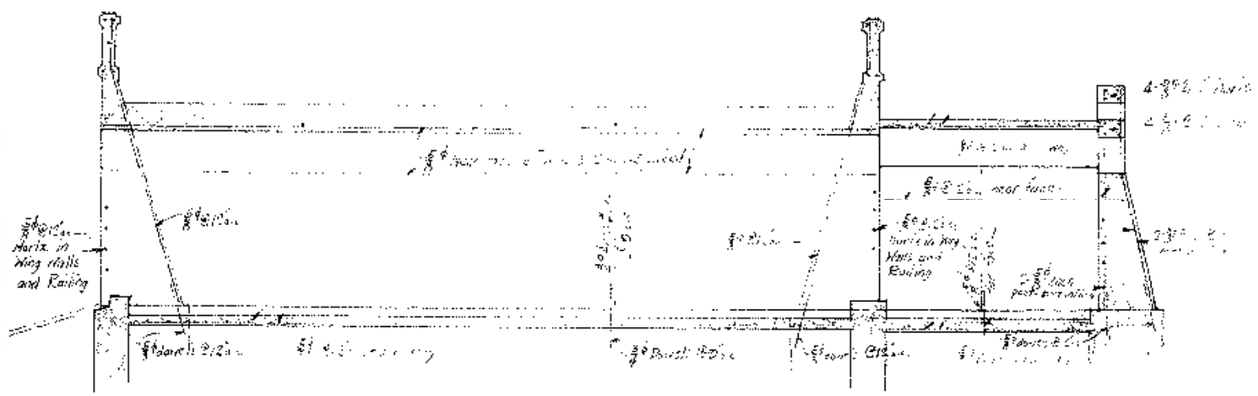


HALF ELEVATION - DOWNSTREAM

UPSTREAM DIVIDED SAME

DETAILS OF BENT BARS

Mark	Length	A	B	C	D
W1	16'-10"	15'-6"	3'-4"	12'-11"	4'-0"
W2	5'-11"	3'-7"	3'-4"	2'-10"	1'-0¾"
W3	7'-0"	3'-7½"	3'-4"	2'-11"	1'-0¾"
W4	7'-0"	3'-8½"	3'-4"	3'-1"	1'-1"
W5	7'-2"	4'-0"	3'-4"	3'-10"	1'-1¾"
W6	7'-5"	4'-5"	3'-4"	4'-3"	1'-3¾"
W7	8'-4"	4'-11½"	3'-4"	4'-10"	1'-5"
W8	8'-11"	5'-6½"	3'-4"	5'-4"	1'-7½"
W9	9'-10"	6'-0"	3'-4"	6'-2"	1'-10¾"
W10	10'-10"	7'-1"	3'-4"	7'-3"	2'-2"
W11	12'-3"	8'-11"	3'-4"	8'-10"	2'-7"



SECTION A-A

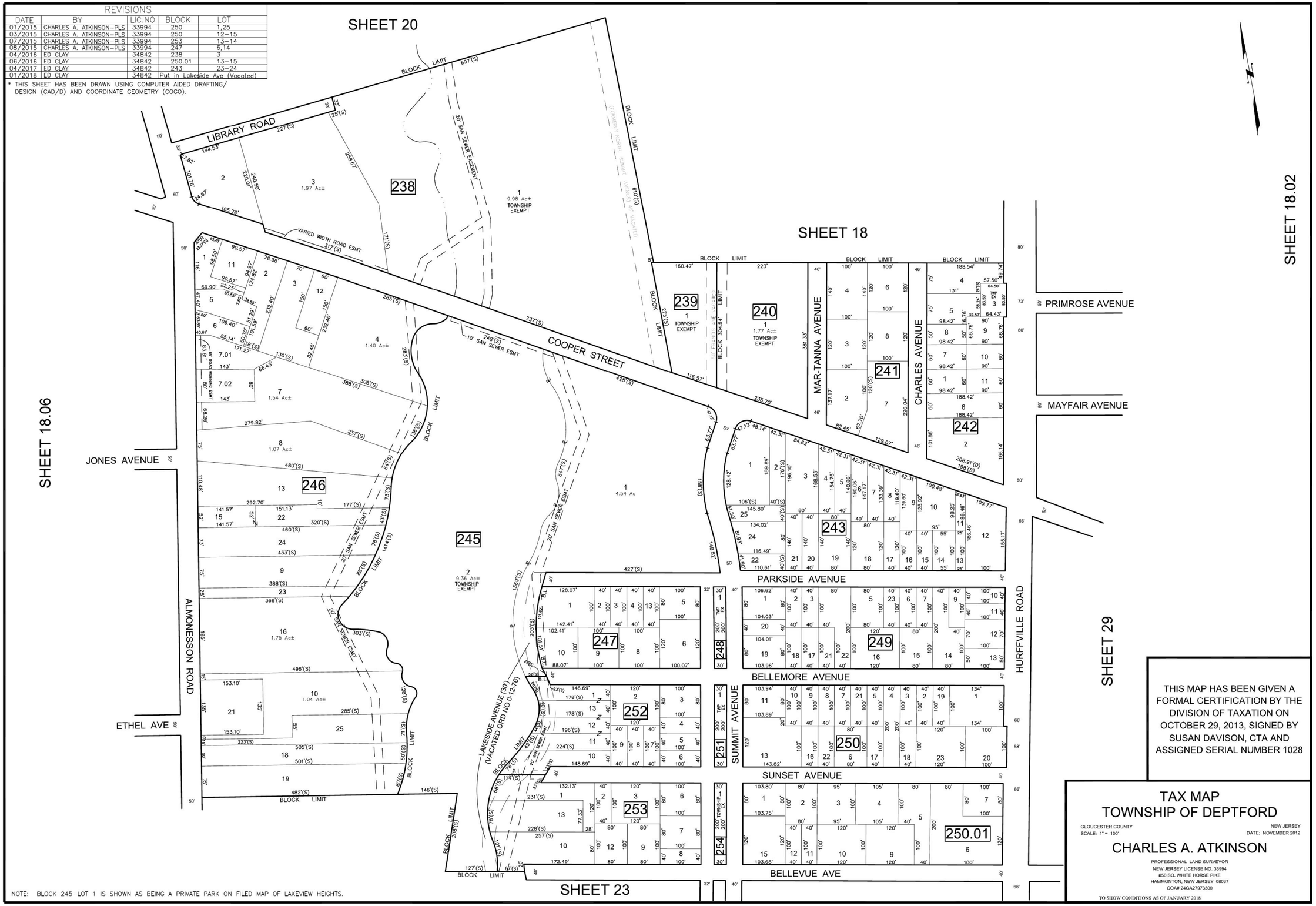
KALMAN STEEL CO. Inc.
PHILA., PA.

STRUCTURE: BRIDGE & SPILLWAY
LOCATION: Montgomery Md.
TITLE: Detailed Reinforcing
ARCHITECT: W.C. Correll
DRAWN BY: H.L.E.
CHECKED BY:
DATE: 5-8-46
JOB NO. 1536
SHEET NO. 1

REVISIONS

DATE	BY	LIC.NO	BLOCK	LOT
01/2015	CHARLES A. ATKINSON-PLS	33994	250	1,25
03/2015	CHARLES A. ATKINSON-PLS	33994	250	12-15
07/2015	CHARLES A. ATKINSON-PLS	33994	253	13-14
08/2015	CHARLES A. ATKINSON-PLS	33994	247	6,14
04/2016	ED CLAY	34842	238	3
06/2016	ED CLAY	34842	250.01	13-15
04/2017	ED CLAY	34842	243	23-24
01/2018	ED CLAY	34842	Put in Lakeside Ave (Vacated)	

* THIS SHEET HAS BEEN DRAWN USING COMPUTER AIDED DRAFTING/ DESIGN (CAD/D) AND COORDINATE GEOMETRY (COGO).



THIS MAP HAS BEEN GIVEN A FORMAL CERTIFICATION BY THE DIVISION OF TAXATION ON OCTOBER 29, 2013, SIGNED BY SUSAN DAVISON, CTA AND ASSIGNED SERIAL NUMBER 1028

TAX MAP
TOWNSHIP OF DEPTFORD

GLOUCESTER COUNTY — NEW JERSEY
SCALE: 1" = 100' — DATE: NOVEMBER 2012

CHARLES A. ATKINSON
PROFESSIONAL LAND SURVEYOR
NEW JERSEY LICENSE NO. 33994
850 SO. WHITE HORSE PIKE
HAMMONTON, NEW JERSEY 08037
COA# 24GA27973300

TO SHOW CONDITIONS AS OF JANUARY 2018

NOTE: BLOCK 245-LOT 1 IS SHOWN AS BEING A PRIVATE PARK ON FILED MAP OF LAKEVIEW HEIGHTS.

FRENCH & PARRELLO ASSOCIATES

Advancing Our Client's Vision
IMPROVING OUR WORLD

TRAFFIC CONDITIONS REPORT
FOR

FY 2018 GLOUCESTER COUNTY LCD STUDY
COOPER STREET (COUNTY ROUTE 706) BRIDGE OVER ALMONESSON CREEK/ AT ALMONESSON LAKE

Township of Deptford
Gloucester County, New Jersey

Prepared for:

Delaware Valley Regional Planning Commission
190 N. Independence Mall West, 8th Floor
Philadelphia, Pennsylvania 19106-1520

and:

County of Gloucester
Department of Public Works
Office of the County Engineer
1200 N. Delsea Drive
Clayton, New Jersey 08312

8/23/2019
FPA No. 13633.001

1800 Route 34, Suite 101 • Wall, NJ • 07719 • T 732.312.9800 • F 732.312.9801
Camden, NJ • Hackettstown, NJ • New York, NY• King of Prussia, PA
fpaengineers.com

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3. DETOUR PLAN ALTERNATIVES 5

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5. FUTURE ROADWAY CONDITIONS 11

APPENDIX A. PROJECT LOCATION MAP A-1

APPENDIX B. LEVEL OF SERVICE B-1

APPENDIX C. CRASH ANALYSIS TABLE C-1

APPENDIX D. TRAFFIC VOLUME ADJUSTMENT CALCULATIONS D-1

1. EXISTING ROADWAY CONDITIONS

This project focuses on Gloucester County Bridge Structure 0803-K03 (hereafter referred to as Bridge 3-K-3), which carries County Route 706 (Cooper Street, hereafter referred to as CR 706) over Almonesson Creek at Almonesson Lake in the Township of Deptford. This traffic report will focus on the bridge roadway itself, as well as the adjacent intersections on either side of the bridge, including the intersection of CR 706 with County Route 621 (Almonesson Road, hereafter referred to as CR 621) on the west side of the bridge, and the intersection of CR 706 with NJ Route 41 (Hurffville Road, hereafter referred to as Route 41), on the east side of the bridge. Within the project limits, CR 706 traverses the Almonesson Lake dam crest and Bridge 3-K-3, which carries CR 706 over the dam spillway and Almonesson Creek / at Almonesson Lake.

1.1. COUNTY ROUTE 706 (COOPER STREET)

CR 706 is classified as an Urban Minor Arterial and follows an east-west alignment. CR 706 provides one lane of travel with shoulders in each direction. To the east, CR 706 serves as a connector to Route 41, where thereafter the roadway enters Camden County before connecting with NJ Route 42 (North-South Freeway). To the west, CR 706 transitions into County Route 534 at the signalized intersection with NJ Route 47 (Delsea Drive). The limits of CR 706 are encompassed entirely by the Township of Deptford.

The posted speed limit on CR 706 is 35 mph. The cartway width of the bridge and roadway within the project limits is 30 feet with concrete sidewalk on the south side of the bridge that continues west. Pavement markings include a double yellow centerline and white edge (shoulder) lines on both sides of the roadway.

The project limits extend a total of approximately 700 feet – approximately 300 feet east and 400 feet west of Bridge 3-K-3. The easterly end of the project is approximately 330 feet west of the intersection of CR 706 and Summit Avenue. The westerly end of the project is approximately 400 feet east of the signalized intersection with CR 621.

1.2. BRIDGE 3-K-3

Bridge 3-K-3 is an earth-filled, reinforced concrete arch with plain concrete parapets constructed in 1926 by Gloucester County. The bridge is similar to 15 other arches built by the County between 1912 and 1940, according to NJDOT Historic Bridge Data. It is 20 feet long and 46 feet wide, and spans a narrow but steeply banked, tree-lined creek. The bridge is immediately upstream of a small dam and lake (Almonesson Lake). The Almonesson Creek is a tributary of Big Timber Creek, which empties into the Delaware River approximately 4.5 miles north-northwest of Bridge 3-K-3.

1.3. INTERSECTION OF CR 706 AND ROUTE 41 (HURFFVILLE ROAD)

Route 41 is a state highway classified as an Urban Minor Arterial that provides one lane of travel in each direction with a posted speed of 50 mph. The roadway of Route 41 consists of two 11-foot lanes with 6 to 9-foot shoulders. Route 41 to the north of CR 706 additionally provides a 14-foot-wide center left turn lane.

The intersection of CR 706 at Route 41 is a four-leg signalized intersection. Crosswalks across CR 706 and Route 41 are striped. Sidewalk is provided along Route 41 at the southwest and northeast corners of the intersection. Push buttons, ramps, and sidewalks do not comply with current ADA requirements and sidewalk is not provided along CR 706. Dedicated left turn lanes are provided on each approach. Opposing lanes of traffic on Route 41 are separated by concrete islands.

1.4. INTERSECTION OF CR 706 AND SUMMIT AVE

Summit Ave is a residential street that runs north-south which services the adjacent neighborhood and forms a stop-controlled T-intersection where Summit Avenue terminates at the southern side of CR 706. Summit Avenue has a posted speed limit of 25 mph. The roadway section provided on CR 706 is two lanes with variable width shoulder. No dedicated left turn lane is provided. Concrete sidewalk runs along both sides of the roadway. Approximately 150 feet south of CR 706, a crosswalk connects two parking lots adjacent to either side of Summit Avenue. The roadway section is curbed with a single drainage inlet observed along the east curbline of Summit Ave, approximately 40 feet south of the centerline of CR 706.

1.5. INTERSECTION OF CR 706 AND CR 621

The CR 621 roadway is classified as an Urban Minor Arterial that provides one lane of travel in each direction with a posted speed of 35 mph. The roadway width of CR 621 at this intersection is 28 feet, with 12-feet-wide travel lanes and 2-feet-wide shoulder lanes on both sides. The most current traffic volumes (2017) indicate an AADT of 8,188 vehicles per day.

The intersection of CR 706 at CR 621 is a four-leg signalized intersection. Crosswalks across CR 706 and CR 621 are striped with sidewalks and push buttons within the intersection. A dedicated right turn lane is provided westbound on CR 706.

1.6. EXISTING PEDESTRIAN FACILITIES

Sidewalk is present along the south side of CR 706 from the intersection at CR 621 to the eastern end of the Bridge 3-K-3 parapet. Sidewalk is present along the north side of CR 706 where the Almonesson Creek Park parking area fronts CR 706. The sidewalk widths are typically less than 4-feet wide and do not provide additional space for passing. The NJDOT Complete Streets Design Guide (NJDOT-CSDG) states ADA standards specify a minimum 5-foot clear path width or, if a pedestrian zone is 4 feet wide, additional space should be provided to allow passing at intervals no greater than 200 feet.

Sidewalks are generally non-existent on the north side of CR 706 except in the area of the Almonesson Creek Park. During field visits to the project site, FPA staff observed pedestrians walking east-west along the north curbline of CR 706. Additionally, FPA staff observed township police controlling traffic midblock to permit pedestrians to cross from Almonesson Caterer's to the Almonesson Creek Park parking.

1.7. EXISTING BICYCLE CONDITIONS

Currently there are no on-road bicycle facilities within the project area. The NJDOT/FHWA New Jersey Southern Bicycle Map identifies CR 706 within the project limits are least suitable for on-road bicycle suitability. However, New Jersey law indicates that since bicycles are "vehicles", they are not to be

operated on sidewalks, but on roadways, even in the absence of any signage or striping – or roadway/lane geometry sufficient to accommodate them.

As previously noted, the roadway width within the project limits is 30 feet which would be sufficient to accommodate two 15-foot lanes, wide enough to be considered “shared” bicycle lanes.

1.8. EXISTING TRANSIT SERVICES

Currently there are no transit facilities within the project limits. Additionally, no bus routes exist within the project limits.

2. EXISTING TRAFFIC DATA & LEVEL OF SERVICE

Automated Traffic Recorder (ATR) data was gathered by TechniQuest beginning on April 30. 2019. The CR 706 Westbound AADT recorded was 5,641 and the Eastbound AADT recorded was 5,387. A Level of Service analysis was performed for CR 706 utilizing the Highway Capacity Manual 6th Edition (2016) and the resulting eastbound level of service is "E" and the resulting westbound level of service is "D". The level of service calculation can be seen in Appendix B.

3. DETOUR PLAN ALTERNATIVES

3.1. DETOUR ALTERNATIVES & LEVEL OF SERVICE

The desirable detour characteristics for this project include the utilization of multi-lane, non-municipal roadways with signalized intersections and turning lanes to facilitate each transition along the route. The roadways used by the detour would be non-residential, accommodate large vehicles and trucks, readily absorb the extra traffic, and only increase travel time by the shortest possible amount. Alternative 2 satisfies most of these characteristics and, therefore, is the preferred Alternative.

Detour Alternative 2 utilizes Clements Bridge Road (CR 544), a County-owned, multi-lane roadway with signalized intersections and turning lanes in either direction at Almonesson Road (CR 621) and Hurffville Road (NJ 41). This detour maintains traffic on County and State roads throughout the route and possesses the highest capacity to accommodate the additional vehicles. Traffic is directed through primarily non-residential areas as Clements Bridge Road (CR 544) is a commercial corridor in this location. The only drawback to this Alternative is that it is the longest distance of the three (3.3 miles). However, during peak travel times it is anticipated that the higher capacity and signalized intersections would better facilitate the flow of traffic than the two competing alternatives.

Detour Alternative 3 represents the logical northern alternate detour route, which is the second shortest at 2.1 miles, but utilizes a Municipal road (Deptford Center Road) that serves as the main access to the Deptford Mall, a major regional shopping center with dozens of retail and dining facilities. The impact of adding traffic from Cooper Street to this roadway must be further investigated. However, Deptford Center Road is a four-lane facility that appears to have enough capacity to accommodate traffic from Cooper Street. Coordination with the Township of Deptford would be required if this alternative is pursued. For these reasons, Alternative 3 is not the preferred signed detour for this project.

Detour Alternative 1 is the shortest distance (1.5 miles) and utilizes only County and State roadways, but it lacks signalized intersections, turning lanes and the capacity to accommodate an influx of traffic and larger vehicles. Good Intent Road (CR 534) in this location provides only a single lane in each direction and is primarily residential. It is anticipated this alternative would likely double the existing AADT and face strong residential opposition. For these reasons, Alternative 1 should no longer be considered.

All three Alternatives utilize CR 621 (Almonesson Road) and NJ 41 (Hurffville Road). CR 621 in this location is signed for 35 MPH and provides one travel lane in each direction through a residential area. NJ 41 in this location is posted for 45 MPH and provides one travel lane in each direction through a mixed commercial and residential area. Both roadways provide signalized intersection at their junctions with CR 544 (Clements Bridge Road) and Deptford Center Road. Only NJ 41 provides a signalized intersection at CR 534 (Good Intent Road), but provides no turning lanes at this location.

provides a signalized intersection at CR 534 (Good Intent Road), but provides no turning lanes at this location.

It is assumed that not all motorists will follow the signed detour. With the use of Google Maps and other GPS traffic apps and software, vehicles would be directed along shorter routes than the preferred Alternative 2. For this reason, it may be necessary to investigate the possibility of providing improvements to these other local roads, such as Deptford Center Road and CR 534 (Good Intent Road), to accommodate the increase in traffic.

Level of Service (LOS) analysis for these Detour Alternatives will be evaluated during the preliminary design phase. Turning movement counts will be included for the three signalized intersections at the following locations:

- CR 706 and CR 621
- CR 706 and Route 41
- Route 41 and Good Intent Road

In summation, Alternative 1 lacks signalized intersections and turning lanes at key junctions between CR 534 (Good Intent Road) and CR 621 and NJ 41. At 2.1 miles, Alternative 3 offers a shorter detour length than Alternative 2 and utilizes a municipal roadway that is wide enough to accommodate the increase in traffic caused by the detour of Cooper Street. However, use of a municipal roadway requires coordinating with the Township of Deptford. For these reasons, Alternatives 1 and 3 are not the preferred signed detours for this project.

Detour Alternative 2 satisfies most of the desired characteristics of a detour route. All three roads utilized by this alternative are either County or State roadways. As a multi-lane, commercial corridor with a posted speed of 35 MPH, CR 544 (Clements Bridge Road) possesses the capacity to accomodate the additional traffic directed its way via CR 621 and NJ 41 with signalized intersections and turn lanes at each junction. For these reasons Alternative 2 is preferred as the signed detour for this project.

3.2. ALTERNATIVE 1

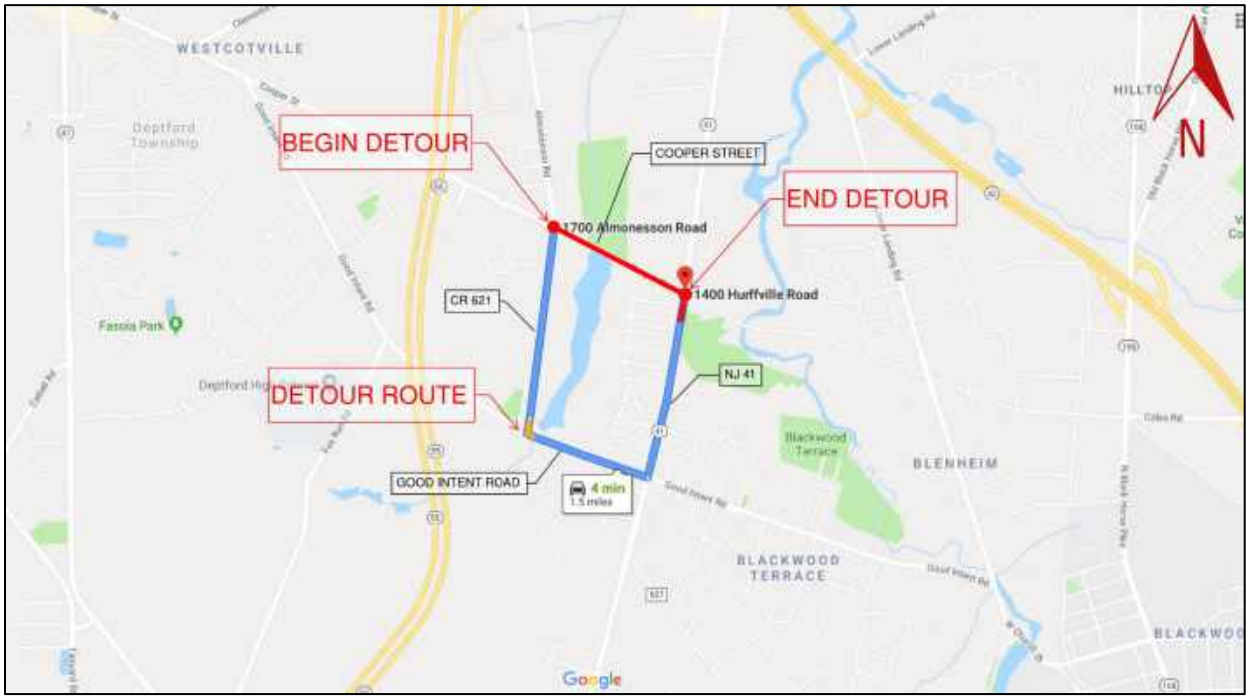


Figure 1. Alternative 1 detours traffic approximately 1.5 miles, redirecting eastbound traffic south on CR 621, east on Good Intent Road, north on NJ 41, and back to eastbound CR 706.

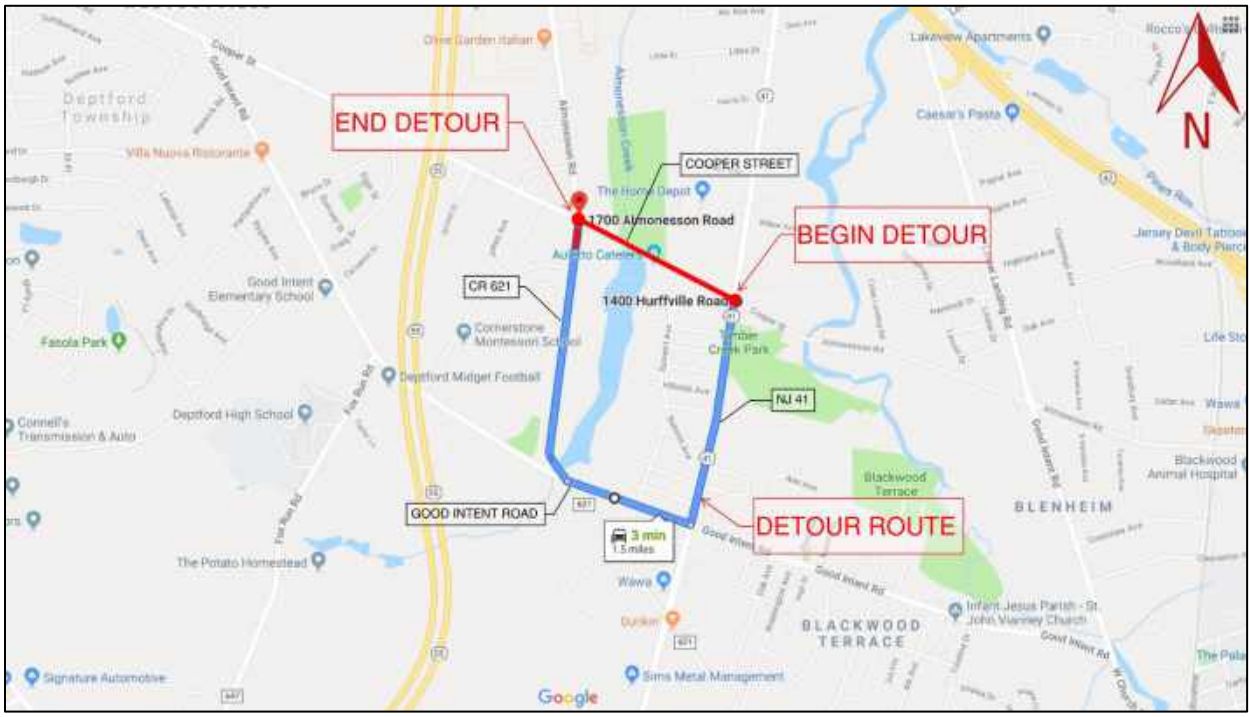


Figure 2. Westbound traffic is detoured south on Route 41, west on Good Intent Road, north on CR 621, and returned westbound on CR 706. This alternative offers the shortest detour route but utilizes residential streets and, therefore, is not the preferred Alternative.

3.3. ALTERNATIVE 2

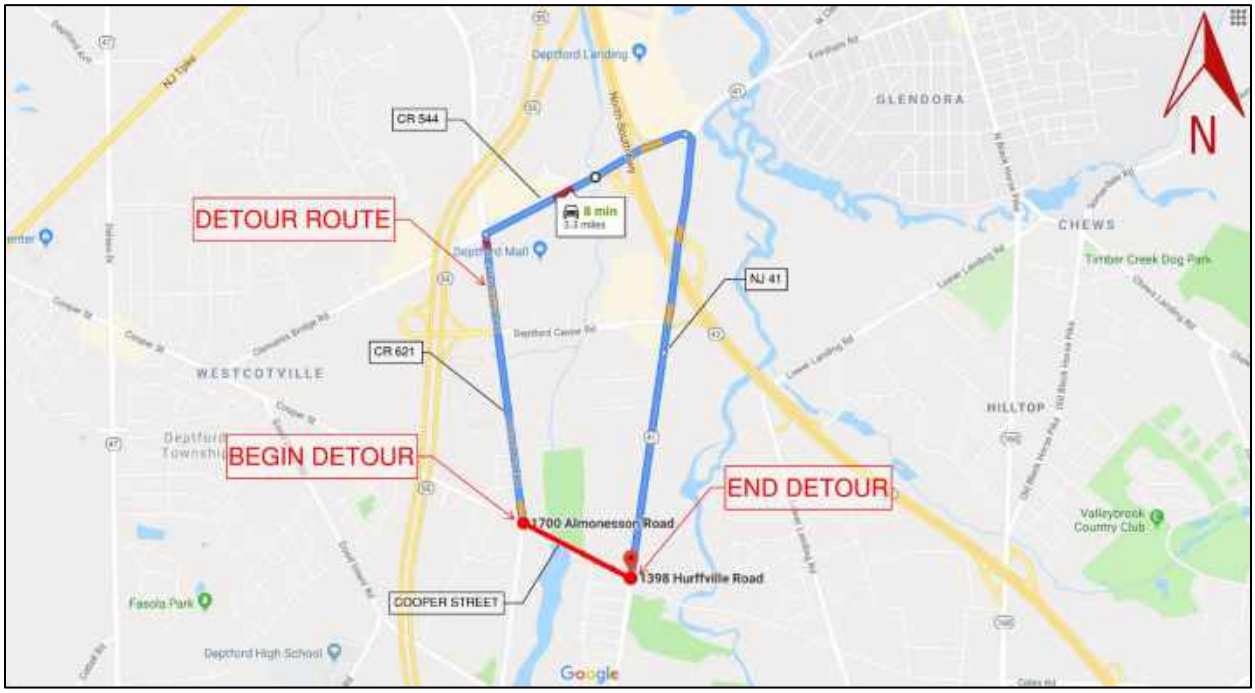


Figure 3. Alternative 2 detours traffic approximately 3.3 miles, redirecting eastbound traffic north on CR 621, east on CR 544 (Clements Bridge Road), south on NJ 41 (Hurffville Road), and back to eastbound CR 706.

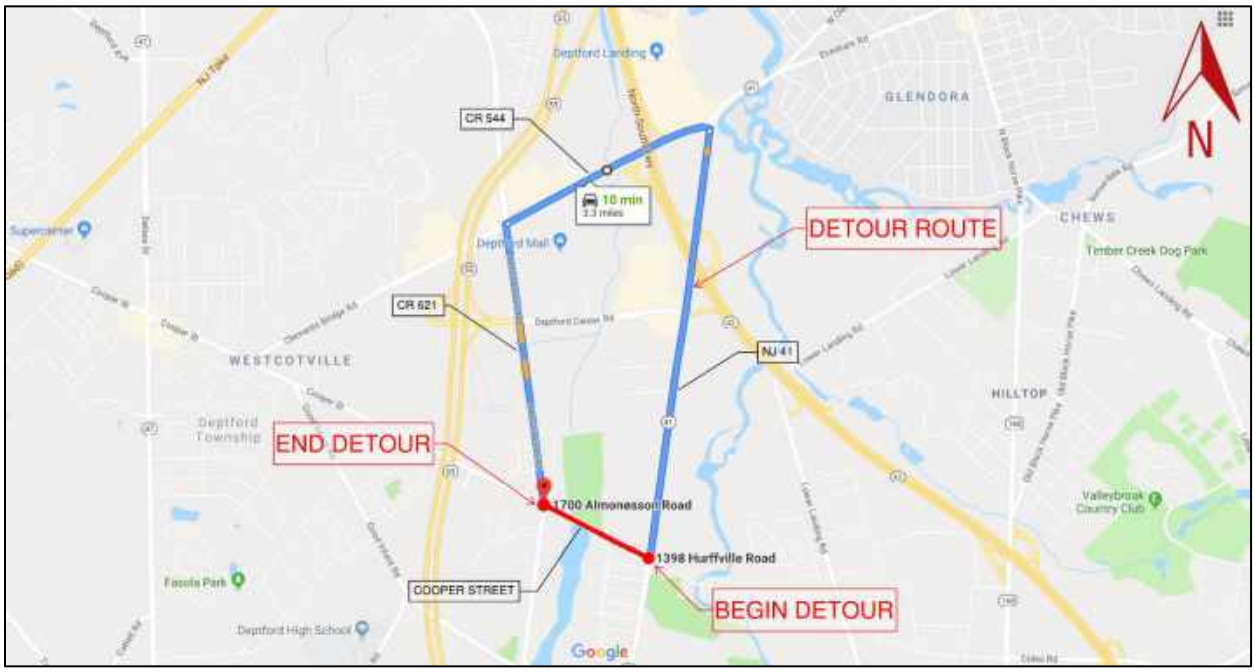


Figure 4. Westbound traffic is detoured north on Route 41, west on CR 544, south on CR 621, and returned to westbound CR 706. While this alternative offers the longest detour route, it utilizes only County and State roads, which are more capable of handling the anticipated traffic type and increased volume. Therefore, this detour route is the preferred Alternative.

3.4. ALTERNATIVE 3

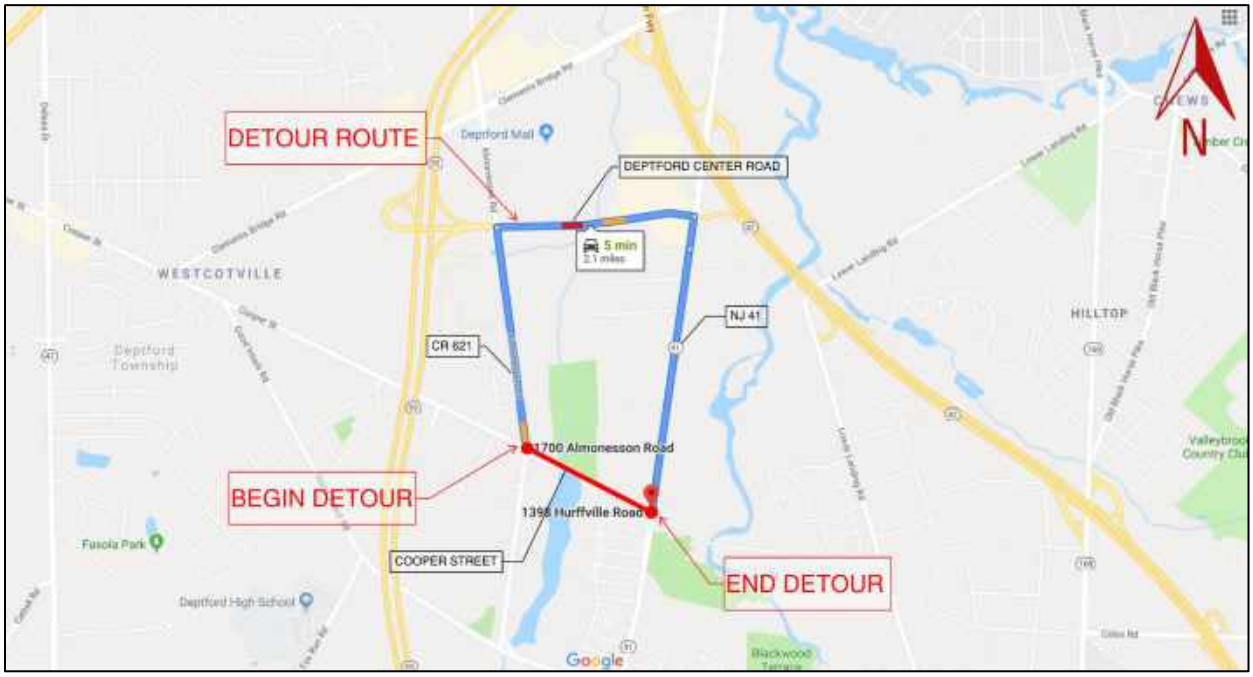


Figure 5. Alternative 3 detours traffic approximately 2.1 miles, redirecting eastbound traffic north on CR 621, east on Deptford Center Road, south on NJ 41 (Hurffville Road), and back to eastbound CR 706.

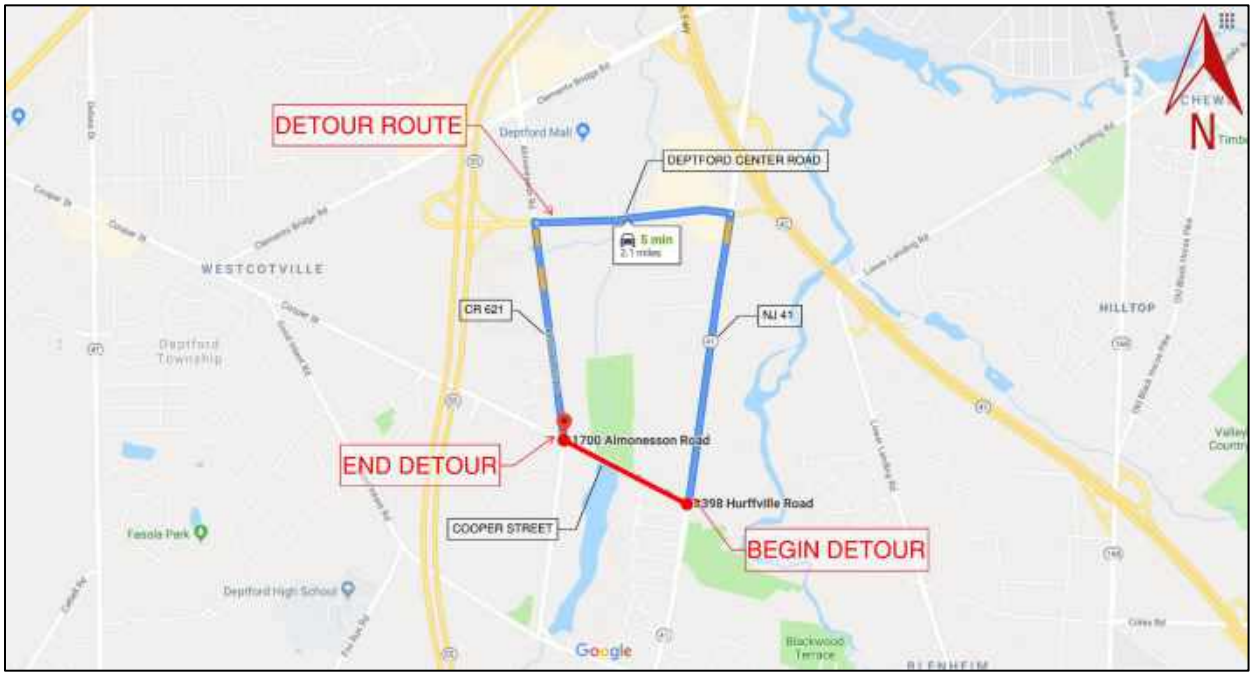


Figure 6. Westbound traffic is detoured north on Route 41, west on Deptford Center Road, south on CR 621, and then returned to westbound CR 706. This alternative offers the second shortest detour route but utilizes local streets and, therefore, is not the preferred Alternative.

4. CRASH ANALYSIS

A total of 57 crashes were reported between 2014 and 2018 along CR 706 (Cooper Street) between CR 621 (Almonesson Road) and NJ 41 (Hurffville Road), according to records from the Deptford Township Police Department (DTPD). The DTPD crash reports include crash types and mile post (MP) locations for the five most recent available years and are summarized in Appendix C.

The crashes are grouped by location along CR 706:

- Just west of CR 621 (<MP 0.99)
- At CR 621 (MP 0.99)
- Between CR 621 and Project Limits (MP 0.99 to MP 1.05)
- Project Limits (MP 1.05 to MP 1.18)
- Between Project Limits and NJ 41 (1.18 to MP 1.40)
- At NJ 41 (MP 1.40)
- Just east of NJ 41 (>MP 1.40)

Only 5 crashes were reported within the project limits between 2014 and 2018, according to DTPD records. The types of crashes were Rear-End (2), Angle (1), Head-on (1) and Fixed Object (1).

The majority of crashes occurred between the eastern end of the project limits and just east of NJ 41. A total of 32 crashes were reported in this region from MP 1.18 to just east of MP 1.40. Types of crashes reported included Rear-End (16), Angle (5), Sideswipe (5), Unknown/Hit & Run (3), Fixed Object (2), and Pedestrian (1). The Pedestrian crash took place at the intersection with NJ 41 and was the only such type reported by DTPD.

Another 20 crashes took place between the western side of project limits and just west of CR 621. The types of crashes reported in this region from MP 1.40 to just west of MP 0.99 included Rear-End (12), Angle (5), Fixed Object (2), and Head-on (1). Overall, the most common type of crash reported was Rear-End, which occurred 30 times between 2014 and 2018.

The most common location or segment of roadway where crashes occurred was east of NJ 41, with 13 reported crashes. Tied with the second most at 10 crashes each was between MP 0.99 to MP 1.05, located just west of project limits, and the intersection with NJ 41 east of the project location.

When compared to NJ data, crash incidents inside project limits (MP 1.05 to 1.40) are below the state average. The crash rate for this segment is 1.91 crashes per million vehicle miles (MVM), which is 66% the state average of 2.89 crashes per MVM. Increasing the limits of the crash analysis to include the all crash reports provided by DTPD, the crash rate increases to 7.08 crashes per MVM, or approximately 245% of the state average. However, this extended boundary is outside of the project limits and should not factor into this analysis.

5. FUTURE ROADWAY CONDITIONS

The Existing Conditions Traffic Report prepared for this project evaluates the existing year 2019 peak hour traffic volumes to determine the existing level of service as a first step in identifying existing deficiencies that should be addressed by a proposed improvement plan. However, traffic volumes tend to increase with time and, therefore, the proposed improvement plan must also consider increased in traffic growth.

The future traffic analysis will focus on a 30-year buildout or future Year 2049. Future traffic volume projections were developed based on regional growth (trips passing through the study area). FPA is not aware of any new planned developments in or near the project study area that could potentially affect future traffic volumes. Therefore, no local growth factor was applied to the Future Traffic Volume projections.

5.1. TRAFFIC VOLUME FORECASTS

Traffic volume forecasts were developed based on US Census data and a review of various Deptford Township, Gloucester County, and DVRPC documents. The following sources were included in the information review:

- US Census "QuickFacts" Data for Gloucester County and Deptford Township
- New Jersey State Data Center (NJSDC) Population Forecast Charts
- 2011 DVRPC Gloucester County Transportation Need Study
- 2015 DVRPC Gloucester County Community Vision
- 2017 Deptford Township Adopted Master Plan

A summary of the estimated population growth according to the data collected from the above sources can be found in Table 1.

Table 1 Population growth data sources

Demographic Information Source	Deptford Township Annual Growth	Gloucester County Annual Growth
US Census Data, 2010-2018	N/A	0.14%
NJSDC Population Forecasts, 2010-2034	N/A	0.32%
2011 DVRPC Gloucester County Transportation Need Study, 2005-2035	0.63%	1.16%
2015 DVRPC Gloucester County Community Vision, 2010-2040	N/A	1.25%
2017 Deptford Township Adopted Master Plan, 2010-2040	0.60%	1.02%

U.S. Census data indicates a 0.14% annual population growth rate in Gloucester County from 2010 to 2018. The NJSDC Population Forecast Projections, which primarily utilize Census data trends, predict Gloucester County to experience a 0.32% annual population growth rate between 2010 and 2034. Projections from Gloucester County (2011 and 2015) and Deptford Township (2017), which consider more local factors on top of previous growth, expect Gloucester County's population to grow at rate greater than 1% annually over the next two decades.

The 2011 DVRPC Transportation Needs Study and 2017 Deptford Township Master Plan forecast population growth inside Deptford Township limits. Both the County and the Township expect Deptford Township experience a 0.6% annual population growth rate through 2035 and 2040, respectively. Census data is not available to determine Deptford Township's recent population trends.

In light of the historical data and projections from the local authorities, a 0.81% annual growth rate was assumed and applied to the existing Peak Hour Traffic Volumes of Cooper Street (CR 706), Deptford Center Road, Clements Bridge Road (CR 544), and Hurffville Road (SR 41) to determine the Future Year 2049 Peak Hour volumes. Deptford Township and Gloucester County officials did not indicate any new planned developments in or near the project study area that could potentially affect future traffic volumes. Therefore, no local growth factor was applied to the Future Traffic Volume projections. A summary of the Traffic Volume Adjustment Calculations can be seen in Appendix D.

5.2. FUTURE TRAFFIC CONDITIONS WITH IMPROVEMENTS

The proposed typical section on CR 706 is assumed to include two 11-foot wide lanes and increase the shoulder width from 3-4 feet to 5-foot shoulders. New concrete curb will be installed with a three-foot buffer and a five-foot concrete sidewalk on both the eastbound and westbound sides, as shown in Figure 7. The bridge roadway width will be increased from a substandard width of 30 feet to a compliant width of 32 feet.

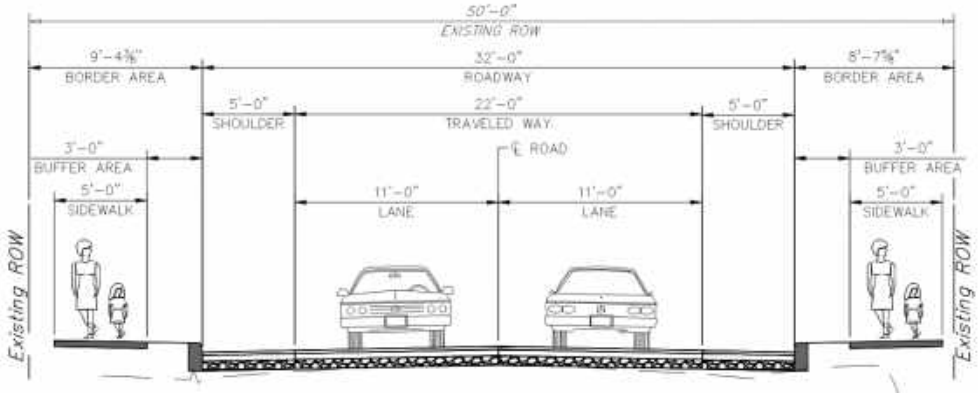


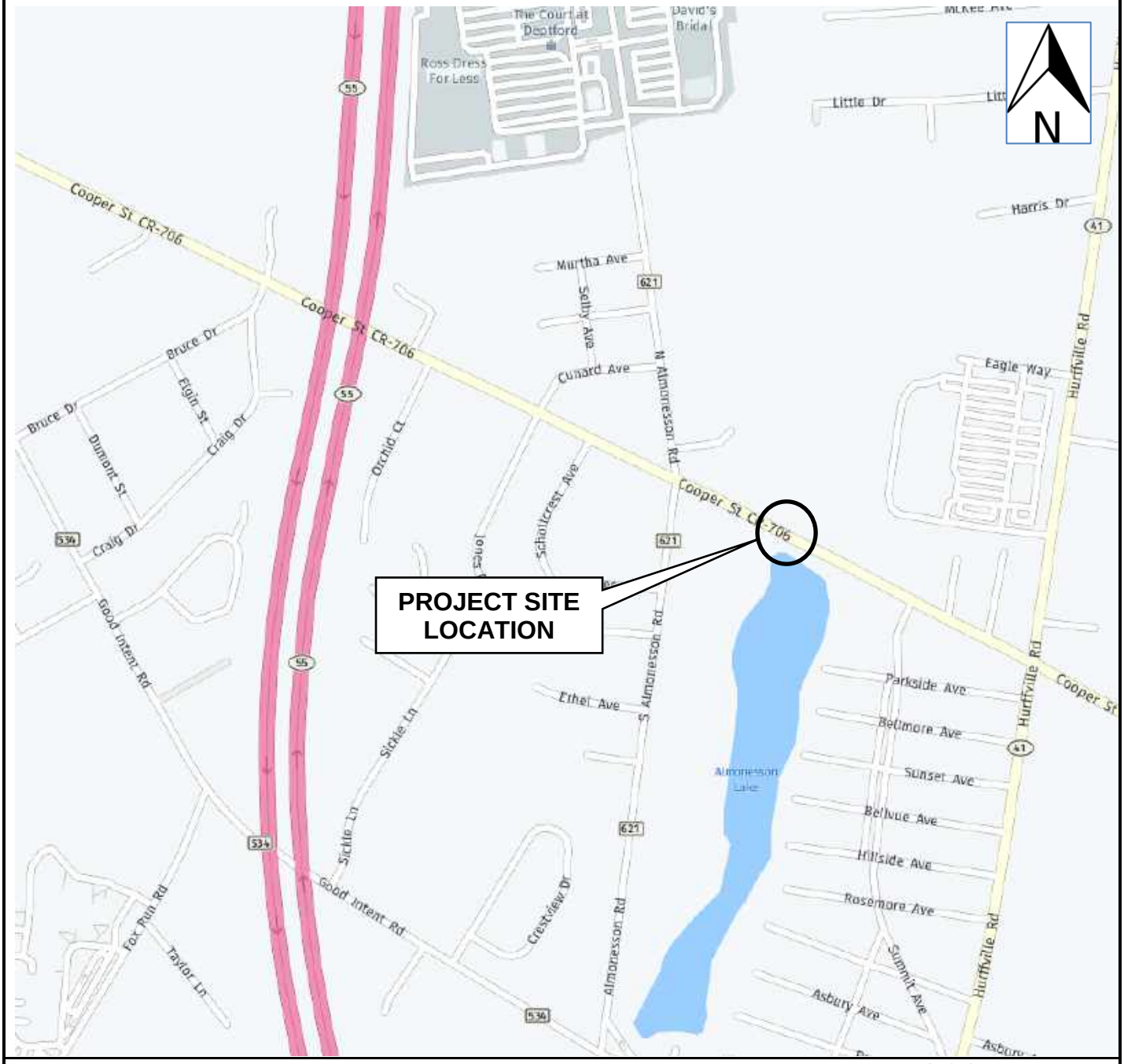
Figure 7 CR 706 Proposed Typical Section

A future level of service analysis was performed utilizing the Highway Capacity Manual 6th Edition (2016) and the resulting eastbound and westbound level of service is "E". The level of service calculation can be seen in Appendix B. We anticipate that the improved pedestrian conditions, such as provisions to continue the sidewalk along the north and south sides of CR 706, will increase pedestrian traffic. Better accommodation of bicycle travel is also assumed under the proposed conditions.

5.3. CONCLUSION

Considering that the proposed improvements do not dramatically modify the existing roadway, improved performance and increased capacity is not achievable with this project. The proposed improvements will match the existing geometry of the CR 706 corridor, which includes two 11-foot lanes with accompanying 5-foot shoulders. Increasing the LOS to an acceptable level would require multiple lanes in each direction. This project is limited to the immediate area of Bridge 3-K-3 and a widening of this short stretch of roadway would not be sensible.

Appendix A. Project Location Map

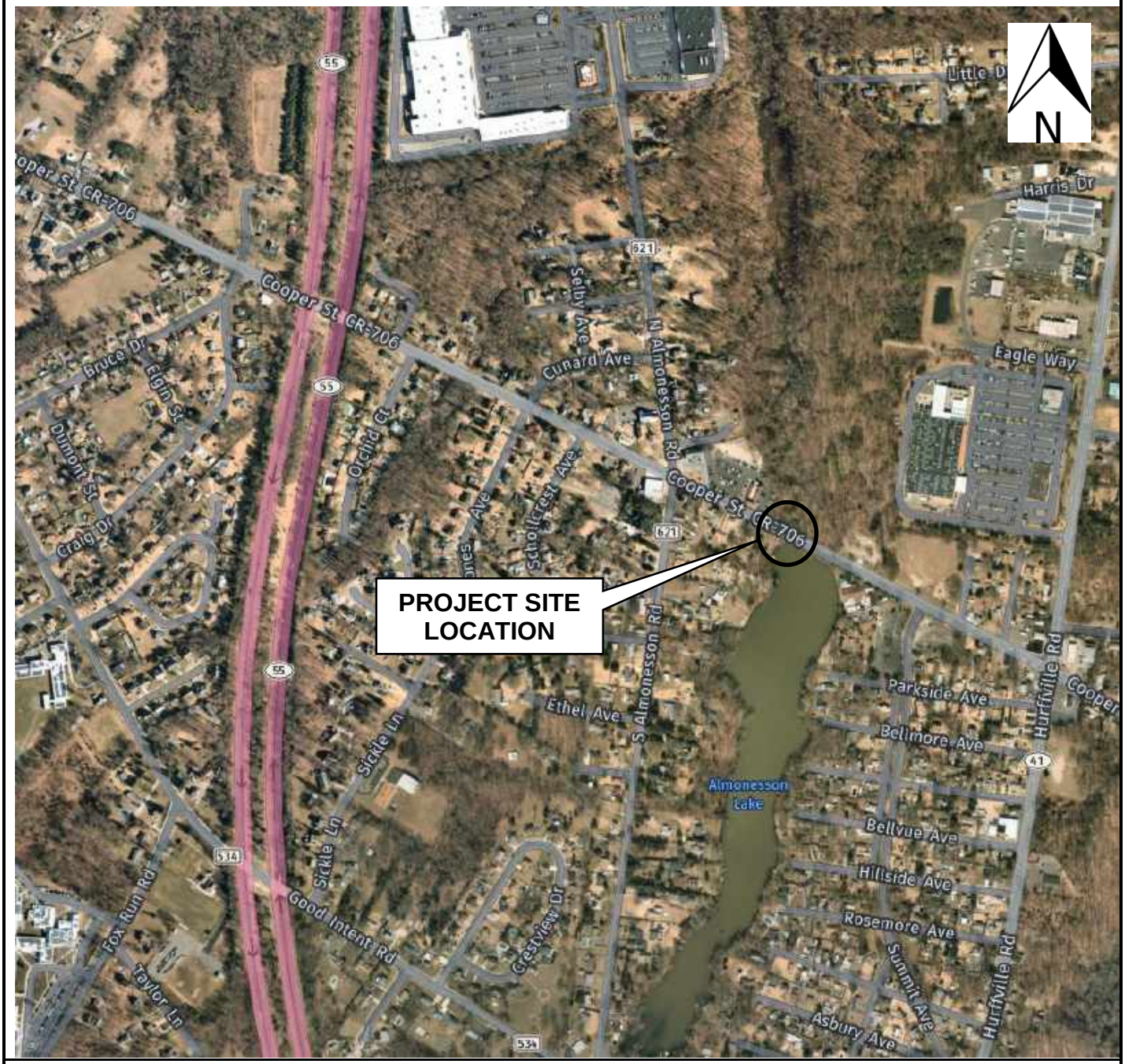


Imagery ©2019 Nearmap, HERE

PROJECT LOCATION PLAN

FY 2018 GLOUCESTER COUNTY LCD STUDY
COOPER STREET (COUNTY ROUTE 706) BRIDGE
OVER ALMONESSON CREEK / AT ALMONESSON LAKE
TOWNSHIP OF DEPTFORD, GLOUCESTER COUNTY, NEW JERSEY

SCALE:	DATE:	JOB NO.:	FIGURE NO.:
NTS	AUGUST 2019	13633.001	1



Imagery ©2019 Nearmap, HERE

PROJECT LOCATION PLAN

FY 2018 GLOUCESTER COUNTY LCD STUDY
COOPER STREET (COUNTY ROUTE 706) BRIDGE
OVER ALMONESSON CREEK / AT ALMONESSON LAKE
TOWNSHIP OF DEPTFORD, GLOUCESTER COUNTY, NEW JERSEY

SCALE:	DATE:	JOB NO.:	FIGURE NO.:
NTS	AUGUST 2019	13633.001	1

Appendix B. Level of Service

Project: Concept Development Study of Cooper Street (CR 706) Bridge over Almonesson Creek at Almonesson Lake (Bridge 3-K-3)

Date: 7/12/2019
Project No. 13633.001
Designed: ERH

LOS Analysis for Cooper Street (CR 706) - Year 2019

Highway Class (I, II, III)	III
Lane Width (ft.)	11
Shoulder Width (ft.)	3
Access Point Density (points/mi.)	48
No Passing Zone (%)	100
Passing Lane Length (mi.)	0
Heavy Vehicle Percentage (%)	2
Posted Speed Limit (mph)	35
BFFS (mph)	45
f_{LS}	3
f_A	10
Free-Flow Speed (mph)	35

Eastbound		Westbound	
V_{EB}	634	V_{WB}	521
15 min. Peak	166	15 min. Peak	145
PHF	0.955	PHF	0.898
$f_{g,ATS}$	1	$f_{g,ATS}$	1
$f_{HV,ATS}$	0.998	$f_{HV,ATS}$	0.996
$V_{EB,ATS}$	665.3	$V_{WB,ATS}$	582.1
P_T	0.02	P_T	0.02
P_R	0.0025	P_R	0.0025
E_T	1.1	E_T	1.18
E_R	1	E_R	1
$f_{np,EB,ATS}$	2.3	$f_{np,WB,ATS}$	1.7
ATS_{EB}	23.0	ATS_{WB}	23.6
$PFFS_{EB}$	65.8%	$PFFS_{WB}$	67.5%
LOS_{EB}	E	LOS_{WB}	D

Peak hour volume data used from ATR data gathered by TechniQuest beginning April 30, 2019.

Reference: *Highway Capacity Manual 6th Edition (2016), Vol. 2 Uninterrupted Flow, Chapter 15, Section 3 - Core Motorized Vehicle Methodology*

Project: Concept Development Study of Cooper Street (CR 706) Bridge over Almonesson Creek at Almonesson Lake (Bridge 3-K-3)

Date: 8/7/719
Project No. 13633.001
Designed: IAM

LOS Analysis for Cooper Street (CR 706) Year 2049

Highway Class (I, II, III)	III	
Lane Width (ft.)	11	
Shoulder Width (ft.)	5	
Access Point Density (points/mi.)	48	
No Passing Zone (%)	100	
Passing Lane Length (mi.)	0	
Heavy Vehicle Percentage (%)	2	
Posted Speed Limit (mph)	35	
BFFS (mph)	45	
f_{LS}	1.7	*Ex. 15-7*
f_A	10	*Ex. 15-8*
Free-Flow Speed (mph)	35	*eq. 15-2*

Eastbound		Westbound		
V_{EB}	812	V_{WB}	667	
15 min. Peak	213	15 min. Peak	186	
PHF	0.953	PHF	0.897	
$f_{g,ATS}$	1	$f_{g,ATS}$	1	*Ex. 15-9*
$f_{HV,ATS}$	0.998	$f_{HV,ATS}$	0.998	*eq. 15-4*
$V_{EB,ATS}$	853.7	$V_{WB,ATS}$	745.5	*eq. 15-3*
P_T	0.02	P_T	0.02	
P_R	0.0025	P_R	0.0025	
E_T	1.1	E_T	1.1	*Ex. 15-11*
E_R	1	E_R	1	*Ex. 15-11*
$f_{np,EB,ATS}$	1.2	$f_{np,WB,ATS}$	1.6	*Ex. 15-15*
ATS_{EB}	21.4	ATS_{WB}	21.0	*eq. 15-6*
$PFFS_{EB}$	61%	$PFFS_{WB}$	60%	*eq. 15-11*
LOS_{EB}	E	LOS_{WB}	E	*Ex. 15-3*

Peak hour volume data used from ATR data gathered by TechniQuest beginning April 30, 2019.

Reference: *Highway Capacity Manual 6th Edition (2016), Vol. 2 Uninterrupted Flow, Chapter 15, Section 3 - Core Motorized Vehicle Methodology*

Appendix C. Crash Analysis Table

Crash Table

Cooper Street Bridge / Dam
FPA Job No. 13633.001

Location along Cooper Street (CR 706)	Reports Crashes During 2018									Reports Crashes During 2017									Reports Crashes During 2016								
	Crash Types									Crash Types									Crash Types								
	Angle	Rear-End	Parked Car	Unknown/ Hit & Run	Sideswipe	Head-on	Pedestrian	Fixed Object	Total	Angle	Rear-End	Parked Car	Unknown/ Hit & Run	Sideswipe	Head-on	Pedestrian	Fixed Object	Total	Angle	Rear-End	Parked Car	Unknown/ Hit & Run	Sideswipe	Head-on	Pedestrian	Fixed Object	Total
< MP 0.99	-	1	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
MP 0.99 - Almonesson Road (CR 621)	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
MP 0.99 to MP 1.05	-	1	-	-	-	-	-	-	1	2	1	-	-	-	-	-	1	4	-	2	-	-	1	-	-	1	4
PROJECT LIMITS MP 1.05 to MP 1.18	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1	2
MP 1.18 to MP 1.40	1	2	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
MP 1.40 - Hurfville Road (SR 41)	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
> MP 1.40	-	-	-	-	1	-	-	-	1	-	3	-	-	-	-	-	-	3	2	-	-	-	2	-	-	-	4
Total	1	4	-	-	1	-	-	-	6	4	7	-	-	-	-	-	1	12	3	3	-	-	3	-	-	2	11

Location along Cooper Street (CR 706)	Reports Crashes During 2015									Reports Crashes During 2014									Reports Crashes During 2018 - 2014								
	Crash Types									Crash Types									Crash Types								
	Angle	Rear-End	Parked Car	Unknown/ Hit & Run	Sideswipe	Head-on	Pedestrian	Fixed Object	Total	Angle	Rear-End	Parked Car	Unknown/ Hit & Run	Sideswipe	Head-on	Pedestrian	Fixed Object	Total	Angle	Rear-End	Parked Car	Unknown/ Hit & Run	Sideswipe	Head-on	Pedestrian	Fixed Object	Total
< MP 0.99	-	1	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	1	-	4	-	-	-	-	-	-	4
MP 0.99 - Almonesson Road (CR 621)	1	1	-	-	-	-	-	-	2	1	2	-	-	-	-	-	-	3	3	3	-	-	-	-	-	-	6
MP 0.99 to MP 1.05	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	2	5	-	-	1	-	-	2	10
PROJECT LIMITS MP 1.05 to MP 1.18	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	2	1	2	-	-	-	1	-	1	5
MP 1.18 to MP 1.40	-	-	-	-	-	-	-	-	-	-	1	-	2	1	-	-	1	5	1	4	-	2	1	-	-	1	9
MP 1.40 - Hurfville Road (SR 41)	-	2	-	-	1	-	1	-	4	-	3	-	-	-	-	-	1	4	1	6	-	-	1	-	1	1	10
> MP 1.40	-	2	-	1	-	-	-	-	3	1	1	-	-	-	-	-	-	2	3	6	-	1	3	-	-	-	13
Total	1	6	-	1	1	-	1	-	10	2	10	-	2	1	1	-	2	18	11	30	-	3	6	1	1	5	57

LEGEND:
FATAL

Annual Average Daily Traffic (2019)	AADT =	11028	
Segment Length (MP 1.05 to 1.18)	L =	0.13	miles
Number of years	n =	5	years
Million Vehicle Miles = [AADT] x [L] x 365 x [n] / 1,000,000 =	MVM =	2.62	
Segment Crash Rate (MP 1.05 to 1.18) =		**1.91**	

Appendix D. Traffic Volume Adjustment Calculations

Project Number 13633.001
Concept Development Study for Cooper Street (CR 706) Bridge over Almonesson Creek at Almonesson Lake (Bridge 3-K-3)
Township of Deptford, Gloucester County, New Jersey
7/11/2019

French & Parrello, Associates
1800 Route 34, Suite 101
Wall, NJ 07719

FULL BUILD OUT

Traffic Volume Adjustment Calculations
For Projection of Traffic to Build-Out Year
Assignment of Site Traffic and Build Conditions Calculations

Date of Count Data	4/30/2019	
Projected Build-Out	4/30/2049	
Annual Growth Rate (2019 - 2022)	Varies	Estimated Growth Rate for Urban Minor Arterial N.J.D.O.T. Data for Gloucester County - Pub. April 2017
Annual Growth Rate (2022 - 2049)	0.81%	Derived from Gloucester County Growth Forecasts - DVRPC Analytical Data Report, Page 6

Description		% Growth (2019 - 2022)	% Growth (2022 - 2049)	No. of Years	No. of Years	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
						2019 Volume	2029 Volume	2039 Volume	2049 Volume	2019 Volume	2029 Volume	2039 Volume	2049 Volume	2019 Volume	2029 Volume	2039 Volume	2049 Volume
Cooper Street																	
Eastbound	Thru	1.00%	0.81%	3	7 - 27	311	339	367	398	634	691	749	812	498	543	588	638
Westbound	Thru	1.00%	0.81%	3	7 - 27	482	525	569	617	521	568	615	667	464	506	548	594
Roadway Total		-	-	-	-	793	864	936	1015	1155	1259	1364	1479	962	1049	1136	1232
Deptford Center Road																	
Eastbound	Thru	1.00%	0.81%	3	7 - 27	681	742	804	872	938	1022	1108	1201	1110	1210	1311	1421
Westbound	Thru	1.00%	0.81%	3	7 - 27	677	738	800	867	872	950	1030	1116	1010	1101	1193	1293
Roadway Total		-	-	-	-	1358	1480	1604	1739	1810	1972	2138	2317	2120	2311	2504	2714
Clements Bridge Road																	
Eastbound	Thru	1.50%	0.81%	3	7 - 27	986	1091	1182	1281	1119	1238	1342	1454	1125	1245	1349	1462
Westbound	Thru	1.50%	0.81%	3	7 - 27	1014	1122	1216	1317	1114	1232	1336	1447	1107	1225	1327	1438
Roadway Total		-	-	-	-	2000	2213	2398	2598	2233	2470	2678	2901	2232	2470	2676	2900
Hurffville Road																	
Southbound	Thru	1.00%	0.81%	3	7 - 27	784	855	926	1004	1197	1305	1414	1532	1198	1306	1415	1534
Northbound	Thru	1.00%	0.81%	3	7 - 27	1172	1277	1384	1500	1133	1235	1338	1450	1202	1310	1420	1539
Roadway Total		-	-	-	-	1956	2132	2310	2504	2330	2540	2752	2982	2400	2616	2835	3073

New Jersey Department of Transportation

Daily Volume from 04/11/2017 through 04/13/2017

Site Names: 7-5-267, , RT 544 Clements Bridge Road-.07, 00000544__, Deptford T
County: GLOUCESTER
Funct. Urban Principal Arterial - Other
Location: Bet CO 534 Cooper Street and Lewis Avenue

Seasonal Factor Group: RG3_FC14
Daily Factor Group: RG3_FC14
Axle Factor Group: RG3_FC14
Growth Factor Group: RG3_FC14

	Sun 04/09/2017			Mon 04/10/2017			Tue 04/11/2017			Wed 04/12/2017			Thu 04/13/2017			Fri 04/14/2017			Sat 04/15/2017		
	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E
00:00										72	46	26	75	44	31						
01:00										44	27	17	54	32	22						
02:00										32	11	21	43	23	20						
03:00										37	20	17	39	21	18						
04:00										55	25	30	66	33	33						
05:00										149	60	89	165	66	99						
06:00										392	175	217	403	172	231						
07:00										726	333	393	694	305	389						
08:00										847	441	406	796	407	389						
09:00										964	452	512	911	398	513						
10:00										997	443	554	1,053	473	580						
11:00							1,164	575	589	1,129	549	580									
12:00							1,347	689	658	1,266	631	635									
13:00							1,313	754	559	1,305	714	591									
14:00							1,237	685	552	1,253	719	534									
15:00							1,318	722	596	1,313	703	610									
16:00							1,414	814	600	1,321	747	574									
17:00							1,396	740	656	1,506	833	673									
18:00							1,256	710	546	1,359	802	557									
19:00							1,076	606	470	1,131	662	469									
20:00							847	516	331	945	577	368									
21:00							563	391	172	599	409	190									
22:00							278	176	102	315	202	113									
23:00							162	89	73	158	90	68									
Volume							13,371	7,467	5,904	17,915	9,671	8,244	4,299	1,974	2,325						
AM Peak Vol										1,129	549	601									
AM Peak Fct										0.95	0.95	0.91									
AM Peak Hr										11:00	11:00	10:45									
PM Peak Vol							1,424	814	658	1,508	833	700									
PM Peak Fct							0.97	0.96	0.90	0.92	0.98	0.90									
PM Peak Hr							16:15	16:00	12:00	16:45	17:00	16:45									
Seasonal Fct							0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981						
Daily Fct							0.975	0.975	0.975	0.955	0.955	0.955	0.946	0.946	0.946						
Axle Fct							0.485	0.485	0.485	0.485	0.485	0.485	0.485	0.485	0.485						
Pulse Fct							2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000						

Collected NJDOT
Created 09/07/2017 3:00:14PM

ROAD AADT 16,278 **W AADT 8,747** **E AADT 7,531**

New Jersey Department of Transportation

Daily Volume from 03/31/2010 through 04/02/2010

Site Names: 090810, , Clements Bridge Rd-1.76, 00000544__, Deptford Twp
County: GLOUCESTER
Funct. Class: Urban Principal Arterial - Other
Location: Bet NJ 42 and NJ 41

Seasonal Factor Type: 2 Urban Other Roadways
Daily Factor Type: 2 Urban Other Roadways
Axle Factor Type: 14
Growth Factor Type: 2 Urban Other Roadways

	03/28/2010			03/29/2010			03/30/2010			03/31/2010			04/01/2010			04/02/2010			04/03/2010		
	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E
00:00													264	132	132	384	170	214			
01:00													189	66	123	237	99	138			
02:00													107	46	61	149	72	77			
03:00													97	49	48	130	72	58			
04:00													116	66	50	118	68	50			
05:00													295	175	120	240	168	72			
06:00													669	387	282	592	350	242			
07:00													1,427	779	648	984	504	480			
08:00													1,390	841	549	1,059	641	418			
09:00													1,369	823	546	1,420	815	605			
10:00													1,653	923	730	1,906	1,053	853			
11:00													1,932	1,050	882	2,279	1,262	1,017			
12:00										2,137	1,110	1,027	2,149	1,119	1,030						
13:00										2,236	1,149	1,087	2,117	1,145	972						
14:00										2,170	1,081	1,089	2,272	1,168	1,104						
15:00										2,205	1,065	1,140	2,303	1,142	1,161						
16:00										2,343	1,196	1,147	2,338	1,198	1,140						
17:00										2,319	1,191	1,128	2,408	1,293	1,115						
18:00										2,217	1,182	1,035	2,250	1,185	1,065						
19:00										2,044	1,042	1,002	2,009	1,060	949						
20:00										1,710	732	978	1,769	832	937						
21:00										1,212	498	714	1,406	617	789						
22:00										778	371	407	937	419	518						
23:00										437	191	246	537	218	319						
Volume										21,808	10,808	11,000	32,003	16,733	15,270	9,498	5,274	4,224			
AM Peak Vol													1,932	1,050	882	2,279	1,262	1,017			
AM Peak Fct													0.94	0.90	0.89	0.97	0.94	0.95			
AM Peak Hr													11.00	11.00	11.00	11.00	11.00	11.00			
PM Peak Vol										2,393	1,225	1,168	2,457	1,297	1,204						
PM Peak Fct										0.98	0.96	0.97	0.93	0.92	0.94						
PM Peak Hr										16.30	16.30	16.30	16.45	16.45	15.15						
Seasonal Fct										1.021	1.021	1.021	0.993	0.993	0.993	0.993	0.993	0.993			
Daily Fct										0.939	0.939	0.939	0.914	0.914	0.914	0.910	0.910	0.910			
Axle Fct										0.486	0.486	0.486	0.485	0.485	0.485	0.485	0.485	0.485			
Pulse Fct										2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000			

Created 05/12/2010 3:07:01 PM

ROAD AADT **28,411** **W AADT** **14,713** **E AADT** **13,698**

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 06/26/2017 to 06/29/2017

Site names:	110822,Almonesson Road-2.7,08000621__	Seasonal Factor Grp:	rg3_4U
County:	GLOUCESTER	Daily Factor Grp:	rg3_4U
Funct Class:	Urban Minor Arterial	Axle Factor Grp:	rg3_4U
Location:	Bet Cunard Avenue and Kindle Avenue	Growth Factor Grp:	rg3_4U

	Sun, Jun 25, 2017			Mon, Jun 26, 2017			Tue, Jun 27, 2017			Wed, Jun 28, 2017			Thu, Jun 29, 2017			Fri, Jun 30, 2017			Sat, Jul 1, 2017		
	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S
00:00							45	15	30	33	7	26	34	6	28						
01:00							21	7	14	14	6	8	20	5	15						
02:00							22	9	13	21	11	10									
03:00							27	16	11	21	14	7									
04:00							22	11	11	32	21	11									
05:00							62	44	18	72	47	25									
06:00							157	124	33	184	145	39									
07:00							389	310	79	367	282	85									
08:00							343	243	100	342	226	116									
09:00							290	182	108	343	228	115									
10:00							426	256	170	463	282	181									
11:00							535	296	239	531	284	247									
12:00				601	313	288	635	353	282	609	338	271									
13:00				658	330	328	619	321	298	626	307	319									
14:00				670	305	365	708	328	380	688	313	375									
15:00				682	279	403	733	298	435	721	294	427									
16:00				795	319	476	842	361	481	829	341	488									
17:00				826	350	476	866	372	494	884	369	515									
18:00				718	310	408	776	337	439	827	358	469									
19:00				600	253	347	611	273	338	607	254	353									
20:00				478	158	320	514	178	336	562	198	364									
21:00				331	95	236	331	100	231	352	108	244									
22:00				154	41	113	167	40	127	195	47	148									
23:00				71	16	55	73	16	57	83	24	59									
Total				6,584	2,769	3,815	9,214	4,490	4,724	9,406	4,504	4,902	54	11	43						
AM Peak Vol							535	321	239	531	302	247									
AM Peak Fct							.869	.854	.83	.868	.848	.858									
AM Peak Hr				:	:	:	11: 00	7: 15	11: 00	11: 00	10: 15	11: 00									
PM Peak Vol				826	350	487	888	404	497	908	385	523									
PM Peak Fct				.956	.893	.902	.914	.878	.881	.966	.908	.947									
PM Peak Hr				17: 00	17: 00	16: 30	16: 45	16: 45	16: 15	16: 45	16: 45	16: 45									
Seasonal Fct				.941	.941	.941	.941	.941	.941	.941	.941	.941	.941	.941	.941						
Daily Fct				1.004	1.004	1.004	.981	.981	.981	.945	.945	.945	.928	.928	.928						
Axle Fct				.486	.486	.486	.486	.486	.486	.486	.486	.486	.486	.486	.486						
Pulse Fct				2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000						

Created 06/25/2018 3:01 PM

ROAD AADT 8,188 NDIR AADT 4,248 PDIR AADT 3,941

New Jersey Department of Transportation

Daily Volume from 05/22/2012 through 05/24/2012

Site Names: 120802, , CO 706 Cooper Street-.22, 08000706__, Deptford Twp
County: GLOUCESTER
Funct. Class: Urban Minor Arterial
Location: Bet Allison Court and Burlington Avenue

Seasonal Factor Group: 2 Urban Other Roadways
Daily Factor Group: 2 Urban Other Roadways
Axle Factor Group:
Growth Factor Group:

	Sun 05/20/2012			Mon 05/21/2012			Tue 05/22/2012			Wed 05/23/2012			Thu 05/24/2012			Fri 05/25/2012			Sat 05/26/2012		
	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E
00:00										52	24	28	57	26	31						
01:00										34	15	19	23	9	14						
02:00										25	16	9	24	14	10						
03:00										17	10	7	20	13	7						
04:00										36	26	10	42	26	16						
05:00										101	56	45	111	69	42						
06:00										280	194	86	319	197	122						
07:00										592	391	201	591	369	222						
08:00										595	398	197	571	380	191						
09:00										466	243	223	439	219	220						
10:00							478	212	266	508	266	242									
11:00							557	264	293	508	267	241									
12:00							543	257	286	534	248	286									
13:00							567	283	284	567	299	268									
14:00							589	309	280	578	312	266									
15:00							677	336	341	713	358	355									
16:00							741	345	396	752	357	395									
17:00							745	364	381	760	369	391									
18:00							577	286	291	607	303	304									
19:00							481	235	246	495	253	242									
20:00							399	211	188	406	211	195									
21:00							276	146	130	310	168	142									
22:00							183	104	79	204	122	82									
23:00							97	48	49	119	49	70									
Volume							6,910	3,400	3,510	9,259	4,955	4,304	1,758	1,103	655						
AM Peak Vol										632	438	255									
AM Peak Fct										0.89	0.87	0.95									
AM Peak Hr										7:30	7:30	10:15									
PM Peak Vol							777	364	430	793	387	407									
PM Peak Fct							0.94	0.91	0.91	0.99	0.89	0.90									
PM Peak Hr							16:15	15:30	16:15	16:45	16:30	16:45									
Seasonal Fct							0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969						
Daily Fct							0.956	0.956	0.956	0.934	0.934	0.934	0.920	0.920	0.920						
Axle Fct							0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500						
Pulse Fct							2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000						

Collected by: NJDOT
Created 07/13/2012 12:11:44PM

ROAD AADT 8,370 **W AADT 4,406** **E AADT 3,963**

New Jersey Department of Transportation

Daily Volume from 10/27/2015 through 10/29/2015

Site Names: 120802, , Cooper Street-.22, 08000706__, Deptford Twp
County: GLOUCESTER
Funct. Urban Minor Arterial
Location: Bet Allison Court and Burlington Avenue

Seasonal Factor Group: RG3_FC16
Daily Factor Group: RG3_FC16
Axle Factor Group: RG3_FC16
Growth Factor Group: RG3_FC16

	Sun 10/25/2015			Mon 10/26/2015			Tue 10/27/2015			Wed 10/28/2015			Thu 10/29/2015			Fri 10/30/2015			Sat 10/31/2015		
	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E
00:00										55	22	33	42	26	16						
01:00										20	8	12	29	19	10						
02:00										23	17	6	14	7	7						
03:00										19	11	8	10	4	6						
04:00										54	38	16	37	21	16						
05:00										140	81	59	169	104	65						
06:00										339	250	89	386	275	111						
07:00										622	243	379	664	257	407						
08:00										604	446	158	657	473	184						
09:00										451	237	214	439	239	200						
10:00										479	216	263	432	235	197						
11:00										523	333	190	484	238	246						
12:00							513	255	258	529	256	273									
13:00							547	283	264	590	304	286									
14:00							620	317	303	672	337	335									
15:00							738	329	409	776	349	427									
16:00							760	355	405	804	377	427									
17:00							753	364	389	798	377	421									
18:00							609	288	321	642	303	339									
19:00							420	226	194	458	242	216									
20:00							289	159	130	347	189	158									
21:00							235	131	104	279	149	130									
22:00							152	75	77	181	90	91									
23:00							79	43	36	107	69	38									
Volume							5,715	2,825	2,890	9,512	4,944	4,568	3,363	1,898	1,465						
AM Peak Vol										666	446	379	718	473	407						
AM Peak Fct										0.95	0.86	0.83	0.95	0.86	0.83						
AM Peak Hr										7:30	8:00	7:00	7:30	8:00	7:00						
PM Peak Vol							778	366	428	822	389	454									
PM Peak Fct							0.92	0.94	0.91	0.92	0.94	0.92									
PM Peak Hr							15:45	15:45	16:15	16:15	15:45	16:15									
Seasonal Fct							0.947	0.947	0.947	0.947	0.947	0.947	0.947	0.947	0.947						
Daily Fct							0.931	0.931	0.931	0.929	0.929	0.929	0.916	0.916	0.916						
Axle Fct							0.491	0.491	0.491	0.491	0.491	0.491	0.491	0.491	0.491						
Pulse Fct							2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000						

Collected NJDOT
Created 02/01/2016 1:47:57PM

ROAD AADT 8,015 **W AADT 4,167** **E AADT 3,848**

New Jersey Department of Transportation

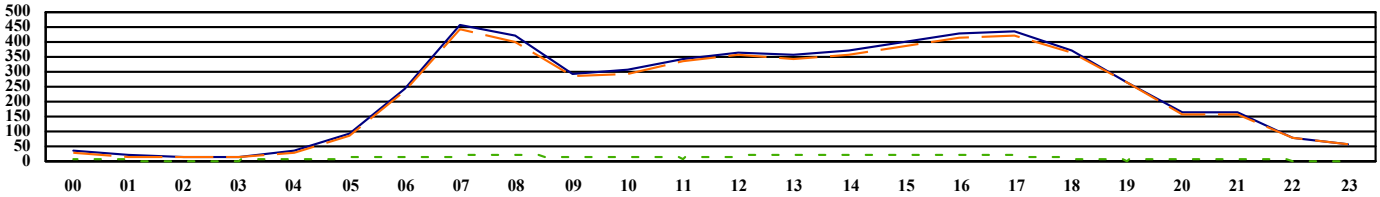
24 Hour Directional Summary, East Bound for Mar 15, 2016

120803, , Almonesson Road-11.344, 04000706__, Gloucester Twp
FC16 CAMDEN County

Bet NJ 41 Hurffville Road and Coles Landing Road

	Total	Total	Peak	Peak
Private:	5,483.5	97.2	442.0	97.3
Single:	149.8	2.7	11.3	2.5
Combo:	8.0	0.1	1.0	0.2
Trucks:	157.8	2.8	12.3	2.7
Total:	5,643.3		454.3	

Peak Hour: 7
Axle Factor: 1.00



	VOL	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+
0	31.0	0	25.0	4.3	0	1.3	0	0	0.3	0	0	0	0	0
1	15.7	0	12.7	2.0	0.3	0	0	0	0.7	0	0	0	0	0
2	10.0	0	8.7	1.3	0	0	0	0	0	0	0	0	0	0
3	9.7	0	8.0	1.0	0	0.3	0	0	0	0.3	0	0	0	0
4	30.7	0	24.7	4.7	0	1.3	0	0	0	0	0	0	0	0
5	89.0	0	71.3	13.3	0	3.7	0.7	0	0	0	0	0	0	0
6	239.7	0	179.7	51.7	0	6.0	2.0	0	0.3	0	0	0	0	0
7	454.3	0	362.7	79.3	0	10.7	0.7	0	0	1.0	0	0	0	0
8	418.0	0	324.0	76.0	0.3	15.7	1.3	0	0.7	0	0	0	0	0
9	293.3	0.3	230.7	54.3	0	6.3	1.0	0	0.3	0.3	0	0	0	0
10	302.3	0	240.0	51.3	0	10.3	0.7	0	0	0	0	0	0	0
11	338.5	0	280.5	50.0	0	7.0	1.0	0	0	0	0	0	0	0
12	361.5	0.5	293.5	59.0	0	7.0	1.5	0	0	0	0	0	0	0
13	354.3	0.3	280.7	59.7	0.3	11.3	1.7	0	0	0.3	0	0	0	0
14	367.3	0.3	289.3	64.3	0.7	11.3	0.7	0	0.3	0.3	0	0	0	0
15	397.0	0	311.0	70.0	0	15.3	0.3	0	0.3	0	0	0	0	0
16	426.3	0.3	346.0	67.7	0	9.0	1.7	0	0	1.7	0	0	0	0
17	431.3	0.3	363.7	57.7	0	8.7	0.3	0	0.7	0	0	0	0	0
18	365.3	0	312.0	47.7	0	5.3	0	0	0	0.3	0	0	0	0
19	260.3	0.3	228.7	30.3	0	1.0	0	0	0	0	0	0	0	0
20	159.3	0	134.7	23.0	0	1.7	0	0	0	0	0	0	0	0
21	158.7	0.3	133.7	22.0	0.3	2.3	0	0	0	0	0	0	0	0
22	77.0	0.3	70.0	6.3	0	0.3	0	0	0	0	0	0	0	0
23	52.7	0	48.0	4.3	0	0.3	0	0	0	0	0	0	0	0
Total	**5,643.3**	**3.2**	**4,579.0**	**901.3**	**2.0**	**136.3**	**13.5**	**0**	**3.7**	**4.3**	**0**	**0**	**0**	**0**
%	**100.0**	**0.1**	**81.1**	**16.0**	**0**	**2.4**	**0.2**	**0**	**0.1**	**0.1**	**0**	**0**	**0**	**0**

New Jersey Department of Transportation

Daily Volume from 03/15/2016 through 03/18/2016

Site Names: 120803, , Almonesson Road-11.344, 04000706__, Gloucester Twp
County: CAMDEN
Funct. Urban Minor Arterial
Location: Bet NJ 41 Hurffville Road and Coles Landing Road

Seasonal Factor Group: RG3_FC16
Daily Factor Group: RG3_FC16
Axle Factor Group: RG3_FC16
Growth Factor Group: RG3_FC16

	Sun 03/13/2016			Mon 03/14/2016			Tue 03/15/2016			Wed 03/16/2016			Thu 03/17/2016			Fri 03/18/2016			Sat 03/19/2016		
	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E
00:00										57	29	28	60	30	30	77	42	35			
01:00										30	16	14	32	16	16	42	25	17			
02:00										15	7	8	19	7	12	21	11	10			
03:00										16	5	11	19	9	10	20	12	8			
04:00										46	19	27	49	15	34	45	14	31			
05:00										147	53	94	146	56	90	133	50	83			
06:00										359	112	247	343	103	240	329	97	232			
07:00										691	219	472	708	211	497	608	214	394			
08:00										640	205	435	624	201	423	616	220	396			
09:00										469	198	271	460	162	298	493	182	311			
10:00										504	224	280	518	205	313	527	213	314			
11:00										575	225	350	571	244	327						
12:00										627	261	366	615	258	357						
13:00							590	250	340	666	308	358	640	275	365						
14:00							617	304	313	746	363	383	739	333	406						
15:00							787	388	399	835	408	427	749	384	365						
16:00							792	396	396	975	496	479	816	412	404						
17:00							850	409	441	1,176	722	454	819	420	399						
18:00							676	355	321	839	421	418	648	291	357						
19:00							531	281	250	638	355	283	497	249	248						
20:00							362	204	158	375	239	136	419	235	184						
21:00							279	176	103	389	190	199	351	177	174						
22:00							181	116	65	189	103	86	192	112	80						
23:00							148	82	66	108	58	50	104	62	42						
Volume							5,813	2,961	2,852	11,112	5,236	5,876	10,138	4,467	5,671	2,911	1,080	1,831			
AM Peak Vol										691	225	472	708	244	497						
AM Peak Fct										1.00	1.00	1.00	1.00	1.00	1.00						
AM Peak Hr										7:00	11:00	7:00	7:00	11:00	7:00						
PM Peak Vol										1,176	722	479	819	420	406						
PM Peak Fct										1.00	1.00	1.00	1.00	1.00	1.00						
PM Peak Hr										17:00	17:00	16:00	17:00	17:00	14:00						
Seasonal Fct							1.048	1.048	1.048	1.048	1.048	1.048	1.048	1.048	1.048	1.048	1.048	1.048			
Daily Fct							0.913	0.913	0.913	0.907	0.907	0.907	0.988	0.988	0.988	0.904	0.904	0.904			
Axle Fct							0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500			
Pulse Fct							2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000			

Collected NJDOT
Created 09/15/2016 8:47:09AM

ROAD AADT 10,188 **W AADT 4,650** **E AADT 5,538**

New Jersey Department of Transportation

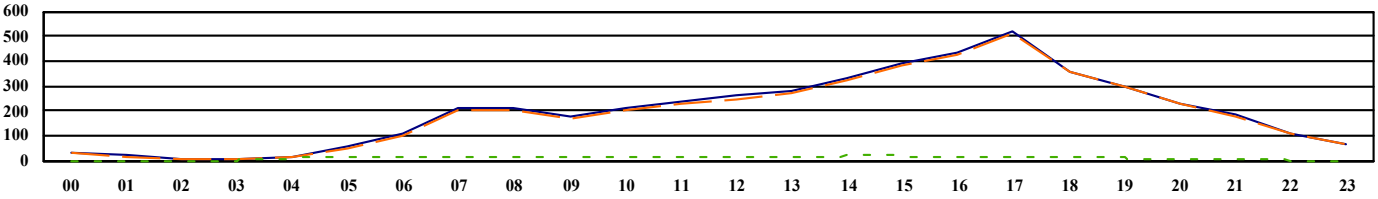
24 Hour Directional Summary, West Bound for Mar 15, 2016

120803, , Almonesson Road-11.344, 04000706__, Gloucester Twp
FC16 CAMDEN County

Bet NJ 41 Hurffville Road and Coles Landing Road

	Total	Total	Peak	Peak
Private:	4,618.3	97.3	510.0	98.6
Single:	119.7	2.5	6.3	1.2
Combo:	5.0	0.1	0.3	0.1
Trucks:	124.7	2.6	6.7	1.3
Total:	4,745.5		517.0	

Peak Hour: 17
Axle Factor: 1.00



	VOL	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+
0	33.7	0	30.7	3.0	0	0	0	0	0	0	0	0	0	0
1	19.0	0	15.3	3.0	0	0.3	0.3	0	0	0	0	0	0	0
2	8.3	0	7.3	1.0	0	0	0	0	0	0	0	0	0	0
3	8.7	0	7.0	0.7	0	0.7	0	0	0	0.3	0	0	0	0
4	16.0	0	11.7	2.7	0	1.3	0.3	0	0	0	0	0	0	0
5	53.0	0	38.0	9.7	0	5.3	0	0	0	0	0	0	0	0
6	104.0	0	75.3	22.3	0	5.7	0.7	0	0	0	0	0	0	0
7	214.7	0	164.3	40.0	0	9.3	0.3	0	0.3	0.3	0	0	0	0
8	208.7	0	158.0	41.0	0	8.7	0.3	0	0	0.7	0	0	0	0
9	180.7	0	132.0	37.0	1.0	9.0	1.3	0	0	0.3	0	0	0	0
10	214.0	0	169.3	34.7	0.7	8.0	0.7	0.3	0.3	0	0	0	0	0
11	234.5	0	186.0	40.0	0	6.0	1.5	0	0	1.0	0	0	0	0
12	259.0	1.0	206.5	41.5	0.5	9.5	0	0	0	0	0	0	0	0
13	277.7	0	224.3	46.3	0	6.7	0.3	0	0	0	0	0	0	0
14	333.3	0.3	268.7	54.3	0	9.0	0.7	0	0	0.3	0	0	0	0
15	393.3	0	313.3	70.0	0	9.3	0	0	0.3	0.3	0	0	0	0
16	434.7	0.7	360.0	65.3	0	7.7	0.7	0	0.3	0	0	0	0	0
17	517.0	1.3	446.7	62.0	0.3	6.0	0.3	0	0	0.3	0	0	0	0
18	355.7	0.3	302.3	50.0	0	2.7	0.3	0	0	0	0	0	0	0
19	295.0	0	260.0	33.3	0	1.7	0	0	0	0	0	0	0	0
20	226.0	0.3	200.3	24.7	0	0.7	0	0	0	0	0	0	0	0
21	181.0	0.7	160.0	17.7	0	2.3	0.3	0	0	0	0	0	0	0
22	110.3	0	102.0	7.3	0	0.7	0.3	0	0	0	0	0	0	0
23	67.3	0	58.7	8.3	0	0.3	0	0	0	0	0	0	0	0
Total	**4,745.5**	**4.7**	**3,897.8**	**715.8**	**2.5**	**110.8**	**8.5**	**0.3**	**1.3**	**3.7**	**0**	**0**	**0**	**0**
%	**100.0**	**0.1**	**82.1**	**15.1**	**0.1**	**2.3**	**0.2**	**0**	**0**	**0.1**	**0**	**0**	**0**	**0**

New Jersey Department of Transportation

Daily Volume from 08/14/2012 through 08/16/2012

Site Names: 120803, , CO 706 Cooper Street-1.54, 08000706__, Deptford Twp
County: GLOUCESTER
Funct. Class: Urban Minor Arterial
Location: Bet NJ 41 Hurffville Road and Coles Landing Road

Seasonal Factor Group: REGION 11
Daily Factor Group: REGION 11
Axle Factor Group: REGION 11
Growth Factor Group:

	Sun 08/12/2012			Mon 08/13/2012			Tue 08/14/2012			Wed 08/15/2012			Thu 08/16/2012			Fri 08/17/2012			Sat 08/18/2012		
	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E
00:00										52	34	18	60	36	24						
01:00										31	24	7	29	19	10						
02:00										23	18	5	31	25	6						
03:00										13	8	5	22	17	5						
04:00										47	38	9	53	45	8						
05:00										96	72	24	107	87	20						
06:00										309	233	76	290	260	30						
07:00										519	384	135	583	391	192						
08:00										490	395	95	490	327	163						
09:00							434	233	201	439	377	62	463	351	112						
10:00							481	268	213	490	428	62	500	341	159						
11:00							477	364	113	540	430	110	518	426	92						
12:00							504	428	76	548	369	179	634	501	133						
13:00							584	463	121	578	404	174	617	479	138						
14:00							590	476	114	616	466	150	613	438	175						
15:00							737	580	157	721	506	215	710	651	59						
16:00							822	667	155	798	576	222	771	733	38						
17:00							814	662	152	828	606	222	811	769	42						
18:00							596	518	78	678	529	149	641	602	39						
19:00							473	384	89	563	445	118	534	495	39						
20:00							463	373	90	454	360	94	424	382	42						
21:00							293	191	102	346	234	112	333	297	36						
22:00							180	134	46	193	143	50	259	238	21						
23:00							107	74	33	121	89	32	107	95	12						
Volume							7,555	5,815	1,740	9,493	7,168	2,325	9,493	7,910	1,583						
AM Peak Vol										541	461	166	606	426	249						
AM Peak Fct										0.95	0.88	0.48	0.91	0.85	0.65						
AM Peak Hr										10:45	10:45	7:15	7:15	11:00	7:45						
PM Peak Vol							850	735	170	829	637	261	843	803	184						
PM Peak Fct							0.95	0.90	0.58	0.95	0.87	0.79	0.97	0.97	0.79						
PM Peak Hr							16:30	16:30	14:45	16:45	16:15	17:15	16:45	16:45	13:45						
Seasonal Fct							0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974						
Daily Fct							0.957	0.957	0.957	0.940	0.940	0.940	0.920	0.920	0.920						
Axle Fct							0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478						
Pulse Fct							2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000						

Collected by: NJDOT
Created 10/09/2012 10:38:01AM

ROAD AADT 8,223 **W AADT 6,453** **E AADT 1,771**

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 07/18/2017 to 07/21/2017

Site names:	7-5-309,Hurffville Road-2.725,00000041__	Seasonal Factor Grp:	rg3_4U
County:	GLOUCESTER	Daily Factor Grp:	rg3_4U
Funct Class:	Urban Minor Arterial	Axle Factor Grp:	rg3_4U
Location:	Bet Eagle Way and Harris Drive	Growth Factor Grp:	rg3_4U

	Sun, Jul 16, 2017			Mon, Jul 17, 2017			Tue, Jul 18, 2017			Wed, Jul 19, 2017			Thu, Jul 20, 2017			Fri, Jul 21, 2017			Sat, Jul 22, 2017		
	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S
00:00										103	49	54	105	45	60	87	35	52			
01:00										56	24	32	61	26	35	57	21	36			
02:00										45	29	16	44	26	18	41	21	20			
03:00										63	35	28	48	35	13	59	38	21			
04:00										107	75	32	119	86	33	89	68	21			
05:00										354	290	64	353	283	70	319	258	61			
06:00										852	745	107	849	729	120	704	587	117			
07:00										1,105	866	239	1,093	838	255	978	752	226			
08:00										1,036	739	297	1,088	747	341	929	668	261			
09:00										965	613	352	917	613	304	904	562	342			
10:00										963	558	405	935	549	386	1,019	622	397			
11:00										1,003	579	424	1,030	609	421	1,262	629	633			
12:00										1,188	659	529	1,133	603	530						
13:00							1,120	580	540	1,166	647	519	1,114	586	528						
14:00							1,172	608	564	1,192	620	572	1,124	521	603						
15:00							1,202	592	610	1,166	611	555	1,279	619	660						
16:00							1,338	613	725	1,310	610	700	1,405	664	741						
17:00							1,378	656	722	1,445	690	755	1,452	655	797						
18:00							1,128	508	620	1,160	523	637	1,286	583	703						
19:00							991	483	508	931	456	475	1,004	490	514						
20:00							753	366	387	739	351	388	768	373	395						
21:00							526	255	271	510	243	267	584	273	311						
22:00							288	142	146	280	133	147	318	159	159						
23:00							168	70	98	167	74	93	175	70	105						
Total							10,064	4,873	5,191	17,906	10,219	7,687	18,284	10,182	8,102	6,448	4,261	2,187			
AM Peak Vol										1,105	866	424	1,093	838	421	1,262	752	633			
AM Peak Fct										1	1	1	1	1	1	1	1	1			
AM Peak Hr										7: 00	7: 00	11: 00	7: 00	7: 00	11: 00	11: 00	7: 00	11: 00			
PM Peak Vol										1,445	690	755	1,452	664	797						
PM Peak Fct										1	1	1	1	1	1						
PM Peak Hr										17: 00	17: 00	17: 00	17: 00	16: 00	17: 00	:	:	:			
Seasonal Fct							.972	.972	.972	.972	.972	.972	.972	.972	.972	.972	.972	.972			
Daily Fct							.970	.970	.970	.912	.912	.912	.924	.924	.924	.934	.934	.934			
Axle Fct							.486	.486	.486	.486	.486	.486	.486	.486	.486	.486	.486	.486			
Pulse Fct							2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000			

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 07/18/2017 to 07/21/2017

Site names:	7-5-309,Hurffville Road-2.725,00000041__	Seasonal Factor Grp:	rg3_4U
County:	GLOUCESTER	Daily Factor Grp:	rg3_4U
Funct Class:	Urban Minor Arterial	Axle Factor Grp:	rg3_4U
Location:	Bet Eagle Way and Harris Drive	Growth Factor Grp:	rg3_4U

	Sun, Jul 16, 2017			Mon, Jul 17, 2017			Tue, Jul 18, 2017			Wed, Jul 19, 2017			Thu, Jul 20, 2017			Fri, Jul 21, 2017			Sat, Jul 22, 2017		
	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S
00:00										103	49	54	105	45	60	87	35	52			
01:00										56	24	32	61	26	35	57	21	36			
02:00										45	29	16	44	26	18	41	21	20			
03:00										63	35	28	48	35	13	59	38	21			
04:00										107	75	32	119	86	33	89	68	21			
05:00										354	290	64	353	283	70	319	258	61			
06:00										852	745	107	849	729	120	704	587	117			
07:00										1,105	866	239	1,093	838	255	978	752	226			
08:00										1,036	739	297	1,088	747	341	929	668	261			
09:00										965	613	352	917	613	304	904	562	342			
10:00										963	558	405	935	549	386	1,019	622	397			
11:00										1,003	579	424	1,030	609	421	1,262	629	633			
12:00										1,188	659	529	1,133	603	530						
13:00							1,120	580	540	1,166	647	519	1,114	586	528						
14:00							1,172	608	564	1,192	620	572	1,124	521	603						
15:00							1,202	592	610	1,166	611	555	1,279	619	660						
16:00							1,338	613	725	1,310	610	700	1,405	664	741						
17:00							1,378	656	722	1,445	690	755	1,452	655	797						
18:00							1,128	508	620	1,160	523	637	1,286	583	703						
19:00							991	483	508	931	456	475	1,004	490	514						
20:00							753	366	387	739	351	388	768	373	395						
21:00							526	255	271	510	243	267	584	273	311						
22:00							288	142	146	280	133	147	318	159	159						
23:00							168	70	98	167	74	93	175	70	105						
Total							10,064	4,873	5,191	17,906	10,219	7,687	18,284	10,182	8,102	6,448	4,261	2,187			
AM Peak Vol										1,105	866	424	1,093	838	421	1,262	752	633			
AM Peak Fct										1	1	1	1	1	1	1	1	1			
AM Peak Hr										7: 00	7: 00	11: 00	7: 00	7: 00	11: 00	11: 00	7: 00	11: 00			
PM Peak Vol										1,445	690	755	1,452	664	797						
PM Peak Fct										1	1	1	1	1	1						
PM Peak Hr										17: 00	17: 00	17: 00	17: 00	16: 00	17: 00	:	:	:			
Seasonal Fct							.972	.972	.972	.972	.972	.972	.972	.972	.972	.972	.972	.972			
Daily Fct							.970	.970	.970	.912	.912	.912	.924	.924	.924	.934	.934	.934			
Axle Fct							.486	.486	.486	.486	.486	.486	.486	.486	.486	.486	.486	.486			
Pulse Fct							2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000			

New Jersey Department of Transportation

Hourly Classification Count and Percent Distribution

July 18, 2017 Road

Site names:	7-5-309	Seasonal Factor Grp:	rg3_4U
County:	GLOUCESTER	Daily Factor Grp:	rg3_4U
Funct Class:	Urban Minor Arterial	Axle Factor Grp:	rg3_4U
Location:	Bet Eagle Way and Harris Drive	Growth Factor Grp:	rg3_4U

	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+	Total	Single	Comb	Trucks
13	3 0.27%	921 82.23%	167 14.91%	0 0.00%	11 0.98%	7 0.63%	1 0.09%	1 0.09%	7 0.63%	2 0.18%	0 0.00%	0 0.00%	0 0.00%	1,120 100.00	19 1.70%	10 0.89%	29 2.59%
14	5 0.43%	954 81.47%	165 14.09%	0 0.00%	27 2.31%	7 0.60%	0 0.00%	0 0.00%	12 1.02%	1 0.09%	0 0.00%	0 0.00%	0 0.00%	1,171 100.00	34 2.90%	13 1.11%	47 4.01%
15	6 0.50%	993 82.68%	177 14.74%	0 0.00%	19 1.58%	3 0.25%	0 0.00%	0 0.00%	3 0.25%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,201 100.00	22 1.83%	3 0.25%	25 2.08%
16	3 0.22%	1,123 83.99%	186 13.91%	1 0.07%	14 1.05%	2 0.15%	0 0.00%	3 0.22%	5 0.37%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,337 100.00	17 1.27%	8 0.60%	25 1.87%
17	1 0.07%	1,206 87.58%	151 10.97%	0 0.00%	10 0.73%	4 0.29%	0 0.00%	1 0.07%	4 0.29%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,377 100.00	14 1.02%	5 0.36%	19 1.38%
18	0 0.00%	984 87.31%	129 11.45%	0 0.00%	9 0.80%	2 0.18%	0 0.00%	2 0.18%	1 0.09%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,127 100.00	11 0.98%	3 0.27%	14 1.24%
19	4 0.40%	878 88.60%	100 10.09%	0 0.00%	7 0.71%	2 0.20%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	991 100.00	9 0.91%	0 0.00%	9 0.91%
20	3 0.40%	650 86.32%	89 11.82%	0 0.00%	9 1.20%	0 0.00%	1 0.13%	0 0.00%	1 0.13%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	753 100.00	10 1.33%	1 0.13%	11 1.46%
21	2 0.38%	473 89.92%	47 8.94%	0 0.00%	4 0.76%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	526 100.00	4 0.76%	0 0.00%	4 0.76%
22	2 0.69%	265 92.01%	21 7.29%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	288 100.00	0 0.00%	0 0.00%	0 0.00%
23	2 1.19%	150 89.29%	15 8.93%	0 0.00%	0 0.00%	1 0.60%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	168 100.00	1 0.60%	0 0.00%	1 0.60%
Total	31 0.31%	8,597 85.47%	1,247 12.40%	1 0.01%	110 1.09%	28 0.28%	2 0.02%	7 0.07%	33 0.33%	3 0.03%	0 0.00%	0 0.00%	0 0.00%	10,059 100.00	141 1.40%	43 0.43%	184 1.83%

New Jersey Department of Transportation

Hourly Classification Count and Percent Distribution

July 19, 2017 Road

Site names:	7-5-309	Seasonal Factor Grp:	rg3_4U
County:	GLOUCESTER	Daily Factor Grp:	rg3_4U
Funct Class:	Urban Minor Arterial	Axle Factor Grp:	rg3_4U
Location:	Bet Eagle Way and Harris Drive	Growth Factor Grp:	rg3_4U

	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+	Total	Single	Comb	Trucks
00	0 0.00%	95 92.23%	6 5.83%	0 0.00%	1 0.97%	0 0.00%	0 0.00%	0 0.00%	1 0.97%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	103 100.00	1 0.97%	1 0.97%	2 1.94%
01	1 1.79%	44 78.57%	7 12.50%	0 0.00%	3 5.36%	0 0.00%	0 0.00%	0 0.00%	1 1.79%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	56 100.00	3 5.36%	1 1.79%	4 7.14%
02	0 0.00%	32 71.11%	10 22.22%	0 0.00%	1 2.22%	2 4.44%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	45 100.00	3 6.67%	0 0.00%	3 6.67%
03	0 0.00%	51 80.95%	10 15.87%	0 0.00%	2 3.17%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	63 100.00	2 3.17%	0 0.00%	2 3.17%
04	0 0.00%	79 73.83%	22 20.56%	0 0.00%	1 0.93%	3 2.80%	0 0.00%	0 0.00%	2 1.87%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	107 100.00	4 3.74%	2 1.87%	6 5.61%
05	0 0.00%	243 68.64%	90 25.42%	0 0.00%	12 3.39%	4 1.13%	1 0.28%	0 0.00%	3 0.85%	1 0.28%	0 0.00%	0 0.00%	0 0.00%	354 100.00	17 4.80%	4 1.13%	21 5.93%
06	3 0.35%	652 76.71%	159 18.71%	0 0.00%	14 1.65%	16 1.88%	0 0.00%	0 0.00%	5 0.59%	1 0.12%	0 0.00%	0 0.00%	0 0.00%	850 100.00	30 3.53%	6 0.71%	36 4.24%
07	1 0.09%	894 80.90%	183 16.56%	0 0.00%	11 1.00%	9 0.81%	1 0.09%	1 0.09%	5 0.45%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,105 100.00	21 1.90%	6 0.54%	27 2.44%
08	0 0.00%	808 78.14%	189 18.28%	0 0.00%	16 1.55%	6 0.58%	3 0.29%	3 0.29%	9 0.87%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,034 100.00	25 2.42%	12 1.16%	37 3.58%
09	1 0.10%	734 76.14%	175 18.15%	1 0.10%	30 3.11%	12 1.24%	2 0.21%	3 0.31%	6 0.62%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	964 100.00	45 4.67%	9 0.93%	54 5.60%
10	0 0.00%	728 75.75%	193 20.08%	2 0.21%	20 2.08%	7 0.73%	0 0.00%	3 0.31%	8 0.83%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	961 100.00	29 3.02%	11 1.14%	40 4.16%
11	1 0.10%	764 76.17%	178 17.75%	0 0.00%	27 2.69%	18 1.79%	0 0.00%	6 0.60%	8 0.80%	1 0.10%	0 0.00%	0 0.00%	0 0.00%	1,003 100.00	45 4.49%	15 1.50%	60 5.98%
12	2 0.17%	978 82.39%	178 15.00%	0 0.00%	12 1.01%	6 0.51%	0 0.00%	2 0.17%	8 0.67%	1 0.08%	0 0.00%	0 0.00%	0 0.00%	1,187 100.00	18 1.52%	11 0.93%	29 2.44%
13	3 0.26%	953 81.80%	173 14.85%	0 0.00%	17 1.46%	5 0.43%	2 0.17%	1 0.09%	11 0.94%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,165 100.00	24 2.06%	12 1.03%	36 3.09%
14	2 0.17%	976 81.95%	184 15.45%	0 0.00%	16 1.34%	6 0.50%	0 0.00%	3 0.25%	4 0.34%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,191 100.00	22 1.85%	7 0.59%	29 2.43%
15	3 0.26%	949 81.39%	184 15.78%	0 0.00%	17 1.46%	2 0.17%	0 0.00%	4 0.34%	7 0.60%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,166 100.00	19 1.63%	11 0.94%	30 2.57%
16	5 0.38%	1,082 82.60%	198 15.11%	1 0.08%	13 0.99%	4 0.31%	0 0.00%	2 0.15%	4 0.31%	1 0.08%	0 0.00%	0 0.00%	0 0.00%	1,310 100.00	18 1.37%	7 0.53%	25 1.91%
17	2 0.14%	1,263 87.40%	162 11.21%	1 0.07%	9 0.62%	7 0.48%	0 0.00%	0 0.00%	1 0.07%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,445 100.00	17 1.18%	1 0.07%	18 1.25%
18	1 0.09%	1,018 87.76%	130 11.21%	0 0.00%	5 0.43%	2 0.17%	0 0.00%	3 0.26%	1 0.09%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,160 100.00	7 0.60%	4 0.34%	11 0.95%
19	3 0.32%	817 87.76%	105 11.28%	0 0.00%	6 0.64%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	931 100.00	6 0.64%	0 0.00%	6 0.64%
20	3 0.41%	656 88.77%	78 10.55%	0 0.00%	1 0.14%	0 0.00%	0 0.00%	0 0.00%	1 0.14%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	739 100.00	1 0.14%	1 0.14%	2 0.27%
21	2 0.39%	442 86.67%	63 12.35%	1 0.20%	1 0.20%	0 0.00%	0 0.00%	0 0.00%	1 0.20%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	510 100.00	2 0.39%	1 0.20%	3 0.59%
22	1 0.36%	251 89.64%	27 9.64%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1 0.36%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	280 100.00	0 0.00%	1 0.36%	1 0.36%
23	1 0.60%	146 87.43%	19 11.38%	0 0.00%	1 0.60%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	167 100.00	1 0.60%	0 0.00%	1 0.60%
Total	35 0.20%	14,655 81.89%	2,723 15.22%	6 0.03%	236 1.32%	109 0.61%	9 0.05%	32 0.18%	86 0.48%	5 0.03%	0 0.00%	0 0.00%	0 0.00%	17,896 100.00	360 2.01%	123 0.69%	483 2.70%

New Jersey Department of Transportation

Hourly Classification Count and Percent Distribution

July 20, 2017 Road

Site names:	7-5-309	Seasonal Factor Grp:	rg3_4U
County:	GLOUCESTER	Daily Factor Grp:	rg3_4U
Funct Class:	Urban Minor Arterial	Axle Factor Grp:	rg3_4U
Location:	Bet Eagle Way and Harris Drive	Growth Factor Grp:	rg3_4U

	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+	Total	Single	Comb	Trucks
00	0 0.00%	97 92.38%	7 6.67%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1 0.95%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	105 100.00	0 0.00%	1 0.95%	1 0.95%
01	2 3.28%	52 85.25%	5 8.20%	0 0.00%	2 3.28%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	61 100.00	2 3.28%	0 0.00%	2 3.28%
02	0 0.00%	38 86.36%	5 11.36%	0 0.00%	1 2.27%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	44 100.00	1 2.27%	0 0.00%	1 2.27%
03	0 0.00%	31 64.58%	11 22.92%	0 0.00%	4 8.33%	2 4.17%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	48 100.00	6 12.50%	0 0.00%	6 12.50%
04	0 0.00%	86 72.27%	21 17.65%	0 0.00%	6 5.04%	2 1.68%	0 0.00%	1 0.84%	3 2.52%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	119 100.00	8 6.72%	4 3.36%	12 10.08%
05	1 0.28%	230 65.53%	94 26.78%	0 0.00%	11 3.13%	10 2.85%	0 0.00%	0 0.00%	5 1.42%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	351 100.00	21 5.98%	5 1.42%	26 7.41%
06	2 0.24%	649 76.53%	158 18.63%	0 0.00%	10 1.18%	18 2.12%	2 0.24%	2 0.24%	6 0.71%	1 0.12%	0 0.00%	0 0.00%	0 0.00%	848 100.00	30 3.54%	9 1.06%	39 4.60%
07	1 0.09%	878 80.40%	169 15.48%	0 0.00%	19 1.74%	20 1.83%	1 0.09%	2 0.18%	2 0.18%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,092 100.00	40 3.66%	4 0.37%	44 4.03%
08	2 0.18%	835 76.82%	210 19.32%	1 0.09%	14 1.29%	14 1.29%	1 0.09%	3 0.28%	7 0.64%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,087 100.00	30 2.76%	10 0.92%	40 3.68%
09	1 0.11%	743 81.03%	132 14.39%	1 0.11%	22 2.40%	13 1.42%	2 0.22%	2 0.22%	1 0.11%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	917 100.00	38 4.14%	3 0.33%	41 4.47%
10	1 0.11%	751 80.49%	131 14.04%	0 0.00%	33 3.54%	11 1.18%	1 0.11%	1 0.11%	4 0.43%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	933 100.00	45 4.82%	5 0.54%	50 5.36%
11	0 0.00%	838 81.36%	156 15.15%	0 0.00%	15 1.46%	16 1.55%	0 0.00%	1 0.10%	4 0.39%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,030 100.00	31 3.01%	5 0.49%	36 3.50%
12	1 0.09%	916 80.85%	181 15.98%	0 0.00%	15 1.32%	12 1.06%	1 0.09%	4 0.35%	2 0.18%	1 0.09%	0 0.00%	0 0.00%	0 0.00%	1,133 100.00	28 2.47%	7 0.62%	35 3.09%
13	0 0.00%	908 81.51%	164 14.72%	0 0.00%	17 1.53%	13 1.17%	2 0.18%	3 0.27%	7 0.63%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,114 100.00	32 2.87%	10 0.90%	42 3.77%
14	1 0.09%	907 80.77%	182 16.21%	1 0.09%	16 1.42%	5 0.45%	1 0.09%	1 0.09%	9 0.80%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,123 100.00	23 2.05%	10 0.89%	33 2.94%
15	2 0.16%	1,051 82.17%	199 15.56%	0 0.00%	19 1.49%	4 0.31%	0 0.00%	0 0.00%	4 0.31%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,279 100.00	23 1.80%	4 0.31%	27 2.11%
16	0 0.00%	1,193 85.03%	189 13.47%	0 0.00%	14 1.00%	3 0.21%	0 0.00%	1 0.07%	3 0.21%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,403 100.00	17 1.21%	4 0.29%	21 1.50%
17	4 0.28%	1,277 87.95%	158 10.88%	1 0.07%	6 0.41%	5 0.34%	0 0.00%	0 0.00%	1 0.07%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,452 100.00	12 0.83%	1 0.07%	13 0.90%
18	2 0.16%	1,138 88.49%	135 10.50%	0 0.00%	8 0.62%	2 0.16%	0 0.00%	1 0.08%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,286 100.00	10 0.78%	1 0.08%	11 0.86%
19	2 0.20%	878 87.54%	108 10.77%	0 0.00%	12 1.20%	2 0.20%	0 0.00%	0 0.00%	1 0.10%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,003 100.00	14 1.40%	1 0.10%	15 1.50%
20	1 0.13%	681 88.79%	76 9.91%	1 0.13%	6 0.78%	0 0.00%	0 0.00%	0 0.00%	2 0.26%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	767 100.00	7 0.91%	2 0.26%	9 1.17%
21	2 0.34%	519 88.87%	58 9.93%	0 0.00%	4 0.68%	0 0.00%	0 0.00%	1 0.17%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	584 100.00	4 0.68%	1 0.17%	5 0.86%
22	1 0.31%	292 91.82%	22 6.92%	0 0.00%	1 0.31%	1 0.31%	0 0.00%	0 0.00%	1 0.31%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	318 100.00	2 0.63%	1 0.31%	3 0.94%
23	1 0.57%	150 85.71%	22 12.57%	1 0.57%	1 0.57%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	175 100.00	2 1.14%	0 0.00%	2 1.14%
Total	27 0.15%	15,138 82.85%	2,593 14.19%	6 0.03%	256 1.40%	153 0.84%	11 0.06%	23 0.13%	63 0.34%	2 0.01%	0 0.00%	0 0.00%	0 0.00%	18,272 100.00	426 2.33%	88 0.48%	514 2.81%

New Jersey Department of Transportation

Hourly Classification Count and Percent Distribution

July 21, 2017 Road

Site names:	7-5-309	Seasonal Factor Grp:	rg3_4U
County:	GLOUCESTER	Daily Factor Grp:	rg3_4U
Funct Class:	Urban Minor Arterial	Axle Factor Grp:	rg3_4U
Location:	Bet Eagle Way and Harris Drive	Growth Factor Grp:	rg3_4U

	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+	Total	Single	Comb	Trucks
00	0 0.00%	78 89.66%	8 9.20%	0 0.00%	1 1.15%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	87 100.00	1 1.15%	0 0.00%	1 1.15%
01	0 0.00%	45 78.95%	11 19.30%	0 0.00%	1 1.75%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	57 100.00	1 1.75%	0 0.00%	1 1.75%
02	0 0.00%	34 82.93%	5 12.20%	0 0.00%	1 2.44%	1 2.44%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	41 100.00	2 4.88%	0 0.00%	2 4.88%
03	0 0.00%	47 79.66%	9 15.25%	0 0.00%	2 3.39%	0 0.00%	0 0.00%	0 0.00%	1 1.69%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	59 100.00	2 3.39%	1 1.69%	3 5.08%
04	0 0.00%	54 60.67%	19 21.35%	0 0.00%	6 6.74%	8 8.99%	0 0.00%	0 0.00%	2 2.25%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	89 100.00	14 15.73%	2 2.25%	16 17.98%
05	1 0.31%	204 63.95%	86 26.96%	1 0.31%	17 5.33%	4 1.25%	2 0.63%	0 0.00%	4 1.25%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	319 100.00	24 7.52%	4 1.25%	28 8.78%
06	1 0.14%	493 70.33%	170 24.25%	0 0.00%	13 1.85%	20 2.85%	0 0.00%	1 0.14%	3 0.43%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	701 100.00	33 4.71%	4 0.57%	37 5.28%
07	0 0.00%	758 77.58%	172 17.60%	0 0.00%	21 2.15%	13 1.33%	7 0.72%	1 0.10%	5 0.51%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	977 100.00	41 4.20%	6 0.61%	47 4.81%
08	0 0.00%	724 77.93%	158 17.01%	0 0.00%	21 2.26%	16 1.72%	2 0.22%	3 0.32%	5 0.54%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	929 100.00	39 4.20%	8 0.86%	47 5.06%
09	0 0.00%	693 76.66%	164 18.14%	3 0.33%	22 2.43%	12 1.33%	2 0.22%	3 0.33%	5 0.55%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	904 100.00	39 4.31%	8 0.88%	47 5.20%
10	0 0.00%	814 79.88%	158 15.51%	0 0.00%	25 2.45%	15 1.47%	1 0.10%	1 0.10%	5 0.49%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,019 100.00	41 4.02%	6 0.59%	47 4.61%
11	2 0.16%	1,021 80.97%	178 14.12%	0 0.00%	35 2.78%	11 0.87%	5 0.40%	0 0.00%	9 0.71%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1,261 100.00	51 4.04%	9 0.71%	60 4.76%
Total	4 0.06%	4,965 77.06%	1,138 17.66%	4 0.06%	165 2.56%	100 1.55%	19 0.29%	9 0.14%	39 0.61%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	6,443 100.00	288 4.47%	48 0.74%	336 5.21%

New Jersey Department of Transportation

Hourly Classification Count and Percent Distribution

July 18, 2017 North

Site names:	7-5-309	Seasonal Factor Grp:	rg3_4U
County:	GLOUCESTER	Daily Factor Grp:	rg3_4U
Funct Class:	Urban Minor Arterial	Axle Factor Grp:	rg3_4U
Location:	Bet Eagle Way and Harris Drive	Growth Factor Grp:	rg3_4U

	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+	Total	Single	Comb	Trucks
13	2 0.34%	479 82.59%	87 15.00%	0 0.00%	3 0.52%	5 0.86%	1 0.17%	0 0.00%	3 0.52%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	580 100.00	9 1.55%	3 0.52%	12 2.07%
14	0 0.00%	496 81.71%	88 14.50%	0 0.00%	12 1.98%	4 0.66%	0 0.00%	0 0.00%	7 1.15%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	607 100.00	16 2.64%	7 1.15%	23 3.79%
15	0 0.00%	505 85.30%	78 13.18%	0 0.00%	7 1.18%	1 0.17%	0 0.00%	0 0.00%	1 0.17%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	592 100.00	8 1.35%	1 0.17%	9 1.52%
16	1 0.16%	520 84.97%	79 12.91%	1 0.16%	6 0.98%	2 0.33%	0 0.00%	2 0.33%	1 0.16%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	612 100.00	9 1.47%	3 0.49%	12 1.96%
17	0 0.00%	578 88.11%	72 10.98%	0 0.00%	4 0.61%	2 0.30%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	656 100.00	6 0.91%	0 0.00%	6 0.91%
18	0 0.00%	441 86.81%	61 12.01%	0 0.00%	5 0.98%	0 0.00%	0 0.00%	1 0.20%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	508 100.00	5 0.98%	1 0.20%	6 1.18%
19	2 0.41%	427 88.41%	49 10.14%	0 0.00%	5 1.04%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	483 100.00	5 1.04%	0 0.00%	5 1.04%
20	1 0.27%	315 86.07%	45 12.30%	0 0.00%	5 1.37%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	366 100.00	5 1.37%	0 0.00%	5 1.37%
21	0 0.00%	231 90.59%	22 8.63%	0 0.00%	2 0.78%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	255 100.00	2 0.78%	0 0.00%	2 0.78%
22	0 0.00%	133 93.66%	9 6.34%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	142 100.00	0 0.00%	0 0.00%	0 0.00%
23	0 0.00%	62 88.57%	8 11.43%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	70 100.00	0 0.00%	0 0.00%	0 0.00%
Total	6 0.12%	4,187 85.96%	598 12.28%	1 0.02%	49 1.01%	14 0.29%	1 0.02%	3 0.06%	12 0.25%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	4,871 100.00	65 1.33%	15 0.31%	80 1.64%

New Jersey Department of Transportation

Hourly Classification Count and Percent Distribution

July 19, 2017 North

Site names: 7-5-309
County: GLOUCESTER
Funct Class: Urban Minor Arterial
Location: Bet Eagle Way and Harris Drive

Seasonal Factor Grp: rg3_4U
Daily Factor Grp: rg3_4U
Axle Factor Grp: rg3_4U
Growth Factor Grp: rg3_4U

	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+	Total	Single	Comb	Trucks
00	0 0.00%	45 91.84%	2 4.08%	0 0.00%	1 2.04%	0 0.00%	0 0.00%	0 0.00%	1 2.04%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	49 100.00	1 2.04%	1 2.04%	2 4.08%
01	0 0.00%	18 75.00%	4 16.67%	0 0.00%	2 8.33%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	24 100.00	2 8.33%	0 0.00%	2 8.33%
02	0 0.00%	20 68.97%	7 24.14%	0 0.00%	1 3.45%	1 3.45%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	29 100.00	2 6.90%	0 0.00%	2 6.90%
03	0 0.00%	27 77.14%	7 20.00%	0 0.00%	1 2.86%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	35 100.00	1 2.86%	0 0.00%	1 2.86%
04	0 0.00%	51 68.00%	18 24.00%	0 0.00%	1 1.33%	3 4.00%	0 0.00%	0 0.00%	2 2.67%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	75 100.00	4 5.33%	2 2.67%	6 8.00%
05	0 0.00%	196 67.59%	75 25.86%	0 0.00%	10 3.45%	4 1.38%	1 0.34%	0 0.00%	3 1.03%	1 0.34%	0 0.00%	0 0.00%	0 0.00%	290 100.00	15 5.17%	4 1.38%	19 6.55%
06	1 0.13%	583 78.47%	132 17.77%	0 0.00%	10 1.35%	13 1.75%	0 0.00%	0 0.00%	3 0.40%	1 0.13%	0 0.00%	0 0.00%	0 0.00%	743 100.00	23 3.10%	4 0.54%	27 3.63%
07	1 0.12%	711 82.10%	135 15.59%	0 0.00%	7 0.81%	8 0.92%	0 0.00%	1 0.12%	3 0.35%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	866 100.00	15 1.73%	4 0.46%	19 2.19%
08	0 0.00%	591 80.19%	120 16.28%	0 0.00%	9 1.22%	5 0.68%	2 0.27%	3 0.41%	7 0.95%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	737 100.00	16 2.17%	10 1.36%	26 3.53%
09	0 0.00%	483 78.92%	102 16.67%	0 0.00%	15 2.45%	6 0.98%	1 0.16%	2 0.33%	3 0.49%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	612 100.00	22 3.59%	5 0.82%	27 4.41%
10	0 0.00%	434 78.06%	100 17.99%	0 0.00%	12 2.16%	5 0.90%	0 0.00%	2 0.36%	3 0.54%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	556 100.00	17 3.06%	5 0.90%	22 3.96%
11	0 0.00%	448 77.37%	93 16.06%	0 0.00%	15 2.59%	12 2.07%	0 0.00%	4 0.69%	7 1.21%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	579 100.00	27 4.66%	11 1.90%	38 6.56%
12	2 0.30%	555 84.22%	89 13.51%	0 0.00%	4 0.61%	4 0.61%	0 0.00%	2 0.30%	2 0.30%	1 0.15%	0 0.00%	0 0.00%	0 0.00%	659 100.00	8 1.21%	5 0.76%	13 1.97%
13	1 0.15%	523 80.96%	96 14.86%	0 0.00%	13 2.01%	3 0.46%	2 0.31%	1 0.15%	7 1.08%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	646 100.00	18 2.79%	8 1.24%	26 4.02%
14	0 0.00%	517 83.39%	86 13.87%	0 0.00%	9 1.45%	6 0.97%	0 0.00%	1 0.16%	1 0.16%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	620 100.00	15 2.42%	2 0.32%	17 2.74%
15	1 0.16%	506 82.82%	87 14.24%	0 0.00%	9 1.47%	2 0.33%	0 0.00%	4 0.65%	2 0.33%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	611 100.00	11 1.80%	6 0.98%	17 2.78%
16	0 0.00%	518 84.92%	85 13.93%	0 0.00%	5 0.82%	1 0.16%	0 0.00%	1 0.16%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	610 100.00	6 0.98%	1 0.16%	7 1.15%
17	1 0.14%	601 87.10%	79 11.45%	1 0.14%	4 0.58%	4 0.58%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	690 100.00	9 1.30%	0 0.00%	9 1.30%
18	1 0.19%	454 86.81%	62 11.85%	0 0.00%	4 0.76%	2 0.38%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	523 100.00	6 1.15%	0 0.00%	6 1.15%
19	0 0.00%	402 88.16%	51 11.18%	0 0.00%	3 0.66%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	456 100.00	3 0.66%	0 0.00%	3 0.66%
20	2 0.57%	302 86.04%	47 13.39%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	351 100.00	0 0.00%	0 0.00%	0 0.00%
21	1 0.41%	205 84.36%	35 14.40%	0 0.00%	1 0.41%	0 0.00%	0 0.00%	0 0.00%	1 0.41%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	243 100.00	1 0.41%	1 0.41%	2 0.82%
22	0 0.00%	117 87.97%	15 11.28%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1 0.75%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	133 100.00	0 0.00%	1 0.75%	1 0.75%
23	1 1.35%	64 86.49%	9 12.16%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	74 100.00	0 0.00%	0 0.00%	0 0.00%
Total	12 0.12%	8,371 81.98%	1,536 15.04%	1 0.01%	136 1.33%	79 0.77%	6 0.06%	22 0.22%	45 0.44%	3 0.03%	0 0.00%	0 0.00%	0 0.00%	10,211 100.00	222 2.17%	70 0.69%	292 2.86%

New Jersey Department of Transportation

Hourly Classification Count and Percent Distribution

July 20, 2017 North

Site names: 7-5-309
County: GLOUCESTER
Funct Class: Urban Minor Arterial
Location: Bet Eagle Way and Harris Drive

Seasonal Factor Grp: rg3_4U
Daily Factor Grp: rg3_4U
Axle Factor Grp: rg3_4U
Growth Factor Grp: rg3_4U

	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+	Total	Single	Comb	Trucks
00	0 0.00%	42 93.33%	3 6.67%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	45 100.00	0 0.00%	0 0.00%	0 0.00%
01	1 3.85%	22 84.62%	2 7.69%	0 0.00%	1 3.85%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	26 100.00	1 3.85%	0 0.00%	1 3.85%
02	0 0.00%	22 84.62%	3 11.54%	0 0.00%	1 3.85%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	26 100.00	1 3.85%	0 0.00%	1 3.85%
03	0 0.00%	21 60.00%	9 25.71%	0 0.00%	3 8.57%	2 5.71%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	35 100.00	5 14.29%	0 0.00%	5 14.29%
04	0 0.00%	60 69.77%	16 18.60%	0 0.00%	5 5.81%	2 2.33%	0 0.00%	0 0.00%	3 3.49%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	86 100.00	7 8.14%	3 3.49%	10 11.63%
05	0 0.00%	183 64.89%	75 26.60%	0 0.00%	10 3.55%	9 3.19%	0 0.00%	0 0.00%	5 1.77%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	282 100.00	19 6.74%	5 1.77%	24 8.51%
06	1 0.14%	566 77.75%	130 17.86%	0 0.00%	9 1.24%	15 2.06%	0 0.00%	2 0.27%	4 0.55%	1 0.14%	0 0.00%	0 0.00%	0 0.00%	728 100.00	24 3.30%	7 0.96%	31 4.26%
07	0 0.00%	683 81.60%	121 14.46%	0 0.00%	14 1.67%	16 1.91%	0 0.00%	2 0.24%	1 0.12%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	837 100.00	30 3.58%	3 0.36%	33 3.94%
08	2 0.27%	570 76.31%	148 19.81%	1 0.13%	7 0.94%	13 1.74%	0 0.00%	2 0.27%	4 0.54%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	747 100.00	21 2.81%	6 0.80%	27 3.61%
09	0 0.00%	505 82.38%	85 13.87%	1 0.16%	10 1.63%	10 1.63%	1 0.16%	0 0.00%	1 0.16%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	613 100.00	22 3.59%	1 0.16%	23 3.75%
10	0 0.00%	439 80.26%	76 13.89%	0 0.00%	21 3.84%	8 1.46%	0 0.00%	1 0.18%	2 0.37%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	547 100.00	29 5.30%	3 0.55%	32 5.85%
11	0 0.00%	503 82.59%	88 14.45%	0 0.00%	7 1.15%	10 1.64%	0 0.00%	0 0.00%	1 0.16%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	609 100.00	17 2.79%	1 0.16%	18 2.96%
12	1 0.17%	492 81.59%	91 15.09%	0 0.00%	5 0.83%	10 1.66%	1 0.17%	2 0.33%	1 0.17%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	603 100.00	16 2.65%	3 0.50%	19 3.15%
13	0 0.00%	479 81.74%	86 14.68%	0 0.00%	7 1.19%	10 1.71%	1 0.17%	1 0.17%	2 0.34%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	586 100.00	18 3.07%	3 0.51%	21 3.58%
14	0 0.00%	421 80.96%	87 16.73%	1 0.19%	5 0.96%	3 0.58%	0 0.00%	0 0.00%	3 0.58%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	520 100.00	9 1.73%	3 0.58%	12 2.31%
15	0 0.00%	525 84.81%	85 13.73%	0 0.00%	7 1.13%	1 0.16%	0 0.00%	0 0.00%	1 0.16%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	619 100.00	8 1.29%	1 0.16%	9 1.45%
16	0 0.00%	571 86.12%	83 12.52%	0 0.00%	7 1.06%	1 0.15%	0 0.00%	0 0.00%	1 0.15%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	663 100.00	8 1.21%	1 0.15%	9 1.36%
17	1 0.15%	574 87.63%	74 11.30%	1 0.15%	2 0.31%	3 0.46%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	655 100.00	6 0.92%	0 0.00%	6 0.92%
18	1 0.17%	506 86.79%	69 11.84%	0 0.00%	4 0.69%	2 0.34%	0 0.00%	1 0.17%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	583 100.00	6 1.03%	1 0.17%	7 1.20%
19	1 0.20%	436 88.98%	44 8.98%	0 0.00%	7 1.43%	1 0.20%	0 0.00%	0 0.00%	1 0.20%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	490 100.00	8 1.63%	1 0.20%	9 1.84%
20	0 0.00%	329 88.44%	39 10.48%	0 0.00%	4 1.08%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	372 100.00	4 1.08%	0 0.00%	4 1.08%
21	0 0.00%	239 87.55%	32 11.72%	0 0.00%	2 0.73%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	273 100.00	2 0.73%	0 0.00%	2 0.73%
22	0 0.00%	146 91.82%	11 6.92%	0 0.00%	1 0.63%	1 0.63%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	159 100.00	2 1.26%	0 0.00%	2 1.26%
23	0 0.00%	60 85.71%	9 12.86%	1 1.43%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	70 100.00	1 1.43%	0 0.00%	1 1.43%
Total	8 0.08%	8,394 82.50%	1,466 14.41%	5 0.05%	139 1.37%	117 1.15%	3 0.03%	11 0.11%	30 0.29%	1 0.01%	0 0.00%	0 0.00%	0 0.00%	10,174 100.00	264 2.59%	42 0.41%	306 3.01%

New Jersey Department of Transportation

Hourly Classification Count and Percent Distribution

July 21, 2017 North

Site names:	7-5-309	Seasonal Factor Grp:	rg3_4U
County:	GLOUCESTER	Daily Factor Grp:	rg3_4U
Funct Class:	Urban Minor Arterial	Axle Factor Grp:	rg3_4U
Location:	Bet Eagle Way and Harris Drive	Growth Factor Grp:	rg3_4U

	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+	Total	Single	Comb	Trucks
00	0 0.00%	30 85.71%	4 11.43%	0 0.00%	1 2.86%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	35 100.00	1 2.86%	0 0.00%	1 2.86%
01	0 0.00%	15 71.43%	5 23.81%	0 0.00%	1 4.76%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	21 100.00	1 4.76%	0 0.00%	1 4.76%
02	0 0.00%	16 76.19%	3 14.29%	0 0.00%	1 4.76%	1 4.76%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	21 100.00	2 9.52%	0 0.00%	2 9.52%
03	0 0.00%	29 76.32%	7 18.42%	0 0.00%	1 2.63%	0 0.00%	0 0.00%	0 0.00%	1 2.63%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	38 100.00	1 2.63%	1 2.63%	2 5.26%
04	0 0.00%	37 54.41%	16 23.53%	0 0.00%	5 7.35%	8 11.76%	0 0.00%	0 0.00%	2 2.94%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	68 100.00	13 19.12%	2 2.94%	15 22.06%
05	1 0.39%	165 63.95%	70 27.13%	1 0.39%	14 5.43%	3 1.16%	2 0.78%	0 0.00%	2 0.78%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	258 100.00	20 7.75%	2 0.78%	22 8.53%
06	1 0.17%	418 71.58%	135 23.12%	0 0.00%	9 1.54%	17 2.91%	0 0.00%	1 0.17%	3 0.51%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	584 100.00	26 4.45%	4 0.68%	30 5.14%
07	0 0.00%	593 78.96%	128 17.04%	0 0.00%	14 1.86%	11 1.46%	1 0.13%	1 0.13%	3 0.40%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	751 100.00	26 3.46%	4 0.53%	30 3.99%
08	0 0.00%	522 78.14%	112 16.77%	0 0.00%	14 2.10%	14 2.10%	0 0.00%	2 0.30%	4 0.60%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	668 100.00	28 4.19%	6 0.90%	34 5.09%
09	0 0.00%	443 78.83%	94 16.73%	2 0.36%	8 1.42%	10 1.78%	1 0.18%	2 0.36%	2 0.36%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	562 100.00	21 3.74%	4 0.71%	25 4.45%
10	0 0.00%	501 80.55%	93 14.95%	0 0.00%	15 2.41%	8 1.29%	0 0.00%	1 0.16%	4 0.64%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	622 100.00	23 3.70%	5 0.80%	28 4.50%
11	1 0.16%	510 81.08%	92 14.63%	0 0.00%	15 2.38%	7 1.11%	0 0.00%	0 0.00%	4 0.64%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	629 100.00	22 3.50%	4 0.64%	26 4.13%
Total	3 0.07%	3,279 77.03%	759 17.83%	3 0.07%	98 2.30%	79 1.86%	4 0.09%	7 0.16%	25 0.59%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	4,257 100.00	184 4.32%	32 0.75%	216 5.07%

New Jersey Department of Transportation

Hourly Classification Count and Percent Distribution

July 18, 2017 South

Site names:	7-5-309	Seasonal Factor Grp:	rg3_4U
County:	GLOUCESTER	Daily Factor Grp:	rg3_4U
Funct Class:	Urban Minor Arterial	Axle Factor Grp:	rg3_4U
Location:	Bet Eagle Way and Harris Drive	Growth Factor Grp:	rg3_4U

	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+	Total	Single	Comb	Trucks
13	1 0.19%	442 81.85%	80 14.81%	0 0.00%	8 1.48%	2 0.37%	0 0.00%	1 0.19%	4 0.74%	2 0.37%	0 0.00%	0 0.00%	0 0.00%	540 100.00	10 1.85%	7 1.30%	17 3.15%
14	5 0.89%	458 81.21%	77 13.65%	0 0.00%	15 2.66%	3 0.53%	0 0.00%	0 0.00%	5 0.89%	1 0.18%	0 0.00%	0 0.00%	0 0.00%	564 100.00	18 3.19%	6 1.06%	24 4.26%
15	6 0.99%	488 80.13%	99 16.26%	0 0.00%	12 1.97%	2 0.33%	0 0.00%	0 0.00%	2 0.33%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	609 100.00	14 2.30%	2 0.33%	16 2.63%
16	2 0.28%	603 83.17%	107 14.76%	0 0.00%	8 1.10%	0 0.00%	0 0.00%	1 0.14%	4 0.55%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	725 100.00	8 1.10%	5 0.69%	13 1.79%
17	1 0.14%	628 87.10%	79 10.96%	0 0.00%	6 0.83%	2 0.28%	0 0.00%	1 0.14%	4 0.55%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	721 100.00	8 1.11%	5 0.69%	13 1.80%
18	0 0.00%	543 87.72%	68 10.99%	0 0.00%	4 0.65%	2 0.32%	0 0.00%	1 0.16%	1 0.16%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	619 100.00	6 0.97%	2 0.32%	8 1.29%
19	2 0.39%	451 88.78%	51 10.04%	0 0.00%	2 0.39%	2 0.39%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	508 100.00	4 0.79%	0 0.00%	4 0.79%
20	2 0.52%	335 86.56%	44 11.37%	0 0.00%	4 1.03%	0 0.00%	1 0.26%	0 0.00%	1 0.26%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	387 100.00	5 1.29%	1 0.26%	6 1.55%
21	2 0.74%	242 89.30%	25 9.23%	0 0.00%	2 0.74%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	271 100.00	2 0.74%	0 0.00%	2 0.74%
22	2 1.37%	132 90.41%	12 8.22%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	146 100.00	0 0.00%	0 0.00%	0 0.00%
23	2 2.04%	88 89.80%	7 7.14%	0 0.00%	0 0.00%	1 1.02%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	98 100.00	1 1.02%	0 0.00%	1 1.02%
Total	25 0.48%	4,410 85.00%	649 12.51%	0 0.00%	61 1.18%	14 0.27%	1 0.02%	4 0.08%	21 0.40%	3 0.06%	0 0.00%	0 0.00%	0 0.00%	5,188 100.00	76 1.46%	28 0.54%	104 2.00%

New Jersey Department of Transportation

Hourly Classification Count and Percent Distribution

July 19, 2017 South

Site names: 7-5-309
County: GLOUCESTER
Funct Class: Urban Minor Arterial
Location: Bet Eagle Way and Harris Drive

Seasonal Factor Grp: rg3_4U
Daily Factor Grp: rg3_4U
Axle Factor Grp: rg3_4U
Growth Factor Grp: rg3_4U

	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+	Total	Single	Comb	Trucks
00	0 0.00%	50 92.59%	4 7.41%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	54 100.00	0 0.00%	0 0.00%	0 0.00%
01	1 3.13%	26 81.25%	3 9.38%	0 0.00%	1 3.13%	0 0.00%	0 0.00%	0 0.00%	1 3.13%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	32 100.00	1 3.13%	1 3.13%	2 6.25%
02	0 0.00%	12 75.00%	3 18.75%	0 0.00%	0 0.00%	1 6.25%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	16 100.00	1 6.25%	0 0.00%	1 6.25%
03	0 0.00%	24 85.71%	3 10.71%	0 0.00%	1 3.57%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	28 100.00	1 3.57%	0 0.00%	1 3.57%
04	0 0.00%	28 87.50%	4 12.50%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	32 100.00	0 0.00%	0 0.00%	0 0.00%
05	0 0.00%	47 73.44%	15 23.44%	0 0.00%	2 3.13%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	64 100.00	2 3.13%	0 0.00%	2 3.13%
06	2 1.87%	69 64.49%	27 25.23%	0 0.00%	4 3.74%	3 2.80%	0 0.00%	0 0.00%	2 1.87%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	107 100.00	7 6.54%	2 1.87%	9 8.41%
07	0 0.00%	183 76.57%	48 20.08%	0 0.00%	4 1.67%	1 0.42%	1 0.42%	0 0.00%	2 0.84%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	239 100.00	6 2.51%	2 0.84%	8 3.35%
08	0 0.00%	217 73.06%	69 23.23%	0 0.00%	7 2.36%	1 0.34%	1 0.34%	0 0.00%	2 0.67%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	297 100.00	9 3.03%	2 0.67%	11 3.70%
09	1 0.28%	251 71.31%	73 20.74%	1 0.28%	15 4.26%	6 1.70%	1 0.28%	1 0.28%	3 0.85%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	352 100.00	23 6.53%	4 1.14%	27 7.67%
10	0 0.00%	294 72.59%	93 22.96%	2 0.49%	8 1.98%	2 0.49%	0 0.00%	1 0.25%	5 1.23%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	405 100.00	12 2.96%	6 1.48%	18 4.44%
11	1 0.24%	316 74.53%	85 20.05%	0 0.00%	12 2.83%	6 1.42%	0 0.00%	2 0.47%	1 0.24%	1 0.24%	0 0.00%	0 0.00%	0 0.00%	424 100.00	18 4.25%	4 0.94%	22 5.19%
12	0 0.00%	423 80.11%	89 16.86%	0 0.00%	8 1.52%	2 0.38%	0 0.00%	0 0.00%	6 1.14%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	528 100.00	10 1.89%	6 1.14%	16 3.03%
13	2 0.39%	430 82.85%	77 14.84%	0 0.00%	4 0.77%	2 0.39%	0 0.00%	0 0.00%	4 0.77%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	519 100.00	6 1.16%	4 0.77%	10 1.93%
14	2 0.35%	459 80.39%	98 17.16%	0 0.00%	7 1.23%	0 0.00%	0 0.00%	2 0.35%	3 0.53%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	571 100.00	7 1.23%	5 0.88%	12 2.10%
15	2 0.36%	443 79.82%	97 17.48%	0 0.00%	8 1.44%	0 0.00%	0 0.00%	0 0.00%	5 0.90%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	555 100.00	8 1.44%	5 0.90%	13 2.34%
16	5 0.71%	564 80.57%	113 16.14%	1 0.14%	8 1.14%	3 0.43%	0 0.00%	1 0.14%	4 0.57%	1 0.14%	0 0.00%	0 0.00%	0 0.00%	700 100.00	12 1.71%	6 0.86%	18 2.57%
17	1 0.13%	662 87.68%	83 10.99%	0 0.00%	5 0.66%	3 0.40%	0 0.00%	0 0.00%	1 0.13%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	755 100.00	8 1.06%	1 0.13%	9 1.19%
18	0 0.00%	564 88.54%	68 10.68%	0 0.00%	1 0.16%	0 0.00%	0 0.00%	3 0.47%	1 0.16%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	637 100.00	1 0.16%	4 0.63%	5 0.78%
19	3 0.63%	415 87.37%	54 11.37%	0 0.00%	3 0.63%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	475 100.00	3 0.63%	0 0.00%	3 0.63%
20	1 0.26%	354 91.24%	31 7.99%	0 0.00%	1 0.26%	0 0.00%	0 0.00%	0 0.00%	1 0.26%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	388 100.00	1 0.26%	1 0.26%	2 0.52%
21	1 0.37%	237 88.76%	28 10.49%	1 0.37%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	267 100.00	1 0.37%	0 0.00%	1 0.37%
22	1 0.68%	134 91.16%	12 8.16%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	147 100.00	0 0.00%	0 0.00%	0 0.00%
23	0 0.00%	82 88.17%	10 10.75%	0 0.00%	1 1.08%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	93 100.00	1 1.08%	0 0.00%	1 1.08%
Total	23 0.30%	6,284 81.77%	1,187 15.45%	5 0.07%	100 1.30%	30 0.39%	3 0.04%	10 0.13%	41 0.53%	2 0.03%	0 0.00%	0 0.00%	0 0.00%	7,685 100.00	138 1.80%	53 0.69%	191 2.49%

New Jersey Department of Transportation

Hourly Classification Count and Percent Distribution

July 20, 2017 South

Site names: 7-5-309
County: GLOUCESTER
Funct Class: Urban Minor Arterial
Location: Bet Eagle Way and Harris Drive

Seasonal Factor Grp: rg3_4U
Daily Factor Grp: rg3_4U
Axle Factor Grp: rg3_4U
Growth Factor Grp: rg3_4U

	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+	Total	Single	Comb	Trucks
00	0 0.00%	55 91.67%	4 6.67%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1 1.67%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	60 100.00	0 0.00%	1 1.67%	1 1.67%
01	1 2.86%	30 85.71%	3 8.57%	0 0.00%	1 2.86%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	35 100.00	1 2.86%	0 0.00%	1 2.86%
02	0 0.00%	16 88.89%	2 11.11%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	18 100.00	0 0.00%	0 0.00%	0 0.00%
03	0 0.00%	10 76.92%	2 15.38%	0 0.00%	1 7.69%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	13 100.00	1 7.69%	0 0.00%	1 7.69%
04	0 0.00%	26 78.79%	5 15.15%	0 0.00%	1 3.03%	0 0.00%	0 0.00%	1 3.03%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	33 100.00	1 3.03%	1 3.03%	2 6.06%
05	1 1.45%	47 68.12%	19 27.54%	0 0.00%	1 1.45%	1 1.45%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	69 100.00	2 2.90%	0 0.00%	2 2.90%
06	1 0.83%	83 69.17%	28 23.33%	0 0.00%	1 0.83%	3 2.50%	2 1.67%	0 0.00%	2 1.67%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	120 100.00	6 5.00%	2 1.67%	8 6.67%
07	1 0.39%	195 76.47%	48 18.82%	0 0.00%	5 1.96%	4 1.57%	1 0.39%	0 0.00%	1 0.39%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	255 100.00	10 3.92%	1 0.39%	11 4.31%
08	0 0.00%	265 77.94%	62 18.24%	0 0.00%	7 2.06%	1 0.29%	1 0.29%	1 0.29%	3 0.88%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	340 100.00	9 2.65%	4 1.18%	13 3.82%
09	1 0.33%	238 78.29%	47 15.46%	0 0.00%	12 3.95%	3 0.99%	1 0.33%	2 0.66%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	304 100.00	16 5.26%	2 0.66%	18 5.92%
10	1 0.26%	312 80.83%	55 14.25%	0 0.00%	12 3.11%	3 0.78%	1 0.26%	0 0.00%	2 0.52%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	386 100.00	16 4.15%	2 0.52%	18 4.66%
11	0 0.00%	335 79.57%	68 16.15%	0 0.00%	8 1.90%	6 1.43%	0 0.00%	1 0.24%	3 0.71%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	421 100.00	14 3.33%	4 0.95%	18 4.28%
12	0 0.00%	424 80.00%	90 16.98%	0 0.00%	10 1.89%	2 0.38%	0 0.00%	2 0.38%	1 0.19%	1 0.19%	0 0.00%	0 0.00%	0 0.00%	530 100.00	12 2.26%	4 0.75%	16 3.02%
13	0 0.00%	429 81.25%	78 14.77%	0 0.00%	10 1.89%	3 0.57%	1 0.19%	2 0.38%	5 0.95%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	528 100.00	14 2.65%	7 1.33%	21 3.98%
14	1 0.17%	486 80.60%	95 15.75%	0 0.00%	11 1.82%	2 0.33%	1 0.17%	1 0.17%	6 1.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	603 100.00	14 2.32%	7 1.16%	21 3.48%
15	2 0.30%	526 79.70%	114 17.27%	0 0.00%	12 1.82%	3 0.45%	0 0.00%	0 0.00%	3 0.45%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	660 100.00	15 2.27%	3 0.45%	18 2.73%
16	0 0.00%	622 84.05%	106 14.32%	0 0.00%	7 0.95%	2 0.27%	0 0.00%	1 0.14%	2 0.27%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	740 100.00	9 1.22%	3 0.41%	12 1.62%
17	3 0.38%	703 88.21%	84 10.54%	0 0.00%	4 0.50%	2 0.25%	0 0.00%	0 0.00%	1 0.13%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	797 100.00	6 0.75%	1 0.13%	7 0.88%
18	1 0.14%	632 89.90%	66 9.39%	0 0.00%	4 0.57%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	703 100.00	4 0.57%	0 0.00%	4 0.57%
19	1 0.19%	442 86.16%	64 12.48%	0 0.00%	5 0.97%	1 0.19%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	513 100.00	6 1.17%	0 0.00%	6 1.17%
20	1 0.25%	352 89.11%	37 9.37%	1 0.25%	2 0.51%	0 0.00%	0 0.00%	0 0.00%	2 0.51%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	395 100.00	3 0.76%	2 0.51%	5 1.27%
21	2 0.64%	280 90.03%	26 8.36%	0 0.00%	2 0.64%	0 0.00%	0 0.00%	1 0.32%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	311 100.00	2 0.64%	1 0.32%	3 0.96%
22	1 0.63%	146 91.82%	11 6.92%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1 0.63%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	159 100.00	0 0.00%	1 0.63%	1 0.63%
23	1 0.95%	90 85.71%	13 12.38%	0 0.00%	1 0.95%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	105 100.00	1 0.95%	0 0.00%	1 0.95%
Total	19 0.23%	6,744 83.28%	1,127 13.92%	1 0.01%	117 1.44%	36 0.44%	8 0.10%	12 0.15%	33 0.41%	1 0.01%	0 0.00%	0 0.00%	0 0.00%	8,098 100.00	162 2.00%	46 0.57%	208 2.57%

New Jersey Department of Transportation

Hourly Classification Count and Percent Distribution

July 21, 2017 South

Site names:	7-5-309	Seasonal Factor Grp:	rg3_4U
County:	GLOUCESTER	Daily Factor Grp:	rg3_4U
Funct Class:	Urban Minor Arterial	Axle Factor Grp:	rg3_4U
Location:	Bet Eagle Way and Harris Drive	Growth Factor Grp:	rg3_4U

	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+	Total	Single	Comb	Trucks
00	0 0.00%	48 92.31%	4 7.69%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	52 100.00	0 0.00%	0 0.00%	0 0.00%
01	0 0.00%	30 83.33%	6 16.67%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	36 100.00	0 0.00%	0 0.00%	0 0.00%
02	0 0.00%	18 90.00%	2 10.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	20 100.00	0 0.00%	0 0.00%	0 0.00%
03	0 0.00%	18 85.71%	2 9.52%	0 0.00%	1 4.76%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	21 100.00	1 4.76%	0 0.00%	1 4.76%
04	0 0.00%	17 80.95%	3 14.29%	0 0.00%	1 4.76%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	21 100.00	1 4.76%	0 0.00%	1 4.76%
05	0 0.00%	39 63.93%	16 26.23%	0 0.00%	3 4.92%	1 1.64%	0 0.00%	0 0.00%	2 3.28%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	61 100.00	4 6.56%	2 3.28%	6 9.84%
06	0 0.00%	75 64.10%	35 29.91%	0 0.00%	4 3.42%	3 2.56%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	117 100.00	7 5.98%	0 0.00%	7 5.98%
07	0 0.00%	165 73.01%	44 19.47%	0 0.00%	7 3.10%	2 0.88%	6 2.65%	0 0.00%	2 0.88%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	226 100.00	15 6.64%	2 0.88%	17 7.52%
08	0 0.00%	202 77.39%	46 17.62%	0 0.00%	7 2.68%	2 0.77%	2 0.77%	1 0.38%	1 0.38%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	261 100.00	11 4.21%	2 0.77%	13 4.98%
09	0 0.00%	250 73.10%	70 20.47%	1 0.29%	14 4.09%	2 0.58%	1 0.29%	1 0.29%	3 0.88%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	342 100.00	18 5.26%	4 1.17%	22 6.43%
10	0 0.00%	313 78.84%	65 16.37%	0 0.00%	10 2.52%	7 1.76%	1 0.25%	0 0.00%	1 0.25%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	397 100.00	18 4.53%	1 0.25%	19 4.79%
11	1 0.16%	511 80.85%	86 13.61%	0 0.00%	20 3.16%	4 0.63%	5 0.79%	0 0.00%	5 0.79%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	632 100.00	29 4.59%	5 0.79%	34 5.38%
Total	1 0.05%	1,686 77.13%	379 17.34%	1 0.05%	67 3.06%	21 0.96%	15 0.69%	2 0.09%	14 0.64%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	2,186 100.00	104 4.76%	16 0.73%	120 5.49%

New Jersey Department of Transportation

Count Class Distribution for 07/18/2017 through 07/21/2017

Site names:	7-5-309	Seasonal Factor Grp:	rg3_4U
County:	GLOUCESTER	Daily Factor Grp:	rg3_4U
Funct Class:	Urban Minor Arterial	Axle Factor Grp:	rg3_4U
Location:	Bet Eagle Way and Harris Drive	Growth Factor Grp:	rg3_4U

	Road	N	S
MC	97 .18%	29 .10%	68 .29%
CAR	43,355 82.26%	24,231 82.04%	19,124 82.55%
PU	7,701 14.61%	4,359 14.76%	3,342 14.43%
BUS	17 .03%	10 .03%	7 .03%
2D	767 1.46%	422 1.43%	345 1.49%
SU 3	390 .74%	289 .98%	101 .44%
SU 4+	41 .08%	14 .05%	27 .12%
ST 4-	71 .13%	43 .15%	28 .12%
ST 5	221 .42%	112 .38%	109 .47%
ST 6+	10 .02%	4 .01%	6 .03%
MT 5-	0 .00%	0 .00%	0 .00%
MT 6	0 .00%	0 .00%	0 .00%
MT 7+	0 .00%	0 .00%	0 .00%
Trucks	1,517 2.88%	894 3.03%	623 2.69%
Combo Trucks	302 .57%	159 .54%	143 .62%
Classified	52,670 99.94%	29,513 99.93%	23,157 99.96%
Volume	52,670 99.94%	29,513 99.93%	23,157 99.96%

TechniQuest Corporation

4105 US Route 1, Suite #10
Monmouth Junction, NJ 08852
Phone: 732-274-9500 Fax: 732-274-9510
www.techniquestcorporation.com

Site Code: 029-01
Date Start: 30-Apr-19
Deptford Center Road between Almonesson Road and Huffville Road - EB

Start	29-Apr-19		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	*	145	5	172	6	158	9	202	25	253	15	236	12	194
12:15	*	*	*	131	10	163	3	175	13	210	23	229	22	229	14	190
12:30	*	*	*	166	3	157	11	201	6	210	16	236	9	239	9	202
12:45	*	*	*	183	5	160	6	171	6	222	14	243	12	249	9	205
01:00	*	*	*	170	2	177	0	146	7	169	2	243	10	235	4	190
01:15	*	*	*	180	6	168	4	198	4	201	6	222	7	**266**	5	206
01:30	*	*	*	167	3	158	2	185	8	198	9	224	11	**255**	7	198
01:45	*	*	*	136	2	186	7	166	4	203	7	219	4	**261**	5	195
02:00	*	*	*	174	4	155	1	178	2	209	5	271	5	**250**	3	206
02:15	*	*	*	172	6	168	5	185	5	195	9	236	11	245	7	200
02:30	*	*	*	164	4	176	5	167	6	228	6	253	3	264	5	209
02:45	*	*	*	189	3	163	4	178	5	195	9	233	4	253	5	202
03:00	*	*	*	163	2	167	2	204	3	202	1	**256**	0	253	2	**208**
03:15	*	*	*	**175**	4	179	4	212	6	223	3	**294**	0	260	3	**224**
03:30	*	*	*	**194**	3	196	3	261	3	241	6	**278**	5	221	4	**232**
03:45	*	*	*	**236**	12	206	0	236	2	**253**	5	**282**	2	232	4	**241**
04:00	*	*	*	**185**	3	197	2	194	5	**213**	5	238	3	222	4	208
04:15	*	*	*	164	4	179	7	**215**	3	**212**	2	247	1	201	3	203
04:30	*	*	*	182	3	186	5	**231**	7	**260**	5	236	2	209	4	217
04:45	*	*	*	191	14	201	11	**231**	12	209	8	253	3	198	10	214
05:00	*	*	*	194	15	**212**	14	**243**	7	228	4	261	4	184	9	220
05:15	*	*	*	180	12	**211**	12	202	15	225	9	264	10	179	12	210
05:30	*	*	*	191	30	**216**	26	222	19	189	10	249	8	171	19	206
05:45	*	*	*	176	49	**204**	34	205	43	210	12	216	15	187	31	200
06:00	*	*	*	197	45	182	56	201	37	188	18	220	10	214	33	200
06:15	*	*	*	171	81	173	107	191	60	194	24	208	11	149	57	181
06:30	*	*	*	160	107	179	157	177	91	200	38	208	13	137	81	177
06:45	*	*	*	169	152	159	**169**	162	131	221	31	183	11	106	99	167
07:00	*	*	*	153	153	163	**168**	165	145	219	31	215	13	113	102	171
07:15	*	*	*	150	143	184	**154**	179	136	224	35	204	15	107	97	175
07:30	*	*	*	173	146	176	**176**	180	173	192	37	162	10	95	108	163
07:45	*	*	*	184	**177**	168	155	151	126	188	52	162	25	103	107	159
08:00	*	*	*	146	**160**	142	144	153	147	193	40	192	23	62	103	148
08:15	*	*	*	151	**144**	118	148	139	135	197	52	173	28	72	101	142
08:30	*	*	*	97	**152**	109	115	131	114	152	64	126	45	46	98	110
08:45	*	*	*	108	121	85	146	118	123	166	87	143	35	39	102	110
09:00	*	*	128	93	94	90	111	105	115	159	83	110	56	59	98	103
09:15	*	*	109	78	108	84	101	103	124	159	97	141	62	31	100	99
09:30	*	*	125	60	105	81	115	77	110	120	133	121	60	32	108	82
09:45	*	*	135	51	101	60	119	89	110	83	148	101	74	35	114	70
10:00	*	*	126	62	105	49	109	47	126	83	130	86	103	34	116	60
10:15	*	*	116	65	138	33	123	35	135	89	154	58	123	29	132	52
10:30	*	*	134	55	124	33	120	23	156	64	194	58	145	25	146	43
10:45	*	*	133	53	135	26	136	27	166	35	157	44	150	26	146	35
11:00	*	*	**125**	22	131	18	155	23	**160**	44	**195**	41	**161**	15	**154**	27
11:15	*	*	**129**	21	120	19	148	19	**181**	31	**201**	35	**190**	13	**162**	23
11:30	*	*	**161**	22	168	7	150	14	**160**	23	**214**	37	**196**	10	**175**	19
11:45	*	*	**134**	10	156	7	144	7	**180**	24	**220**	25	**221**	14	**176**	14
Total	0	0	1555	6659	3270	6702	3400	7280	3341	8355	2636	8989	1946	7065	2905	7510
Day Total	0		8214		9972		10680		11696		11625		9011		10415	
% Splits	0.0%	0.0%	18.9 %	81.1 %	32.8 %	67.2 %	31.8 %	68.2 %	28.6 %	71.4 %	22.7 %	77.3 %	21.6 %	78.4 %	27.9 %	72.1%
Peak	-	-	11:00	03:15	07:45	05:00	06:45	04:15	11:00	03:45	11:00	03:00	11:00	01:15	11:00	03:00
Vol.	-	-	549	790	633	843	667	920	681	938	830	1110	768	1032	667	905
P.H.F.			0.852	0.837	0.894	0.976	0.947	0.881	0.941	0.902	0.943	0.944	0.869	0.970	0.947	0.939

TechniQuest Corporation
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Site Code: 029-01
Date Start: 30-Apr-19
Deptford Center Road between Almonesson Road and Huffville Road - EB

Start	06-May-19		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	5	174	6	*	*	*	*	*	*	*	*	*	*	*	6	174
12:15	8	202	8	*	*	*	*	*	*	*	*	*	*	*	8	202
12:30	5	168	8	*	*	*	*	*	*	*	*	*	*	*	6	168
12:45	3	150	4	*	*	*	*	*	*	*	*	*	*	*	4	150
01:00	6	155	2	*	*	*	*	*	*	*	*	*	*	*	4	155
01:15	9	168	3	*	*	*	*	*	*	*	*	*	*	*	6	168
01:30	0	167	6	*	*	*	*	*	*	*	*	*	*	*	3	167
01:45	2	190	4	*	*	*	*	*	*	*	*	*	*	*	3	190
02:00	1	194	4	*	*	*	*	*	*	*	*	*	*	*	2	194
02:15	1	170	3	*	*	*	*	*	*	*	*	*	*	*	2	170
02:30	5	176	3	*	*	*	*	*	*	*	*	*	*	*	4	176
02:45	1	146	6	*	*	*	*	*	*	*	*	*	*	*	4	146
03:00	2	172	5	*	*	*	*	*	*	*	*	*	*	*	4	172
03:15	1	200	1	*	*	*	*	*	*	*	*	*	*	*	1	200
03:30	1	**206**	3	*	*	*	*	*	*	*	*	*	*	*	2	**206**
03:45	3	**197**	4	*	*	*	*	*	*	*	*	*	*	*	4	**197**
04:00	7	**209**	7	*	*	*	*	*	*	*	*	*	*	*	7	**209**
04:15	6	**203**	5	*	*	*	*	*	*	*	*	*	*	*	6	**203**
04:30	5	186	4	*	*	*	*	*	*	*	*	*	*	*	4	186
04:45	8	181	12	*	*	*	*	*	*	*	*	*	*	*	10	181
05:00	17	196	17	*	*	*	*	*	*	*	*	*	*	*	17	196
05:15	22	213	16	*	*	*	*	*	*	*	*	*	*	*	19	213
05:30	14	172	24	*	*	*	*	*	*	*	*	*	*	*	19	172
05:45	40	187	39	*	*	*	*	*	*	*	*	*	*	*	40	187
06:00	43	177	42	*	*	*	*	*	*	*	*	*	*	*	42	177
06:15	70	183	107	*	*	*	*	*	*	*	*	*	*	*	88	183
06:30	150	168	**176**	*	*	*	*	*	*	*	*	*	*	*	163	168
06:45	156	187	**171**	*	*	*	*	*	*	*	*	*	*	*	164	187
07:00	**159**	161	**145**	*	*	*	*	*	*	*	*	*	*	*	**152**	161
07:15	**178**	148	**163**	*	*	*	*	*	*	*	*	*	*	*	**170**	148
07:30	**164**	170	164	*	*	*	*	*	*	*	*	*	*	*	**164**	170
07:45	**174**	135	158	*	*	*	*	*	*	*	*	*	*	*	**166**	135
08:00	156	123	148	*	*	*	*	*	*	*	*	*	*	*	152	123
08:15	120	142	142	*	*	*	*	*	*	*	*	*	*	*	131	142
08:30	153	126	136	*	*	*	*	*	*	*	*	*	*	*	144	126
08:45	135	133	127	*	*	*	*	*	*	*	*	*	*	*	131	133
09:00	119	95	136	*	*	*	*	*	*	*	*	*	*	*	128	95
09:15	120	84	142	*	*	*	*	*	*	*	*	*	*	*	131	84
09:30	106	71	127	*	*	*	*	*	*	*	*	*	*	*	116	71
09:45	125	43	123	*	*	*	*	*	*	*	*	*	*	*	124	43
10:00	135	50	139	*	*	*	*	*	*	*	*	*	*	*	137	50
10:15	144	40	*	*	*	*	*	*	*	*	*	*	*	*	144	40
10:30	129	28	*	*	*	*	*	*	*	*	*	*	*	*	129	28
10:45	163	26	*	*	*	*	*	*	*	*	*	*	*	*	163	26
11:00	146	16	*	*	*	*	*	*	*	*	*	*	*	*	146	16
11:15	135	15	*	*	*	*	*	*	*	*	*	*	*	*	135	15
11:30	144	14	*	*	*	*	*	*	*	*	*	*	*	*	144	14
11:45	171	8	*	*	*	*	*	*	*	*	*	*	*	*	171	8
Total	3467	6725	2540	0	0	0	0	0	0	0	0	0	0	0	3520	6725
Day Total	10192		2540		0		0		0		0		0		10245	
% Splits	34.0 %	66.0 %	100.0 %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	34.4 %	65.6%
Peak	07:00	03:30	06:30	-	-	-	-	-	-	-	-	-	-	-	07:00	03:30
Vol.	675	815	655	-	-	-	-	-	-	-	-	-	-	-	652	815
P.H.F.	0.948	0.975	0.930												0.959	0.975

ADT ADT 10,481 AADT 10,481

TechniQuest Corporation

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Site Code: 029-01
Date Start: 30-Apr-19
Deptford Center Road btw Almonesson Road and Huffville Road - WB

Start	29-Apr-19		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	*	157	14	165	8	138	6	171	13	218	14	204	11	176
12:15	*	*	*	151	4	147	6	161	5	179	21	239	11	201	9	180
12:30	*	*	*	126	9	144	5	188	2	206	18	242	10	237	9	190
12:45	*	*	*	149	4	170	4	189	5	193	21	235	18	223	10	193
01:00	*	*	*	139	10	152	4	177	3	197	10	**263**	17	217	9	191
01:15	*	*	*	169	5	150	6	164	7	221	11	**237**	14	232	9	196
01:30	*	*	*	150	2	133	1	151	3	197	6	**245**	5	**238**	3	186
01:45	*	*	*	149	5	162	2	182	5	191	8	**248**	6	**266**	5	200
02:00	*	*	*	145	0	153	3	180	2	183	4	225	2	**242**	2	188
02:15	*	*	*	157	8	163	2	157	4	204	9	234	1	**264**	5	196
02:30	*	*	*	140	5	162	4	149	3	181	5	255	5	234	4	187
02:45	*	*	*	138	5	157	2	164	2	199	4	249	4	259	3	194
03:00	*	*	*	163	7	183	5	142	4	209	12	251	3	235	6	197
03:15	*	*	*	160	3	162	7	131	0	206	2	231	2	233	3	187
03:30	*	*	*	153	3	170	3	180	2	189	3	237	3	201	3	188
03:45	*	*	*	162	4	163	1	171	3	216	1	265	1	232	2	**202**
04:00	*	*	*	177	2	198	3	201	5	218	5	226	3	196	4	**203**
04:15	*	*	*	181	7	156	6	198	8	219	4	243	4	175	6	**195**
04:30	*	*	*	183	2	**196**	7	167	2	**212**	4	244	0	160	3	**194**
04:45	*	*	*	**176**	5	**206**	12	**198**	13	**208**	4	232	7	175	8	199
05:00	*	*	*	**196**	8	**177**	9	**185**	10	**213**	5	210	0	166	6	191
05:15	*	*	*	**186**	9	**208**	13	**214**	15	**239**	9	209	5	145	10	200
05:30	*	*	*	**198**	13	188	14	**189**	21	182	6	222	8	121	12	183
05:45	*	*	*	166	31	145	19	190	22	188	8	213	9	130	18	172
06:00	*	*	*	172	24	188	16	172	20	193	11	218	8	145	16	181
06:15	*	*	*	177	38	157	40	164	33	204	6	212	2	116	24	172
06:30	*	*	*	140	51	167	56	178	51	202	29	190	10	112	39	165
06:45	*	*	*	131	60	164	41	138	44	196	26	189	13	115	37	156
07:00	*	*	*	158	26	162	35	169	38	191	15	171	10	112	25	160
07:15	*	*	*	142	51	142	53	141	50	221	25	160	12	92	38	150
07:30	*	*	*	132	57	149	53	149	54	185	43	155	10	97	43	144
07:45	*	*	*	131	82	140	67	132	49	196	47	173	22	82	53	142
08:00	*	*	*	139	68	142	54	130	66	198	49	155	17	65	51	138
08:15	*	*	*	113	82	112	78	119	71	164	60	136	29	56	64	117
08:30	*	*	*	92	101	78	82	113	64	137	68	117	30	41	69	96
08:45	*	*	*	89	77	91	94	100	98	131	73	90	50	32	78	89
09:00	*	*	101	70	78	71	92	89	82	120	87	106	38	35	80	82
09:15	*	*	91	51	89	55	80	69	91	115	96	83	42	30	82	67
09:30	*	*	90	57	104	43	119	65	102	105	114	63	59	16	98	58
09:45	*	*	132	43	108	36	116	57	127	103	203	61	108	21	132	54
10:00	*	*	114	38	99	37	128	43	127	65	167	58	115	38	125	46
10:15	*	*	127	39	129	33	139	44	149	49	165	33	132	22	140	37
10:30	*	*	135	38	127	24	127	27	143	43	205	48	123	15	143	32
10:45	*	*	**133**	21	107	27	**145**	27	**177**	34	225	30	179	19	161	26
11:00	*	*	**147**	14	**129**	17	**136**	25	**150**	47	**207**	23	**173**	12	**157**	23
11:15	*	*	**146**	13	**127**	9	**112**	22	**178**	23	**200**	24	**179**	17	**157**	18
11:30	*	*	**150**	5	**148**	15	**157**	15	**172**	31	**234**	18	**201**	9	**177**	16
11:45	*	*	133	5	**171**	10	126	8	158	17	**233**	19	**227**	11	**175**	12
Total	0	0	1499	5881	2298	6079	2292	6362	2446	7791	2781	8205	1941	6296	2324	6769
Day Total	0		7380		8377		8654		10237		10986		8237		9093	
% Splits	0.0%	0.0%	20.3 %	79.7 %	27.4 %	72.6 %	26.5 %	73.5 %	23.9 %	76.1 %	25.3 %	74.7 %	23.6 %	76.4 %	25.6 %	74.4%
Peak	-	-	10:45	04:45	11:00	04:30	10:45	04:45	10:45	04:30	11:00	01:00	11:00	01:30	11:00	03:45
Vol.	-	-	576	756	575	787	550	786	677	872	874	993	780	1010	666	794
P.H.F.			0.960	0.955	0.841	0.946	0.876	0.918	0.951	0.912	0.934	0.944	0.859	0.949	0.941	0.978

TechniQuest Corporation
4105 US Route 1, Suite #10
Monmouth Junction, NJ 08852
Phone: 732-274-9500 Fax: 732-274-9510
www.techniquestcorporation.com

Site Code: 029-01
Date Start: 30-Apr-19
Deptford Center Road btw Almonesson Road and Huffville Road - WB

Start	06-May-19		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	13	153	13	*	*	*	*	*	*	*	*	*	*	*	13	153
12:15	6	158	3	*	*	*	*	*	*	*	*	*	*	*	4	158
12:30	4	163	6	*	*	*	*	*	*	*	*	*	*	*	5	163
12:45	4	199	2	*	*	*	*	*	*	*	*	*	*	*	3	199
01:00	3	156	4	*	*	*	*	*	*	*	*	*	*	*	4	156
01:15	2	182	3	*	*	*	*	*	*	*	*	*	*	*	2	182
01:30	1	156	4	*	*	*	*	*	*	*	*	*	*	*	2	156
01:45	2	145	5	*	*	*	*	*	*	*	*	*	*	*	4	145
02:00	4	146	3	*	*	*	*	*	*	*	*	*	*	*	4	146
02:15	1	151	7	*	*	*	*	*	*	*	*	*	*	*	4	151
02:30	5	161	3	*	*	*	*	*	*	*	*	*	*	*	4	161
02:45	3	164	2	*	*	*	*	*	*	*	*	*	*	*	2	164
03:00	1	154	4	*	*	*	*	*	*	*	*	*	*	*	2	154
03:15	1	134	1	*	*	*	*	*	*	*	*	*	*	*	1	134
03:30	3	164	4	*	*	*	*	*	*	*	*	*	*	*	4	164
03:45	4	177	1	*	*	*	*	*	*	*	*	*	*	*	2	177
04:00	2	169	6	*	*	*	*	*	*	*	*	*	*	*	4	169
04:15	5	161	10	*	*	*	*	*	*	*	*	*	*	*	8	161
04:30	4	172	6	*	*	*	*	*	*	*	*	*	*	*	5	172
04:45	15	**200**	11	*	*	*	*	*	*	*	*	*	*	*	13	**200**
05:00	10	**201**	7	*	*	*	*	*	*	*	*	*	*	*	8	**201**
05:15	13	**179**	11	*	*	*	*	*	*	*	*	*	*	*	12	**179**
05:30	15	**189**	15	*	*	*	*	*	*	*	*	*	*	*	15	**189**
05:45	23	193	23	*	*	*	*	*	*	*	*	*	*	*	23	193
06:00	18	159	29	*	*	*	*	*	*	*	*	*	*	*	24	159
06:15	32	165	33	*	*	*	*	*	*	*	*	*	*	*	32	165
06:30	40	147	50	*	*	*	*	*	*	*	*	*	*	*	45	147
06:45	51	153	34	*	*	*	*	*	*	*	*	*	*	*	42	153
07:00	38	151	42	*	*	*	*	*	*	*	*	*	*	*	40	151
07:15	60	123	45	*	*	*	*	*	*	*	*	*	*	*	52	123
07:30	51	148	59	*	*	*	*	*	*	*	*	*	*	*	55	148
07:45	70	116	58	*	*	*	*	*	*	*	*	*	*	*	64	116
08:00	64	122	65	*	*	*	*	*	*	*	*	*	*	*	64	122
08:15	53	136	68	*	*	*	*	*	*	*	*	*	*	*	60	136
08:30	73	101	**76**	*	*	*	*	*	*	*	*	*	*	*	74	101
08:45	79	95	**72**	*	*	*	*	*	*	*	*	*	*	*	76	95
09:00	84	76	**87**	*	*	*	*	*	*	*	*	*	*	*	86	76
09:15	74	59	**92**	*	*	*	*	*	*	*	*	*	*	*	83	59
09:30	104	50	*	*	*	*	*	*	*	*	*	*	*	*	104	50
09:45	101	39	*	*	*	*	*	*	*	*	*	*	*	*	101	39
10:00	119	40	*	*	*	*	*	*	*	*	*	*	*	*	119	40
10:15	140	31	*	*	*	*	*	*	*	*	*	*	*	*	140	31
10:30	126	40	*	*	*	*	*	*	*	*	*	*	*	*	126	40
10:45	**145**	22	*	*	*	*	*	*	*	*	*	*	*	*	**145**	22
11:00	**125**	17	*	*	*	*	*	*	*	*	*	*	*	*	**125**	17
11:15	**134**	10	*	*	*	*	*	*	*	*	*	*	*	*	**134**	10
11:30	**140**	11	*	*	*	*	*	*	*	*	*	*	*	*	**140**	11
11:45	145	8	*	*	*	*	*	*	*	*	*	*	*	*	145	8
Total	2210	6046	964	0	0	0	0	0	0	0	0	0	0	0	2224	6046
Day Total	8256		964		0		0		0		0		0		8270	
% Splits	26.8 %	73.2 %	100.0 %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	26.9 %	73.1%
Peak	10:45	04:45	08:30	-	-	-	-	-	-	-	-	-	-	-	10:45	04:45
Vol.	544	769	327	-	-	-	-	-	-	-	-	-	-	-	544	769
P.H.F.	0.938	0.956	0.889												0.938	0.956

ADT ADT 8,990 AADT 8,990

TechniQuest Corporation

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Site Code: 029-02
Date Start: 30-Apr-19
Hurffville Road North of SR 42 and South of Clements Bridge Road - NB

Start	29-Apr-19		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	*	238	27	224	22	228	33	250	47	285	43	245	34	245
12:15	*	*	*	221	22	222	24	229	26	264	46	**292**	46	280	33	251
12:30	*	*	*	202	12	219	17	219	22	241	38	**277**	34	258	25	236
12:45	*	*	*	200	12	241	15	234	17	249	25	**306**	32	308	20	256
01:00	*	*	*	201	14	210	21	221	12	257	20	**327**	26	263	19	246
01:15	*	*	*	229	6	203	14	219	17	237	13	275	34	**312**	17	246
01:30	*	*	*	233	5	203	13	212	10	248	15	280	26	**271**	14	241
01:45	*	*	*	218	11	210	6	242	12	261	19	271	13	**299**	12	250
02:00	*	*	*	205	5	203	8	229	7	246	7	303	15	**278**	8	244
02:15	*	*	*	216	9	224	16	235	15	243	17	282	23	250	16	242
02:30	*	*	*	214	7	203	10	240	8	254	6	283	22	270	11	244
02:45	*	*	*	216	10	220	9	193	12	233	14	276	22	262	13	233
03:00	*	*	*	227	10	214	11	245	9	211	11	245	14	270	11	235
03:15	*	*	*	216	6	253	9	261	3	266	12	260	11	273	8	255
03:30	*	*	*	258	10	235	11	219	12	259	13	250	13	248	12	245
03:45	*	*	*	260	15	233	10	288	13	276	22	298	13	246	15	**267**
04:00	*	*	*	245	19	**249**	12	260	14	255	9	265	11	234	13	**251**
04:15	*	*	*	245	15	**278**	14	266	21	**300**	12	285	9	206	14	**263**
04:30	*	*	*	**255**	35	**246**	27	265	22	**284**	10	294	12	239	21	**264**
04:45	*	*	*	**270**	29	**250**	30	**283**	32	**278**	13	276	14	220	24	263
05:00	*	*	*	**275**	22	234	28	**278**	31	**271**	8	249	9	206	20	252
05:15	*	*	*	**270**	35	283	34	**263**	25	275	15	272	6	179	23	257
05:30	*	*	*	253	57	254	46	**300**	62	241	23	255	12	168	40	245
05:45	*	*	*	242	68	237	79	226	73	250	36	281	23	177	56	236
06:00	*	*	*	256	102	245	107	241	78	247	31	269	29	168	69	238
06:15	*	*	*	219	137	212	148	239	126	235	49	252	24	158	97	219
06:30	*	*	*	221	219	228	228	240	158	245	59	242	37	183	140	226
06:45	*	*	*	221	229	206	272	194	211	235	75	229	42	163	166	208
07:00	*	*	*	196	246	189	304	222	199	241	71	213	37	166	171	204
07:15	*	*	*	171	248	187	278	205	**216**	237	72	219	35	129	170	191
07:30	*	*	*	184	**292**	186	262	211	**258**	209	69	206	42	133	185	188
07:45	*	*	*	174	**282**	145	**298**	207	**259**	197	115	186	52	123	201	172
08:00	*	*	*	165	**313**	176	**296**	198	**253**	214	90	206	48	102	200	177
08:15	*	*	*	179	**285**	177	**282**	171	201	197	116	160	69	110	191	166
08:30	*	*	*	143	274	127	**281**	135	190	205	147	156	70	86	192	142
08:45	*	*	*	124	197	123	229	150	191	155	166	159	89	87	174	133
09:00	*	*	*	115	172	107	141	120	157	142	151	124	95	91	143	116
09:15	*	*	*	99	199	111	177	126	175	135	156	128	97	78	161	113
09:30	*	*	121	99	187	107	188	96	199	131	166	141	139	71	167	108
09:45	*	*	183	89	170	94	186	90	185	108	180	115	156	63	177	93
10:00	*	*	152	72	164	80	170	84	192	122	209	107	175	59	177	87
10:15	*	*	165	67	179	62	171	77	198	93	223	86	195	47	188	72
10:30	*	*	187	60	184	47	185	56	215	79	253	73	230	35	209	58
10:45	*	*	**194**	53	208	54	177	47	203	76	249	90	245	42	213	60
11:00	*	*	**195**	52	170	37	205	47	214	91	**242**	77	**243**	35	**212**	56
11:15	*	*	**210**	32	200	48	192	39	211	66	**259**	58	**228**	34	**217**	46
11:30	*	*	**208**	32	180	33	239	29	221	67	**316**	58	**260**	22	**237**	40
11:45	*	*	191	26	225	33	224	22	220	46	**294**	56	**273**	20	**238**	34
Total	0	0	1806	8658	5523	8562	5726	9101	5238	9922	4209	10297	3393	8167	4774	9114
Day Total	0		10464		14085		14827		15160		14506		11560		13888	
% Splits	0.0%	0.0%	17.3 %	82.7 %	39.2 %	60.8 %	38.6 %	61.4 %	34.6 %	65.4 %	29.0 %	71.0 %	29.4 %	70.6 %	34.4 %	65.6%
Peak	-	-	10:45	04:30	07:30	04:00	07:45	04:45	07:15	04:15	11:00	00:15	11:00	01:15	11:00	03:45
Vol.	-	-	807	1070	1172	1023	1157	1124	986	1133	1111	1202	1004	1160	904	1045
P.H.F.			0.961	0.973	0.936	0.920	0.971	0.937	0.952	0.944	0.879	0.919	0.919	0.929	0.950	0.978

TechniQuest Corporation

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Monmouth Junction, NJ 08852
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Site Code: 029-02
Date Start: 30-Apr-19
Hurffville Road North of SR 42 and South of Clements Bridge Road - NB

Start	06-May-19		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	23	219	16	*	*	*	*	*	*	*	*	*	*	*	20	219
12:15	21	224	15	*	*	*	*	*	*	*	*	*	*	*	18	224
12:30	24	238	16	*	*	*	*	*	*	*	*	*	*	*	20	238
12:45	11	249	10	*	*	*	*	*	*	*	*	*	*	*	10	249
01:00	10	223	14	*	*	*	*	*	*	*	*	*	*	*	12	223
01:15	9	230	10	*	*	*	*	*	*	*	*	*	*	*	10	230
01:30	12	204	11	*	*	*	*	*	*	*	*	*	*	*	12	204
01:45	12	231	10	*	*	*	*	*	*	*	*	*	*	*	11	231
02:00	8	187	12	*	*	*	*	*	*	*	*	*	*	*	10	187
02:15	4	226	11	*	*	*	*	*	*	*	*	*	*	*	8	226
02:30	7	199	16	*	*	*	*	*	*	*	*	*	*	*	12	199
02:45	7	243	8	*	*	*	*	*	*	*	*	*	*	*	8	243
03:00	6	213	10	*	*	*	*	*	*	*	*	*	*	*	8	213
03:15	9	245	7	*	*	*	*	*	*	*	*	*	*	*	8	245
03:30	12	251	9	*	*	*	*	*	*	*	*	*	*	*	10	251
03:45	12	254	17	*	*	*	*	*	*	*	*	*	*	*	14	254
04:00	11	229	22	*	*	*	*	*	*	*	*	*	*	*	16	229
04:15	13	263	20	*	*	*	*	*	*	*	*	*	*	*	16	263
04:30	29	235	23	*	*	*	*	*	*	*	*	*	*	*	26	235
04:45	20	**264**	26	*	*	*	*	*	*	*	*	*	*	*	23	**264**
05:00	27	**223**	22	*	*	*	*	*	*	*	*	*	*	*	24	**223**
05:15	39	**278**	37	*	*	*	*	*	*	*	*	*	*	*	38	**278**
05:30	59	**268**	75	*	*	*	*	*	*	*	*	*	*	*	67	**268**
05:45	85	219	78	*	*	*	*	*	*	*	*	*	*	*	82	219
06:00	84	238	83	*	*	*	*	*	*	*	*	*	*	*	84	238
06:15	130	228	133	*	*	*	*	*	*	*	*	*	*	*	132	228
06:30	218	219	209	*	*	*	*	*	*	*	*	*	*	*	214	219
06:45	259	208	263	*	*	*	*	*	*	*	*	*	*	*	261	208
07:00	254	206	268	*	*	*	*	*	*	*	*	*	*	*	261	206
07:15	238	197	224	*	*	*	*	*	*	*	*	*	*	*	231	197
07:30	**275**	179	**267**	*	*	*	*	*	*	*	*	*	*	*	**271**	179
07:45	**260**	180	**276**	*	*	*	*	*	*	*	*	*	*	*	**268**	180
08:00	**286**	167	**291**	*	*	*	*	*	*	*	*	*	*	*	**288**	167
08:15	**297**	181	**304**	*	*	*	*	*	*	*	*	*	*	*	**300**	181
08:30	234	177	238	*	*	*	*	*	*	*	*	*	*	*	236	177
08:45	177	122	179	*	*	*	*	*	*	*	*	*	*	*	178	122
09:00	148	101	154	*	*	*	*	*	*	*	*	*	*	*	151	101
09:15	155	118	171	*	*	*	*	*	*	*	*	*	*	*	163	118
09:30	156	95	164	*	*	*	*	*	*	*	*	*	*	*	160	95
09:45	163	70	*	*	*	*	*	*	*	*	*	*	*	*	163	70
10:00	153	72	*	*	*	*	*	*	*	*	*	*	*	*	153	72
10:15	181	63	*	*	*	*	*	*	*	*	*	*	*	*	181	63
10:30	172	57	*	*	*	*	*	*	*	*	*	*	*	*	172	57
10:45	208	37	*	*	*	*	*	*	*	*	*	*	*	*	208	37
11:00	183	35	*	*	*	*	*	*	*	*	*	*	*	*	183	35
11:15	176	36	*	*	*	*	*	*	*	*	*	*	*	*	176	36
11:30	195	33	*	*	*	*	*	*	*	*	*	*	*	*	195	33
11:45	229	21	*	*	*	*	*	*	*	*	*	*	*	*	229	21
Total	5301	8655	3719	0	0	0	0	0	0	0	0	0	0	0	5341	8655
Day Total	13956		3719		0		0		0		0		0		13996	
% Splits	38.0 %	62.0 %	100.0 %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	38.2 %	61.8%
Peak	07:30	04:45	07:30	-	-	-	-	-	-	-	-	-	-	-	07:30	04:45
Vol.	1118	1033	1138	-	-	-	-	-	-	-	-	-	-	-	1127	1033
P.H.F.	0.941	0.929	0.936												0.939	0.929

ADT ADT 14,016 AADT 14,016

TechniQuest Corporation

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Site Code: 029-02
Date Start: 30-Apr-19
Hurffville Road North of SR 42 and South of Clements Bridge Road - SB

Start	29-Apr-19		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	*	200	29	209	22	210	44	207	47	261	47	259	38	224
12:15	*	*	*	188	29	208	28	192	27	226	47	**358**	55	262	37	239
12:30	*	*	*	219	26	211	17	238	18	241	35	**282**	45	266	28	243
12:45	*	*	*	201	18	210	20	238	24	247	31	**283**	25	229	24	235
01:00	*	*	*	214	24	208	24	245	17	273	26	**275**	28	**263**	24	246
01:15	*	*	*	237	16	211	10	211	19	265	28	290	32	**275**	21	248
01:30	*	*	*	192	17	234	20	238	20	262	34	286	25	**271**	23	247
01:45	*	*	*	217	13	222	28	213	21	243	24	250	26	**253**	22	233
02:00	*	*	*	209	14	196	16	249	22	249	20	301	24	255	19	243
02:15	*	*	*	244	20	252	20	231	21	269	19	276	26	256	21	255
02:30	*	*	*	209	14	230	12	234	10	253	19	266	23	287	16	246
02:45	*	*	*	213	13	223	14	246	8	268	20	277	24	257	16	247
03:00	*	*	*	227	8	251	18	209	7	289	18	285	12	252	13	252
03:15	*	*	*	244	9	266	16	263	11	285	20	265	16	242	14	261
03:30	*	*	*	259	4	251	11	278	13	280	14	283	13	234	11	264
03:45	*	*	*	245	6	252	10	254	9	272	6	286	10	239	8	258
04:00	*	*	*	278	20	285	6	276	13	294	15	295	12	222	13	**275**
04:15	*	*	*	283	11	270	18	276	10	**313**	5	298	10	240	11	**280**
04:30	*	*	*	281	17	294	12	260	14	**296**	4	267	7	210	11	**268**
04:45	*	*	*	**306**	21	272	30	270	18	**290**	10	259	10	194	18	**265**
05:00	*	*	*	**276**	24	274	21	292	12	**298**	14	247	6	224	15	268
05:15	*	*	*	**298**	27	260	34	292	27	302	17	231	13	214	24	266
05:30	*	*	*	**286**	42	**286**	34	**264**	45	257	15	307	9	192	29	265
05:45	*	*	*	267	53	**284**	45	**280**	38	282	23	259	13	186	34	260
06:00	*	*	*	287	43	**288**	37	**303**	50	287	23	256	16	186	34	268
06:15	*	*	*	268	88	**271**	95	**299**	71	274	22	225	12	197	58	256
06:30	*	*	*	255	91	257	102	263	91	280	33	225	16	159	67	240
06:45	*	*	*	220	100	246	95	244	101	263	44	204	29	168	74	224
07:00	*	*	*	194	110	198	112	241	96	253	41	219	37	152	79	210
07:15	*	*	*	184	133	180	128	217	147	251	60	211	47	131	103	196
07:30	*	*	*	198	178	159	180	226	150	226	66	217	34	132	122	193
07:45	*	*	*	187	176	180	148	212	167	216	84	185	42	113	123	182
08:00	*	*	*	208	165	194	167	182	141	240	107	217	51	123	126	194
08:15	*	*	*	160	149	151	165	143	167	192	125	165	68	98	135	152
08:30	*	*	*	153	172	133	151	160	131	199	130	156	74	102	132	150
08:45	*	*	*	129	139	135	128	136	167	181	109	150	74	86	123	136
09:00	*	*	*	111	140	118	149	111	152	157	141	121	109	87	138	118
09:15	*	*	*	107	164	95	128	107	137	147	135	143	84	61	130	110
09:30	*	*	148	92	179	96	162	121	155	157	157	129	116	67	153	110
09:45	*	*	169	100	146	61	155	90	184	118	191	113	118	58	160	90
10:00	*	*	158	122	143	69	144	74	159	97	183	120	106	52	149	89
10:15	*	*	176	123	136	62	153	66	182	108	177	104	134	47	160	85
10:30	*	*	164	109	136	63	176	68	163	93	202	78	150	42	165	76
10:45	*	*	156	103	136	61	156	63	201	74	193	66	166	34	168	67
11:00	*	*	**168**	104	**173**	52	**151**	63	**171**	67	**219**	66	**189**	42	**178**	66
11:15	*	*	**166**	63	**156**	30	**208**	60	**180**	70	**235**	53	**176**	30	**187**	51
11:30	*	*	**199**	41	**196**	31	**202**	39	**222**	61	**234**	65	**185**	25	**206**	44
11:45	*	*	**177**	27	**196**	18	**196**	31	**211**	51	**259**	59	**230**	24	**212**	35
Total	0	0	1681	9338	3920	9007	3974	9478	4064	10523	3681	10234	2774	7998	3672	9430
Day Total	0		11019		12927		13452		14587		13915		10772		13102	
% Splits	0.0%	0.0%	15.3 %	84.7 %	30.3 %	69.7 %	29.5 %	70.5 %	27.9 %	72.1 %	26.5 %	73.5 %	25.8 %	74.2 %	28.0 %	72.0%
Peak	-	-	11:00	04:45	11:00	05:30	11:00	05:30	11:00	04:15	11:00	00:15	11:00	01:00	11:00	04:00
Vol.	-	-	710	1166	721	1129	757	1146	784	1197	947	1198	780	1062	783	1088
P.H.F.			0.892	0.953	0.920	0.960	0.910	0.946	0.883	0.956	0.914	0.837	0.848	0.965	0.923	0.971

TechniQuest Corporation

4105 US Route 1, Suite #10
Monmouth Junction, NJ 08852
Phone: 732-274-9500 Fax: 732-274-9510
www.techniquestcorporation.com

Site Code: 029-02
Date Start: 30-Apr-19
Hurffville Road North of SR 42 and South of Clements Bridge Road - SB

Start	06-May-19		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	22	205	26	*	*	*	*	*	*	*	*	*	*	*	24	205
12:15	26	240	18	*	*	*	*	*	*	*	*	*	*	*	22	240
12:30	20	238	27	*	*	*	*	*	*	*	*	*	*	*	24	238
12:45	17	218	18	*	*	*	*	*	*	*	*	*	*	*	18	218
01:00	9	211	13	*	*	*	*	*	*	*	*	*	*	*	11	211
01:15	18	216	18	*	*	*	*	*	*	*	*	*	*	*	18	216
01:30	9	203	15	*	*	*	*	*	*	*	*	*	*	*	12	203
01:45	11	215	19	*	*	*	*	*	*	*	*	*	*	*	15	215
02:00	8	230	14	*	*	*	*	*	*	*	*	*	*	*	11	230
02:15	9	224	16	*	*	*	*	*	*	*	*	*	*	*	12	224
02:30	11	240	10	*	*	*	*	*	*	*	*	*	*	*	10	240
02:45	13	246	12	*	*	*	*	*	*	*	*	*	*	*	12	246
03:00	6	219	14	*	*	*	*	*	*	*	*	*	*	*	10	219
03:15	8	231	9	*	*	*	*	*	*	*	*	*	*	*	8	231
03:30	9	249	8	*	*	*	*	*	*	*	*	*	*	*	8	249
03:45	7	262	5	*	*	*	*	*	*	*	*	*	*	*	6	262
04:00	6	273	11	*	*	*	*	*	*	*	*	*	*	*	8	273
04:15	9	269	22	*	*	*	*	*	*	*	*	*	*	*	16	269
04:30	10	254	19	*	*	*	*	*	*	*	*	*	*	*	14	254
04:45	34	267	26	*	*	*	*	*	*	*	*	*	*	*	30	267
05:00	19	**317**	21	*	*	*	*	*	*	*	*	*	*	*	20	**317**
05:15	18	**260**	24	*	*	*	*	*	*	*	*	*	*	*	21	**260**
05:30	40	**293**	35	*	*	*	*	*	*	*	*	*	*	*	38	**293**
05:45	37	**282**	37	*	*	*	*	*	*	*	*	*	*	*	37	**282**
06:00	48	255	47	*	*	*	*	*	*	*	*	*	*	*	48	255
06:15	61	262	71	*	*	*	*	*	*	*	*	*	*	*	66	262
06:30	85	258	117	*	*	*	*	*	*	*	*	*	*	*	101	258
06:45	92	205	94	*	*	*	*	*	*	*	*	*	*	*	93	205
07:00	93	217	108	*	*	*	*	*	*	*	*	*	*	*	100	217
07:15	143	201	136	*	*	*	*	*	*	*	*	*	*	*	140	201
07:30	168	188	**171**	*	*	*	*	*	*	*	*	*	*	*	170	188
07:45	144	155	**177**	*	*	*	*	*	*	*	*	*	*	*	160	155
08:00	157	177	**174**	*	*	*	*	*	*	*	*	*	*	*	166	177
08:15	120	154	**162**	*	*	*	*	*	*	*	*	*	*	*	141	154
08:30	152	156	159	*	*	*	*	*	*	*	*	*	*	*	156	156
08:45	128	149	136	*	*	*	*	*	*	*	*	*	*	*	132	149
09:00	104	114	121	*	*	*	*	*	*	*	*	*	*	*	112	114
09:15	133	123	139	*	*	*	*	*	*	*	*	*	*	*	136	123
09:30	120	109	125	*	*	*	*	*	*	*	*	*	*	*	122	109
09:45	167	76	171	*	*	*	*	*	*	*	*	*	*	*	169	76
10:00	164	98	167	*	*	*	*	*	*	*	*	*	*	*	166	98
10:15	151	66	*	*	*	*	*	*	*	*	*	*	*	*	151	66
10:30	149	66	*	*	*	*	*	*	*	*	*	*	*	*	149	66
10:45	156	47	*	*	*	*	*	*	*	*	*	*	*	*	156	47
11:00	**157**	40	*	*	*	*	*	*	*	*	*	*	*	*	**157**	40
11:15	**197**	41	*	*	*	*	*	*	*	*	*	*	*	*	**197**	41
11:30	**191**	36	*	*	*	*	*	*	*	*	*	*	*	*	**191**	36
11:45	**202**	27	*	*	*	*	*	*	*	*	*	*	*	*	**202**	27
Total	3658	9082	2712	0	0	0	0	0	0	0	0	0	0	0	3786	9082
Day Total	12740		2712		0		0		0		0		0		12868	
% Splits	28.7 %	71.3 %	100.0 %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	29.4 %	70.6%
Peak	11:00	05:00	07:30	-	-	-	-	-	-	-	-	-	-	-	11:00	05:00
Vol.	747	1152	684	-	-	-	-	-	-	-	-	-	-	-	747	1152
P.H.F.	0.925	0.909	0.966												0.925	0.909

ADT ADT 13,094 AADT 13,094

TechniQuest Corporation

4105 US Route 1, Suite #10
Monmouth Junction, NJ 08852
Phone: 732-274-9500 Fax: 732-274-9510
www.techniquestcorporation.com

Site Code: 029-03
Date Start: 30-Apr-19
Clements Bridge Road btw Almonesson Road and SR 42 - EB

Start	29-Apr-19		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	*	197	26	192	23	176	44	171	54	213	73	205	44	192
12:15	*	*	*	199	33	186	39	179	25	213	57	245	57	236	42	210
12:30	*	*	*	204	21	192	10	190	19	225	38	273	48	217	27	217
12:45	*	*	*	186	14	206	13	202	23	237	34	286	40	246	25	227
01:00	*	*	*	190	13	173	23	223	20	240	28	254	33	239	23	220
01:15	*	*	*	206	27	186	26	202	14	241	44	281	41	227	30	224
01:30	*	*	*	204	16	182	25	177	15	204	33	249	47	**259**	27	212
01:45	*	*	*	185	6	209	42	214	14	236	25	**282**	26	**236**	23	227
02:00	*	*	*	216	7	179	31	229	13	227	20	**265**	24	**245**	19	227
02:15	*	*	*	197	24	221	36	202	18	230	19	**301**	26	**251**	25	234
02:30	*	*	*	197	5	183	13	205	13	232	26	**277**	26	249	17	224
02:45	*	*	*	186	13	206	10	207	2	255	23	229	15	198	13	214
03:00	*	*	*	231	7	217	13	220	7	269	10	243	14	214	10	232
03:15	*	*	*	221	14	256	11	244	5	254	26	260	21	201	15	239
03:30	*	*	*	243	10	221	9	217	10	276	12	250	12	220	11	238
03:45	*	*	*	227	9	244	9	239	6	263	9	276	18	202	10	**242**
04:00	*	*	*	247	24	263	10	265	15	**307**	10	283	6	213	13	**263**
04:15	*	*	*	263	19	248	12	270	12	**270**	8	251	11	210	12	**252**
04:30	*	*	*	268	17	252	18	238	23	**263**	8	260	10	178	15	**243**
04:45	*	*	*	206	20	**283**	24	**246**	16	**279**	14	264	7	168	16	241
05:00	*	*	*	240	20	**271**	14	**295**	17	258	9	256	10	189	14	252
05:15	*	*	*	**289**	19	**282**	23	**246**	19	282	19	265	6	187	17	258
05:30	*	*	*	**238**	26	**260**	38	**273**	34	283	14	237	9	165	24	243
05:45	*	*	*	**249**	50	274	43	246	49	252	15	223	16	180	35	237
06:00	*	*	*	**256**	67	245	63	244	39	249	22	238	19	165	42	233
06:15	*	*	*	213	87	246	103	248	85	291	21	209	19	209	63	236
06:30	*	*	*	215	123	187	136	190	117	251	42	219	23	152	88	202
06:45	*	*	*	194	186	213	187	195	159	241	61	212	30	145	125	200
07:00	*	*	*	191	179	177	189	186	170	215	52	228	34	134	125	188
07:15	*	*	*	169	**232**	190	**261**	172	**216**	210	72	188	33	130	163	176
07:30	*	*	*	183	**275**	172	**242**	180	**211**	188	82	185	36	121	169	172
07:45	*	*	*	189	**249**	178	**275**	174	**215**	205	89	184	37	101	173	172
08:00	*	*	*	172	**224**	168	**208**	154	**198**	198	86	174	49	105	153	162
08:15	*	*	*	150	179	168	186	162	141	190	113	191	48	126	133	164
08:30	*	*	*	164	165	132	156	142	175	177	122	153	54	89	134	143
08:45	*	*	*	141	158	117	143	132	150	151	129	121	68	58	130	120
09:00	*	*	*	134	162	103	133	107	125	161	148	114	79	75	129	116
09:15	*	*	*	128	138	112	151	115	149	148	151	134	102	56	138	116
09:30	*	*	*	103	149	94	132	128	178	159	159	146	95	74	143	117
09:45	*	*	*	78	132	79	136	91	142	107	191	100	127	32	146	81
10:00	*	*	124	84	143	97	132	86	156	97	173	93	138	42	144	83
10:15	*	*	134	81	139	85	147	79	146	101	175	108	176	51	153	84
10:30	*	*	142	45	154	51	158	73	183	74	211	72	157	36	168	58
10:45	*	*	**163**	56	149	36	163	54	205	59	237	85	169	31	181	54
11:00	*	*	**140**	28	148	36	169	51	152	56	**200**	75	**148**	30	**160**	46
11:15	*	*	**172**	52	176	56	175	68	172	75	**212**	73	**202**	39	**185**	60
11:30	*	*	**172**	27	179	29	173	48	186	48	**237**	70	**207**	48	**192**	45
11:45	*	*	155	24	178	18	158	29	214	46	**271**	52	**222**	19	**200**	31
Total	0	0	1202	8366	4411	8375	4491	8513	4317	9664	3811	9647	2868	7203	3944	8627
Day Total	0		9568		12786		13004		13981		13458		10071		12571	
% Splits	0.0%	0.0%	12.6 %	87.4 %	34.5 %	65.5 %	34.5 %	65.5 %	30.9 %	69.1 %	28.3 %	71.7 %	28.5 %	71.5 %	31.4 %	68.6%
Peak	-	-	10:45	05:15	07:15	04:45	07:15	04:45	07:15	04:00	11:00	01:45	11:00	01:30	11:00	03:45
Vol.	-	-	647	1032	980	1096	986	1060	840	1119	920	1125	779	991	737	1000
P.H.F.			0.940	0.893	0.891	0.968	0.896	0.898	0.972	0.911	0.849	0.934	0.877	0.957	0.921	0.951

TechniQuest Corporation

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Site Code: 029-03
Date Start: 30-Apr-19
Clements Bridge Road btw Almonesson Road and SR 42 - EB

Start	06-May-19		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	24	183	24	*	*	*	*	*	*	*	*	*	*	*	24	183
12:15	38	206	21	*	*	*	*	*	*	*	*	*	*	*	30	206
12:30	15	189	19	*	*	*	*	*	*	*	*	*	*	*	17	189
12:45	12	190	8	*	*	*	*	*	*	*	*	*	*	*	10	190
01:00	10	200	20	*	*	*	*	*	*	*	*	*	*	*	15	200
01:15	25	204	10	*	*	*	*	*	*	*	*	*	*	*	18	204
01:30	8	215	13	*	*	*	*	*	*	*	*	*	*	*	10	215
01:45	7	218	8	*	*	*	*	*	*	*	*	*	*	*	8	218
02:00	10	206	10	*	*	*	*	*	*	*	*	*	*	*	10	206
02:15	9	210	6	*	*	*	*	*	*	*	*	*	*	*	8	210
02:30	12	202	6	*	*	*	*	*	*	*	*	*	*	*	9	202
02:45	4	199	6	*	*	*	*	*	*	*	*	*	*	*	5	199
03:00	5	214	8	*	*	*	*	*	*	*	*	*	*	*	6	214
03:15	4	198	6	*	*	*	*	*	*	*	*	*	*	*	5	198
03:30	6	228	10	*	*	*	*	*	*	*	*	*	*	*	8	228
03:45	11	266	11	*	*	*	*	*	*	*	*	*	*	*	11	266
04:00	12	255	12	*	*	*	*	*	*	*	*	*	*	*	12	255
04:15	10	252	11	*	*	*	*	*	*	*	*	*	*	*	10	252
04:30	15	220	21	*	*	*	*	*	*	*	*	*	*	*	18	220
04:45	25	**267**	22	*	*	*	*	*	*	*	*	*	*	*	24	**267**
05:00	13	**266**	25	*	*	*	*	*	*	*	*	*	*	*	19	**266**
05:15	26	**277**	20	*	*	*	*	*	*	*	*	*	*	*	23	**277**
05:30	34	**251**	31	*	*	*	*	*	*	*	*	*	*	*	32	**251**
05:45	44	231	49	*	*	*	*	*	*	*	*	*	*	*	46	231
06:00	57	214	82	*	*	*	*	*	*	*	*	*	*	*	70	214
06:15	92	221	90	*	*	*	*	*	*	*	*	*	*	*	91	221
06:30	142	200	133	*	*	*	*	*	*	*	*	*	*	*	138	200
06:45	177	186	175	*	*	*	*	*	*	*	*	*	*	*	176	186
07:00	170	193	194	*	*	*	*	*	*	*	*	*	*	*	182	193
07:15	**230**	210	**254**	*	*	*	*	*	*	*	*	*	*	*	**242**	210
07:30	**254**	184	**232**	*	*	*	*	*	*	*	*	*	*	*	**243**	184
07:45	**217**	169	**247**	*	*	*	*	*	*	*	*	*	*	*	**232**	169
08:00	**201**	152	**211**	*	*	*	*	*	*	*	*	*	*	*	**206**	152
08:15	182	158	188	*	*	*	*	*	*	*	*	*	*	*	185	158
08:30	122	132	129	*	*	*	*	*	*	*	*	*	*	*	126	132
08:45	165	127	173	*	*	*	*	*	*	*	*	*	*	*	169	127
09:00	121	115	130	*	*	*	*	*	*	*	*	*	*	*	126	115
09:15	122	109	130	*	*	*	*	*	*	*	*	*	*	*	126	109
09:30	152	120	159	*	*	*	*	*	*	*	*	*	*	*	156	120
09:45	133	99	139	*	*	*	*	*	*	*	*	*	*	*	136	99
10:00	128	81	133	*	*	*	*	*	*	*	*	*	*	*	130	81
10:15	152	60	156	*	*	*	*	*	*	*	*	*	*	*	154	60
10:30	152	48	*	*	*	*	*	*	*	*	*	*	*	*	152	48
10:45	145	32	*	*	*	*	*	*	*	*	*	*	*	*	145	32
11:00	150	35	*	*	*	*	*	*	*	*	*	*	*	*	150	35
11:15	166	40	*	*	*	*	*	*	*	*	*	*	*	*	166	40
11:30	161	26	*	*	*	*	*	*	*	*	*	*	*	*	161	26
11:45	172	24	*	*	*	*	*	*	*	*	*	*	*	*	172	24
Total	4142	8282	3332	0	0	0	0	0	0	0	0	0	0	0	4212	8282
Day Total	12424		3332		0		0		0		0		0		12494	
% Splits	33.3 %	66.7 %	100.0 %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	33.7 %	66.3%
Peak	07:15	04:45	07:15	-	-	-	-	-	-	-	-	-	-	-	07:15	04:45
Vol.	902	1061	944	-	-	-	-	-	-	-	-	-	-	-	923	1061
P.H.F.	0.888	0.958	0.929												0.950	0.958

ADT ADT 12,618 AADT 12,618

TechniQuest Corporation

4105 US Route 1, Suite #10
Monmouth Junction, NJ 08852
Phone: 732-274-9500 Fax: 732-274-9510
www.techniquestcorporation.com

Site Code: 029-03
Date Start: 30-Apr-19
Clements Bridge Road btw Almonesson Road and SR 42 - WB

Start Time	29-Apr-19 A.M.	29-Apr-19 P.M.	Tue A.M.	Tue P.M.	Wed A.M.	Wed P.M.	Thu A.M.	Thu P.M.	Fri A.M.	Fri P.M.	Sat A.M.	Sat P.M.	Sun A.M.	Sun P.M.	Average Da A.M.	Average Da P.M.
12:00	*	*	*	196	20	188	22	213	13	217	31	258	38	234	25	218
12:15	*	*	*	228	10	213	17	228	9	234	27	**273**	38	229	20	234
12:30	*	*	*	223	12	200	17	214	14	238	17	**266**	31	232	18	229
12:45	*	*	*	202	16	229	11	240	12	234	24	**264**	13	231	15	233
01:00	*	*	*	221	8	231	17	209	8	242	14	**304**	19	**254**	13	244
01:15	*	*	*	230	9	209	14	213	9	242	10	252	17	**218**	12	227
01:30	*	*	*	208	18	215	6	231	10	276	6	265	12	**244**	10	240
01:45	*	*	*	245	5	256	10	212	17	273	17	240	26	**251**	15	246
02:00	*	*	*	217	10	238	15	244	5	233	13	240	13	234	11	234
02:15	*	*	*	198	3	205	9	214	15	192	8	262	9	236	9	218
02:30	*	*	*	256	12	251	9	257	8	264	9	266	12	216	10	252
02:45	*	*	*	252	16	260	8	263	5	266	10	240	8	240	9	254
03:00	*	*	*	265	14	232	5	248	10	269	6	260	10	211	9	248
03:15	*	*	*	264	13	273	10	233	13	258	11	266	4	201	10	249
03:30	*	*	*	253	27	256	31	249	20	285	4	223	9	232	18	250
03:45	*	*	*	265	22	252	22	248	28	245	13	282	5	231	18	**254**
04:00	*	*	*	269	25	247	22	**274**	36	**290**	12	248	13	237	22	**261**
04:15	*	*	*	**256**	28	**275**	25	**247**	23	**283**	7	258	6	193	18	**252**
04:30	*	*	*	**280**	37	**272**	32	**258**	32	**263**	15	265	9	199	25	**256**
04:45	*	*	*	**284**	45	**250**	76	**267**	51	**272**	29	250	14	179	43	250
05:00	*	*	*	**294**	45	**272**	44	271	49	266	18	216	19	182	35	250
05:15	*	*	*	242	75	248	76	244	40	268	20	263	20	137	46	234
05:30	*	*	*	238	86	279	88	218	84	261	47	249	27	168	66	236
05:45	*	*	*	241	104	251	107	232	102	265	47	234	36	158	79	230
06:00	*	*	*	239	100	197	104	201	88	244	58	207	45	134	79	204
06:15	*	*	*	203	125	216	120	208	111	275	71	211	40	140	93	209
06:30	*	*	*	211	123	219	112	228	121	215	58	219	29	122	89	202
06:45	*	*	*	197	151	175	116	199	147	215	108	189	54	126	115	184
07:00	*	*	*	181	153	147	126	177	141	196	91	176	47	95	112	162
07:15	*	*	*	176	187	155	160	201	154	193	92	216	55	108	130	175
07:30	*	*	*	160	186	155	155	154	164	211	128	149	67	102	140	155
07:45	*	*	*	138	143	140	140	150	139	185	131	171	78	103	126	148
08:00	*	*	*	122	138	128	113	132	120	166	140	148	74	66	117	127
08:15	*	*	*	110	145	117	134	105	140	139	135	143	79	77	127	115
08:30	*	*	*	86	105	111	119	99	163	152	141	133	95	64	125	108
08:45	*	*	135	76	159	88	148	88	147	141	173	137	125	61	148	98
09:00	*	*	160	76	128	90	133	91	146	113	175	107	129	54	145	88
09:15	*	*	143	66	171	77	153	80	155	70	207	99	141	39	162	72
09:30	*	*	145	62	149	82	156	55	167	82	216	85	169	54	167	70
09:45	*	*	151	70	158	70	166	47	166	72	215	92	214	49	178	67
10:00	*	*	185	64	179	48	162	56	218	90	223	96	176	38	190	65
10:15	*	*	144	44	168	62	190	34	189	79	231	95	192	30	186	57
10:30	*	*	**201**	40	**224**	30	179	22	219	70	258	61	203	28	214	42
10:45	*	*	**200**	35	**204**	41	**207**	24	204	65	258	64	229	15	217	41
11:00	*	*	**198**	28	**189**	32	**214**	28	**253**	47	**283**	58	**216**	24	**226**	36
11:15	*	*	**224**	29	**221**	16	**213**	34	**238**	51	**256**	58	**227**	21	**230**	35
11:30	*	*	180	12	209	22	**208**	20	**260**	44	**273**	34	**207**	19	**223**	25
11:45	*	*	208	10	219	28	186	20	**263**	35	**294**	31	**254**	13	**237**	23
Total	0	0	2274	8262	4594	8248	4407	8180	4726	9286	4630	9123	3553	6729	4332	8307
Day Total	0		10536		12842		12587		14012		13753		10282		12639	
% Splits	0.0%	0.0%	21.6 %	78.4 %	35.8 %	64.2 %	35.0 %	65.0 %	33.7 %	66.3 %	33.7 %	66.3 %	34.6 %	65.4 %	34.3 %	65.7%
Peak	-	-	10:30	04:15	10:30	04:15	10:45	04:00	11:00	04:00	11:00	00:15	11:00	01:00	11:00	03:45
Vol.	-	-	823	1114	838	1069	842	1046	1014	1108	1106	1107	904	967	916	1023
P.H.F.			0.919	0.947	0.935	0.972	0.984	0.954	0.964	0.955	0.940	0.910	0.890	0.952	0.966	0.980

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Site Code: 029-03
Date Start: 30-Apr-19
Clements Bridge Road btw Almonesson Road and SR 42 - WB

Start Time	06-May-19 A.M.	06-May-19 P.M.	Tue A.M.	Tue P.M.	Wed A.M.	Wed P.M.	Thu A.M.	Thu P.M.	Fri A.M.	Fri P.M.	Sat A.M.	Sat P.M.	Sun A.M.	Sun P.M.	Average Da A.M.	Average Da P.M.
12:00	7	203	10	*	*	*	*	*	*	*	*	*	*	*	8	203
12:15	7	220	8	*	*	*	*	*	*	*	*	*	*	*	8	220
12:30	13	216	6	*	*	*	*	*	*	*	*	*	*	*	10	216
12:45	6	203	9	*	*	*	*	*	*	*	*	*	*	*	8	203
01:00	7	199	8	*	*	*	*	*	*	*	*	*	*	*	8	199
01:15	6	211	7	*	*	*	*	*	*	*	*	*	*	*	6	211
01:30	5	225	8	*	*	*	*	*	*	*	*	*	*	*	6	225
01:45	3	229	10	*	*	*	*	*	*	*	*	*	*	*	6	229
02:00	4	227	5	*	*	*	*	*	*	*	*	*	*	*	4	227
02:15	5	244	3	*	*	*	*	*	*	*	*	*	*	*	4	244
02:30	9	241	9	*	*	*	*	*	*	*	*	*	*	*	9	241
02:45	10	234	8	*	*	*	*	*	*	*	*	*	*	*	9	234
03:00	8	259	12	*	*	*	*	*	*	*	*	*	*	*	10	259
03:15	10	245	15	*	*	*	*	*	*	*	*	*	*	*	12	245
03:30	29	256	22	*	*	*	*	*	*	*	*	*	*	*	26	256
03:45	14	**267**	24	*	*	*	*	*	*	*	*	*	*	*	19	**267**
04:00	24	**288**	15	*	*	*	*	*	*	*	*	*	*	*	20	**288**
04:15	26	**283**	30	*	*	*	*	*	*	*	*	*	*	*	28	**283**
04:30	37	**276**	45	*	*	*	*	*	*	*	*	*	*	*	41	**276**
04:45	53	251	61	*	*	*	*	*	*	*	*	*	*	*	57	251
05:00	43	250	54	*	*	*	*	*	*	*	*	*	*	*	48	250
05:15	62	256	74	*	*	*	*	*	*	*	*	*	*	*	68	256
05:30	74	214	87	*	*	*	*	*	*	*	*	*	*	*	80	214
05:45	106	209	102	*	*	*	*	*	*	*	*	*	*	*	104	209
06:00	99	209	101	*	*	*	*	*	*	*	*	*	*	*	100	209
06:15	100	202	125	*	*	*	*	*	*	*	*	*	*	*	112	202
06:30	119	174	144	*	*	*	*	*	*	*	*	*	*	*	132	174
06:45	127	185	**162**	*	*	*	*	*	*	*	*	*	*	*	144	185
07:00	135	170	**174**	*	*	*	*	*	*	*	*	*	*	*	154	170
07:15	179	151	**186**	*	*	*	*	*	*	*	*	*	*	*	182	151
07:30	160	150	**166**	*	*	*	*	*	*	*	*	*	*	*	163	150
07:45	147	151	152	*	*	*	*	*	*	*	*	*	*	*	150	151
08:00	126	123	130	*	*	*	*	*	*	*	*	*	*	*	128	123
08:15	133	107	136	*	*	*	*	*	*	*	*	*	*	*	134	107
08:30	122	108	126	*	*	*	*	*	*	*	*	*	*	*	124	108
08:45	120	76	125	*	*	*	*	*	*	*	*	*	*	*	122	76
09:00	123	65	129	*	*	*	*	*	*	*	*	*	*	*	126	65
09:15	148	58	*	*	*	*	*	*	*	*	*	*	*	*	148	58
09:30	185	46	*	*	*	*	*	*	*	*	*	*	*	*	185	46
09:45	151	44	*	*	*	*	*	*	*	*	*	*	*	*	151	44
10:00	169	39	*	*	*	*	*	*	*	*	*	*	*	*	169	39
10:15	184	35	*	*	*	*	*	*	*	*	*	*	*	*	184	35
10:30	171	26	*	*	*	*	*	*	*	*	*	*	*	*	171	26
10:45	210	28	*	*	*	*	*	*	*	*	*	*	*	*	210	28
11:00	**179**	13	*	*	*	*	*	*	*	*	*	*	*	*	**179**	13
11:15	**194**	18	*	*	*	*	*	*	*	*	*	*	*	*	**194**	18
11:30	**221**	9	*	*	*	*	*	*	*	*	*	*	*	*	**221**	9
11:45	**219**	17	*	*	*	*	*	*	*	*	*	*	*	*	**219**	17
Total	4289	7910	2488	0	0	0	0	0	0	0	0	0	0	0	4401	7910
Day Total	12199		2488		0		0		0		0		0		12311	
% Splits	35.2 %	64.8 %	100.0 %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	35.7 %	64.3%
Peak	11:00	03:45	06:45	-	-	-	-	-	-	-	-	-	-	-	11:00	03:45
Vol.	813	1114	688	-	-	-	-	-	-	-	-	-	-	-	813	1114
P.H.F.	0.920	0.967	0.925												0.920	0.967

ADT ADT 12,631 AADT 12,631

TechniQuest Corporation

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Site Code: 029-04
Date Start: 30-Apr-19
Cooper Street at Bridge over Almonesson Creek / Lake - EB

Start	29-Apr-19		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	*	69	5	71	10	74	8	78	20	108	21	71	13	78
12:15	*	*	*	68	6	82	12	73	11	86	17	110	19	83	13	84
12:30	*	*	*	88	8	93	6	78	7	104	11	109	17	73	10	91
12:45	*	*	*	77	5	74	4	83	6	108	8	107	13	**112**	7	94
01:00	*	*	*	91	5	73	8	79	5	105	11	108	11	**88**	8	91
01:15	*	*	*	80	7	78	4	101	5	83	7	102	13	**102**	7	91
01:30	*	*	*	87	3	86	0	80	3	107	8	91	9	**92**	5	90
01:45	*	*	*	87	3	79	7	82	5	85	4	93	11	79	6	84
02:00	*	*	*	97	7	89	4	77	2	89	3	113	8	89	5	92
02:15	*	*	*	89	1	94	3	99	2	90	6	97	5	82	3	92
02:30	*	*	*	85	3	89	4	107	5	124	12	101	10	91	7	100
02:45	*	*	*	103	2	96	4	104	2	123	4	100	6	114	4	107
03:00	*	*	*	90	3	112	4	100	6	124	2	99	5	71	4	99
03:15	*	*	*	100	7	111	3	140	4	145	6	113	5	91	5	117
03:30	*	*	*	126	2	128	2	124	2	121	0	**139**	7	102	3	123
03:45	*	*	*	128	2	114	5	119	1	133	4	**125**	3	86	3	118
04:00	*	*	*	132	5	122	3	131	4	**164**	2	**115**	6	102	4	**128**
04:15	*	*	*	118	3	**160**	9	132	1	**166**	5	**119**	3	101	4	**133**
04:30	*	*	*	116	9	**127**	5	128	4	**148**	4	132	3	80	5	**122**
04:45	*	*	*	**145**	13	**139**	9	**138**	9	**156**	6	90	6	73	9	**124**
05:00	*	*	*	**141**	12	**134**	7	**136**	8	147	5	101	4	63	7	120
05:15	*	*	*	**151**	15	125	14	**150**	11	142	4	84	3	66	9	120
05:30	*	*	*	**131**	19	131	18	**161**	23	136	11	99	2	55	15	119
05:45	*	*	*	110	21	117	19	136	26	136	16	80	7	50	18	105
06:00	*	*	*	103	31	102	30	123	24	132	12	105	4	64	20	105
06:15	*	*	*	112	34	104	36	104	25	134	8	83	10	72	23	102
06:30	*	*	*	91	59	90	48	93	49	126	22	77	10	52	38	88
06:45	*	*	*	98	52	88	64	91	68	145	15	69	9	64	42	92
07:00	*	*	*	96	54	74	73	86	66	118	26	88	10	63	46	88
07:15	*	*	*	80	63	76	64	76	63	107	30	78	21	57	48	79
07:30	*	*	*	94	60	69	73	88	74	96	36	66	16	48	52	77
07:45	*	*	*	74	**81**	71	66	63	66	99	40	61	18	47	54	69
08:00	*	*	*	110	**85**	73	67	93	71	87	45	48	16	47	57	76
08:15	*	*	*	64	**65**	65	62	67	68	92	33	56	18	44	49	65
08:30	*	*	*	59	**63**	63	66	57	62	74	42	71	29	38	52	60
08:45	*	*	*	59	66	61	62	50	59	76	47	68	21	26	51	57
09:00	*	*	*	52	49	59	51	47	69	78	48	54	23	34	48	54
09:15	*	*	*	46	82	42	55	60	60	54	48	46	22	25	53	46
09:30	*	*	*	37	52	47	67	38	60	58	60	46	27	32	53	43
09:45	*	*	*	33	52	35	50	44	47	70	66	56	39	20	51	43
10:00	*	*	*	37	45	34	58	23	64	74	61	49	35	19	53	39
10:15	*	*	**68**	45	48	26	67	29	59	43	91	54	**59**	25	65	37
10:30	*	*	**79**	44	80	21	57	29	62	61	77	33	**70**	17	71	34
10:45	*	*	**57**	36	69	19	69	22	75	36	81	28	**72**	16	70	26
11:00	*	*	**56**	29	72	14	**75**	27	**76**	32	**94**	34	**63**	12	**73**	25
11:15	*	*	64	19	64	17	**65**	17	**72**	34	**87**	36	47	12	**66**	22
11:30	*	*	65	18	66	15	**84**	19	**78**	13	**106**	18	60	8	**76**	15
11:45	*	*	73	18	85	15	**87**	9	**78**	21	**103**	19	75	9	**84**	15
Total	0	0	462	3963	1643	3804	1660	3987	1655	4760	1454	3878	971	2867	1469	3879
Day Total	0		4425		5447		5647		6415		5332		3838		5348	
% Splits	0.0%	0.0%	10.4 %	89.6 %	30.2 %	69.8 %	29.4 %	70.6 %	25.8 %	74.2 %	27.3 %	72.7 %	25.3 %	74.7 %	27.5 %	72.5%
Peak	-	-	10:15	04:45	07:45	04:15	11:00	04:45	11:00	04:00	11:00	03:30	10:15	00:45	11:00	04:00
Vol.	-	-	260	568	294	560	311	585	304	634	390	498	264	394	299	507
P.H.F.			0.823	0.940	0.865	0.875	0.894	0.908	0.974	0.955	0.920	0.896	0.917	0.879	0.890	0.953

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Date Start: 30-Apr-19
Cooper Street at Bridge over Almonesson Creek / Lake - EB

Start	06-May-19		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	4	73	14	*	*	*	*	*	*	*	*	*	*	*	9	73
12:15	9	83	5	*	*	*	*	*	*	*	*	*	*	*	7	83
12:30	3	70	8	*	*	*	*	*	*	*	*	*	*	*	6	70
12:45	5	82	4	*	*	*	*	*	*	*	*	*	*	*	4	82
01:00	2	93	5	*	*	*	*	*	*	*	*	*	*	*	4	93
01:15	1	77	1	*	*	*	*	*	*	*	*	*	*	*	1	77
01:30	3	88	4	*	*	*	*	*	*	*	*	*	*	*	4	88
01:45	5	86	2	*	*	*	*	*	*	*	*	*	*	*	4	86
02:00	5	93	5	*	*	*	*	*	*	*	*	*	*	*	5	93
02:15	2	87	1	*	*	*	*	*	*	*	*	*	*	*	2	87
02:30	2	110	7	*	*	*	*	*	*	*	*	*	*	*	4	110
02:45	5	101	3	*	*	*	*	*	*	*	*	*	*	*	4	101
03:00	2	100	2	*	*	*	*	*	*	*	*	*	*	*	2	100
03:15	6	99	2	*	*	*	*	*	*	*	*	*	*	*	4	99
03:30	1	117	4	*	*	*	*	*	*	*	*	*	*	*	2	117
03:45	5	125	3	*	*	*	*	*	*	*	*	*	*	*	4	125
04:00	1	140	0	*	*	*	*	*	*	*	*	*	*	*	0	140
04:15	5	137	6	*	*	*	*	*	*	*	*	*	*	*	6	137
04:30	4	120	4	*	*	*	*	*	*	*	*	*	*	*	4	120
04:45	14	**165**	9	*	*	*	*	*	*	*	*	*	*	*	12	**165**
05:00	4	**148**	5	*	*	*	*	*	*	*	*	*	*	*	4	**148**
05:15	16	**161**	16	*	*	*	*	*	*	*	*	*	*	*	16	**161**
05:30	18	**127**	10	*	*	*	*	*	*	*	*	*	*	*	14	**127**
05:45	23	118	21	*	*	*	*	*	*	*	*	*	*	*	22	118
06:00	31	80	30	*	*	*	*	*	*	*	*	*	*	*	30	80
06:15	45	97	42	*	*	*	*	*	*	*	*	*	*	*	44	97
06:30	39	120	53	*	*	*	*	*	*	*	*	*	*	*	46	120
06:45	64	87	58	*	*	*	*	*	*	*	*	*	*	*	61	87
07:00	50	82	57	*	*	*	*	*	*	*	*	*	*	*	54	82
07:15	**68**	80	70	*	*	*	*	*	*	*	*	*	*	*	**69**	80
07:30	**77**	70	**84**	*	*	*	*	*	*	*	*	*	*	*	**80**	70
07:45	**71**	84	**70**	*	*	*	*	*	*	*	*	*	*	*	**70**	84
08:00	**65**	59	**75**	*	*	*	*	*	*	*	*	*	*	*	**70**	59
08:15	62	77	**76**	*	*	*	*	*	*	*	*	*	*	*	69	77
08:30	51	71	*	*	*	*	*	*	*	*	*	*	*	*	51	71
08:45	55	60	*	*	*	*	*	*	*	*	*	*	*	*	55	60
09:00	60	57	*	*	*	*	*	*	*	*	*	*	*	*	60	57
09:15	54	57	*	*	*	*	*	*	*	*	*	*	*	*	54	57
09:30	44	46	*	*	*	*	*	*	*	*	*	*	*	*	44	46
09:45	62	44	*	*	*	*	*	*	*	*	*	*	*	*	62	44
10:00	57	29	*	*	*	*	*	*	*	*	*	*	*	*	57	29
10:15	65	27	*	*	*	*	*	*	*	*	*	*	*	*	65	27
10:30	60	24	*	*	*	*	*	*	*	*	*	*	*	*	60	24
10:45	62	17	*	*	*	*	*	*	*	*	*	*	*	*	62	17
11:00	77	11	*	*	*	*	*	*	*	*	*	*	*	*	77	11
11:15	68	23	*	*	*	*	*	*	*	*	*	*	*	*	68	23
11:30	65	6	*	*	*	*	*	*	*	*	*	*	*	*	65	6
11:45	64	16	*	*	*	*	*	*	*	*	*	*	*	*	64	16
Total	1561	3924	756	0	0	0	0	0	0	0	0	0	0	0	1581	3924
Day Total	5485		756		0		0		0		0		0		5505	
% Splits	28.5 %	71.5 %	100.0 %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.7 %	71.3%
Peak	07:15	04:45	07:30	-	-	-	-	-	-	-	-	-	-	-	07:15	04:45
Vol.	281	601	305	-	-	-	-	-	-	-	-	-	-	-	289	601
P.H.F.	0.912	0.911	0.908												0.903	0.911

ADT ADT 5,387 AADT 5,387

TechniQuest Corporation

4105 US Route 1, Suite #10
Monmouth Junction, NJ 08852
Phone: 732-274-9500 Fax: 732-274-9510
www.techniquestcorporation.com

Site Code: 029-04
Date Start: 30-Apr-19
Cooper Street at Bridge over Almonesson Creek / Lake - WB

Start	29-Apr-19		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	*	91	12	82	8	92	8	104	15	116	18	73	12	93
12:15	*	*	*	68	5	71	6	65	7	74	14	**123**	8	97	8	83
12:30	*	*	*	85	3	88	7	84	7	101	12	**110**	14	104	9	95
12:45	*	*	*	98	4	78	10	96	7	123	7	**113**	6	**110**	7	103
01:00	*	*	*	84	6	94	6	80	4	97	12	**118**	7	**106**	7	96
01:15	*	*	*	82	10	86	7	108	6	101	9	105	8	**97**	8	96
01:30	*	*	*	93	5	95	2	103	5	105	3	111	6	**108**	4	102
01:45	*	*	*	99	3	87	3	87	2	102	4	107	8	93	4	96
02:00	*	*	*	96	2	82	1	79	3	88	14	101	3	98	5	91
02:15	*	*	*	65	2	78	3	87	3	82	3	120	5	89	3	87
02:30	*	*	*	79	4	94	2	95	2	88	9	105	9	85	5	91
02:45	*	*	*	103	1	97	5	84	5	100	7	104	8	80	5	95
03:00	*	*	*	83	5	107	7	106	5	116	2	118	5	92	5	104
03:15	*	*	*	126	2	101	2	97	5	101	11	114	4	70	5	102
03:30	*	*	*	100	2	110	6	101	5	121	4	113	1	73	4	103
03:45	*	*	*	116	6	128	8	109	3	123	5	118	2	88	5	114
04:00	*	*	*	106	3	115	7	108	13	112	5	102	0	76	6	103
04:15	*	*	*	107	11	**119**	8	**112**	8	137	3	102	3	90	7	**111**
04:30	*	*	*	130	16	**131**	9	**136**	7	118	2	113	4	64	8	**115**
04:45	*	*	*	137	10	**125**	16	**117**	10	**123**	7	107	1	70	9	**113**
05:00	*	*	*	102	15	**124**	15	**110**	13	**138**	13	97	7	72	13	**107**
05:15	*	*	*	**119**	17	115	12	109	21	**129**	5	90	8	72	13	106
05:30	*	*	*	**145**	19	127	31	115	30	**129**	15	115	8	72	21	117
05:45	*	*	*	**137**	28	109	38	134	37	120	11	85	9	71	25	109
06:00	*	*	*	**120**	52	82	45	114	35	118	22	73	8	58	32	94
06:15	*	*	*	107	54	103	53	100	59	116	12	82	9	66	37	96
06:30	*	*	*	85	80	98	78	86	63	115	21	81	9	52	50	86
06:45	*	*	*	69	85	110	98	92	77	113	27	77	18	54	61	86
07:00	*	*	*	71	97	67	89	120	**87**	109	38	55	17	44	66	78
07:15	*	*	*	74	93	69	**115**	78	**93**	109	31	64	12	42	69	73
07:30	*	*	*	76	98	66	**110**	64	**114**	79	43	56	16	39	76	63
07:45	*	*	*	56	**136**	45	**136**	72	**112**	104	46	53	22	47	90	63
08:00	*	*	*	52	**136**	60	**118**	59	83	69	48	54	25	38	82	55
08:15	*	*	*	49	**100**	54	112	76	81	72	45	57	27	35	73	57
08:30	*	*	*	54	**105**	47	83	50	96	51	53	64	24	35	72	50
08:45	*	*	*	39	95	42	93	43	87	66	58	47	29	28	72	44
09:00	*	*	*	29	88	32	80	45	68	65	48	39	32	28	63	40
09:15	*	*	*	30	85	36	79	34	73	43	93	34	35	23	73	33
09:30	*	*	*	39	86	44	63	37	80	46	93	40	45	19	73	38
09:45	*	*	*	29	101	25	95	28	95	46	106	37	56	23	91	31
10:00	*	*	*	24	67	33	78	36	78	53	101	35	56	17	76	33
10:15	*	*	*	19	90	25	72	25	79	50	88	27	49	17	76	27
10:30	*	*	56	22	66	22	83	23	108	67	96	31	71	20	80	31
10:45	*	*	**76**	13	56	16	76	22	67	62	100	34	79	8	76	26
11:00	*	*	**74**	24	80	19	74	19	87	57	**92**	20	**78**	10	**81**	25
11:15	*	*	**69**	17	73	14	77	23	79	30	**89**	32	**73**	13	**77**	22
11:30	*	*	**70**	11	89	7	98	19	98	23	**101**	19	**85**	8	**90**	14
11:45	*	*	66	9	76	14	89	9	95	17	**124**	22	**94**	6	**91**	13
Total	0	0	411	3569	2279	3573	2313	3688	2210	4312	1767	3740	1121	2780	1925	3610
Day Total	0		3980		5852		6001		6522		5507		3901		5535	
% Splits	0.0%	0.0%	10.3 %	89.7 %	38.9 %	61.1 %	38.5 %	61.5 %	33.9 %	66.1 %	32.1 %	67.9 %	28.7 %	71.3 %	34.8 %	65.2%
Peak	-	-	10:45	05:15	07:45	04:15	07:15	04:15	07:00	04:45	11:00	00:15	11:00	00:45	11:00	04:15
Vol.	-	-	289	521	477	499	479	475	406	519	406	464	330	421	339	446
P.H.F.			0.951	0.898	0.877	0.952	0.881	0.873	0.890	0.940	0.819	0.943	0.878	0.957	0.931	0.970

TechniQuest Corporation
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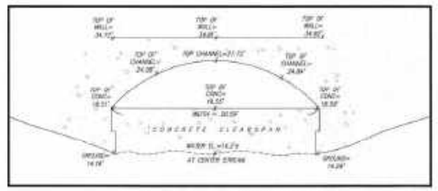
Site Code: 029-04
Date Start: 30-Apr-19
Cooper Street at Bridge over Almonesson Creek / Lake - WB

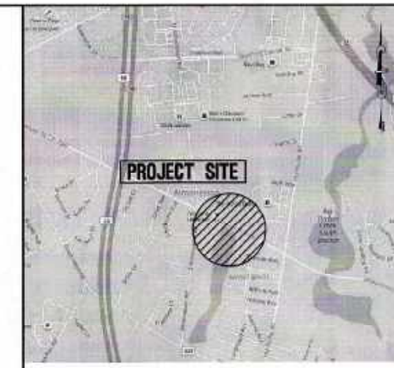
Start	06-May-19		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	7	71	10	*	*	*	*	*	*	*	*	*	*	*	8	71
12:15	1	97	6	*	*	*	*	*	*	*	*	*	*	*	4	97
12:30	7	89	5	*	*	*	*	*	*	*	*	*	*	*	6	89
12:45	3	82	4	*	*	*	*	*	*	*	*	*	*	*	4	82
01:00	4	72	2	*	*	*	*	*	*	*	*	*	*	*	3	72
01:15	3	99	9	*	*	*	*	*	*	*	*	*	*	*	6	99
01:30	2	83	2	*	*	*	*	*	*	*	*	*	*	*	2	83
01:45	5	87	1	*	*	*	*	*	*	*	*	*	*	*	3	87
02:00	2	86	9	*	*	*	*	*	*	*	*	*	*	*	6	86
02:15	1	76	5	*	*	*	*	*	*	*	*	*	*	*	3	76
02:30	3	86	5	*	*	*	*	*	*	*	*	*	*	*	4	86
02:45	2	110	6	*	*	*	*	*	*	*	*	*	*	*	4	110
03:00	5	111	3	*	*	*	*	*	*	*	*	*	*	*	4	111
03:15	4	102	3	*	*	*	*	*	*	*	*	*	*	*	4	102
03:30	4	100	5	*	*	*	*	*	*	*	*	*	*	*	4	100
03:45	3	110	7	*	*	*	*	*	*	*	*	*	*	*	5	110
04:00	3	127	6	*	*	*	*	*	*	*	*	*	*	*	4	127
04:15	5	112	9	*	*	*	*	*	*	*	*	*	*	*	7	112
04:30	9	117	6	*	*	*	*	*	*	*	*	*	*	*	8	117
04:45	15	**124**	17	*	*	*	*	*	*	*	*	*	*	*	16	**124**
05:00	11	**132**	12	*	*	*	*	*	*	*	*	*	*	*	12	**132**
05:15	21	**126**	15	*	*	*	*	*	*	*	*	*	*	*	18	**126**
05:30	25	**120**	23	*	*	*	*	*	*	*	*	*	*	*	24	**120**
05:45	53	115	47	*	*	*	*	*	*	*	*	*	*	*	50	115
06:00	27	106	43	*	*	*	*	*	*	*	*	*	*	*	35	106
06:15	55	103	57	*	*	*	*	*	*	*	*	*	*	*	56	103
06:30	91	80	87	*	*	*	*	*	*	*	*	*	*	*	89	80
06:45	76	72	79	*	*	*	*	*	*	*	*	*	*	*	78	72
07:00	93	60	84	*	*	*	*	*	*	*	*	*	*	*	88	60
07:15	100	75	110	*	*	*	*	*	*	*	*	*	*	*	105	75
07:30	**114**	67	**143**	*	*	*	*	*	*	*	*	*	*	*	**128**	67
07:45	**111**	54	**170**	*	*	*	*	*	*	*	*	*	*	*	**140**	54
08:00	**129**	53	**161**	*	*	*	*	*	*	*	*	*	*	*	**145**	53
08:15	**128**	54	**114**	*	*	*	*	*	*	*	*	*	*	*	**121**	54
08:30	102	36	111	*	*	*	*	*	*	*	*	*	*	*	106	36
08:45	98	32	106	*	*	*	*	*	*	*	*	*	*	*	102	32
09:00	60	46	67	*	*	*	*	*	*	*	*	*	*	*	64	46
09:15	79	35	85	*	*	*	*	*	*	*	*	*	*	*	82	35
09:30	81	23	86	*	*	*	*	*	*	*	*	*	*	*	84	23
09:45	79	24	83	*	*	*	*	*	*	*	*	*	*	*	81	24
10:00	91	27	94	*	*	*	*	*	*	*	*	*	*	*	92	27
10:15	67	21	70	*	*	*	*	*	*	*	*	*	*	*	68	21
10:30	67	21	71	*	*	*	*	*	*	*	*	*	*	*	69	21
10:45	78	19	83	*	*	*	*	*	*	*	*	*	*	*	80	19
11:00	88	12	94	*	*	*	*	*	*	*	*	*	*	*	91	12
11:15	97	15	*	*	*	*	*	*	*	*	*	*	*	*	97	15
11:30	78	5	*	*	*	*	*	*	*	*	*	*	*	*	78	5
11:45	75	4	*	*	*	*	*	*	*	*	*	*	*	*	75	4
Total	2262	3478	2215	0	0	0	0	0	0	0	0	0	0	0	2363	3478
Day Total	5740		2215		0		0		0		0		0		5841	
% Splits	39.4 %	60.6 %	100.0 %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	40.5 %	59.5%
Peak	07:30	04:45	07:30	-	-	-	-	-	-	-	-	-	-	-	07:30	04:45
Vol.	482	502	588	-	-	-	-	-	-	-	-	-	-	-	534	502
P.H.F.	0.934	0.951	0.865												0.921	0.951

ADT ADT 5,641 AADT 5,641



DETAIL B - 'WATERFALL'

SCALE: NOT TO SCALE

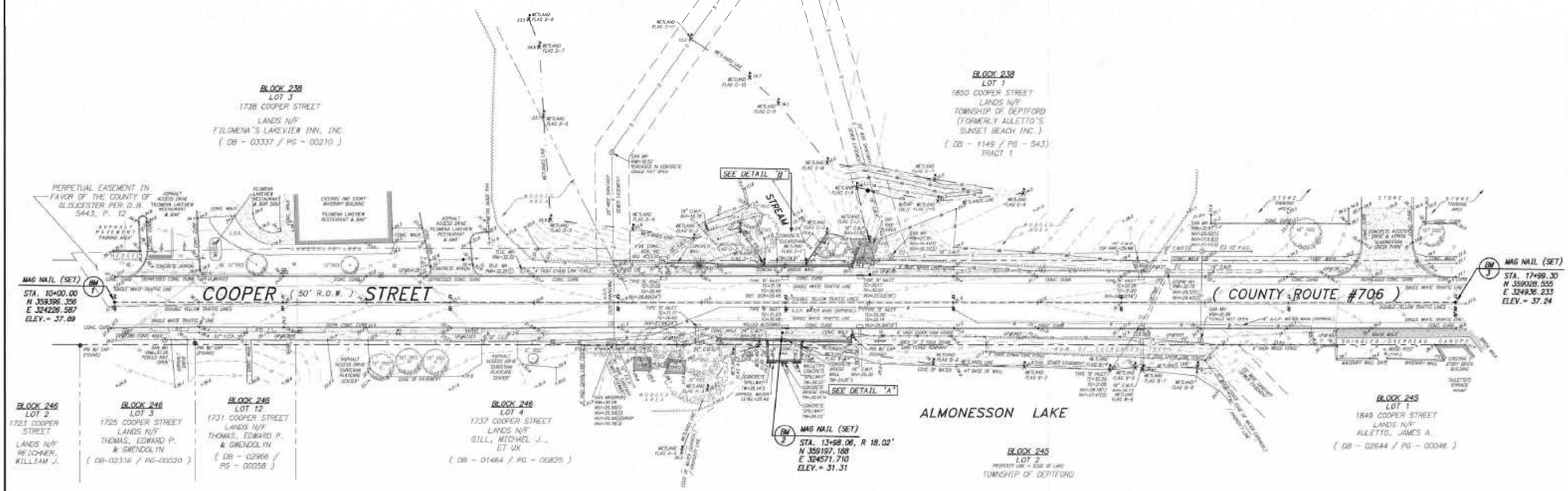


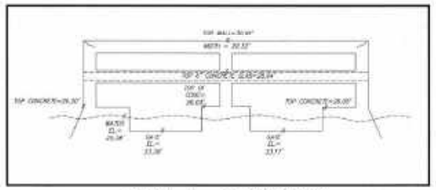
LOCATION MAP

SCALE: N.T.S.

RVE 1901
REMINGTON & VERNICK ENGINEERS
232 KINGS HIGHWAY EAST
HADDONFIELD, NJ 08033
(856) 795-9595, FAX (856) 795-1882
WEB SITE ADDRESS : WWW.RVE.COM
Certification of Authorization No. 24GA28003300
—ENGINEERING PROFESSIONAL LLC

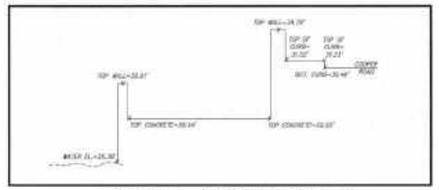
DATE: 2/5/2020
CHARLES E. ADAMSON
NJ PROFESSIONAL LAND SURVEYOR LIC. No. 42627





DETAIL A - 'BRIDGE RAIL'

SCALE: NOT TO SCALE



DETAIL A - 'CONCRETE PROFILE'

SCALE: NOT TO SCALE

SURVEY NOTES & REFERENCES:

1. THE HORIZONTAL DATUM IS BASED ON THE NEW JERSEY STATE PLANE COORDINATE SYSTEM (NAD-1983) AND THE VERTICAL DATUM IS BASED ON NAVD-1988 - 2012B ADJ. (ADD 1.18 FEET TO THESE ELEVATIONS TO CONVERT TO NGVD-1929 DATUM)
2. PROPERTY AND RIGHT-OF-WAY LINES SHOWN ON THESE PLANS ARE APPROXIMATE LOCATIONS BASED ON THE CURRENT TAX MAPS OF THE TOWNSHIP OF DEPTFORD, GLOUCESTER COUNTY, NEW JERSEY. PROPERTY AND RIGHT-OF-WAY LINES ARE SHOWN FOR GRAPHICAL INFORMATION ONLY AND HAVE NOT BEEN FIELD VERIFIED.
3. EXISTING TOPOGRAPHIC CONDITIONS WERE SURVEYED BY REMINGTON & VERNICK ENGINEERS UNDER THE SUPERVISION OF CHARLES E. ADAMSON, NJPLS LICENSE NO. 42627. THE SURVEY WORK WAS COMPLETED ON JANUARY 25, 2019.
4. REFERENCE PLAN ENTITLED, 'PLAN OF LOTS OF LAKEVIEW HEIGHTS SITUATE AT ALMONESSON - DEPT. TWP.'

GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft.

CALL BEFORE YOU DIG
1-800-272-1000
It's THE LAW
NEW JERSEY ONE CALL Dig Safely.

CONTRACTOR TO CALL AT LEAST 72 HOURS PRIOR TO COMMENCEMENT OF EXCAVATION WORK.

PLANS WHICH DO NOT BEAR AN EMBOSSED SEAL ARE NOT VALID

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No.	REVISION	DATE	BY	CHK

EXISTING TOPOGRAPHIC CONDITIONS

GLOUCESTER COUNTY LOCAL DEVELOPMENT STUDY

COOPER STREET (COUNTY ROUTE 706) BRIDGE OVER ALMONESSON CREEK (BRIDGE 3-K-3)

TOWNSHIP OF DEPTFORD GLOUCESTER COUNTY NEW JERSEY

DRAWN BY:	DESIGN BY:	CHECKED BY:	SCALE:
JG		CEA	NOTED
DATE: 1		SHEET No.: 1 of 1	

JOB No.: 3949 X 007

REMINGTON & VERNICK ENGINEERS

RVE HQ:
232 Kings Highway East
Haddonfield, NJ 08033
O: (856) 795-9595
F: (856) 795-1882

SURVEY REPORT FOR
COOPER ST. / C.R. 706 / ALMONESSON DAM BRIDGE 3-K-3
TOWNSHIP OF DEPTFORD, GLOUCESTER COUNTY, N.J.

As part of the Delaware Valley Regional Planning Commission Concept Development Study for French & Parello Associates, RVE performed professional survey services at the Almonesson Dam along Cooper Street located in Deptford Township, Gloucester County. RVE was to establish primary survey control and detail the existing conditions of the roadway and dam.

All of the project field observations were recorded during January, 2019.

3 primary intervisible control points (1,2,3) were established by GNSS using the Carlson BRx6 units on the BOYD RTK GPS Control Network for 180 epochs apiece. All observations were recorded using a Topcon ES-105 Total Station with a Carlson Surveyor 2 data collector.

Project Horizontal Datum: North American Datum, 2011 Adjustment – NJ State Plane, Zone 2900
Project Vertical Datum: North American Vertical Datum 1988 (GNSS Derived)
Project Geoidal Model: GEOID 2012B

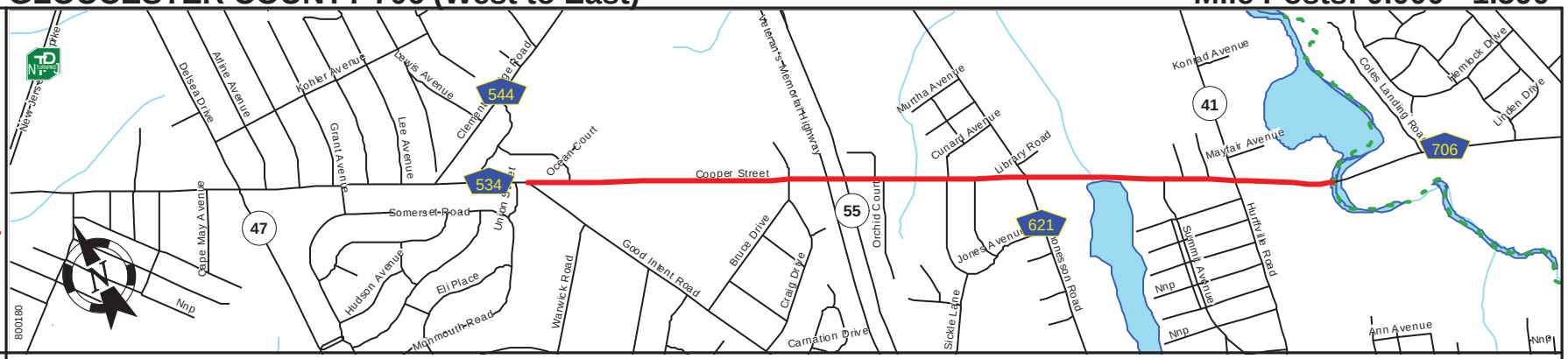
Local project ground coordinates were were computed by scaling the project grid coordinates using a project specific combined scale factor that was computed from the average of the 3 project control points. The combined scale factor for this project is 0.999937269.

GLOUCESTER COUNTY 706 (West to East)

Mile Posts: 0.000 - 1.590

Secondary Direction

Primary Direction



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	

Interstate Route 287
US Route 22
NJ Route 33
County Road 689
Interchange Number 2
Grade Separated Interchange
Traffic Signal
Traffic Monitoring Sites WIM AVC VOL
Road Underpass
Road Overpass

Secondary Direction

Primary Direction

Deptford Twp, Gloucester Co

BURLINGTON AVE (0.09)
GOOD INTENT RD (0.00) 534
ALLISON CR (0.39)
KRAMER CT (0.52)
BRUCE DR
55 (0.62) 55
MOSTOVLYAN CT (0.69)
ORCHARD CT (0.71)
CUNARD AVE
(0.83) JONES AVE
SCHOOLCREST AVE (0.88)
621 ALMONESSON (0.99) ROAD 621
SUMMIT AVE (1.26)
MAR-TANNA AVE (1.30)
(1.34) CHARLES AVE
41 HURFFVILLE (1.40) ROAD 41
Camden County Line

Deptford Twp, Gloucester Co

Units in miles

-1.0 0.0 1.0 2.0

Street Name	Cooper Street	
Jurisdiction	County	
Functional Class	Urban Minor Arterial	
Federal Aid - NHS Sy	STP	
Control Section		
Speed Limit	45 / 35	
Number of Lanes	2	
Med. Type	None	
Med. Width	0	
Pavement	22 / 36 / 22	
Shoulder	4 / 2 / 10 / 4 / 2 / 0 / 2	
Traffic Volume	8,369 (2012)	8,224 (2012)
Traffic Sta. ID	120802	120803
Structure No.		
Enlarged Views		

Begin Gloucester County 706 MP=0.00

End Gloucester County 706 MP=1.59

Page Created: June, 2015

SRI = 08000706__

Date last inventoried: May 2011

Legend

- Bridge 3-K-3
- Project Limits

Accident Reports

Number of Accidents

- 1
- 2
- 3
- 5
- 6
- 13

N

0 307
Feet

FRENCH & PARRELLO ASSOCIATES

1800 Route 34, Suite 101 ▪ Wall, NJ ▪ 07719 ▪ 732-312-9800

COOPER STREET LCD

TOWNSHIP OF DEPTFORD
GLOUCESTER COUNTY, NEW JERSEY

ACCIDENT REPORTS

SCALE:	BLOCK:	LOT:	DRAWING #
1 " = 307 '	-	-	1
DATE: 03/01/2019	DRAWN BY: IAM	PROJECT NUMBER: 13633.001	

Document Path: O:\13K\13600\13633 - Cooper Street Bridge CR 706\13633.001 Design\CADD\GIS\13633.001 - ACCIDENT REPORTS.mxd
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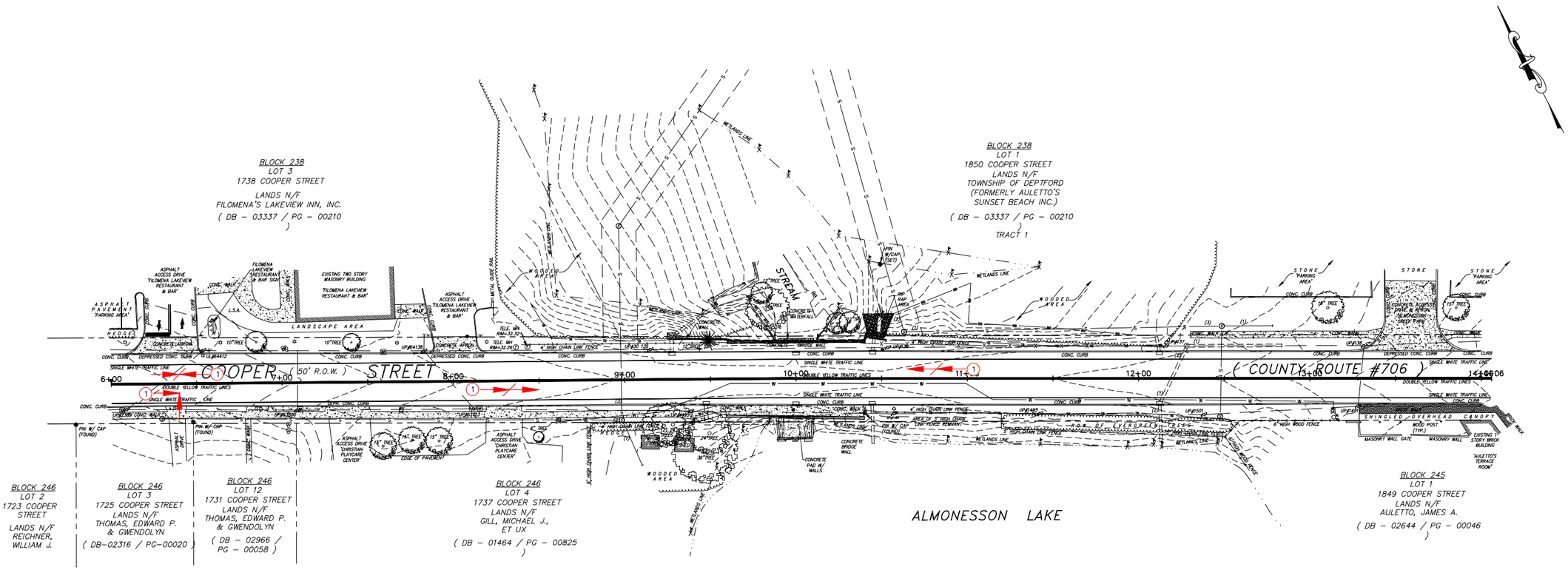
PLOTTED ON: 3/1/2019 3:16:19 PM
PLOTTED BY: IAN MUELLER

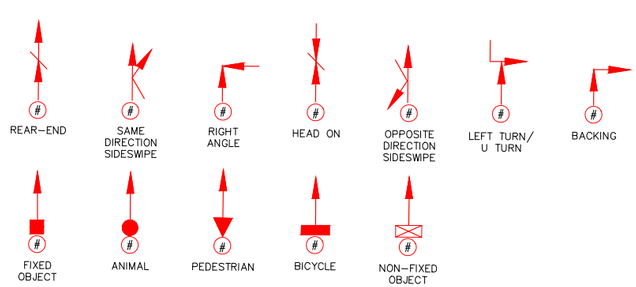
No.	Date	Revision	Revised By	Checked By



CRASH DIAGRAM

SCALE: 1" = 30'-0"

LEGEND:



30 20 10 0 30 60
1" = 30'

FRENCH & PARRELLO ASSOCIATES

Corporate Office
1800 Route 34, Suite 101
Wall, NJ 07719
732.312.9800

Regional Offices
Camden, NJ
Hackettstown, NJ
New York, NY

CRASH DIAGRAM

FOR THE LOCAL CONCEPT DEVELOPMENT STUDY OF

BRIDGE 3-K-3

ON COOPER STREET (CR 706) OVER
ALMONESSON CREEK / AT ALMONESSON LAKE

IN THE TOWNSHIP OF DEPTFORD
GLOUCESTER COUNTY, NEW JERSEY

DATE:	DESIGNED BY:	DRAWN BY:	PROJECT NUMBER:
03/01/2019		IAM	13633.001
SCALE:	CHECKED BY:	CHECKED BY:	SHEET:
AS SHOWN		SS	1 of 1

O:\13K\13600\13633 - COOPER STREET BRIDGE CR 706\13633.001 DESIGN\CADD\DWG\TRAFFIC\13633.001 - CRASH DIAGRAM.DWG - PLAN

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Page 1 of 4 ☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

96 04 | 97 01 | 98 01 | 99 05 | 100a 01 | 100b 04 | 101 02 | 102 01 | 103 01 | 104 03 | 105 01 | 106 - | 107 - | 108 01 | 109 01 | 110 01 | 111 01 | 112 - | 113 - | 114 - | 115 - | 116 04 | 117 04

1. Case Number: 2018026919

2. Police Dept. of: Deptford Police Department — Code: 01

3. Station/Precinct: Patrol

4. Date of Crash (mm dd yy): 06 26 18

5. Day of Week: Su M O W Th F Sa

6. Time (use 2400 hrs.): 1756

7. Municipality Code: 0802

8. Total Killed: - -

9. Total Injured: - -

10. Crash Occurred On: Cooper ST (Road Name) W (Dir) — 500 (14) ☐ At Intersection with ☒ Feet ☐ Miles (15) ☐N ☐E ☐S ☐W (16) of: Almonesson RD

11. Speed Limit: 35

12. Route No.: -534 — Suffix: - — 13. Milepost: - - - . - -

18. Speed Limit: 35

19. Ramp ☐ To ☐ From: — 17. Cross Road Name/Route No.: -

☐NB ☐EB ☐SB ☐WB

20. Route Name/Route No.: 75 — 21. Latitude: 39.818926 — 22. Longitude: 075.098624

118a 02 | 118b - | 119a 25 | 119b - | 120a 01 | 120b - | 121a 01 | 121b - | 122 01 | 123 08 | 124 11 | 125 11 | 126a 26 | 126b - | 126c - | 126d - | 126e 26 | 127a 26 | 127b 26 | 127c - | 127d - | 127e 26 | 128 26 | 129 12 | 130 12 | 131 06 | 132 12 | 133 04 | 134 03

Vehicle 1

23. Veh. #: 1 — 24. Policy No.: 4086684463 — 25. NJ Ins. Code: 148

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

26. Driver's First Name: Md — Initial: R — Last Name: Islam — 29. Sex: M

27. Number & Street: 2049 Blackwood Barnsboro RD,S4

28. City: Turnersville — State: NJ — Zip: 08012

30. Eyes: 01 — DL Class: - D — Restrictions: - - - - — Endorsements: - - — 31. State: NJ

32. Driver's License Number: I8040 53779 05731 — 33. DOB (mm dd yy): 05 07 73 — 34. Expires (mm yy): 08 20

35. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name

36. Number & Street:

37. City — State — Zip

38. Make: NISS — 39. Model: ROU — 40. Color: GY — 41. Year: 13 — 42. Plate No.: W34HGK — 43. State: NJ

44. VIN: JN8AS5MV8DW632222 — 45. Expires: 11 18

46. Vehicle Removed to: Bernie's Towing

☐ Driven ☒ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

47. Authority: ☐ Owner ☐ Driver ☒ Police

48. Alcohol Drug Test: Given: ☒No ☐Yes ☐Refused — Type: ☐Breath ☐Blood ☐Urine — Results: 0.- - % ☐Pending

49. Hazardous Material: ☐None ☐On Board ☐Spill — Hazard Class: - — Placard No.: - - - -

50. Carrier No.: ☐USDOT - - - - - - - ☐None — ☐MC/MX - - - - - - -

51. GVWR / GCWR (trucks & buses only): ☐≤ 10,000 lbs. ☐10,001 - 26,000 lbs. ☐≥ 26,001 lbs.

52. Motor Carrier or Government Entity: -

Number & Street: -

City: - — State: - — Zip: -

Vehicle 2

53. Veh. #: 2 — 54. Policy No.: 905215082 — 55. NJ Ins. Code: 134

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

56. Driver's First Name: Robert — Initial: D — Last Name: Casmer — 59. Sex: M

57. Number & Street: 154 West Branch Avenue

58. City: Pine Hill — State: NJ — Zip: 08021

60. Eyes: 05 — DL Class: - D — Restrictions: - - - - — Endorsements: - - — 61. State: NJ

62. Driver's License Number: C0754 65864 02795 — 63. DOB (mm dd yy): 02 22 79 — 64. Expires (mm yy): 04 20

65. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name

66. Number & Street:

67. City — State — Zip

68. Make: FORD — 69. Model: FUS — 70. Color: BK — 71. Year: 15 — 72. Plate No.: S28FDZ — 73. State: NJ

74. VIN: 1FA6P0G78F51230 54 — 75. Expires: 03 19

76. Vehicle Removed to: -

☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

77. Authority: ☐ Owner ☒ Driver ☐ Police

78. Alcohol Drug Test: Given: ☒No ☐Yes ☐Refused — Type: ☐Breath ☐Blood ☐Urine — Results: 0.- - % ☐Pending

79. Hazardous Material: ☐None ☐On Board ☐Spill — Hazard Class: - — Placard No.: - - - -

80. Carrier No.: ☐USDOT - - - - - - - ☐None — ☐MC/MX - - - - - - -

81. GVWR / GCWR (trucks & buses only): ☐≤ 10,000 lbs. ☐10,001 - 26,000 lbs. ☐≥ 26,001 lbs.

82. Motor Carrier or Government Entity: -

Number & Street: -

City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒No

-

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
1	39:4-97	E18 004117	2	-	-
1	39:4-56	E18 004118	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	-	-	45	M	-	-	-	11	04	-	-	Islam, Md R & 2049 Blackwood Barnsboro RD,S4, Turnersville, NJ, 08012
B	2	01	-	-	39	M	-	-	-	11	04	-	-	Casmer, Robert D & 154 West Branch Avenue, Pine Hill, NJ, 08021
C	3	01	-	04	23	F	06	08	-	11	04	01	5802	Grabowski, Danielle N & 15 Oakton DR, Mantua, NJ, 08051
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

96 04 | 97 01 | 98 01 | 99 05 | 100a 01 | 100b 04 | 101 02 | 102 01 | 103 01 | 104 03 | 105 01 | 106 - | 107 - | 108 01 | 109 - | 110 01 | 111 - | 112 - | 113 - | 114 - | 115 - | 116 04 | 117 -

1. Case Number: 2018026919
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 06 26 18
5. Day of Week: Su M T W Th F Sa
6. Time (use 2400 hrs.): 1756
7. Municipality Code: 0802
8. Total Killed: - -
9. Total Injured: - -
10. Crash Occurred On: Cooper ST (Road Name) W (Dir)
11. Speed Limit: 35
12. Route No.: - 5 3 4 — Suffix: - — 13. Milepost: - - - . - -
14. 500 — 15. ☐ At intersection with ☒ Feet ☐ Miles — 16. ☐N ☐E ☐S ☐W of: Almonesson RD
18. Speed Limit: 35
19. Ramp ☐ To: ☐ From: — 17. Cross Road Name/Route No.: - — ☐NB ☐EB ☐SB ☐WB
20. Route Name/Route No.: -
21. Latitude: 39.818926 — 22. Longitude: 75.098624

	23. Veh. #	24. Policy No.	25. NJ Ins. Code	26. Driver's First Name	Initial	Last Name	29. Sex	27. Number & Street	28. City	State	Zip	30. Eyes	DL Class	Restrictions	Endorsements	31. State	32. Driver's License Number	33. DOB (mm dd yy)	34. Expires (mm yy)	35. Owner's First Name	Initial	Last Name	36. Number & Street	37. City	State	Zip	38. Make	39. Model	40. Color	41. Year	42. Plate No.	43. State	44. VIN	45. Expires	46. Vehicle Removed to:	47. Authority	48. Alcohol Drug Test	49. Hazardous Material	50. Carrier No.	51. GVWR / GCWR (trucks & buses only)	52. Motor Carrier or Government Entity	Number & Street	City	State	Zip
Veh. 1	3	187153296	803	Danielle	N	Grabowski	F	15 Oakton DR	Mantua	NJ	08051	06	- D	- - - -	- -	NJ	G7123	07 21 95	08 17	Same as Driver: Frank	E	Grabowski	15 Oakton DR	Mantua	NJ	08051	NISS	SEN	BK	10	D30DAZ	NJ	3N1BB6AP3AL681330	05 19	Bernie's Towing	☐ Driven ☒ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded	☐ Owner ☐ Driver ☒ Police	Given: ☒No ☐Yes ☐Refused; Type: ☐Breath ☐Blood ☐Urine; Results: 0.-- % ☐Pending	☐None ☐On Board ☐Spill; Hazard Class: - ; Placard No.: - - - -	☐USDOT - - - - - - - ☐None; ☐MC/MX - - - - - - -	☐≤ 10,000 lbs. ☐10,001 - 26,000 lbs. ☐≥ 26,001 lbs.	-	-	-	-	-
Veh. 2	-	-	-	-	-	-	-	-	-	-	-	- -	- -	- - - -	- -	-	-	- - -	- - - -	Same as Driver: -	-	-	-	-	-	-	-	-	-	-	-	-	- - - - - - - - - - - - - - - - -	-	-	-	-	-	-	-	-	-	-

78. Vehicle Removed to:	77. Authority	78. Alcohol Drug Test	79. Hazardous Material	80. Carrier No.	81. GVWR / GCWR (trucks & buses only)	82. Motor Carrier or Government Entity	Number & Street	City	State	Zip
Veh. 1	☐ Owner ☐ Driver ☐ Police	Given: ☐No ☐Yes ☐Refused; Type: ☐Breath ☐Blood ☐Urine; Results: 0.-- % ☐Pending	☐None ☐On Board ☐Spill; Hazard Class: - ; Placard No.: - - - -	☐USDOT - - - - - - - ☐None; ☐MC/MX - - - - - - -	☐≤ 10,000 lbs. ☐10,001 - 26,000 lbs. ☐≥ 26,001 lbs.	-	-	-	-	-
Veh. 2	☐ Owner ☐ Driver ☐ Police	Given: ☐No ☐Yes ☐Refused; Type: ☐Breath ☐Blood ☐Urine; Results: 0.-- % ☐Pending	☐None ☐On Board ☐Spill; Hazard Class: - ; Placard No.: - - - -	☐USDOT - - - - - - - ☐None; ☐MC/MX - - - - - - -	☐≤ 10,000 lbs. ☐10,001 - 26,000 lbs. ☐≥ 26,001 lbs.	-	-	-	-	-

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No: -

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
3	-	-	-	-	-
3	-	-	-	-	-

Oper.	140. Charge	141. Summons No.	Oper.	142. Charge	143. Summons No.
3	-	-	-	-	-

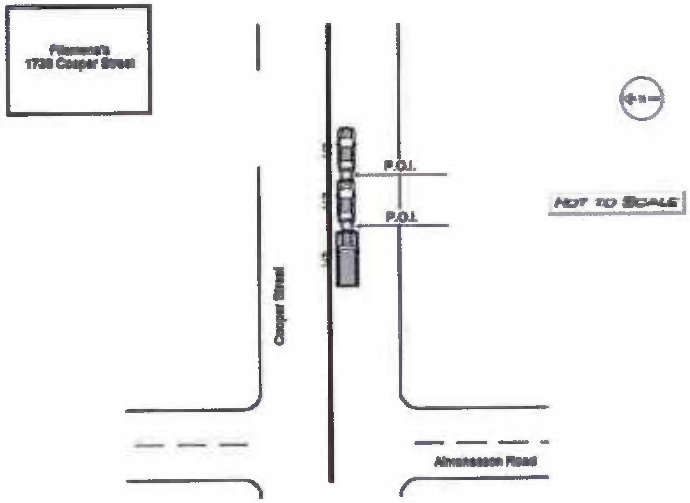
	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

116a 25 | 116b - | 119a - | 119b - | 120a 01 | 120b - | 121a - | 121b - | 122 08 | 123 - | 124 11 | 125 - | 126a 26 | 126b - | 126c - | 126d - | 126e 26 | 127a - | 127b - | 127c - | 127d - | 127e - | 128 26 | 129 06 | 130 06 | 131 - | 132 - | 133 04 | 134 -

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)



145. Crash Description/Narrative

The Crash Description begins on continuation page

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Umba, Matthew C	5260	Mantici, Thomas R	5240	☐ Pending ☒ Complete

New Jersey Police Crash Investigation Report Motor Vehicle Crash Description	Police Dept: Deptford Police Department Code: 01 Station: Patrol Case No: 2018026919

145. Crash Description

On 06/26/2018, at 17:56 hours, I, PO Umba #5260 was dispatched to Cooper Street and Almonesson Road for a report of a motor vehicle accident with possible injuries. I responded at emergency speed utilizing my overhead lights and sirens.

Upon my arrival, I spoke with the operator of V3. O3 complain of pain to her neck and knee and was immediately treated by Deptford BLS. O3 stated to the effect, she was stop in traffic, facing E/B on Cooper street, waiting to turn left into Filomena's restaurant. O3 stated she had her left turn signal on and then V2 came from behind and made contact with the rear of her vehicle. O3 was transported to Jefferson Hospital for a medical evaluation.

I then spoke with the operator of V2. O2 stated to the effect, he was stopped in traffic directly behind V3. O2 stated that V1 came from behind and made contact with the rear of his vehicle. As a result of the contact, his vehicle was pushed into the rear of V3. O2 did not report any injuries at the time of the crash.

I then spoke with the operator of V1. O1 stated to the effect, V2 came to a sudden stop as he was traveling directly behind him on Cooper Street. O1 stated that he was unable to stop in time before he made contact with the rear of V2. O1 did not report any injuries at the time of the crash.

V3 and V1 were disabled as a result of the crash and were towed away by Bernie's Towing.

No further information provided at this time.

End Crash Narrative.

Umba, Matthew C
Officer's Signature

5260
Badge Number

Page 1 of 2 ☐ Fatal

New Jersey Police Crash Investigation Report

☐ Reportable ☒ Non-Reportable ☐ Change Report

98 05 | 97 01 | 98 01 | 99 05 | 100a 01 | 100b 04 | 101 02 | 102 04 | 103 01 | 104 02 | 105 01 | 106 - | 107 - | 108 01 | 109 01 | 110 01 | 111 01 | 112 - | 113 - | 114 - | 115 - | 116 - | 117 -

1. Case Number: 2018001055

2. Police Dept. of: Deptford Police Department — Code: 01

3. Station/Precinct: Patrol

10. Crash Occurred On: Cooper ST (Road Name) - (Dir)

11. Speed Limit: 35

12. Route No. - - - - Suffix - 13. Milepost - - - . - -

14. 30 15. ☐ At Intersection with ☒ Feet ☐ Miles 16. ☐ N ☒ E ☐ S ☐ W of: Almonesson RD

18. Speed Limit: 35

19. Ramp ☐ To: ☐ From: 17. Cross Road Name/Route No.: - ☐ NB ☐ EB ☐ SB ☐ WB

4. Date of Crash mm dd yy: 01 07 18

5. Day of Week: ☒ M Tu W Th F Sa

6. Time (use 2400 hrs.): 1103

7. Municipality Code: 0802

8. Total Killed: - -

9. Total Injured: - -

21. Latitude: 39.818926 20. Route Name/Route No. 22. Longitude: 75.098624

116a 51 | 116b - | 119a 25 | 119b - | 120a 01 | 120b - | 121a 01 | 121b - | 122 07 | 123 08 | 124 03 | 125 03 | 126a 26 | 126b - | 126c - | 126d - | 126e 26 | 127a 26 | 127b - | 127c - | 127d - | 127e 26 | 128 26 | 129 12 | 130 17 | 131 06 | 132 06 | 133 01 | 134 02

Vehicle 1

23. Veh. # 1 — 24. Policy No. 902935647 — 25. NJ Ins. Code 134

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

26. Driver's First Name: Robert — Initial: M — Last Name: Malseed — 29. Sex: M

27. Number & Street: 184 Colony PL

28. City: Woolwich Township — State: NJ — Zip: 08085

30. Eyes: 04 — DL Class: - - — Restrictions: - - - - — Endorsements: - - — 31. State: NJ

32. Driver's License Number: M0317 65874 10614 — 33. DOB mm dd yy: 10 23 61 — 34. Expires mm yy: 01 19

35. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name

36. Number & Street

37. City — State — Zip

38. Make: CHEV — 39. Model: AVA — 40. Color: BK — 41. Year: 02 — 42. Plate No.: D71JDW — 43. State: NJ

44. VIN: 3GNEK13T92G227253 — 45. Expires: 10 18

46. Vehicle Removed to: -

☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

47. Authority: ☒ Owner ☐ Driver ☐ Police

48. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending

49. Hazardous Material — ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -

50. Carrier No. — ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -

51. GVWR / GCWR (trucks & buses only) — ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.

52. Motor Carrier or Government Entity: -

Number & Street: -

City: - — State: - — Zip: -

Vehicle 2

53. Veh. # 2 — 54. Policy No. 939437324 — 55. NJ Ins. Code 054

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

56. Driver's First Name: Angela — Initial: R — Last Name: Veneziani — 59. Sex: F

57. Number & Street: 6 Stonegate Court

58. City: Blackwood — State: NJ — Zip: 08012

60. Eyes: 04 — DL Class: - - — Restrictions: - - - - — Endorsements: - - — 61. State: NJ

62. Driver's License Number: V2530 04379 59614 — 63. DOB mm dd yy: 09 29 61 — 64. Expires mm yy: 10 18

65. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name

66. Number & Street

67. City — State — Zip

68. Make: TOYT — 69. Model: 4RN — 70. Color: GY — 71. Year: 14 — 72. Plate No.: CHKAD — 73. State: NJ

74. VIN: 5TDZKRFH7ES019281 — 75. Expires: 04 18

76. Vehicle Removed to: -

☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

77. Authority: ☐ Owner ☒ Driver ☐ Police

78. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending

79. Hazardous Material — ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -

80. Carrier No. — ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -

81. GVWR / GCWR (trucks & buses only) — ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.

82. Motor Carrier or Government Entity: -

Number & Street: -

City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No

-

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
1	-	-	2	-	-

Oper.	140. Charge	141. Summons No.	Oper.	142. Charge	143. Summons No.
1	-	-	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	57	M	-	-	-	11	04	-	-	Malseed, Robert M & 184 Colony PL, Woolwich Township, NJ, 08085
B	2	01	01	-	57	F	-	-	-	11	04	-	-	Veneziani, Angela R & 6 Stonegate Court, Blackwood, NJ, 08012
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

New Jersey Police Crash Investigation Report	Case Number 2018001055	Page 2 of 2

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)

145. Crash Description/Narrative

On 01/07/2018 I, PO Nucera #5223 was dispatched to Cooper St. and Almonesson Rd. for the report of a tow vehicle crash with no injuries. Upon my arrival, I spoke to the operator of V1. He stated that he was coming to a stop behind V2 in the right turn lane on Cooper St. at Almonesson Rd. He advised that as he was trying to stop, his vehicle began to slide on the ice and snow that was partially covering the roadway. He was unable to stop in time and the front of V1 collided with the rear of V2.

The operator of V2 stated that she was stopped waiting to make the right turn from Cooper St. onto Almonesson Rd. when she suddenly felt V1 collide with the rear of her vehicle.

V1 had no visible damage. V2 sustained damage to the rear bumper. No injuries were reported on scene. Both vehicles were driven from the scene. No further police action was necessary.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Nucera, Anthony	5223	Grogan, David P	5234	☐ Pending ☒ Complete

Page 1 of 2 ☐ Fatal

New Jersey Police Crash Investigation Report

☐ Reportable ☒ Non-Reportable ☐ Change Report

95 05 | 97 01 | 98 01 | 99 05 | 100a 01 | 100b 04 | 101 02 | 102 01 | 103 01 | 104 01 | 105 11 | 106 - | 107 - | 108 01 | 109 - | 110 03 | 111 - | 112 02 | 113 - | 114 - | 115 - | 116 - | 117 -

1. Case Number: 2017036944
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 10 14 17
5. Day of Week: Su M Tu W Th F S
6. Time (use 2400 hrs.): 1637
7. Municipality Code: 0802
8. Total Killed: - -
9. Total Injured: - -
10. Crash Occurred On: Cooper St (Road Name) - (Dir)
11. Speed Limit: 35
12. Route No.: - - - -
Suffix: -
13. Milepost: - - - . - -
14. ☐ At Intersection with ☒ Feet ☐ Miles 50 (15)
☐ N ☒ E ☐ S ☐ W of: Almonesson RD
16. Ramp ☐ To: ☐ From:
17. Cross Road Name/Route No.: -
18. Speed Limit: 35
☐ NB ☐ EB ☐ SB ☐ WB
19. Latitude: - - . - - - - - - -
20. Route Name/Route No.: - -
22. Longitude: - - . - - - - - - -

23. Veh. #	24. Policy No.	25. NJ Ins. Code
1	12-91	*

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

26. Driver's First Name: Danielle — Initial: - — Last Name: Emmons — 29. Sex: F
27. Number & Street: 518 Prince ST
28. City: Woodbury — State: NJ — Zip: 08096
30. Eyes: 04 — DL Class: - - — Restrictions: - - - - — Endorsements: - - — 31. State: NJ
32. Driver's License Number: E5804 15373 60834
33. DOB (mm dd yy): 10 03 83
34. Expires (mm yy): 10 16
35. Owner's First Name: ☐ Same as Driver Deptford Police Dept — Initial — Last Name
36. Number & Street: 1011 Cooper ST,1
37. City: Deptford — State: NJ — Zip: 08096
38. Make: FORD — 39. Model: EXP — 40. Color: - — 41. Year: 15 — 42. Plate No.: 13831MG — 43. State: NJ
44. VIN: 1FM5K8AR7FGB84263 — 45. Expires: 04 18
46. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
47. Authority: ☐ Owner ☒ Driver ☐ Police
48. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
50. Carrier No.: ☐ USDOT - - - - - - - ☐ None ☐ MC/MX - - - - - - -
51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

53. Veh. #	54. Policy No.	55. NJ Ins. Code
-	-	-

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

56. Driver's First Name: - — Initial: - — Last Name: - — 59. Sex: -
57. Number & Street: -
58. City: - — State: - — Zip: -
60. Eyes — DL Class — Restrictions — Endorsements — 61. State: -
62. Driver's License Number — 63. DOB (mm dd yy) — 64. Expires (mm yy)
65. Owner's First Name: ☐ Same as Driver - — Initial: - — Last Name: -
66. Number & Street: -
67. City: - — State: - — Zip: -
68. Make: - — 69. Model: - — 70. Color: - — 71. Year: - — 72. Plate No.: - — 73. State: -
74. VIN: - - - - - - - - - - - - - - - - - — 75. Expires: - -
76. Vehicle Removed to: -
☐ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
77. Authority: ☐ Owner ☐ Driver ☐ Police
78. Alcohol Drug Test — Given: ☐ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
80. Carrier No.: ☐ USDOT - - - - - - - ☐ None ☐ MC/MX - - - - - - -
81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
82. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

116a 60 | 116b - | 119a - | 119b - | 120a 01 | 120b - | 121a - | 121b - | 122 13 | 123 - | 124 11 | 125 - | 126a 62 | 126b - | 126c - | 126d - | 126e 62 | 127a - | 127b - | 127c - | 127d - | 127e - | 128 62 | 129 06 | 130 06 | 131 - | 132 - | 133 02 | 134 -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No
-

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
1	-	-	-	-	-
Oper.	140. Charge	141. Summons No.	Oper.	142. Charge	143. Summons No.
1	-	-	-	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	35	F	-	-	-	11	04	-	-	Emmons, Danielle & 518 Prince ST, Woodbury, NJ, 08096
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

New Jersey Police Crash Investigation Report	Case Number 2017036944	Page 2 of 2

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)

14s. Crash Description/Narrative

On 10/14/2017 I, PO Nucera #5223 was dispatched to Cooper St. and Almonesson Rd. for the report of a one vehicle crash with no injuries. Upon my arrival, I spoke to the operator of V1. She stated that she was attempting to assist the Gloucester County highway division with traffic while they fixed a traffic light pole that was damaged in a previous crash. She advised that when she first arrived she parked blocking a driveway. She wanted to reposition her vehicle to a more visible safe location. The traffic was congested and she could only use one lane of travel to make a U turn. As she was backing up to compete the U turn she could not see a fire hydrant behind her vehicle and the rear driver side of V1 collided with a fire hydrant.

V1 sustained damage to the rear driver side of the vehicle. The fire hydrant was not damaged. No injuries were reported on scene. V1 was driven from the scene. No further police action was necessary.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Nucera, Anthony	5223	Smith, Joseph J	5180	☐ Pending ☒ Complete

Page 1 of 3 ☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

95 05 | 97 01 | 98 01 | 99 05 | 100a 01 | 100b 05 | 101 02 | 102 01 | 103 01 | 104 02 | 105 03 | 106 - | 107 - | 108 01 | 109 01 | 110 01 | 111 01 | 112 - | 113 - | 114 - | 115 - | 116 02 | 117 03

1. Case Number: 2017036935
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 1 0 1 4 1 7
5. Day of Week: Su M Tu W Th F S
6. Time (use 2400 hrs.): 1 4 2 8
7. Municipality Code: 0 8 0 2
8. Total Killed: 0 0
9. Total Injured: 0 1
10. Crash Occurred On: Cooper ST (Road Name) - (Dir) of: Almonesson RD
☒ At Intersection with ☐ Feet ☐ Miles (14, 15) ☐ N ☐ E ☐ S ☐ W (16)
11. Speed Limit: 3 5
12. Route No. - - - - Suffix - 13. Milepost - - - . - -
18. Speed Limit: 3 5
19. Ramp ☐ To: ☐ From: 17. Cross Road Name/Route No. - ☐ NB ☐ EB ☐ SB ☐ WB
21. Latitude: 3 9 . 8 1 8 9 2 6 — 20 Route Name/Route No. — 22. Longitude: 7 5 . 0 9 8 6 2 4

118a 03 | 118b - | 119a 25 | 119b 25 | 120a 01 | 120b 01 | 121a 01 | 121b 01 | 122 01 | 123 01 | 124 03 | 125 03 | 126a 26 | 126b 51 | 126c 52 | 126d 26 | 126e 26 | 127a 26 | 127b 26 | 127c - | 127d - | 127e 26 | 128 26 | 129 10 | 130 12 | 131 02 | 132 12 | 133 04 | 134 04

Vehicle 1

23. Veh. #: 1
24. Policy No.: PAA80002053838
25. NJ Ins. Code: 963
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
26. Driver's First Name: Dhruvkuma — Initial: M — Last Name: Bhalodia — 29. Sex: M
27. Number & Street: 832 Nblack Horse Pk
28. City: Blackwood — State: NJ — Zip: -
30. Eyes: 0 2 — DL Class: - D — Restrictions: - - - - — Endorsements: - - — 31. State: NJ
32. Driver's License Number: B3165 16774 01972 — 33. DOB (mm dd yy): 0 1 0 9 9 7 — 34. Expires (mm yy): 0 1 2 1
35. Owner's First Name: ☐ Same as Driver Priyanka — Initial: M — Last Name: Bhalodia
36. Number & Street: 832 N Blck Hrs Pk Rm 323
37. City: Blackwood — State: NJ — Zip: 08012
38. Make: HOND — 39. Model: ACC — 40. Color: BK — 41. Year: 12 — 42. Plate No.: K47HZT — 43. State: NJ
44. VIN: 1 H G C P 2 F 6 X C A 1 3 8 3 9 9 — 45. Expires: 07 18
46. Vehicle Removed to: -
☐ Driven ☒ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
47. Authority: ☐ Owner ☐ Driver ☒ Police
48. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
50. Carrier No.: ☐ USDOT - - - - - - - ☐ None ☐ MC/MX - - - - - - -
51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

Vehicle 2

53. Veh. #: 2
54. Policy No.: 939 265 428
55. NJ Ins. Code: 054
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
56. Driver's First Name: Mary — Initial: - — Last Name: Disavino — 59. Sex: F
57. Number & Street: 3 Brandon LN
58. City: Sewell Washington — State: NJ — Zip: 08080
60. Eyes: 0 2 — DL Class: - d — Restrictions: - - - - — Endorsements: - - — 61. State: NJ
62. Driver's License Number: D4632 52700 61312 — 63. DOB (mm dd yy): 1 1 2 1 3 1 — 64. Expires (mm yy): 0 7 1 9
65. Owner's First Name: ☒ Same as Driver SAME AS DRIVER — Initial: — Last Name:
66. Number & Street:
67. City: — State: — Zip:
68. Make: MERC — 69. Model: - — 70. Color: SL — 71. Year: 10 — 72. Plate No.: KL622K — 73. State: NJ
74. VIN: 2 M E B M 7 F V 8 A X 6 1 5 2 4 4 — 75. Expires: 08 18
76. Vehicle Removed to: -
☐ Driven ☒ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
77. Authority: ☐ Owner ☐ Driver ☒ Police
78. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
80. Carrier No.: ☐ USDOT - - - - - - - ☐ None ☐ MC/MX - - - - - - -
81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
82. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No
-

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
1	39:4-56	-	2	-	-
Oper.	140. Charge	141. Summons No.	Oper.	142. Charge	143. Summons No.
1	39:4-144	-	2	-	-

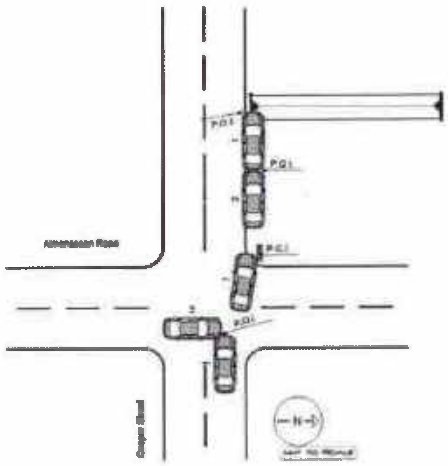
	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	21	M	-	-	-	11	04	01	-	Bhalodia, Dhruvkuma M & 832 Nblack Horse Pk, Blackwood, NJ
B	2	03	01	-	27	F	-	-	-	11	11	01	-	Petrongalo, Nina & 107 Sonesta CT, Sewell Washington, NJ, 08080
C	2	01	01	03	87	F	08	04	02	11	11	01	5801	Disavino, Mary & 3 Brandon LN, Sewell Washington, NJ, 08080
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

New Jersey Police Crash Investigation Report	Case Number 2017036935	Page 2 of 3

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)



145. Crash Description/Narrative

The Crash Description begins on continuation page

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Ivey, Luke B	5262	Nucera, Anthony	5223	☐ Pending ☒ Complete

NJTR-1 (Rev. 01/17)

New Jersey Police Crash Investigation Report Motor Vehicle Crash Description	Police Dept: Deptford Police Department Code: 01 Station: Patrol Case No: 2017036935

145. Crash Description

On 10/14/2017 at 14:28 hours I, PO Ivey, was dispatched to the intersection of Cooper Street and Almonesson Road for the report of a crash with injuries. I responded priority 1.

Upon my arrival, I observed both vehicles crashed at the intersection, and all occupants of the vehicles outside of the vehicles, standing on the side of the roadway. The driver of V#2 had a bleeding wound on her right arm as a result of the crash. EMS was dispatched to the scene, and transported driver #2 to Inspira Hospital for treatment. Before driver #2 left the scene, I collected her documents and statement.

Driver #2 advised me that she was traveling southbound on Almonesson Road, through the intersection with Cooper Street, when the traffic signal was green. Driver #2 stated that as she went through the intersection, her vehicle was suddenly swiped on the front passenger side by V#1, causing her vehicle to veer left, onto Cooper Street, and continue forward. V#1 proceeded in front of her vehicle, struck a traffic signal, continued forward, and struck a utility pole head on followed by V#2 rear ending V#1 where the two vehicles came to rest. Driver #2 sustained a bleeding wound to her right arm from the crash. V#2 sustained disabling damage to the front of the vehicle which also caused the front airbags to deploy.

I spoke to driver #1, who advised me that he was traveling eastbound on Cooper Street, through the intersection with Almonesson Road, going through the traffic signal when it was, as he stated, "Orange". Driver #1 stated that as he went through the intersection, V#2 suddenly appeared in front of his, which resulted in the front driver side of V#1 swiping the front passenger side of V#2. V#1 continued traveling straight on Cooper Street, struck a traffic signal standard at the corner of Cooper and Almonesson, proceeded forward, and stuck a utility pole head on followed by being rear ended by V#2. The vehicles came to rest at that time. V#1 sustained disabling damage to the front and rear of the vehicle, causing the airbags to deploy.

Both vehicles were towed from the scene by Bernie's Towing. The Gloucester County Highway Department was dispatched to the scene to repair the struck traffic standard. Driver #1 was issued two citations: 39:4-56 Creating the risk of an accident and 39:4-144 failure to stop.

END REPORT.

Ivey, Luke B
Officer's Signature

5262
Badge Number

Page 1 of 2 ☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☒ Change Report

96 05 | 97 01 | 98 01 | 99 05 | 100a 01 | 100b 05 | 101 02 | 102 01 | 103 01 | 104 02 | 105 03 | 106 - | 107 - | 108 - | 109 - | 110 - | 111 - | 112 - | 113 - | 114 - | 115 - | 116 - | 117 -

1. Case Number: 2017036935
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 10 14 17
5. Day of Week: Su M Tu W Th F S
6. Time (use 2400 hrs.): 1428
7. Municipality Code: 0802
8. Total Killed: 00
9. Total Injured: 01
10. Crash Occurred On: Cooper ST (Road Name) - (Dir)
11. Speed Limit: 35
12. Route No.: - - - -
Suffix: -
13. Milepost: - - - . - -
14. - 15. ☒ At Intersection with ☐ Feet ☐ Miles 16. ☐N ☐E ☐S ☐W of: Almonesson RD
17. Cross Road Name/Route No.: -
18. Speed Limit: 35
19. Ramp ☐ To: ☐ From: ☐NB ☐EB ☐SB ☐WB
20. Route Name/Route No.:
21. Latitude: 39.818926
22. Longitude: 75.098624

118a - | 118b - | 119a - | 119b - | 120a - | 120b - | 121a - | 121b - | 122 - | 123 - | 124 - | 125 - | 126a - | 126b - | 126c - | 126d - | 126e - | 127a - | 127b - | 127c - | 127d - | 127e - | 128 26 | 129 - | 130 - | 131 - | 132 - | 133 - | 134 -

Vehicle 1

23. Veh. #: 1
24. Policy No.: -
25. NJ Ins. Code: -
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
26. Driver's First Name: Dhruvkuma — Initial: M — Last Name: Bhalodia
29. Sex: M
27. Number & Street: 832 Nblack Horse Pk
28. City: Blackwood — State: NJ — Zip: -
30. Eyes: 02 — DL Class: - - — Restrictions: - - - - — Endorsements: - -
31. State: NJ
32. Driver's License Number: B3165 16774 01972
33. DOB (mm dd yy): 01 09 97
34. Expires (mm yy): 01 21
35. Owner's First Name: ☐ Same as Driver - — Initial: - — Last Name: -
36. Number & Street: -
37. City: - — State: - — Zip: -
38. Make: - — 39. Model: - — 40. Color: - — 41. Year: - — 42. Plate No.: - — 43. State: -
44. VIN: - - - - - - - - - - - - - - - - - — 45. Expires: - -
46. Vehicle Removed to: -
☐ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
47. Authority: ☐ Owner ☐ Driver ☐ Police
48. Alcohol Drug Test — Given: ☐ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
50. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

Vehicle 2

53. Veh. #: 2
54. Policy No.: -
55. NJ Ins. Code: -
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
56. Driver's First Name: Mary — Initial: - — Last Name: Disavino
59. Sex: F
57. Number & Street: 3 Brandon LN
58. City: Sewell Washington — State: NJ — Zip: 08080
60. Eyes: 02 — DL Class: - D — Restrictions: - - - - — Endorsements: - -
61. State: NJ
62. Driver's License Number: D4632 52700 61312
63. DOB (mm dd yy): 11 21 31
64. Expires (mm yy): 07 19
65. Owner's First Name: ☐ Same as Driver - — Initial: - — Last Name: -
66. Number & Street: -
67. City: - — State: - — Zip: -
68. Make: - — 69. Model: - — 70. Color: - — 71. Year: - — 72. Plate No.: - — 73. State: -
74. VIN: - - - - - - - - - - - - - - - - - — 75. Expires: - -
76. Vehicle Removed to: -
☐ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
77. Authority: ☐ Owner ☐ Driver ☐ Police
78. Alcohol Drug Test — Given: ☐ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
80. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
82. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No
-

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
1	-	-	2	-	-
1	-	-	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants if Deceased, Date & Time of Death
A	1	-	-	-	21	M	-	-	-	-	-	-	-	Bhalodia, Dhruvkuma M & 832 Nblack Horse Pk, Blackwood, NJ
B	2	01	01	03	87	F	08	04	-	11	04	-	5802	Disavino, Mary & 3 Brandon LN, Sewell Washington, NJ, 08080
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

New Jersey Police Crash Investigation Report	Case Number 2017036935	Page 2 of 2

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	
F	-	-	-	-	-	-	-	-	-	-	-	-	-	
G	-	-	-	-	-	-	-	-	-	-	-	-	-	
H	-	-	-	-	-	-	-	-	-	-	-	-	-	
I	-	-	-	-	-	-	-	-	-	-	-	-	-	
J	-	-	-	-	-	-	-	-	-	-	-	-	-	

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)

145. Crash Description/Narrative

Driver and Vehicle #2 information change:

Vehicle #2's airbags did not deploy

Driver#2 was transported to Kennedy Hospital in Washington Township, NJ by Deptford EMS.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Ivey, Luke B	5262	Grogan, David P	5234	☐ Pending ☒ Complete

Page 1 of 3 ☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

1. Case Number: 2017036921
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 10 14 17
5. Day of Week: Su M Tu W Th F S
6. Time (use 2400 hrs.): 1157
7. Municipality Code: 0802
8. Total Killed: -
9. Total Injured: 01
10. Crash Occurred On: Cooper ST (Road Name) - (Dir)
11. Speed Limit: 35
12. Route No.: -706
13. Milepost: - Suffix: -
14. 100 ☐ At Intersection with ☒ Feet ☐ Miles
15. ☐ N ☐ E ☐ S ☒ W
16. of: Almonesson RD
17. Cross Road Name/Route No.: -
18. Speed Limit: 35 ☐ NB ☐ EB ☐ SB ☐ WB
19. Ramp ☐ To: ☐ From:
20. Route Name/Route No.:
21. Latitude: 39.818926
22. Longitude: 75.098624

Veh. #	Policy No.	NJ Ins. Code	Parked	Ped	Pedalcyclist	Resp. to Emergency	Hit & Run
1	NJSS-202704955	217	☐	☐	☐	☐	☐
2	8325412	*	☐	☐	☐	☐	☐

Veh. #	Driver's First Name	Initial	Last Name	Sex	Number & Street	City	State	Zip
1	Alison	-	Dudley	F	155 Peterson BLVD	Deptford	NJ	08096
2	Mary	J	Bowen	F	2329 S Hutchinson St	Philadelphia	PA	19148

Veh. #	Eyes	DL Class	Restrictions	Endorsements	State	DL No.	DOB (mm dd yy)	Expires (mm yy)
1	04	- -	- - - -	- -	NJ	D9088 02571 62974	12 21 79	12 20
2	04	- -	- - - -	- -	PA	21232 164	03 18 55	03 20

Veh. #	Owner's First Name	Initial	Last Name	Number & Street	City	State	Zip
1	☒ Same as Driver		SAME AS DRIVER				
2	☒ Same as Driver		SAME AS DRIVER				

Veh. #	Make	Model	Color	Year	Plate No.	State	VIN	Expires
1	MAZD	TRB	BK	06	UYN22V	NJ		07 18
2	HOND	ACC	GN	95	KGP9346	PA	1HGCD5636SA011597	09 18

Veh. #	Vehicle Removed to:	Authority
1	- ☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded	☒ Owner ☐ Driver ☐ Police
2	Bernies Towing ☐ Driven ☐ Towed Disabled ☒ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded	☐ Owner ☐ Driver ☒ Police

Veh. #	Alcohol Drug Test	Hazardous Material	Carrier No.	GVWR / GCWR (trucks & buses only)
1	Given: ☒ No ☐ Yes ☐ Refused; Type: ☐ Breath ☐ Blood ☐ Urine; Results: 0.-- % ☐ Pending	☐ None ☐ On Board ☐ Spill; Hazard Class: -; Placard No.: -	☐ USDOT - ☐ MC/MX - ☐ None	☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
2	Given: ☒ No ☐ Yes ☐ Refused; Type: ☐ Breath ☐ Blood ☐ Urine; Results: 0.-- % ☐ Pending	☐ None ☐ On Board ☐ Spill; Hazard Class: -; Placard No.: -	☐ USDOT - ☐ MC/MX - ☐ None	☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.

Veh. #	Motor Carrier or Government Entity	Number & Street	City	State	Zip
1	-	-	-	-	-
2	-	-	-	-	-

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No
-

Oper.	Charge	Summons No.	Oper.	Charge	Summons No.
1	-	-	2	-	-
1	-	-	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	39	F	-	-	01	11	04	-	-	Dudley, Alison & 155 Peterson BLVD, Deptford, NJ, 08096
B	1	04	01	-	8	M	-	-	01	11	04	-	-	Dudley, Connor & 155 Peterson BLVD, Deptford, NJ, 08096
C	2	01	01	04	63	F	05	08	02	11	04	-	5802	Bowen, Mary J & 2329 S Hutchinson St, Philadelphia, PA, 19148
D	2	03	01	-	68	F	-	-	01	11	04	-	-	Rogers, Catherine & 16 Scott Ave, Clementon, NJ, 08021

☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

96	05
97	01
98	01
99	05
100a	01
100b	05
101	02
102	01
103	01
104	03
105	01
106	-
107	-
108	04
109	-
110	01
111	-
112	-
113	-
114	-
115	-
116	02
117	-
118a	02
118b	02
119a	-
119b	-
120a	01
120b	-
121a	-
121b	-
122	01
123	-
124	04
125	-
126a	26
126b	-
126c	-
126d	-
126e	26
127a	-
127b	-
127c	-
127d	-
127e	-
128	26
129	12
130	12
131	-
132	-
133	02
134	-

1. Case Number: 2017036921
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 10 14 17
5. Day of Week: Su M Tu W Th F S
6. Time (use 2400 hrs.): 1157
7. Municipality Code: 0802
8. Total Killed: -
9. Total Injured: 01
10. Crash Occurred On: Cooper ST (Road Name) - (Dir)
11. Speed Limit: 35
12. Route No.: -706
13. Milepost: - Suffix: -
14. At Intersection with: ☐ Feet ☒ Miles — 100
15. ☐ N ☐ E ☐ S ☒ W
16. of: Almonesson RD
17. Cross Road Name/Route No.: -
18. Speed Limit: 35
19. Ramp ☐ To: ☐ From: ☐ NB ☐ EB ☐ SB ☐ WB
20. Route Name/Route No.: -
21. Latitude: 39.818926
22. Longitude: 75.098624

23. Veh. #	24. Policy No.	25. NJ Ins. Code
3	910862508	134

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

26. Driver's First Name: Joseph — Initial: A — Last Name: Toomin — 29. Sex: M
27. Number & Street: 38A Higgins Ave
28. City: Clementon — State: NJ — Zip: 08021
30. Eyes: 05 — DL Class: - — Restrictions: - — Endorsements: - — 31. State: NJ
32. Driver's License Number: T6500 41061 10856 — 33. DOB (mm dd yy): 10 05 85 — 34. Expires (mm yy): 07 19

35. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name
36. Number & Street:
37. City — State — Zip
38. Make: FORD — 39. Model: EXP — 40. Color: RD — 41. Year: 05 — 42. Plate No.: C62GEW — 43. State: NJ
44. VIN: — 45. Expires: 02 18
46. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
47. Authority: ☒ Owner ☐ Driver ☐ Police
48. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.-- % ☐ Pending
49. Hazardous Material — ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: ----
50. Carrier No. — ☐ USDOT ☐ MC/MX ☐ None
51. GVWR / GCWR (trucks & buses only) — ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City — State — Zip

53. Veh. #: -
54. Policy No.: -
55. NJ Ins. Code: -
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

56. Driver's First Name — Initial — Last Name — 59. Sex
57. Number & Street: -
58. City — State — Zip
60. Eyes — DL Class — Restrictions — Endorsements — 61. State
62. Driver's License Number — 63. DOB (mm dd yy) — 64. Expires (mm yy)

65. Owner's First Name: ☐ Same as Driver — Initial — Last Name
66. Number & Street: -
67. City — State — Zip
68. Make — 69. Model — 70. Color — 71. Year — 72. Plate No. — 73. State
74. VIN: — 75. Expires
76. Vehicle Removed to: -
☐ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
77. Authority: ☐ Owner ☐ Driver ☐ Police
78. Alcohol Drug Test — Given: ☐ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.-- % ☐ Pending
79. Hazardous Material — ☐ None ☐ On Board ☐ Spill — Hazard Class — Placard No.
80. Carrier No. — ☐ USDOT ☐ MC/MX ☐ None
81. GVWR / GCWR (trucks & buses only) — ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
82. Motor Carrier or Government Entity: -
Number & Street: -
City — State — Zip

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No: -

Oper.	138. Charge	137. Summons No.	Oper.	139. Charge	139. Summons No.
3	-	-	-	-	-

Oper.	140. Charge	141. Summons No.	Oper.	142. Charge	143. Summons No.
3	-	-	-	-	-

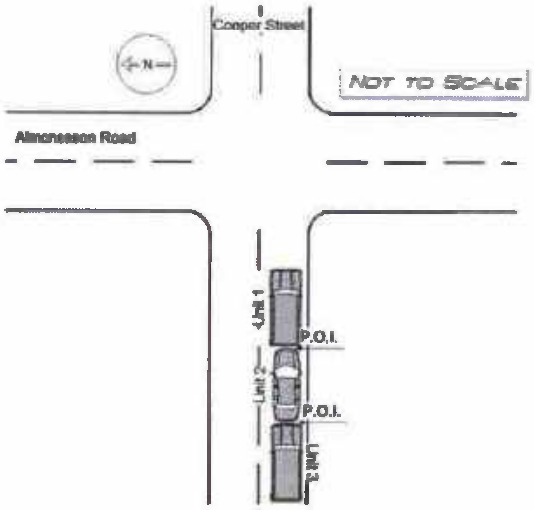
	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	3	01	01	-	33	M	-	-	01	-	-	-	-	Toomin, Joseph A & 38A Higgins Ave, Clementon, NJ, 08021
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

New Jersey Police Crash Investigation Report	Case Number 2017036921	Page 3 of 3

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)



145. Crash Description/Narrative

On 10/14/2017 at 11:57 hours, I was dispatched to the area of Cooper Street and Almonesson Road for the report of a motor vehicle crash with vehicles still in the roadway.

Upon my arrival, I located all (3) vehicles in the road way (Cooper Street neat Almonesson Road). I was able to have all drivers move their vehicles to the side of the roadway. I then spoke with D1 who reported that she was stopped in traffic waiting for the red light to change when she heard a load bang then an impact to the rear of her vehicle.

I then spoke with D2 who advised that she was stopped in traffic behind V1 when she felt an impact to her rear bumper which then pushed her vehicle into V1.

D3 advised that he was traveling behind V2 when he was coming to a stop for the traffic light. At that time, he stated that he then crashed into the rear bumper of V2.

V1 sustained damage to the rear bumper. V2 sustained damage the rear and front bumper and V3 sustained damage to the front bumper. D2 reported that her chest was hurting and requested that she be transported to the hospital. V2 NAIC # 17957.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Brown, Todd R	5228	Storms, John C	5192	☐ Pending ☒ Complete

Page 1 of 2 ☐ Fatal

New Jersey Police Crash Investigation Report

☐ Reportable ☒ Non-Reportable ☐ Change Report

95	04
97	01
98	01
99	07
100a	01
100b	04
101	02
102	01
103	01
104	02
105	03
106	-
107	-
108	01
109	01
110	01
111	01
112	-
113	-
114	-
115	-
116	-
117	-

1. Case Number: 2017029396

2. Police Dept. of: Deptford Police Department — Code: 01

3. Station/Precinct: Patrol

4. Date of Crash (mm dd yy): 08 19 17 — 5. Day of Week: Su M Tu W Th F [S] — 6. Time (use 2400 hrs): 1553 — 7. Municipality Code: 0802 — 8. Total Killed: - — 9. Total Injured: -

10. Crash Occurred On: Cooper ST (Road Name) - (Dir) — 11. Speed Limit: 35 — 12. Route No.: - — Suffix: - — 13. Milepost: -

200 (14) ☐ At Intersection with ☒ Feet ☐ Miles (15) ☐ N ☒ E ☐ S ☐ W (16) of: Almonesson RD — 18. Speed Limit: 35

19. Ramp ☐ To: ☐ From: — 17. Cross Road Name/Route No.: - — ☐ NB ☐ EB ☐ SB ☐ WB

21. Latitude: 39.830585 — 20. Route Name/Route No. — 22. Longitude: 75.130331

118a	02
118b	-
119a	25
119b	-
120a	01
120b	-
121a	01
121b	-
122	03
123	01
124	11
125	11
126a	26
126b	-
126c	-
126d	-
126e	26
127a	26
127b	-
127c	-
127d	-
127e	26
128	26
129	01
130	01
131	09
132	09
133	02
134	03

Vehicle 1

23. Veh. #: 1 — 24. Policy No.: 139086204 — 25. NJ Ins. Code: 012

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

26. Driver's First Name: Theresa — Initial: M — Last Name: Nolan — 29. Sex: F

27. Number & Street: 3 Doe CT

28. City: Sewell Washington — State: NJ — Zip: 08080

30. Eyes: 02 — DL Class: - — Restrictions: - — Endorsements: - — 31. State: NJ

32. Driver's License Number: N6212 73974 51582 — 33. DOB (mm dd yy): 010658 — 34. Expires (mm yy): 0219

35. Owner's First Name: ☐ Same as Driver John — Initial: - — Last Name: Nolan

36. Number & Street: 3 Doe CT

37. City: Sewell Washington — State: NJ — Zip: 08080

38. Make: TOYT — 39. Model: SNA — 40. Color: SL — 41. Year: 08 — 42. Plate No.: WNJ54W — 43. State: NJ

44. VIN: 5TDZK23C58S135924 — 45. Expires: 01 18

46. Vehicle Removed to: -

☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

47. Authority: ☐ Owner ☒ Driver ☐ Police

48. Alcohol Drug Test: Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.-- % ☐ Pending

49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: -

50. Carrier No.: ☐ USDOT - ☐ MC/MX - ☐ None

51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.

52. Motor Carrier or Government Entity: -

Number & Street: -

City: - — State: - — Zip: -

Vehicle 2

53. Veh. #: 2 — 54. Policy No.: 191823807 — 55. NJ Ins. Code: *

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

56. Driver's First Name: Kapura — Initial: - — Last Name: Singh — 59. Sex: M

57. Number & Street: 1316 PHEASANT RUN RD

58. City: MIDDLETOWN — State: PA — Zip: 17057

60. Eyes: 01 — DL Class: - — Restrictions: - — Endorsements: - — 61. State: PA

62. Driver's License Number: 28186 369 — 63. DOB (mm dd yy): 040150 — 64. Expires (mm yy): 0420

65. Owner's First Name: ☐ Same as Driver Sukhpreet — Initial: - — Last Name: Singh

66. Number & Street: 1316 Pheasant Run Rd

67. City: Middletown — State: PA — Zip: 17057

68. Make: TOYT — 69. Model: COR — 70. Color: BL — 71. Year: 13 — 72. Plate No.: JDW1972 — 73. State: PA

74. VIN: 2T1BU4EE6DC991161 — 75. Expires: 12 17

76. Vehicle Removed to: -

☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

77. Authority: ☐ Owner ☒ Driver ☐ Police

78. Alcohol Drug Test: Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.-- % ☐ Pending

79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: -

80. Carrier No.: ☐ USDOT - ☐ MC/MX - ☐ None

81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.

82. Motor Carrier or Government Entity: -

Number & Street: -

City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No

-

Oper.	Charge	Summons No.	Oper.	Charge	Summons No.
1	-	-	2	-	-
1	-	-	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	61	F	-	-	-	11	04	-	-	Nolan, Theresa M & 3 Doe CT, Sewell Washington, NJ, 08080
B	2	01	01	-	68	M	-	-	-	11	04	-	-	Singh, Kapura & 1316 PHEASANT RUN RD, MIDDLETOWN, PA, 17057
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

New Jersey Police Crash Investigation Report	Case Number 2017029396	Page 2 of 2

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)

145. Crash Description/Narrative

On 08/19/2017 I, PO Nucera #5223 was dispatched Cooper St. in the area of Filomena's for the report of a two vehicle cash with no injuries. Upon my arrival, I spoke to the operator of V1. She stated that she was making a left out of Filomena's parking lot onto Cooper St. She stated that there was traffic back up and a gap in the traffic. She began to make the left turn and did not see V2. The front passenger side of V1 collided with the driver side of V2.

The operator of V2 stated that he was driving East on Cooper St. when V1 suddenly made a left into his lane of travel. The front of V1 collided with the driver side of V2.

V1 sustained damage to the front passenger side corner. V2 sustained damage to the driver side of the vehicle. No injuries were reported on scene. Both vehicles were driven from the scene. No further police action was necessary.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Nucera, Anthony	5223	Mottershead, Derek J	5221	☐ Pending ☒ Complete

Page 1 of 2 ☐ Fatal

New Jersey Police Crash Investigation Report

☐ Reportable ☒ Non-Reportable ☐ Change Report

96	05
97	01
98	01
99	05
100a	01
100b	05
101	02
102	02
103	05
104	02
105	01
106	-
107	-
108	05
109	05
110	01
111	01
112	-
113	-
114	-
115	-
116	02
117	02

1. Case Number: 2017027168
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 0 8 0 2 1 7
5. Day of Week: Su M Tu (W) Th F Sa
6. Time (use 2400 hrs.): 1 8 3 8
7. Municipality Code: 0 8 0 2
8. Total Killed: - -
9. Total Injured: - -

10. Crash Occurred On: Cooper ST (Road Name) - (Dir)
11. Speed Limit: 3 5
12. Route No.: - 5 3 4
Suffix: -
13. Milepost: - - - . - -
14. 500 ☐ At Intersection with ☒ Feet ☐ Miles
15. ☐ N ☒ E ☐ S ☐ W
16. of: Almonesson RD
18. Speed Limit: 4 0
19. Ramp ☐ To: ☐ From:
17. Cross Road Name/Route No.: -
☐ NB ☐ EB ☐ SB ☐ WB
21. Latitude: - - . - - - - - - -
20. Route Name/Route No.
22. Longitude: - - . - - - - - - -

118a	09
118b	-
119a	25
119b	-
120a	01
120b	01
121a	01
121b	01
122	07
123	07
124	11
125	11
126a	26
126b	-
126c	-
126d	-
126e	26
127a	26
127b	-
127c	-
127d	-
127e	26
128	26
129	12
130	12
131	06
132	06
133	02
134	02

Vehicle 1

23. Veh. #: 1
24. Policy No.: 939 224 142
25. NJ Ins. Code: 054
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
26. Driver's First Name: Daniel — Initial: J — Last Name: Foley — 29. Sex: M
27. Number & Street: 10 Grant Ct
28. City: Laurel Springs — State: NJ — Zip: 08021
30. Eyes: 0 2 — DL Class: - D — Restrictions: None — Endorsements: - -
31. State: NJ
32. Driver's License Number: F6243 15371 11982
33. DOB (mm dd yy): 1 1 0 7 9 8
34. Expires (mm yy): 0 4 2 0
35. Owner's First Name: ☐ Same as Driver Laura — Initial: L — Last Name: Foley
36. Number & Street: 10 Grant Ct
37. City: Laurel Springs — State: NJ — Zip: 08021
38. Make: CHEV — 39. Model: SLV — 40. Color: RD — 41. Year: 03 — 42. Plate No.: Z67HJY — 43. State: NJ
44. VIN: 2 G C E C 1 9 V 5 3 1 1 6 1 1 2 9
45. Expires: 12 17
46. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
47. Authority: ☐ Owner ☒ Driver ☐ Police
48. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0. - - % ☐ Pending
49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
50. Carrier No.: ☐ USDOT - - - - - - - ☐ None ☐ MC/MX - - - - - - -
51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

Vehicle 2

53. Veh. #: 2
54. Policy No.: 129 0223470
55. NJ Ins. Code: 360
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
56. Driver's First Name: David — Initial: K — Last Name: Springle — 59. Sex: M
57. Number & Street: 28 Willow Cedar Way
58. City: Blackwood — State: NJ — Zip: 08012
60. Eyes: 0 4 — DL Class: - D — Restrictions: None — Endorsements: - M
61. State: NJ
62. Driver's License Number: S7108 15672 02614
63. DOB (mm dd yy): 0 2 1 6 6 1
64. Expires (mm yy): 1 2 2 0
65. Owner's First Name: ☒ Same as Driver SAME AS DRIVER — Initial: — Last Name:
66. Number & Street:
67. City: — State: — Zip:
68. Make: DODG — 69. Model: R15 — 70. Color: GY — 71. Year: 16 — 72. Plate No.: KF779U — 73. State: NJ
74. VIN: 1 C 6 R R 7 G T 9 G S 2 4 5 3 2 6
75. Expires: 07 18
76. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
77. Authority: ☒ Owner ☐ Driver ☐ Police
78. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0. - - % ☐ Pending
79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
80. Carrier No.: ☐ USDOT - - - - - - - ☐ None ☐ MC/MX - - - - - - -
81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
82. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No
-

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
1	39:4-56	E17 005184	2	-	-
Oper.	140. Charge	141. Summons No.	Oper.	142. Charge	143. Summons No.
1	-		2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	03	01	-	18	F	-	-	-	11	04	-	-	Toomin, Madison A & 115 Peterson BLVD, Deptford, NJ, 08096
B	1	01	01	-	20	M	-	-	-	11	04	-	-	Foley, Daniel J & 10 Grant Ct, Laurel Springs, NJ, 08021
C	2	01	01	-	57	M	-	-	-	11	04	-	-	Springle, David K & 28 Willow Cedar Way, Blackwood, NJ, 08012
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

New Jersey Police Crash Investigation Report	Case Number 2017027168	Page 2 of 2

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)

145. Crash Description/Narrative

On Wednesday, 08/02/2017 at 18:38 hrs., I was dispatched to Cooper Street by Almonesson Road in reference to a (2) two car crash with no reported injuries. I responded priority (2) two.

Upon my arrival, neither of the occupants claimed injury. Operator#01 advised me that he was traveling eastbound on Cooper Street behind vehicle#02, when he observed vehicle#02 come to an abrupt stop. Per operator#01, he then applied his brakes, and slid into vehicle#02. I checked vehicle#01 and observed minor damage to the front bumper and front grill.

Operator#02 advised me that he was traveling eastbound on Cooper Street, when the vehicle in front of him came to an abrupt stop, before turning into Filomena's; 1738 Cooper Street. Per operator#02, he applied his brakes. At that time, he was rear ended by vehicle#01. I checked vehicle#02 and observed minor damage to the rear bumper and tow hitch. A summons was issued to operator#01. End report.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Williams, Brian D	5229	Smith, Joseph J	5180	☐ Pending ☒ Complete

Page 1 of 2 ☐ Fatal

New Jersey Police Crash Investigation Report

☐ Reportable ☒ Non-Reportable ☐ Change Report

95	04
97	01
98	01
99	05
100a	01
100b	05
101	02
102	02
103	02
104	02
105	01
106	-
107	-
108	01
109	01
110	01
111	01
112	-
113	-
114	-
115	-
116	-
117	-

1. Case Number: 2017021753
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 06 19 17
5. Day of Week: Su ❶ Tu W Th F Sa
6. Time (use 2400 hrs): 1731
7. Municipality Code: 0802
8. Total Killed: - -
9. Total Injured: - -
10. Crash Occurred On: Cooper ST (Road Name) - (Dir)
At Intersection with ☐ Feet ☒ Miles ☐ N ☒ E ☐ S ☐ W
100 (14) (15) (16) of: Almonesson RD
11. Speed Limit: 35
12. Route No. - - - - Suffix - 13. Milepost - - - . - -
18. Speed Limit: 35
19. Ramp ☐ To: ☐ From: 17. Cross Road Name/Route No.: - ☐ NB ☐ EB ☐ SB ☐ WB
21. Latitude: 39.830585 20 Route Name/Route No. 22. Longitude: 75.130331

118a	51
118b	-
119a	25
119b	-
120a	01
120b	-
121a	01
121b	-
122	07
123	08
124	11
125	11
126a	26
126b	-
126c	-
126d	-
126e	26
127a	26
127b	-
127c	-
127d	-
127e	26
128	26
129	12
130	12
131	06
132	06
133	03
134	02

Vehicle 1

23. Veh. #: 1
24. Policy No.: 0894129E2030
25. NJ Ins. Code: 962
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
26. Driver's First Name: Samantha — Initial: E — Last Name: Mccartney — 29. Sex: F
27. Number & Street: 431 Myrtle AVE,5D
28. City: Woodbury — State: NJ — Zip: 08096
30. Eyes: 04 — DL Class: - - — Restrictions: - - - - — Endorsements: - - — 31. State: NJ
32. Driver's License Number: M1139 68765 52974
33. DOB (mm dd yy): 02 01 97
34. Expires (mm yy): 04 18
35. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name
36. Number & Street
37. City — State — Zip
38. Make: CHEV — 39. Model: IMP — 40. Color: SL — 41. Year: 07 — 42. Plate No.: P10HUT — 43. State: NJ
44. VIN: 2G1WB58K379415104 — 45. Expires: 04 18
46. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
47. Authority: ☒ Owner ☐ Driver ☐ Police
48. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
49. Hazardous Material — ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
50. Carrier No. — ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
51. GVWR / GCWR (trucks & buses only) — ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

Vehicle 2

53. Veh. #: 2
54. Policy No.: 030012918C71016
55. NJ Ins. Code: 823
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
56. Driver's First Name: Joshua — Initial: I — Last Name: Mastrando — 59. Sex: M
57. Number & Street: 153 Red Bank AVE
58. City: West Deptford — State: NJ — Zip: 08096
60. Eyes: 04 — DL Class: - - — Restrictions: - - - - — Endorsements: - - — 61. State: NJ
62. Driver's License Number: M0780 41169 06804
63. DOB (mm dd yy): 06 28 80
64. Expires (mm yy): 08 17
65. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name
66. Number & Street
67. City — State — Zip
68. Make: JEEP — 69. Model: GCH — 70. Color: GY — 71. Year: 17 — 72. Plate No.: L51HME — 73. State: NJ
74. VIN: 1C4RJFAG9HC684155 — 75. Expires: 03 20
76. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
77. Authority: ☒ Owner ☐ Driver ☐ Police
78. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
79. Hazardous Material — ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
80. Carrier No. — ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
81. GVWR / GCWR (trucks & buses only) — ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
82. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No
-

Oper.	Charge	Summons No.	Oper.	Charge	Summons No.
1	-	-	2	-	-
1	-	-	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	21	F	-	-	-	11	04	-	-	Mccartney, Samantha E & 431 Myrtle AVE,5D, Woodbury, NJ, 08096
B	2	01	01	-	38	M	-	-	-	11	04	-	-	Mastrando, Joshua I & 153 Red Bank AVE, West Deptford, NJ, 08096
C	2	05	01	-	2	M	-	-	-	06	06	-	-	Bartley-Mastrando, Noah & 153 W Red Bank AVE, West Deptford, NJ, 08096
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow
(Not to Scale)

145. Crash Description/Narrative

On 06/19/2017 I, PO Nucera #5223 was dispatched to Cooper St. near Almonesson Rd. for the report of a two vehicle crash with no injuries. Upon my arrival, I spoke to the operator of V1. She stated that she was slowing down behind V2 which was stopped for traffic when her vehicle began to hydroplane on the wet roadway. She was unable to stop her vehicle and the front of V1 collided with the rear of V2.

The operator of V2 stated that he was stopped in traffic when he suddenly felt V1 collide with the rear of his vehicle.

V1 sustained damage to the front of the vehicle. V2 sustained damage to the rear of the vehicle. No injuries were reported on scene. Both vehicles were driven from the scene. No further police action was necessary.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Nucera, Anthony	5223	Grogan, David P	5234	☐ Pending ☒ Complete

New Jersey Police Crash Investigation Report

☐ Fatal ☐ Reportable ☒ Non-Reportable ☐ Change Report

Field	Value
1. Case Number	2017021281
2. Police Dept. of	Deptford Police Department (Code 01)
3. Station/Precinct	Patrol
4. Date of Crash (mm dd yy)	06 15 17
5. Day of Week	Th
6. Time (use 2400 hrs.)	1716
7. Municipality Code	0802
8. Total Killed	- -
9. Total Injured	- -
10. Crash Occurred On (Road Name)	Cooper ST
Dir	-
11. Speed Limit	40
12. Route No. / Suffix / 13. Milepost	- - - - / - / - - - - - -
14 / 15 / 16	100 Feet (☐ At intersection with) of:
17. Cross Road Name/Route No.	Almonesson RD
18. Speed Limit	- -
19. Ramp	☐ To: ☐ From: -
20 Route Name/Route No.	
21. Latitude	- - . - - - - - -
22. Longitude	- - . - - - - - - -

Left margin	Code
96	04
97	01
98	01
99	07
100a	01
100b	04
101	02
102	01
103	01
104	02
105	04
106	-
107	-
108	01
109	02
110	01
111	01
112	-
113	-
114	-
115	-
116	-
117	-

Right margin	Code
118a	25
118b	-
119a	06
119b	-
120a	01
120b	01
121a	01
121b	-
122	03
123	01
124	04
125	05
126a	26
126b	-
126c	-
126d	-
126e	26
127a	26
127b	-
127c	-
127d	-
127e	26
128	26
129	12
130	01
131	11
132	11
133	02
134	02

Vehicles

Field	Vehicle 1	Vehicle 2
Veh. #	1	2
Policy No.	17412035	4272220239
NJ Ins. Code	134	148
Parked / Ped / Pedalcyclist / Resp. to Emergency / Hit & Run	☐	☐
Driver's First Name / Initial / Last Name	Sharon - Hall	Frank J Saraceno
Sex	F	M
Number & Street	1501 little gloucester rd	120 Beacon DR
City / State / Zip	Blackwood NJ 08012	Deptford NJ 08096
Eyes	02	02
DL Class	- D	- D
Restrictions	- - - -	- - - -
Endorsements	- -	- -
State	NJ	NJ
Driver's License Number	H0288 70362 59582	S0532 26771 07692
DOB (mm dd yy)	09 12 58	07 31 69
Expires (mm yy)	06 17	02 18
Owner	☒ Same as Driver — SAME AS DRIVER	☒ Same as Driver — SAME AS DRIVER
Owner Number & Street		
Owner City / State / Zip		
Make	KIA	INFI
Model	RON	Q50
Color	BL	SL
Year	07	15
Plate No.	SBC28P	F11BYD
State	NJ	NJ
VIN	KNAFG525077049466	JN1BV7AR7FM390776
Expires	12 17	04 18
Vehicle Removed to	-	-
Removal	☒ Driven ☐ Left at Scene ☐ Towed Disabled ☐ Towed Impounded ☐ Towed Disabled & Impounded	☒ Driven ☐ Left at Scene ☐ Towed Disabled ☐ Towed Impounded ☐ Towed Disabled & Impounded
Authority	☐ Owner ☐ Driver ☐ Police	☐ Owner ☐ Driver ☐ Police
Alcohol Drug Test	Given: ☒ No ☐ Yes ☐ Refused; Type: ☐ Breath ☐ Blood ☐ Urine; Results: 0.- - % ☐ Pending	Given: ☒ No ☐ Yes ☐ Refused; Type: ☐ Breath ☐ Blood ☐ Urine; Results: 0.- - % ☐ Pending
Hazardous Material	☐ None ☐ On Board ☐ Spill; Hazard Class -; Placard No. - - - -	☐ None ☐ On Board ☐ Spill; Hazard Class -; Placard No. - - - -
Carrier No.	☐ USDOT - - - - - - - - ☐ None; ☐ MC/MX - - - - - - -	☐ USDOT - - - - - - - - ☐ None; ☐ MC/MX - - - - - - -
GVWR / GCWR (trucks & buses only)	☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.	☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
Motor Carrier or Government Entity	-	-
Number & Street	-	-
City / State / Zip	- - -	- - -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No

-

Oper.	Charge	Summons No.	Oper.	Charge	Summons No.
1	136. -	137. -	2	138. -	139. -
1	140. -	141. -	2	142. -	143. -

Occupants

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	-	-	-	60	F	-	-	-	11	04	-	-	Hall, Sharon & 1501 little gloucester rd, Blackwood, NJ, 08012
B	2	-	-	-	49	M	-	-	-	11	04	-	-	Saraceno, Frank J & 120 Beacon DR, Deptford, NJ, 08096
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow
(Not to Scale)

145. Crash Description/Narrative

On the above date and time I, was dispatched to the area of Almonesson Rd and Cooper Street for a report of a minor motor vehicle crash. Gloucester County Communication advised me that there were no reported injuries, however, the male caller called multiple times to report the motor vehicle crash. I responded at a normal speed.

Upon arrival I met with D1. D1 stated that she did not need an medical attention. She advised me that she was waiting to male a left into the Cooper Grill store. She stated that the oncoming traffic stopped and a car had stopped to allow her to turn. As she turned, D2, passed the stopped vehicle and crashed into her. D1 had minor damage to the passenger side.

I then spoke with D2. He stated that he was driving straight ahead, when D1 turned in front of him. He had minor damage to the driver side front fender. D2 stated that he did not need any medical attention.

There were no independent witness to the crash.

NJTR-1 Complete.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Dalton, Matthew P	5258	Storms, John C	5192	☐ Pending ☒ Complete

 ☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

Code	Value
96	05
97	01
98	01
99	05
100a	01
100b	-
101	01
102	02
103	02
104	01
105	11
106	-
107	-
108	05
109	-
110	02
111	-
112	-
113	-
114	-
115	-
116	02
117	-

Code	Value
118a	51
118b	-
119a	-
119b	-
120a	01
120b	-
121a	-
121b	-
122	01
123	-
124	11
125	-
126a	52
126b	-
126c	-
126d	-
126e	-
127a	-
127b	-
127c	-
127d	-
127e	-
128	-
129	01
130	01
131	-
132	-
133	-
134	-

1. Case Number: 2016045192
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 11 30 16
5. Day of Week: Su M Tu (W) Th F Sa
6. Time (use 2400 hrs.): 1347
7. Municipality Code: 0802
8. Total Killed: - -
9. Total Injured: - -

10. Crash Occurred On: Cooper ST (Road Name) — Dir: E
11. Speed Limit: 35
12. Route No.: -706 — Suffix: - — 13. Milepost: - - - . - -
14. 75 — 15. ☐ At Intersection with ☒ Feet ☐ Miles — 16. ☐N ☒E ☐S ☐W
of: 17. Cross Road Name/Route No.: Almonesson RD
18. Speed Limit: 35 — ☐NB ☐EB ☐SB ☐WB
19. Ramp ☐To: ☐From: -
20 Route Name/Route No.
21. Latitude: - - . - - - - - -
22. Longitude: - - . - - - - - - -

Vehicle 1

Field	Vehicle 1	Vehicle 2
Veh. # (23 / 53)	1	-
Policy No. (24 / 54)	AU9-0680-357	-
NJ Ins. Code (25 / 55)	279	-
Flags	☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run	☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
Driver's First Name / Initial / Last Name (26 / 56)	Nicholas J Turner	- - -
Sex (29 / 59)	M	-
Number & Street (27 / 57)	228 WOODS LANE	-
City / State / Zip (28 / 58)	SOMERDALE, NJ 08083	- - -
Eyes (30 / 60)	02	- -
DL Class	- -	- -
Restrictions	- - - -	- - - -
Endorsements	- -	- -
State (31 / 61)	NJ	-
Driver's License Number (32 / 62)	T9386 59071 01952	- - -
DOB (33 / 63)	01 14 95	- - -
Expires (34 / 64)	08 20	- -
Owner's First Name / Initial / Last Name (35 / 65)	☐ Same as Driver — Dempseys Auto Parts	☐ Same as Driver — - - -
Number & Street (36 / 66)	175 Bridgeton PIKE,2	-
City / State / Zip (37 / 67)	Mantua, NJ 08051	- - -
Make (38 / 68)	CHEV	-
Model (39 / 69)	SLV	-
Color (40 / 70)	WT	-
Year (41 / 71)	11	-
Plate No. (42 / 72)	XV902U	-
State (43 / 73)	NJ	-
VIN (44 / 74)	1GCNCPEX3BZ110714	-
Expires (45 / 75)	12 17	- -
Vehicle Removed to (46 / 76)	Private Tow	-
Removal	☐ Driven ☒ Towed Disabled ☒ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded	☐ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
Authority (47 / 77)	☐ Owner ☒ Driver ☐ Police	☐ Owner ☐ Driver ☐ Police
Alcohol Drug Test (48 / 78) Given	☒ No ☐ Yes ☐ Refused	☐ No ☐ Yes ☐ Refused
Type	☐ Breath ☐ Blood ☐ Urine	☐ Breath ☐ Blood ☐ Urine
Results	0.- - % ☐ Pending	0.- - % ☐ Pending
Hazardous Material (49 / 79)	☐ None ☐ On Board ☐ Spill; Hazard Class: -; Placard No.: - - - -	☐ None ☐ On Board ☐ Spill; Hazard Class: -; Placard No.: - - - -
Carrier No. (50 / 80)	☐ USDOT - - - - - - - - ☐ None; ☐ MC/MX - - - - - - - -	☐ USDOT - - - - - - - - ☐ None; ☐ MC/MX - - - - - - - -
GVWR / GCWR (trucks & buses only) (51 / 81)	☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.	☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
Motor Carrier or Government Entity (52 / 82)	-	-
Number & Street	-	-
City / State / Zip	- - -	- - -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No

Utility pole (#2389DP).

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
1	-	-	-	-	-

Oper.	140. Charge	141. Summons No.	Oper.	142. Charge	143. Summons No.
1	-	-	-	-	-

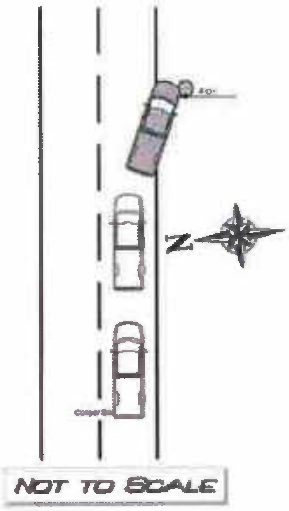
	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	23	M	-	-	03	04	02	-	-	Turner, Nicholas J & 228 WOODS LANE, SOMERDALE, NJ, 08083
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

New Jersey Police Crash Investigation Report	Case Number 2016045192	Page 2 of 2

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)



145. Crash Description/Narrative

On 11/30/2016 at 13:47 hours, I was dispatched to the area of Cooper Street and Almonesson Road for the report of a motor vehicle crash. I responded at emergent speed as it was unknown if there were injuries or not. Upon my arrival, I discovered there were no injuries at the scene.

Operator #1 advised me that he was traveling on Cooper Street when a vehicle in front of him, stopped quickly. Operator #1 advised me that when he attempted to stop his vehicle began to slide. Operator #1 continued that in order to avoid a collision with the other vehicle, he steered his vehicle to the right. Operator #1 continued that when he steered to the right his vehicle left the roadway and struck a pole (#2389DP). Vehicle #1 had moderate damage on the front passenger side bumper of the vehicle.

PSE&G was notified about the incident and were dispatched to inspect the pole that was struck, as it was now leaning and appeared unstable. There were no injuries reported at the scene.

At this time, there area no further details.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Massing, Matthew J	5231	Storms, John C	5192	☐ Pending ☒ Complete

NJTR-1 (Rev. 01/17)

Page 1 of 2 ☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

98	05
97	01
96	01
99	05
100a	01
100b	-
101	01
102	02
103	02
104	02
105	01
106	-
107	-
108	05
109	01
110	01
111	01
112	-
113	-
114	-
115	-
116	02
117	02

1. Case Number: 2016045184

2. Police Dept. of: Deptford Police Department — Code: 01

3. Station/Precinct: Patrol

4. Date of Crash (mm dd yy): 11 30 16

5. Day of Week: Su M Tu (W) Th F Sa

6. Time (use 2400 hrs.): 1216

7. Municipality Code: 0802

8. Total Killed: - -

9. Total Injured: - -

10. Crash Occurred On: Cooper ST (Road Name) - (Dir)

At Intersection with ☐ Feet ☒ Feet ☐ Miles (50) ☐ N ☒ E ☐ S ☐ W of: Almonesson Rd

11. Speed Limit: 35

12. Route No.: -706 Suffix: - 13. Milepost: - - - . - -

18. Speed Limit: 35

19. Ramp ☐ To: ☐ From: 17. Cross Road Name/Route No.: - ☐ NB ☐ EB ☐ SB ☐ WB

21. Latitude: - - . - - - - - - 20. Route Name/Route No. 22. Longitude: - - . - - - - - -

118a	25
118b	-
119a	51
119b	-
120a	01
120b	-
121a	01
121b	-
122	07
123	01
124	11
125	11
126a	26
126b	-
126c	-
126d	-
126e	-
127a	26
127b	-
127c	-
127d	-
127e	-
128	-
129	06
130	17
131	12
132	12
133	-
134	-

Vehicle 1

23. Veh. #: 1 — 24. Policy No.: 993587 — 25. NJ Ins. Code: 884

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

26. Driver's First Name: Richard — Initial: D — Last Name: Graham — 29. Sex: M

27. Number & Street: 2040 Harmony LN

28. City: Deptford — State: NJ — Zip: 08096

30. Eyes: 02 — DL Class: - - — Restrictions: - - - - — Endorsements: - - — 31. State: NJ

32. Driver's License Number: G7154 65564 12532 — 33. DOB (mm dd yy): 12 13 53 — 34. Expires (mm yy): 04 19

35. Owner's First Name: ☒ Same as Driver — Initial — Last Name: SAME AS DRIVER

36. Number & Street:

37. City — State — Zip

38. Make: DODG — 39. Model: R15 — 40. Color: RD — 41. Year: 07 — 42. Plate No.: KZ442E — 43. State: NJ

44. VIN: 3D7KR28D67G729343 — 45. Expires: 11 17

46. Vehicle Removed to: -

☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

47. Authority: ☒ Owner ☐ Driver ☐ Police

48. Alcohol Drug Test: Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending

49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -

50. Carrier No.: ☐ USDOT - - - - - - - ☐ None ☐ MC/MX - - - - - - -

51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.

52. Motor Carrier or Government Entity: -

Number & Street: -

City: - — State: - — Zip: -

Vehicle 2

53. Veh. #: 2 — 54. Policy No.: 01754-12-78C — 55. NJ Ins. Code: 823

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

56. Driver's First Name: Alexis — Initial: N — Last Name: Strube — 59. Sex: F

57. Number & Street: 590 LOWERLANDING ROAD #72

58. City: BLACKWOOD — State: NJ — Zip: 08012

60. Eyes: 04 — DL Class: - - — Restrictions: - - - - — Endorsements: - - — 61. State: NJ

62. Driver's License Number: S8378 01975 52934 — 63. DOB (mm dd yy): 02 28 93 — 64. Expires (mm yy): 04 18

65. Owner's First Name: ☒ Same as Driver — Initial — Last Name: SAME AS DRIVER

66. Number & Street:

67. City — State — Zip

68. Make: CHEV — 69. Model: MAL — 70. Color: TN — 71. Year: 03 — 72. Plate No.: X43GPA — 73. State: NJ

74. VIN: 1G1ND52J53M669738 — 75. Expires: 04 17

76. Vehicle Removed to: Private Tow

☐ Driven ☒ Towed Disabled ☒ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

77. Authority: ☒ Owner ☐ Driver ☐ Police

78. Alcohol Drug Test: Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending

79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -

80. Carrier No.: ☐ USDOT - - - - - - - ☐ None ☐ MC/MX - - - - - - -

81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.

82. Motor Carrier or Government Entity: -

Number & Street: -

City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No

-

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
1	-	-	2	-	-
1	-	-	2	-	-

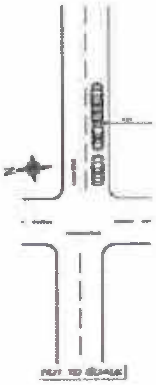
	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	65	M	-	-	03	04	02	-	-	Graham, Richard D & 2040 Harmony LN, Deptford, NJ, 08096
B	2	01	01	-	25	F	-	-	03	04	02	-	-	Strube, Alexis N & 590 LOWERLANDING ROAD #72, BLACKWOOD, NJ, 08012
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

New Jersey Police Crash Investigation Report	Case Number 2016045184	Page 2 of 2

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)



145. Crash Description/Narrative

On 11/30/20146 at 12:16 hours, I was dispatched to the area of Almonesson Road and Cooper Street for the report of a motor vehicle crash. I responded at normal speed with lights and siren deactivated.

Operator #1 advised me that he was slowing traffic because a vehicle in front of stopped rapidly. He further advised me that when he did so, vehicle #2 struck the rear of his vehicle.

Operator #2 advised me that she was traveling behind vehicle #1 when it stopped quickly. She further advised me that when she applied her brakes, she slid into the rear of vehicle #1.

Vehicle #2 slid into the rear of vehicle #1 that had a large tow hitch and ball attached to it. Vehicle #2 struck this hitch, causing heavy damage to the front bumper and hood of the vehicle. There was no damage visible to the rear of vehicle #1. Vehicle #2 was disabled and towed privately. No injuries were reported to me at the scene.

No further details.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Massing, Matthew J	5231	Storms, John C	5192	☐ Pending ☒ Complete

☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

1. Case Number: 2016040984
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: -
4. Date of Crash (mm dd yy): 10 31 16
5. Day of Week: Su Mo Tu W Th F Sa
6. Time (use 2400 hrs.): 1624
7. Municipality Code: 0802
8. Total Killed: - -
9. Total Injured: - -
10. Crash Occurred On: Cooper ST (Road Name) - (Dir)
11. Speed Limit: 35
12. Route No.: - - - -
Suffix: -
13. Milepost: - - - - - -
18. Speed Limit: 40
☐ At Intersection with: Almonesson RD
☒ Feet ☐ Miles: 50
☐ N ☒ E ☐ S ☐ W
14 15 16
19. Ramp ☐ To: ☐ From:
17. Cross Road Name/Route No.: -
☐ NB ☐ EB ☐ SB ☐ WB
21. Latitude: - - . - - - - - -
20 Route Name/Route No.:
22. Longitude: - - . - - - - - -

Vehicle 1

23. Veh. #: 1
24. Policy No.: -
25 NJ Ins. Code: -
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☒ Hit & Run
26. Driver's First Name: 0 — Initial: - — Last Name: 0
29. Sex: -
27. Number & Street: 0
28. City: 0 — State: - — Zip: 0
30. Eyes: - - — DL Class: - - — Restrictions: - - - - — Endorsements: - -
31. State:
32. Driver's License Number: 0
33. DOB (mm dd yy): - - - - - -
34. Expires (mm yy):
35. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name
36. Number & Street:
37. City: — State: — Zip:
38. Make: - — 39. Model: - — 40. Color: - — 41. Year: - — 42. Plate No.: - — 43. State: -
44. VIN: - - - - - - - - - - - - - - - - - -
45. Expires: - -
46. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
47. Authority: ☐ Owner ☒ Driver ☐ Police
48. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
50. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

Vehicle 2

53. Veh. #: 2
54. Policy No.: 025712839C7101
55. NJ Ins. Code: 823
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☒ Hit & Run
56. Driver's First Name: Rebecca — Initial: A — Last Name: Stodnick
59. Sex: F
57. Number & Street: 208 Emerson ST
58. City: Woodbury — State: NJ — Zip: 08096
60. Eyes: 0 2 — DL Class: - - — Restrictions: - - - - — Endorsements: - -
61. State: NJ
62. Driver's License Number: S8284 64561 59912
63. DOB (mm dd yy): 0 9 1 6 9 1
64. Expires (mm yy): 0 6 1 7
65. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name
66. Number & Street:
67. City: — State: — Zip:
68. Make: SUBA — 69. Model: FOR — 70. Color: SL — 71. Year: 03 — 72. Plate No.: L52GMC — 73. State: NJ
74. VIN: J F 1 S G 6 5 6 1 3 H 7 7 2 4 4 3
75. Expires: 04 17
76. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
77. Authority: ☒ Owner ☐ Driver ☐ Police
78. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
80. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
82. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

135. Damage to Other Property: ☐ Yes (If Yes, describe) ☒ No
-

Oper.	Charge	Summons No.	Oper.	Charge	Summons No.
1	-	-	2	-	-
1	-	-	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	-	M	-	-	03	09	04	-	-	0, 0 & 0, 0, 0
B	2	01	01	-	27	F	-	-	03	09	04	-	-	Stodnick, Rebecca A & 208 Emerson ST, Woodbury, NJ, 08096
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

98	05
97	01
99	01
99	05
100a	01
100b	-
101	02
102	01
103	01
104	02
105	02
106	-
107	-
108	05
109	01
110	01
111	01
112	-
113	-
114	-
115	-
116	-
117	-
118a	75
118b	-
119a	25
119b	-
120a	00
120b	-
121a	01
121b	-
122	12
123	01
124	03
125	03
126a	26
126b	-
126c	-
126d	-
126e	-
127a	26
127b	-
127c	-
127d	-
127e	-
128	-
129	10
130	00
131	05
132	05
133	-
134	-

New Jersey Police Crash Investigation Report	Case Number 2016040984	Page 2 of 2

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)

145. Crash Description/Narrative

V2 stated that she was traveling on Cooper St. and awaiting traffic at the Almonesson Rd. intersection when an unknown Red F150, driven by a white male with a plaid shirt and brown hair, pulled out of the Cooper Grill parking lot onto Cooper St. The truck made contact with V2's rear passenger quarter panel. V2 then stated that the driver of the unknown vehicle "gave her the finger" and then turned on Almonesson Rd. toward the Deptford Mall.

On scene investigation revealed: Minor scrapes and dents to the rear passenger quarter panel without and paint transfer. V2 denied needing medical attention at this time.

Crash investigation complete.

Prior to speaking to V2, a thorough area check by multiple Deptford units were negative for the fleeing vehicle that V2 described.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Bullock, Ryan P	5248	Storms, John C	5192	☐ Pending ☒ Complete

Page 1 of 3 ☐ Fatal

New Jersey Police Crash Investigation Report

☐ Reportable ☒ Non-Reportable ☐ Change Report

1. Case Number: 2016037054
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 09 30 16
5. Day of Week: Su M Tu W Th F Sa
6. Time (use 2400 hrs.): 1253
7. Municipality Code: 0802
8. Total Killed: -
9. Total Injured: -
10. Crash Occurred On: Cooper ST (Road Name) - (Dir)
11. Speed Limit: 35
12. Route No.: -
Suffix: -
13. Milepost: -
14. 100 ☐ At intersection with ☒ Feet ☐ Miles 15
16. ☐ N ☒ E ☐ S ☐ W of: Almonesson RD
18. Speed Limit: 35
19. Ramp ☐ To: ☐ From:
17. Cross Road Name/Route No.: -
☐ NB ☐ EB ☐ SB ☐ WB
20. Route Name/Route No.: -
21. Latitude: -
22. Longitude: -

23. Veh. #: 1
24. Policy No.: 911035583
25. NJ Ins. Code: 134
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

26. Driver's First Name: James — Initial: T — Last Name: Storms
29. Sex: M
27. Number & Street: 5 Fleming AVE
28. City: Sewell — State: NJ — Zip: 08080
30. Eyes: 05 — DL Class: - — Restrictions: - — Endorsements: -
31. State: NJ
32. Driver's License Number: S8309 38383 06935
33. DOB (mm dd yy): 061893
34. Expires (mm yy): 0115
35. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name
36. Number & Street: -
37. City: - — State: - — Zip: -
38. Make: FORD — 39. Model: F15 — 40. Color: WT — 41. Year: 90 — 42. Plate No.: N87GXC — 43. State: NJ
44. VIN: 1FTEF14YXLNA62894
45. Expires: 07 17
46. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
47. Authority: ☒ Owner ☐ Driver ☐ Police
48. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.-- % ☐ Pending
49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: -
50. Carrier No.: ☐ USDOT - ☐ MC/MX - ☐ None
51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

53. Veh. #: 2
54. Policy No.: 4262-80-04-46
55. NJ Ins. Code: 148
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

56. Driver's First Name: Carmen — Initial: J — Last Name: Lynch
59. Sex: F
57. Number & Street: 5 Schollcrest AVE
58. City: Deptford — State: NJ — Zip: 08096
60. Eyes: 02 — DL Class: - — Restrictions: - — Endorsements: -
61. State: NJ
62. Driver's License Number: L9665 11171 59702
63. DOB (mm dd yy): 090270
64. Expires (mm yy): 0619
65. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name
66. Number & Street: -
67. City: - — State: - — Zip: -
68. Make: CHEV — 69. Model: COL — 70. Color: OG — 71. Year: 16 — 72. Plate No.: H60GNH — 73. State: NJ
74. VIN: 1GCGTDE30G1265697
75. Expires: 04 20
76. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
77. Authority: ☒ Owner ☐ Driver ☐ Police
78. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.-- % ☐ Pending
79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: -
80. Carrier No.: ☐ USDOT - ☐ MC/MX - ☐ None
81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
82. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No: -

Oper.	Charge	Summons No.	Oper.	Charge	Summons No.
1	-	-	2	-	-
1	-	-	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	25	M	-	-	03	09	04	-	-	Storms, James T & 5 Fleming AVE, Sewell, NJ, 08080
B	2	01	-	-	48	F	-	-	03	09	04	-	-	Lynch, Carmen J & 5 Schollcrest AVE, Deptford, NJ, 08096
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

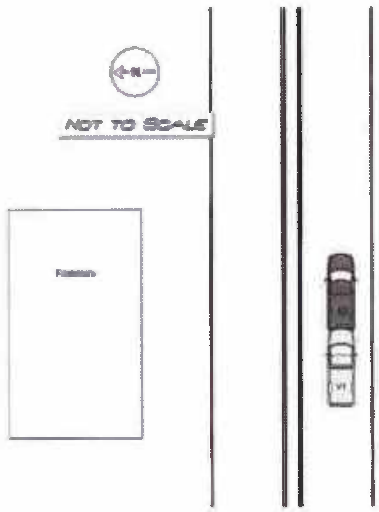
98	05
97	01
99	01
99	05
100a	01
100b	-
101	01
102	02
103	02
104	02
105	01
106	-
107	-
108	01
109	01
110	01
111	01
112	-
113	-
114	-
115	-
116	02
117	02
118a	09
118b	-
119a	25
119b	-
120a	01
120b	-
121a	01
121b	-
122	07
123	07
124	11
125	11
126a	26
126b	-
126c	-
126d	-
126e	-
127a	26
127b	-
127c	-
127d	-
127e	-
128	-
129	12
130	12
131	06
132	06
133	-
134	-

New Jersey Police Crash Investigation Report	Case Number 2016037054	Page 2 of 3

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)



145. Crash Description/Narrative

The Crash Description begins on continuation page

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Wisnofsky, John M	5257	Riggs, Michael S	5224	☐ Pending ☒ Complete

New Jersey Police Crash Investigation Report Motor Vehicle Crash Description	Police Dept: Deptford Police Department Code: 01 Station: Patrol Case No: 2016037054

145. Crash Description

On Friday, 9/30/2016, at 12:53 hours, I was dispatched to Cooper St. in the area of Filomena's Restaurant, for a motor vehicle crash. Per County Dispatch, both vehicles were still in the middle of the roadway blocking traffic, with no complaints of injury. I responded priority one.

Upon arrival I observed the two vehicles involved off to the shoulder of the road, not obstructing traffic flow. There were no complaints of injury or major vehicle damage.

I then spoke with the driver of V1, James Storms. James said that he was traveling East on Cooper St, when V2 slowed down because a vehicle cut in front of her, pulling out of Filomena's. James said that he applied his brakes, but his vehicle slid into the rear of V2. James said that there was damage to his front bumper and I observed the damage.

I then spoke with the driver of V2, Carmen Lynch. Carmen advised me that she was traveling East on Cooper St, when a vehicle quickly pulled out of the Filomena's parking lot, directly in front of her vehicle. Carmen said that she applied her brakes, when V1 crashed into the rear of her vehicle. Carmen had a bike rack on the back of her truck, which slightly damaged. I observed that the bike rack slightly dented where the impact occurred.

Both the driver of V1 and the driver of V2 claimed no injuries, therefore medical assistance was not needed.

Both vehicles were driven from the scene of the crash.

End of report.

Wisnofsky, John M
Officer's Signature

5257
Badge Number

Page 1 of 2 ☐ Fatal

New Jersey Police Crash Investigation Report

☐ Reportable ☒ Non-Reportable ☐ Change Report

96	05
97	01
98	01
99	05
100a	01
100b	-
101	02
102	01
103	01
104	02
105	07
106	-
107	-
108	01
109	01
110	01
111	01
112	-
113	-
114	-
115	-
116	01
117	03

1. Case Number: 2016013346
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 0 4 0 3 1 6
5. Day of Week: 6 M Tu W Th F Sa
6. Time (use 2400 hrs.): 1 8 5 0
7. Municipality Code: 0 8 0 2
8. Total Killed: - -
9. Total Injured: - -
10. Crash Occurred On: Cooper ST (Road Name) - (Dir) of: Almonesson RD
At Intersection with
325 (14) ☒ Feet ☐ Miles (15) ☐ N ☒ E ☐ S ☐ W (16)
11. Speed Limit: 3 5
12. Route No.: - 7 0 6
Suffix: -
13. Milepost: - - - . - -
18. Speed Limit: 4 0
19. Ramp ☐ To: ☐ From:
17. Cross Road Name/Route No.: -
☐ NB ☐ EB ☐ SB ☐ WB
21. Latitude: - - . - - - - - - -
20. Route Name/Route No.: - -
22. Longitude: - - . - - - - - - -

118a	08
118b	-
119a	25
119b	-
120a	01
120b	-
121a	01
121b	-
122	03
123	08
124	11
125	11
126a	26
126b	-
126c	-
126d	-
126e	-
127a	26
127b	-
127c	-
127d	-
127e	-
128	-
129	10
130	10
131	11
132	11
133	-
134	-

Vehicle 1

23. Veh. #: 1
24. Policy No.: AVP2400545
25. NJ Ins. Code: 960
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
26. Driver's First Name: John — Initial: F — Last Name: Colclough
29. Sex: M
27. Number & Street: 359 Wilson RD
28. City: Turnersville — State: NJ — Zip: 08012
30. Eyes: 0 4 — DL Class: - - — Restrictions: - - - - — Endorsements: - -
31. State: NJ
32. Driver's License Number: C6221 40766 09524
33. DOB (mm dd yy): 0 9 1 2 5 2
34. Expires (mm yy): 0 6 1 8
35. Owner's First Name: ☒ Same as Driver SAME AS DRIVER — Initial — Last Name
36. Number & Street
37. City — State — Zip
38. Make: MERC — 39. Model: - — 40. Color: YL — 41. Year: 59 — 42. Plate No.: DQ59MERC — 43. State: NJ
44. VIN: 0 0 0 0 0 1 N 9 W A 5 5 4 6 5 5 9
45. Expires: 09 17
46. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
47. Authority: ☐ Owner ☒ Driver ☐ Police
48. Alcohol Drug Test: Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0. - - % ☐ Pending
49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
50. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

Vehicle 2

53. Veh. #: 2
54. Policy No.: 939 276 136
55. NJ Ins. Code: 054
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
56. Driver's First Name: Jeffrey — Initial: - — Last Name: Smith
59. Sex: M
57. Number & Street: 2503 Beacon Hill DR
58. City: Sicklerville — State: NJ — Zip: 08081
60. Eyes: 0 4 — DL Class: - - — Restrictions: - - - - — Endorsements: - -
61. State: NJ
62. Driver's License Number: S5778 39300 12634
63. DOB (mm dd yy): 1 2 1 3 6 3
64. Expires (mm yy): 1 2 1 7
65. Owner's First Name: ☒ Same as Driver SAME AS DRIVER — Initial — Last Name
66. Number & Street
67. City — State — Zip
68. Make: INFI — 69. Model: G35 — 70. Color: SL — 71. Year: 12 — 72. Plate No.: X11EHL — 73. State: NJ
74. VIN: J N 1 D V 6 A R 5 C M 7 3 0 8 9 3
75. Expires: 05 16
76. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
77. Authority: ☐ Owner ☒ Driver ☐ Police
78. Alcohol Drug Test: Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0. - - % ☐ Pending
79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
80. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
82. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No
-

Oper.	136. Charge	137. Summons No.	Oper.	139. Charge	139. Summons No.
1	-	-	2	-	-
Oper.	**140. Charge**	**141. Summons No.**	**Oper.**	**142. Charge**	**143. Summons No.**
1	-	-	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	66	M	-	-	03	09	04	-	-	Colclough, John F & 359 Wilson RD, Turnersville, NJ, 08012
B	2	01	01	-	55	M	-	-	03	09	04	-	-	Smith, Jeffrey & 2503 Beacon Hill DR, Sicklerville, NJ, 08081
C	2	03	01	-	48	F	-	-	03	09	04	-	-	Zitterman, Susan H & 2405 Beacon Hill DR, Sicklerville, NJ, 08081
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

New Jersey Police Crash Investigation Report	Case Number 2016013346	Page 2 of 2

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	
F	-	-	-	-	-	-	-	-	-	-	-	-	-	
G	-	-	-	-	-	-	-	-	-	-	-	-	-	
H	-	-	-	-	-	-	-	-	-	-	-	-	-	
I	-	-	-	-	-	-	-	-	-	-	-	-	-	
J	-	-	-	-	-	-	-	-	-	-	-	-	-	

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)

145. Crash Description/Narrative

On Sunday 04/03/2016 at 18:50 hours, I was dispatched to 1738 Cooper Street; Filomena's Lakeside, in reference to a motor vehicle crash without injuries. I responded at normal speed.

Upon my arrival, I spoke with operator 01 who reported that he was making a left turn to pull into the parking lot to Filomena's when he believes vehicle 02 was beginning to pull out causing their vehicles to collide. I observed some damage to the front driver's side portion of vehicle 01.

I spoke with operator 02 who reported that he was stopped in the Filomena's parking lot waiting for traffic to clear so he could exit the parking lot when vehicle 01 turned into the lot striking his vehicle while doing so. I observed some damage to the front driver's side portion of vehicle 02.

With both driver's statements and my observation of the scene it can be determined that the primary contributing factor for the crash was vehicle 01 turning unsafely. End report.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Troughton, Christopher M	5246	Storms, John C	5192	☐ Pending ☒ Complete

Page 1 of 2 ☐ Fatal

New Jersey Police Crash Investigation Report

☐ Reportable ☒ Non-Reportable ☐ Change Report

96 05 | 97 01 | 98 06 | 99 05 | 100a 01 | 100b - | 101 02 | 102 03 | 103 03 | 104 01 | 105 11 | 106 - | 107 - | 108 04 | 109 - | 110 01 | 111 - | 112 - | 113 - | 114 - | 115 - | 116 - | 117 -

1. Case Number: 2016003162
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: -
4. Date of Crash (mm dd yy): 0 1 2 2 1 6
5. Day of Week: Su M Tu W Th F Sa
6. Time (use 2400 hrs.): 2 2 4 5
7. Municipality Code: 0 8 0 2
8. Total Killed: - -
9. Total Injured: - -
10. Crash Occurred On: Cooper ST (Road Name) - (Dir) of: Almonesson RD
At Intersection with ☐ / 200 (14) ☒ Feet ☐ Miles (15) ☐ N ☒ E ☐ S ☐ W (16)
11. Speed Limit: 3 5
12. Route No. - Suffix - 13. Milepost - -
18. Speed Limit: 3 5
19. Ramp ☐ To: ☐ From:
17. Cross Road Name/Route No. -
☐ NB ☐ EB ☐ SB ☐ WB
20 Route Name/Route No. -
21. Latitude - - . - - - - - - -
22. Longitude - - . - - - - - - -

118a 51 | 118b - | 119a - | 119b - | 120a 01 | 120b - | 121a - | 121b - | 122 01 | 123 - | 124 11 | 125 - | 126a 59 | 126b - | 126c - | 126d - | 126e - | 127a - | 127b - | 127c - | 127d - | 127e - | 128 - | 129 17 | 130 17 | 131 - | 132 - | 133 - | 134 -

23. Veh. # 1 — 24. Policy No. 8012857 — 25. NJ Ins. Code 096
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
26. Driver's First Name: William — Initial: E — Last Name: Spickler — 29. Sex: M
27. Number & Street: 1860 Rosemore AVE
28. City: Deptford — State: NJ — Zip: 08096
30. Eyes: 0 4 — DL Class: - - — Restrictions: - - - - — Endorsements: - - — 31. State: NJ
32. Driver's License Number: S7062 78565 11934
33. DOB (mm dd yy): 1 1 1 6 9 3
34. Expires (mm yy): 0 7 1 6
35. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name
36. Number & Street
37. City — State — Zip
38. Make: DODG — 39. Model: DUR — 40. Color: RD — 41. Year: 06 — 42. Plate No.: Y36FKZ — 43. State: NJ
44. VIN: 1 D 4 H B 3 8 N 6 6 F 1 2 0 4 7 3 — 45. Expires: 06 16
46. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
47. Authority: ☒ Owner ☐ Driver ☐ Police
48. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
50. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City — State — Zip

53. Veh. # - — 54. Policy No. - — 55. NJ Ins. Code -
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
56. Driver's First Name — Initial — Last Name — 59. Sex
57. Number & Street
58. City — State — Zip
60. Eyes — DL Class — Restrictions — Endorsements — 61. State
62. Driver's License Number
63. DOB (mm dd yy)
64. Expires (mm yy)
65. Owner's First Name: ☐ Same as Driver — Initial — Last Name
66. Number & Street
67. City — State — Zip
68. Make — 69. Model — 70. Color — 71. Year — 72. Plate No. — 73. State
74. VIN — 75. Expires
76. Vehicle Removed to:
☐ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
77. Authority: ☐ Owner ☐ Driver ☐ Police
78. Alcohol Drug Test — Given: ☐ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class — Placard No.
80. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
82. Motor Carrier or Government Entity
Number & Street
City — State — Zip

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
1	-	-	-	-	-
Oper.	140. Charge	141. Summons No.	Oper.	142. Charge	143. Summons No.
1	-	-	-	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	25	M	-	-	-	09	04	-	-	Spickler, William E & 1860 Rosemore AVE, Deptford, NJ, 08096
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

New Jersey Police Crash Investigation Report	Case Number 2016003162	Page 2 of 2

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)

145. Crash Description/Narrative

Driver #1 was traveling eastbound on Cooper Street in the area of Almonesson Road when he lost control of Vehicle #1 and struck a chain link fence at 1709 Cooper Street. There was damage to the chain link fence. No visible damage on Vehicle #1. The roadways were covered in snow and it was actively snowing.

Home owner's information:
Joseph V Barbuto
DOB: 08/08/1937
Phone: 856-473-8909

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Warrington, Jr., Thomas E	5259	Ruiz, Rudy R	5230	☐ Pending ☒ Complete

Page 1 of 2 ☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

1. Case Number: 2015035304
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 10 02 15
5. Day of Week: Su M Tu W Th F Sa
6. Time (use 2400 hrs.): 1239
7. Municipality Code: 0802
8. Total Killed: - -
9. Total Injured: 01
10. Crash Occurred On: Cooper ST (Road Name) - (Dir) of: Almonesson RD
At Intersection with ☐ / 50 (14) ☒ Feet ☐ Miles (15) ☒ N ☐ E ☐ S ☐ W (16)
11. Speed Limit: 35
12. Route No. - - - - Suffix - 13. Milepost - - - . - -
18. Speed Limit: 35 ☐ NB ☐ EB ☐ SB ☐ WB
19. Ramp ☐ To: ☐ From: 17. Cross Road Name/Route No.: -
20. Route Name/Route No.: - - . - - - - - - -
21. Latitude: - - . - - - - - - -
22. Longitude: - - . - - - - - - -

Veh. #	Policy No.	NJ Ins. Code	Parked	Ped	Pedalcyclist	Resp. to Emergency	Hit & Run
1	1290194231	360					
2	43354802	961					

	Driver 1	Driver 2
25. Driver's First Name	Samantha	Wendy
Initial	E	J
Last Name	Mccartney	Zagarella
29. Sex	F	F
27. Number & Street	431 Myrtle AVE,5D	506 MATTHEWS ST
28. City	Woodbury	BLACKWOOD
State	NJ	NJ
Zip	08096	08012
30. Eyes	04	06
DL Class	- -	- -
Restrictions	- - - -	- - - -
Endorsements	- -	- -
31. State	NJ	NJ
32. Driver's License Number	M1139 68765 52974	Z0132 78071 57576
33. DOB (mm dd yy)	02 01 97	07 01 57
34. Expires (mm yy)	04 18	08 16
35. Owner's First Name	☐ Same as Driver Kimberly	☐ Same as Driver Joseph
Initial	T	J
Last Name	Mccartney	Zagarella
36. Number & Street	8 Dover RD	506 MATTHEWS ST
37. City	Sewell	BLACKWOOD
State	NJ	NJ
Zip	08080	08012
38. Make	CHEV	TOYT
39. Model	IMP	AVA
40. Color	SL	RD
41. Year	04	06
42. Plate No.	P49ECE	YKE76D
43. State	NJ	NJ
44. VIN	2G1WF52E149287531	4T1BK36B56U095178
45. Expires	04 16	11 16
46. Vehicle Removed to:	-	-
	☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded	☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
47. Authority	☐ Owner ☒ Driver ☐ Police	☐ Owner ☒ Driver ☐ Police
48. Alcohol Drug Test	Given: ☒ No ☐ Yes ☐ Refused; Type: ☐ Breath ☐ Blood ☐ Urine; Results: 0.- - % ☐ Pending	Given: ☒ No ☐ Yes ☐ Refused; Type: ☐ Breath ☐ Blood ☐ Urine; Results: 0.- - % ☐ Pending
49. Hazardous Material	☐ None ☐ On Board ☐ Spill; Hazard Class: - ; Placard No.: - - - -	☐ None ☐ On Board ☐ Spill; Hazard Class: - ; Placard No.: - - - -
50. Carrier No.	☐ USDOT - - - - - - - ☐ None; ☐ MC/MX - - - - - - -	☐ USDOT - - - - - - - ☐ None; ☐ MC/MX - - - - - - -
51. GVWR / GCWR (trucks & buses only)	☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.	☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity	-	-
Number & Street	-	-
City	-	-
State	-	-
Zip	-	-

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No
-

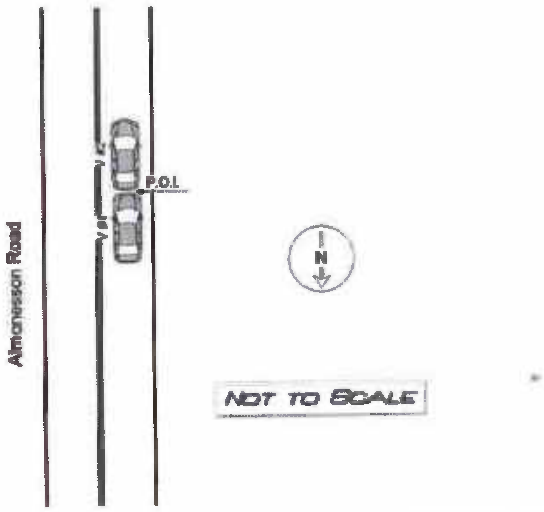
Oper.	Charge	Summons No.	Oper.	Charge	Summons No.
1	-	-	2	-	-
1	-	-	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants if Deceased, Date & Time of Death
A	1	01	01	04	21	F	11	08	01	09	04	-	-	Mccartney, Samantha E & 431 Myrtle AVE,5D, Woodbury, NJ, 08096
B	2	01	01	-	61	F	-	-	03	09	04	-	-	Zagarella, Wendy J & 506 MATTHEWS ST, BLACKWOOD, NJ, 08012
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)



145. Crash Description/Narrative

Operator #1 stated she was traveling southbound on Almonesson Road approaching the intersection with Cooper Street. Operator #1 stated she observed traffic buildup from the traffic light and began slowing down to stop. Operator #1 stated that her vehicle began to hydroplane on the wet road surface, causing her vehicle to rear end Vehicle #2.

Operator #2 stated she was stopped in traffic on Almonesson Road southbound at the intersection with Cooper Street when her vehicle was rear ended by Vehicle #1.

On scene investigation revealed: Vehicle #1 sustained damage to the front bumper. Vehicle #2 sustained damage to the rear bumper. Operator #1 complained of knee pain, however, she advised that she did not want an ambulance to respond. Note that it was heavily raining at the time of the crash and the road was slick.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Mottershead, Derek J	5221	Clements, Kevin A	5172	☐ Pending ☒ Complete

Page 1 of 4 ☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

1. Case Number: 2015033118
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 09 16 15
5. Day of Week: Su M Tu W Th F Sa
6. Time (use 2400 hrs.): 0856
7. Municipality Code: 0802
8. Total Killed: -
9. Total Injured: -
10. Crash Occurred On: Cooper ST (Road Name) - (Dir) of: Almonesson RD
11. Speed Limit: -
12. Route No.: -
13. Milepost: -
14. 75 ☐ At Intersection with ☒ Feet ☐ Miles 15. ☐N ☐E ☐S ☒W 16.
17. Cross Road Name/Route No.: -
18. Speed Limit: 3 5 ☐NB ☐EB ☐SB ☐WB
19. Ramp ☐To: ☐From:
20. Route Name/Route No.: -
21. Latitude: -
22. Longitude: -

23. Veh. #: 1 — 24. Policy No.: au906834461 — 25. NJ Ins. Code: 279
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

26. Driver's First Name: William — Initial: D — Last Name: McGrath — 29. Sex: M
27. Number & Street: 690 Shields AVE
28. City: West Deptford — State: NJ — Zip: 08096
30. Eyes: - — DL Class: - — Restrictions: - — Endorsements: - — 31. State: NJ
32. Driver's License Number: M1268 78564 07512 — 33. DOB (mm dd yy): 07 04 51 — 34. Expires (mm yy):
35. Owner's First Name: ☐ Same as Driver Till Paint Co Inc — Initial — Last Name
36. Number & Street: 691 S Evergreen AVE
37. City: Woodbury Heights — State: NJ — Zip: 08097
38. Make: FORD — 39. Model: - — 40. Color: WT — 41. Year: 13 — 42. Plate No.: XACS36 — 43. State: NJ
44. VIN: NM0LS6BN2DT168243 — 45. Expires: 08 16
46. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
47. Authority: ☐ Owner ☒ Driver ☐ Police
48. Alcohol Drug Test: Given: ☒No ☐Yes ☐Refused — Type: ☐Breath ☐Blood ☐Urine — Results: 0.- - % ☐Pending
49. Hazardous Material: ☐None ☐On Board ☐Spill — Hazard Class: - — Placard No.: - - - -
50. Carrier No.: ☐USDOT - - - - - - - ☐None ☐MC/MX - - - - - - -
51. GVWR / GCWR (trucks & buses only): ☐≤ 10,000 lbs. ☐10,001 - 26,000 lbs. ☐≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

53. Veh. #: 2 — 54. Policy No.: 137185215942001 — 55. NJ Ins. Code: *
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

56. Driver's First Name: Joseph — Initial: K — Last Name: Koroma — 59. Sex: M
57. Number & Street: 5922 COLGATE ST
58. City: PHILADELPHIA — State: PA — Zip: 19120
60. Eyes: 02 — DL Class: - — Restrictions: - — Endorsements: - — 61. State: PA
62. Driver's License Number: 29344 993 — 63. DOB (mm dd yy): 08 12 79 — 64. Expires (mm yy): 08 18
65. Owner's First Name: ☒ Same as Driver SAME AS DRIVER — Initial — Last Name
66. Number & Street:
67. City: — State: — Zip:
68. Make: TOYT — 69. Model: CAM — 70. Color: WT — 71. Year: 05 — 72. Plate No.: HCB2163 — 73. State: PA
74. VIN: 4T1BE32K35U602896 — 75. Expires: 07 16
76. Vehicle Removed to: Riehl's
☐ Driven ☒ Towed Disabled ☒ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
77. Authority: ☐ Owner ☒ Driver ☐ Police
78. Alcohol Drug Test: Given: ☒No ☐Yes ☐Refused — Type: ☐Breath ☐Blood ☐Urine — Results: 0.- - % ☐Pending
79. Hazardous Material: ☐None ☐On Board ☐Spill — Hazard Class: - — Placard No.: - - - -
80. Carrier No.: ☐USDOT - - - - - - - ☐None ☐MC/MX - - - - - - -
81. GVWR / GCWR (trucks & buses only): ☐≤ 10,000 lbs. ☐10,001 - 26,000 lbs. ☐≥ 26,001 lbs.
82. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No
-

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
1	-	-	2	-	-
1	-	-	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	-	-	-	67	M	-	-	-	-	-	-	-	McGrath, William D & 690 Shields AVE, West Deptford, NJ, 08096
B	2	01	01	-	39	M	-	-	03	09	04	-	-	Koroma, Joseph K & 5922 COLGATE ST, PHILADELPHIA, PA, 19120
C	3	01	01	-	31	F	-	-	03	09	04	01	-	Jaward, Fatema Zena & 2536 S ASHFORD ST, PHILADELPHIA, PA, 19153
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Page 2 of 4 ☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

96 05 | 97 01 | 98 01 | 99 05 | 100a 01 | 100b - | 101 02 | 102 01 | 103 01 | 104 03 | 105 01 | 106 - | 107 - | 108 01 | 109 - | 110 01 | 111 - | 112 - | 113 - | 114 - | 115 - | 116 04 | 117 -

1. Case Number: 2015033118

2. Police Dept. of: Deptford Police Department — Code: 01

3. Station/Precinct: Patrol

4. Date of Crash (mm dd yy): 09 16 15

5. Day of Week: Su M Tu W Th F Sa

6. Time (use 2400 hrs.): 0856

7. Municipality Code: 0802

8. Total Killed: - -

9. Total Injured: - -

10. Crash Occurred On: Cooper ST (Road Name) - (Dir) of: Almonesson RD

☐ At Intersection with ☒ Feet ☐ Miles — 75 (14, 15) — ☐ N ☐ E ☐ S ☒ W (16)

11. Speed Limit: - -

12. Route No.: - - - - Suffix: - 13. Milepost: - - - . - -

18. Speed Limit: 3 5

19. Ramp ☐ To: ☐ From: 17. Cross Road Name/Route No.: -

☐ NB ☐ EB ☐ SB ☐ WB

21. Latitude: - - . - - - - - - 20 Route Name/Route No.: - - 22. Longitude: - - . - - - - - -

118a 09 | 118b 02 | 119a - | 119b - | 120a 01 | 120b - | 121a - | 121b - | 122 01 | 123 - | 124 03 | 125 - | 126a 26 | 126b - | 126c - | 126d - | 126e - | 127a - | 127b - | 127c - | 127d - | 127e - | 128 - | 129 12 | 130 12 | 131 - | 132 - | 133 - | 134 -

23. Veh. #: 3 — 24. Policy No.: *_* — 25. NJ Ins. Code: * — ☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

26. Driver's First Name: Fatema — Initial: Zena — Last Name: Jaward — 29. Sex: F

27. Number & Street: 2536 S ASHFORD ST

28. City: PHILADELPHIA — State: PA — Zip: 19153

30. Eyes: 01 — DL Class: - - — Restrictions: - - - - — Endorsements: - -

31. State: PA

32. Driver's License Number: 28163 209

33. DOB (mm dd yy): 03 15 87 — 34. Expires (mm yy): 03 16

35. Owner's First Name: SAME AS DRIVER — Initial: — Last Name: — ☒ Same as Driver

36. Number & Street:

37. City: — State: — Zip:

38. Make: HYUN — 39. Model: SON — 40. Color: MN — 41. Year: 05 — 42. Plate No.: JWZ4282 — 43. State: PA

44. VIN: K M H W F 3 5 H 5 5 A 1 4 6 7 0 7 — 45. Expires: 06 16

46. Vehicle Removed to: Riehl's

☐ Driven ☒ Towed Disabled ☒ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

47. Authority: ☐ Owner ☒ Driver ☐ Police

48. Alcohol Drug Test: Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending

49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -

50. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -

51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.

52. Motor Carrier or Government Entity:

Number & Street:

City: — State: — Zip:

53. Veh. #: - — 54. Policy No.: - — 55. NJ Ins. Code: - — ☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

56. Driver's First Name: - — Initial: - — Last Name: - — 59. Sex: -

57. Number & Street: -

58. City: - — State: - — Zip: -

60. Eyes: - - — DL Class: - - — Restrictions: - - - - — Endorsements: - -

61. State: -

62. Driver's License Number: - - -

63. DOB (mm dd yy): - - - - - - — 64. Expires (mm yy): - - - -

65. Owner's First Name: - — Initial: - — Last Name: - — ☐ Same as Driver

66. Number & Street: -

67. City: - — State: - — Zip: -

68. Make: - — 69. Model: - — 70. Color: - — 71. Year: - — 72. Plate No.: - — 73. State: -

74. VIN: - - - - - - - - - - - - - - - - - — 75. Expires: - -

76. Vehicle Removed to: -

☐ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

77. Authority: ☐ Owner ☐ Driver ☐ Police

78. Alcohol Drug Test: Given: ☐ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending

79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -

80. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -

81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.

82. Motor Carrier or Government Entity: -

Number & Street: -

City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No

-

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
3	39:4-97	E15-002215	-	-	-

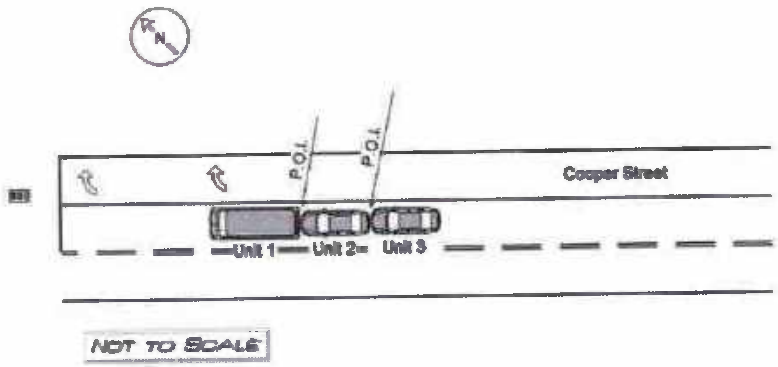
Oper.	140. Charge	141. Summons No.	Oper.	142. Charge	143. Summons No.
3	-		-	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)



145. Crash Description/Narrative

The Crash Description begins on continuation page

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Garr, Daniel J	5243	Grogan, David P	5234	☐ Pending ☒ Complete

New Jersey Police Crash Investigation Report Motor Vehicle Crash Description	Police Dept: Deptford Police Department Code: 01 Station: Patrol Case No: 2015033118

145. Crash Description

On 09/16/2015, I, PO Daniel Garr #5243 was dispatched to a motor vehicle crash, involving three vehicle that were still in the road way. I responded at emergency speed with lights and sirens activated. Upon my arrival, I spoke with William McGrath (operator V1), Joseph Koroma (operator V2), and Fatema J. Jaward (operator V3).

Operator V1 stated that he was stopped at a traffic signal and then was rear ended by V2.

Operator V2 stated that that he was stopped behind V1 at the traffic signal and was rear ended by V3.

Operator V3 stated that she did not know how the crash happened. V3 crashed into V2, which then caused V2 to crash into V1.

On scene investigation revealed the following: V1 sustained moderate damage to the rear bumper. V2 sustained heavy front end damage and heavy rear end damage. V2 was towed from the scene by Riehl's towing. V3 sustained heavy front end damage and was also towed from the scene by Riehl's towing. Operator V3 was issued several motor vehicle summonses: Careless Driving (39:4-97), Uninsured motorist (39:6B-3), and Creating a Risk of Motor Accident (39:4-56).

* Page 1: box 55 insurance code - NAIC 21792*

* Page 3: box 24&25 insurance policy/code - uninsured motorist*

My initial crash investigation is complete.

Garr, Daniel J
Officer's Signature

5243
Badge Number

Page 1 of 3 ☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

1. Case Number: 2015003517
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 0 1 2 8 1 5
5. Day of Week: Su M Tu W Th F Sa
6. Time (use 2400 hrs.): 0 7 4 1
7. Municipality Code: 0 8 0 2
8. Total Killed: - -
9. Total Injured: 0 2
10. Crash Occurred On: Cooper ST (Road Name) - (Dir) of: Almonesson Rd
☒ At intersection with ☐ Feet ☐ Miles - (14 15) ☐ N ☐ E ☐ S ☐ W (16)
11. Speed Limit: 4 0
12. Route No.: - 5 3 4 — Suffix: - — 13. Milepost: - - - . - -
18. Speed Limit: 4 0
19. Ramp ☐ To: ☐ From: 17. Cross Road Name/Route No.: - ☐ NB ☐ EB ☐ SB ☐ WB
21. Latitude: - - . - - - - - - 20. Route Name/Route No.: - - . - - - - - - 22. Longitude

23. Veh. #	24. Policy No.	25. NJ Ins. Code
1	Ba00000073754C	153

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

26. Driver's First Name: Michael — Initial: E — Last Name: Mcgrath — 29. Sex: M
27. Number & Street: 1308 Glen Lake BLVD
28. City: Pitman — State: NJ — Zip: 08071
30. Eyes: 0 2 — DL Class: - - — Restrictions: - - - - — Endorsements: - - — 31. State: NJ
32. Driver's License Number: M1268 54465 06542 — 33. DOB (mm dd yy): 0 6 0 8 5 4 — 34. Expires (mm yy): 0 7 1 8
35. Owner's First Name: ☒ Same as Driver — Initial — Last Name: SAME AS DRIVER
36. Number & Street:
37. City — State — Zip
38. Make: FORD — 39. Model: EC3 — 40. Color: WT — 41. Year: 03 — 42. Plate No.: PZV32A — 43. State: NJ
44. VIN: 1 F T N S 2 4 L 3 3 H B 3 0 0 0 5 — 45. Expires: 02 15
46. Vehicle Removed to: -
☐ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☒ Left at Scene ☐ Towed Impounded
47. Authority: ☐ Owner ☐ Driver ☒ Police
48. Alcohol Drug Test: Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0. - - % ☐ Pending
49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
50. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

53. Veh. #	54. Policy No.	55. NJ Ins. Code
2	4041759640	639

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

56. Driver's First Name: Stephanie — Initial: D — Last Name: Williams — 59. Sex: F
57. Number & Street: 3 BLUE JAY DR
58. City: CLEMENTON — State: NJ — Zip: 08021
60. Eyes: 0 6 — DL Class: - - — Restrictions: - - - - — Endorsements: - - — 61. State: NJ
62. Driver's License Number: W4365 72264 62785 — 63. DOB (mm dd yy): 1 2 1 5 7 8 — 64. Expires (mm yy): 1 2 1 7
65. Owner's First Name: ☐ Same as Driver Craig — Initial: - — Last Name: Williams
66. Number & Street: 3 BLUE JAY DR
67. City: CLEMENTON — State: NJ — Zip: 08021
68. Make: TOYT — 69. Model: CAM — 70. Color: GY — 71. Year: 13 — 72. Plate No.: X27DEF — 73. State: NJ
74. VIN: 4 T 1 B F 1 F K 0 D U 2 5 5 7 3 3 — 75. Expires: 05 16
76. Vehicle Removed to: Advanced Towing
☐ Driven ☒ Towed Disabled ☒ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
77. Authority: ☐ Owner ☒ Driver ☐ Police
78. Alcohol Drug Test: Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0. - - % ☐ Pending
79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
80. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
82. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No
Landscaping of 1768 Almonesson Rd

Oper.	138. Charge	137. Summons No.	Oper.	139. Charge	139. Summons No.
1	-	-	2	-	-

Oper.	140. Charge	141. Summons No.	Oper.	142. Charge	143. Summons No.
1	-	-	2	-	-

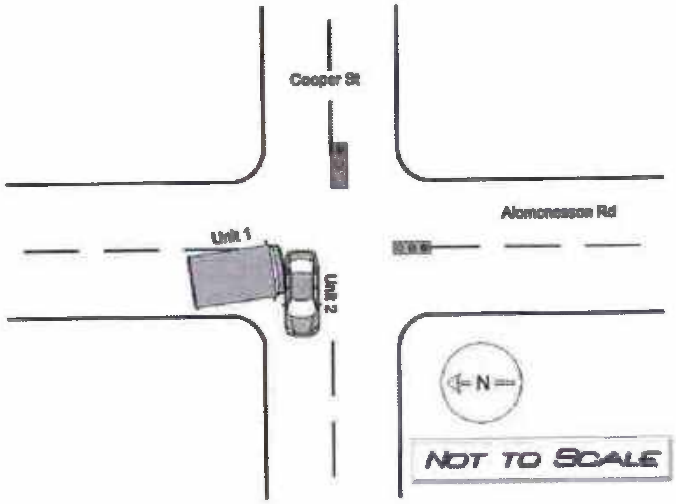
	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	02	64	M	12	08	02	09	04	-	5801	Mcgrath, Michael E & 1308 Glen Lake BLVD, Pitman, NJ, 08071
B	2	01	01	04	40	F	12	08	01	09	04	-	-	Williams, Stephanie D & 3 BLUE JAY DR, CLEMENTON, NJ, 08021
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

96	05
97	01
98	01
99	05
100a	01
100b	-
101	02
102	01
103	01
104	02
105	04
106	-
107	-
108	03
109	01
110	01
111	01
112	-
113	-
114	-
115	-
116	03
117	04
118a	03
118b	99
119a	25
119b	-
120a	07
120b	-
121a	01
121b	-
122	01
123	01
124	03
125	03
126a	26
126b	-
126c	-
126d	-
126e	-
127a	26
127b	-
127c	-
127d	-
127e	-
128	-
129	01
130	01
131	03
132	03
133	-
134	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)



145. Crash Description/Narrative

The Crash Description begins on continuation page

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Mantici, Thomas R	5240	McShane, Ian A	5182	☐ Pending ☒ Complete

New Jersey Police Crash Investigation Report Motor Vehicle Crash Description	Police Dept: Deptford Police Department Code: 01 Station: Patrol Case No: 2015003517

145. Crash Description

On 01/28/2015 at 07:41 hours I responded to a motor vehicle crash at the intersection of Cooper St. and Almonesson Road with reported injuries. Dispatch advised me that BLS and ALS were enroute. Upon arrival a vehicle (Vehicle #2) was still in the intersection with passenger side damage and the driver (Driver #2) was complaining of back pain. Another vehicle (Vehicle #1) was located on Almonesson Road in front of 1768 Almonesson Road with the male driver (Driver #1) unconscious and slumped over the wheel. He was breathing and appeared to be suffering from some type of medical condition. ALS and BLS arrived on location. Driver #1 was transported to Inspira and Driver #2 refused medical attention.

Driver #1 later reported that he doesn't remember anything about the crash.

Driver #2 reported that as she was going through the intersection with a green light she was struck in the passenger side by V1.

My investigation of the crash determined that D1 passed out due to a medical condition while traveling S/B on Almonesson Rd. and approaching Cooper Street. V1 then went though the red light of Cooper St. and Almonesson Rd and struck the passenger side of V2. V1 continued S/B on Almonesson Rd where it came to a stop on the yard of 1768 Almonesson Road. V1 had visible front end damage and was parked in the parking lot of 24/7 Food Mart. V2 was disabled with passenger side damage and towed from the scene by Advanced Towing.

Amy Deyoung (DOB: 12-31-1985 contact info: 609-385-5846) witnessed the accident and reported that V1 did run the red light and strike the passenger side of V2.

Ralph Verlengia of 1768 Almonesson Road was informed of the damage to his landscaping and that he could also receive a copy of the report.

No further details, report compete.

Mantici, Thomas R
Officer's Signature

5240
Badge Number

Page 1 of 3 ☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

96 05 | 97 01 | 98 06 | 99 05 | 100a 02 | 100b - | 101 02 | 102 02 | 103 02 | 104 02 | 105 01 | 106 - | 107 - | 108 01 | 109 01 | 110 01 | 111 01 | 112 - | 113 - | 114 - | 115 - | 116 04 | 117 04

1. Case Number: 2014047793
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Traffic
4. Date of Crash (mm dd yy): 1 2 1 6 1 4
5. Day of Week: Su M T W Th F Sa
6. Time (use 2400 hrs.): 1 6 5 2
7. Municipality Code: 0 8 0 2
8. Total Killed: - -
9. Total Injured: - -
10. Crash Occurred On: Cooper Street (Road Name) - (Dir) of: Almonesson RD
At intersection with ☐ Feet ☒ Feet ☐ Miles — 20 (14, 15) — ☐ N ☒ E ☐ S ☐ W (16)
11. Speed Limit: 4 5
12. Route No.: - 5 3 4 — Suffix: - — 13. Milepost: - - - . - -
14. Speed Limit: 3 5
19. Ramp ☐ To: ☐ From: — 17. Cross Road Name/Route No.: - — ☐ NB ☐ EB ☐ SB ☐ WB
21. Latitude: - - . - - - - - - — 20 Route Name/Route No. — 22. Longitude: - - . - - - - - -

118a 02 | 118b 09 | 119a 25 | 119b - | 120a 01 | 120b - | 121a 01 | 121b - | 122 07 | 123 08 | 124 04 | 125 03 | 126a 26 | 126b - | 126c - | 126d - | 126e - | 127a 26 | 127b - | 127c - | 127d - | 127e - | 128 - | 129 12 | 130 12 | 131 06 | 132 06 | 133 - | 134 -

Vehicle 1

23. Veh. #: 1
24. Policy No.: SNJ-000-7432-230-4
25. NJ Ins. Code: 038
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
26. Driver's First Name: Kristine — Initial: A — Last Name: Ebright
28. Sex: F
27. Number & Street: 121 Cove RD
28. City: Mantua — State: NJ — Zip: 08051
30. Eyes: 0 5 — DL Class: - - — Restrictions: - - - - — Endorsements: - -
31. State: NJ
32. Driver's License Number: E1068 43761 51485
33. DOB (mm dd yy): 0 1 3 1 4 8
34. Expires (mm yy): 1 2 1 6
35. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name
36. Number & Street:
37. City — State — Zip
38. Make: BUIC — 39. Model: PRK — 40. Color: BG — 41. Year: 94 — 42. Plate No.: RUD72M — 43. State: NJ
44. VIN: 1 G 4 C W 5 2 L 2 R 1 6 1 8 5 6 7
45. Expires: 09 15
46. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
47. Authority: ☒ Owner ☐ Driver ☐ Police
48. Alcohol Drug Test: Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0. - - % ☐ Pending
49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
50. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

Vehicle 2

53. Veh. #: 2
54. Policy No.: 4984527400
55. NJ Ins. Code: 945
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
56. Driver's First Name: Marion — Initial: L — Last Name: Greer
59. Sex: M
57. Number & Street: 64 LA CASCATA
58. City: CLEMENTON — State: NJ — Zip: 08021
60. Eyes: 0 2 — DL Class: - - — Restrictions: - - - - — Endorsements: - -
61. State: NJ
62. Driver's License Number: G7314 51973 01612
63. DOB (mm dd yy): 0 1 0 6 6 1
64. Expires (mm yy): 0 7 1 5
65. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name
66. Number & Street:
67. City — State — Zip
68. Make: TOYT — 69. Model: CAM — 70. Color: TN — 71. Year: 11 — 72. Plate No.: N55DRR — 73. State: NJ
74. VIN: 4 T 1 B F 3 E K 2 B U 1 3 3 9 5 2
75. Expires: 11 15
76. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
77. Authority: ☒ Owner ☐ Driver ☐ Police
78. Alcohol Drug Test: Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0. - - % ☐ Pending
79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
80. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
82. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No
-

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
1	39:4-97	C855106	2	-	-
1	-		2	-	

Oper.	140. Charge	141. Summons No.	Oper.	142. Charge	143. Summons No.
1	-		2	-	-

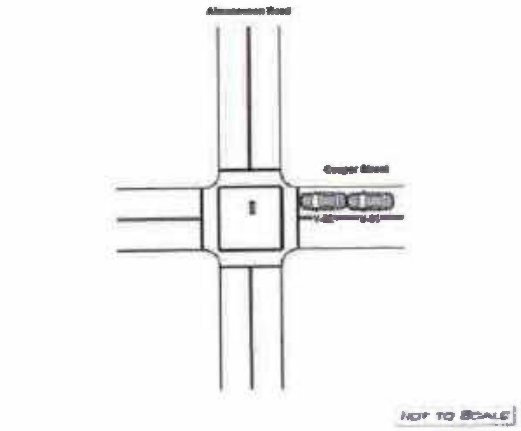
	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	70	F	-	-	03	09	04	-	-	Ebright, Kristine A & 121 Cove RD, Mantua, NJ, 08051
B	2	01	01	-	58	M	-	-	03	09	04	-	-	Greer, Marion L & 64 LA CASCATA, CLEMENTON, NJ, 08021
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

New Jersey Police Crash Investigation Report	Case Number 2014047793	Page 2 of 3

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)



145. Crash Description/Narrative

The Crash Description begins on continuation page

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Rosati, William	5225	Ruiz, Rudy R	5230	☐ Pending ☒ Complete

New Jersey Police Crash Investigation Report Motor Vehicle Crash Description	Police Dept: Deptford Police Department Code: 01 Station: Traffic Case No: 2014047793

145. Crash Description

On 12/16/2014 at 16:52 hours, I, P.O. William Rosati #5225 was dispatched to the intersection of Cooper Street and Almonesson Road for a report of a motor vehicle crash without injuries. I responded at normal speed.

Upon my arrival, I confirmed with both operators that there were no reported injuries. Operator 01 stated that she was traveling Westbound on Cooper Street when she observed the red traffic signal and V-02 stopped in front of her. Operator 01 further stated that she began to stop V-01 when she began to slide on the wet roadway colliding with the rear bumper of V-02. Operator 02 stated that he was stopped for the red traffic signal on Westbound Cooper Street when V-01 collided with the rear bumper of his vehicle.

On scene investigation revealed the following: The point of impact occurred approximately twenty feet East of Almonesson Road. The roadway was wet from the light rain falling. V-02 was stopped at the red traffic signal on Westbound Cooper Street and Almonesson Road when V-01 collided with the rear bumper of V-02. The contributing factor to the crash was following too closely along with the inattention of Operator 01 to stop her vehicle at a safe distance prior to sliding on the wet roadway and colliding with the rear bumper of V-02. Operator 01 was issued motor vehicle summons #C055106 (39:4-56, Creating risk of a motor vehicle crash) for causing the crash.

V-01 sustained moderate front grill and headlight damage. V-02 sustained minor rear bumper damage. Both vehicles were able to be driven from the crash scene. Initial crash investigation complete.

End Report.

Rosati, William
Officer's Signature

5225
Badge Number

Page 1 of 2 ☐ Fatal

New Jersey Police Crash Investigation Report

☐ Reportable ☒ Non-Reportable ☐ Change Report

1. Case Number: 2014047220
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 12 12 14
5. Day of Week: Su M Tu W Th F Sa
6. Time (use 2400 hrs.): 1728
7. Municipality Code: 0802
8. Total Killed: -
9. Total Injured: -
10. Crash Occurred On: Cooper St (Road Name) - (Dir) of: Almonesson RD
☐ At Intersection with ☒ Feet ☐ Miles — 25 (14, 15) — ☐ N ☐ E ☐ S ☒ W (16)
11. Speed Limit: 35
12. Route No.: - Suffix: - 13. Milepost: -
18. Speed Limit: 35
19. Ramp ☐ To: ☐ From: 17. Cross Road Name/Route No.: - ☐ NB ☐ EB ☐ SB ☐ WB
20. Route Name/Route No.: 21. Latitude: - 22. Longitude: -

23. Veh. #	24. Policy No.	25. NJ Ins. Code
1	4371346020	945

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

26. Driver's First Name: Grace — Initial: A — Last Name: Freni — 29. Sex: F
27. Number & Street: 8 Jefferson Dr
28. City: Laurel Springs — State: NJ — Zip: 08021
30. Eyes: 02 — DL Class: - — Restrictions: - — Endorsements: - — 31. State: NJ
32. Driver's License Number: F7341 30061 62442 — 33. DOB (mm dd yy): 12 28 44 — 34. Expires (mm yy): 07 15
35. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name
36. Number & Street: -
37. City: - — State: - — Zip: -
38. Make: TOYT — 39. Model: CAM — 40. Color: BK — 41. Year: 14 — 42. Plate No.: IM45YG — 43. State: NJ
44. VIN: 4T1BF1FK5EU809947 — 45. Expires: 09 15
46. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
47. Authority: ☐ Owner ☒ Driver ☐ Police
48. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.-- % ☐ Pending
49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: -
50. Carrier No.: ☐ USDOT - ☐ MC/MX - ☐ None
51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

53. Veh. #	54. Policy No.	55. NJ Ins. Code
2	F815180-5	426

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

56. Driver's First Name: Christy — Initial: N — Last Name: Fanelli — 59. Sex: F
57. Number & Street: 1902 County House RD
58. City: Deptford — State: NJ — Zip: 08096
60. Eyes: 02 — DL Class: - — Restrictions: - — Endorsements: - — 61. State: NJ
62. Driver's License Number: F0411 12475 58782 — 63. DOB (mm dd yy): 08 04 78 — 64. Expires (mm yy): 10 17
65. Owner's First Name: ☒ Same as Driver — SAME AS DRIVER — Initial — Last Name
66. Number & Street: -
67. City: - — State: - — Zip: -
68. Make: PON — 69. Model: FIR — 70. Color: RD — 71. Year: 01 — 72. Plate No.: REJ32D — 73. State: NJ
74. VIN: 2G2FS22K2121002 16 — 75. Expires: 04 15
76. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
77. Authority: ☐ Owner ☒ Driver ☐ Police
78. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.-- % ☐ Pending
79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: -
80. Carrier No.: ☐ USDOT - ☐ MC/MX - ☐ None
81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
82. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No
-

Oper.	Charge	Summons No.	Oper.	Charge	Summons No.
1	-	-	2	-	-
1	-	-	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	74	F	-	-	-	09	04	-	-	Freni, Grace A & 8 Jefferson Dr, Laurel Springs, NJ, 08021
B	2	01	01	-	40	F	-	-	-	09	04	-	-	Fanelli, Christy N & 1902 County House RD, Deptford, NJ, 08096
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

New Jersey Police Crash Investigation Report	Case Number 2014047220	Page 2 of 2

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)

145. Crash Description/Narrative

Driver #2 stated that as she slowed to a stop for flow traffic, she was rear ended by Vehicle #1. Driver #1 stated that as she slowed in flow traffic she rear ended vehicle #2.

Both vehicles displayed very minor damage from the low speed collision.

CONTRIBUTING FACTORS: DRIVER INATTENTION on the part of DRIVER #1 for failing to safely stop behind vehicle #2.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Clements, Kevin A	5172	Clements, Kevin A	5172	☐ Pending ☒ Complete

Page 1 of 2 ☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

1. Case Number: 2014041219
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 10 22 14
5. Day of Week: Su M Tu ⓪ Th F Sa
6. Time (use 2400 hrs.): 1921
7. Municipality Code: 0802
8. Total Killed: -
9. Total Injured: -
10. Crash Occurred On: Cooper ST (Road Name) - (Dir)
11. Speed Limit: 35
12. Route No.: - - - -
Suffix: -
13. Milepost: - - - . - -
14. ☒ At Intersection with ☐ Feet ☐ Miles
15. ☐ N ☐ E ☐ S ☐ W
16. of: Almonesson Rd
17. Cross Road Name/Route No.: -
18. Speed Limit: 35
19. Ramp ☐ To: ☐ From:
☐ NB ☐ EB ☐ SB ☐ WB
20. Route Name/Route No.:
21. Latitude: - - . - - - - - -
22. Longitude: - - . - - - - - -

Veh. #	Policy No.	NJ Ins. Code	Parked	Ped	Pedalcyclist	Resp. to Emergency	Hit & Run
1	00	*	☐	☐	☐	☐	☒
2	4319-27-55-27	148	☐	☐	☐	☐	☐

Veh. #	Driver's First Name	Initial	Last Name	Sex	Number & Street	City	State	Zip
1	0	-	0	-	unknown	-	-	-
2	Luann	-	Smith-spanos	F	213 Pratt CT	Sewell Washington	NJ	08080

Veh. #	Eyes	DL Class	Restrictions	Endorsements	State
1	- -	- -	- - - -	- -	
2	0 6	- -	- - - -	- -	NJ

Veh. #	Driver License Number	DOB (mm dd yy)	Expires (mm yy)
1		- - - - - -	
2	S5779 49000 58546	0 8 0 8 5 4	0 9 1 5

Veh. #	Owner's First Name	Initial	Last Name
1	☒ Same as Driver SAME AS DRIVER		
2	☐ Same as Driver Michael	-	Spanos

Veh. #	Owner Number & Street	City	State	Zip
1				
2	213 Pratt CT	Sewell Washington	NJ	08080

Veh. #	Make	Model	Color	Year	Plate No.	State
1	-	-	-	-	-00	NJ
2	BMW	320	SL	14	K68EDW	NJ

Veh. #	VIN	Expires
1	0 - 0 - - - - - - - - - - - - - - -	- -
2	WBA3C3G58ENS67501	04 17

Veh. #	Vehicle Removed to:	
1	-	☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded
2	-	☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

Veh. #	Authority
1	☐ Owner ☒ Driver ☐ Police
2	☐ Owner ☒ Driver ☐ Police

Veh. #	Alcohol Drug Test	Hazardous Material
1	Given: ☒ No ☐ Yes ☐ Refused; Type: ☐ Breath ☐ Blood ☐ Urine; Results: 0. - - % ☐ Pending	☐ None ☐ On Board ☐ Spill; Hazard Class: -; Placard No.: - - - -
2	Given: ☒ No ☐ Yes ☐ Refused; Type: ☐ Breath ☐ Blood ☐ Urine; Results: 0. - - % ☐ Pending	☐ None ☐ On Board ☐ Spill; Hazard Class: -; Placard No.: - - - -

Veh. #	Carrier No.	GVWR / GCWR (trucks & buses only)
1	☐ USDOT - - - - - - - ☐ None; ☐ MC/MX - - - - - - -	☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
2	☐ USDOT - - - - - - - ☐ None; ☐ MC/MX - - - - - - -	☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.

Veh. #	Motor Carrier or Government Entity	Number & Street	City	State	Zip
1	-	-	-	-	-
2	-	-	-	-	-

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No
-

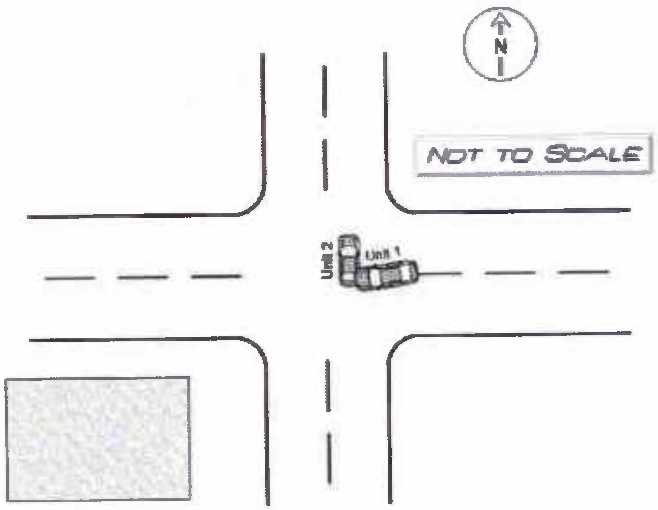
Oper.	Charge	Summons No.	Oper.	Charge	Summons No.
1	-	-	2	-	-
1	-	-	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	-	-	-	-	-	-	-	-	-	0, 0 & unknown
B	2	01	01	-	64	F	-	-	03	09	04	-	-	Smith-spanos, Luann & 213 Pratt CT, Sewell Washington, NJ, 08080
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	
F	-	-	-	-	-	-	-	-	-	-	-	-	-	
G	-	-	-	-	-	-	-	-	-	-	-	-	-	
H	-	-	-	-	-	-	-	-	-	-	-	-	-	
I	-	-	-	-	-	-	-	-	-	-	-	-	-	
J	-	-	-	-	-	-	-	-	-	-	-	-	-	

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)



145. Crash Description/Narrative

On 10/22/2014 at 19:21 hours I responded to Almonesson Fire House for a hit and run motor vehicle crash with no reported injuries. Dispatch advised me that the accused vehicle fled eastbound on Cooper St. The caller/ victim could not provide and details on the accused vehicle due to lighting.

D2 reported that as she was stopped in the intersection of Cooper St. and Almonesson Road to make a left onto Cooper St. when V1 slide through the intersection and struck her passenger side rear end. She informed me that V1 was coming from Cooper St. traveling E/B.

During my investigation I was unable to locate V1. V2 did have visible damage to her passenger side rear end. D2 did not report any injuries at the time of the crash. No further details at this time, report complete.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Mantici, Thomas R	5240	Hubert, David R	5181	☐ Pending ☒ Complete

New Jersey Police Crash Investigation Report

Page 1 of 2 | Fatal | ☒ Reportable | ☐ Non-Reportable | ☐ Change Report

96: 04 | 97: 01 | 98: 01 | 99: 05 | 100a: 01 | 100b: - | 101: 02 | 102: 01 | 103: 01 | 104: 02 | 105: 01 | 106: - | 107: - | 108: 04 | 109: 01 | 110: 01 | 111: 01 | 112: - | 113: - | 114: - | 115: - | 116: - | 117: 02

1. Case Number: 2014025758

2. Police Dept. of: Deptford Police Department | Code: 01

3. Station/Precinct: Patrol

4. Date of Crash (mm dd yy): 0 6 2 8 1 4

5. Day of Week: Su M Tu W Th F S

6. Time (use 2400 hrs.): 1 2 0 3

7. Municipality Code: 0 8 0 2

8. Total Killed: - -

9. Total Injured: - -

10. Crash Occurred On: Cooper ST (Road Name) - (Dir) of: Almonesson RD

☐ At Intersection with
☒ Feet ☐ Miles: 30 (14, 15)
☐ N ☐ E ☐ S ☒ W (16)

11. Speed Limit: 3 5

12. Route No. - - - - Suffix - 13. Milepost - - - . - -

18. Speed Limit: - -

19. Ramp ☐ To: ☐ From: 17. Cross Road Name/Route No.: -

☐ NB ☐ EB ☐ SB ☐ WB

20. Route Name/Route No.

21. Latitude - - . - - - - - -

22. Longitude - - . - - - - - -

118a: 09 | 118b: - | 119a: 25 | 119b: - | 120a: 00 | 120b: - | 121a: 01 | 121b: - | 122: 01 | 123: 01 | 124: 03 | 125: 03 | 126a: 26 | 126b: - | 126c: - | 126d: - | 126e: - | 127a: 26 | 127b: - | 127c: - | 127d: - | 127e: - | 128: - | 129: 12 | 130: 12 | 131: 06 | 132: 06 | 133: - | 134: -

Veh. #	Driver's First Name	Initial	Last Name	Sex	Policy No.	NJ Ins. Code
1	0	-	0	-	-	-
2	James	R	Wills	M	F208624-5	426

Vehicle 1: ☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☒ Hit & Run

Vehicle 2: ☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

Veh. #	Number & Street	City	State	Zip
1	0	0	-	0
2	235 Somerset RD	Deptford	NJ	08096

Veh. #	Eyes	DL Class	Restrictions	Endorsements	State
1	- -	- -	- - - -	- -	
2	0 2	- -	- - - -	- -	NJ

Veh. #	Driver's License Number	DOB (mm dd yy)	Expires (mm yy)
1	0	- - -	- -
2	W4378 38379 03622	0 3 2 6 6 2	0 4 1 5

Veh. #	Owner's First Name	Initial	Last Name
1	☒ Same as Driver		SAME AS DRIVER
2	☐ Same as Driver		Acar Leasing LTD

Veh. #	Number & Street	City	State	Zip
1	-	-	-	-
2	unknown	Williamsville	NY	14221

Veh. #	Make	Model	Color	Year	Plate No.	State
1	-	-	-		0	NJ
2	CHEV	EQU	GY	12	X21BUP	NJ

Veh. #	VIN	Expires
1	0 - - - - - - - - - - - - - - - -	- -
2	2 G N A L B E K 1 C 1 2 2 0 0 5 4	01 16

Veh. #	Vehicle Removed to:	Authority
1	-	☐ Owner ☐ Driver ☐ Police
2	-	☐ Owner ☒ Driver ☐ Police

Vehicle 1: ☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

Vehicle 2: ☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

Veh. #	Alcohol Drug Test	Hazardous Material
1	Given: ☒ No ☐ Yes ☐ Refused; Type: ☐ Breath ☐ Blood ☐ Urine; Results: 0. - - % ☐ Pending	☐ None ☐ On Board ☐ Spill; Hazard Class: -; Placard No.: - - - -
2	Given: ☒ No ☐ Yes ☐ Refused; Type: ☐ Breath ☐ Blood ☐ Urine; Results: 0. - - % ☐ Pending	☐ None ☐ On Board ☐ Spill; Hazard Class: -; Placard No.: - - - -

Veh. #	Carrier No.	GVWR / GCWR (trucks & buses only)
1	☐ USDOT - - - - - - - ☐ None; ☐ MC/MX - - - - - - -	☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
2	☐ USDOT - - - - - - - ☐ None; ☐ MC/MX - - - - - - -	☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.

Veh. #	Motor Carrier or Government Entity	Number & Street	City	State	Zip
1	-	-	-	-	-
2	-	-	-	-	-

135. Damage to Other Property: ☐ Yes (If Yes, describe) ☒ No

-

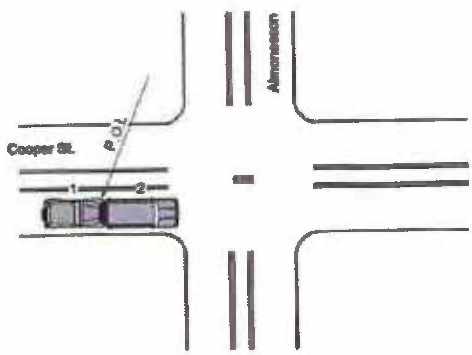
Oper.	Charge	Summons No.	Oper.	Charge	Summons No.
1	-	-	2	-	-
1	-	-	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	-	M	-	-	-	-	-	-	-	0, 0 & 0, 0, 0
B	2	01	01	-	56	M	-	-	03	04	04	-	-	Wills, James R & 235 Somerset RD, Deptford, NJ, 08096
C	2	03	01	-	-	-	-	-	03	04	04	-	-	Wills Noreen & 235 Somerset RD, Deptford, NJ, 08096
D	2	06	01	-	-	F	-	-	03	04	04	-	-	Wills, Colleen & 235 Somerset RD, Deptford, NJ, 08096

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)



NOT TO SCALE

145. Crash Description/Narrative

Operator #1 left the scene after striking Vehicle #2. Operator #2 was able to give a partial NJ registration A21

Operator #2 stated he was slowing down for a traffic light which turned red when he was struck in the rear by Vehicle #1. Vehicle #2 had no sign of visible damage.

On scene investigation revealed: Vehicle #1 fled the scene after striking Vehicle #2. Operator #2 was the victim of a hit and run crash. Vehicle #2 had no sign of visible damage to his rear bumper. Neither operator or occupants complained of pain and refused any treatment from Deptford BLS.

Crash Investigation Complete.

Witness :

Name : Hunter, Terik - 1649 Cooper ST, Deptford, NJ, 08096
Witness stated he heard a loud squeal of the tires and then a crash. Witness then observed the a black jeep Liberty flee the scene after striking Vehicle #2. Nothing further to report.

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Hinman, Charles E	5244	Graves, Todd C	5165	☐ Pending ☒ Complete

Page 1 of 4 ☐ Fatal

New Jersey Police Crash Investigation Report

☐ Reportable ☒ Non-Reportable ☐ Change Report

98	05
97	01
98	01
99	05
100a	01
100b	-
101	02
102	01
103	01
104	03
105	01
106	-
107	-
108	02
109	29
110	01
111	03
112	-
113	-
114	-
115	-
116	02
117	02

1. Case Number: 2014019973

2. Police Dept. of: Deptford Police Department — Code: 01

3. Station/Precinct: Patrol

4. Date of Crash (mm dd yy): 0 5 1 6 1 4

5. Day of Week: Su M Tu W Th F Sa

6. Time (use 2400 hrs.): 1 7 3 6

7. Municipality Code: 0 8 0 2

8. Total Killed: - -

9. Total Injured: - -

10. Crash Occurred On: Cooper ST (Road Name) - (Dir)

☐ At Intersection with ☒ Feet ☐ Miles — 50 (14, 15) ☐ N ☒ E ☐ S ☐ W (16) of: Almonesson RD

11. Speed Limit: 3 5

12. Route No. - - - - Suffix - 13. Milepost - - - . - -

18. Speed Limit: 3 5

19. Ramp ☐ To: ☐ From: 17. Cross Road Name/Route No. - ☐ NB ☐ EB ☐ SB ☐ WB

20. Route Name/Route No.

21. Latitude - - . - - - - - -

22. Longitude - - . - - - - - -

11a	09
11b	-
119a	25
119b	-
120a	01
120b	-
121a	01
121b	-
122	01
123	08
124	04
125	04
126a	26
126b	-
126c	-
126d	-
126e	-
127a	26
127b	-
127c	-
127d	-
127e	-
128	-
129	12
130	12
131	06
132	06
133	-
134	-

Vehicle 1

23. Veh. # 1

24. Policy No. Y1749175

25. NJ Ins. Code 042

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

26. Driver's First Name: Julian — Initial: A — Last Name: Gray

29. Sex: M

27. Number & Street: 984 LOWER LANDING ROAD

28. City: BLACKWOOD — State: NJ — Zip: 08012

30. Eyes: 0 2 — DL Class: - - — Restrictions: - - - - — Endorsements: - -

31. State: NJ

32. Driver's License Number: G7246 42061 10912

33. DOB (mm dd yy): 1 0 2 7 9 1

34. Expires (mm yy): 0 3 1 8

35. Owner's First Name: SAME AS DRIVER — Initial — Last Name

☒ Same as Driver

36. Number & Street

37. City — State — Zip

38. Make: CHRY — 39. Model: TC — 40. Color: GN — 41. Year: 03 — 42. Plate No.: Z10DXG — 43. State: NJ

44. VIN: 2 C 4 G P 4 4 3 1 3 R 1 1 3 7 0 1

45. Expires: 03 15

46. Vehicle Removed to: Advanced Towing

☐ Driven ☒ Towed Disabled ☒ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

47. Authority: ☐ Owner ☐ Driver ☒ Police

48. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending

49. Hazardous Material — ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -

50. Carrier No. — ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -

51. GVWR / GCWR (trucks & buses only) — ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.

52. Motor Carrier or Government Entity: -

Number & Street: -

City: - — State: - — Zip: -

Vehicle 2

53. Veh. # 2

54. Policy No. ***

55. NJ Ins. Code *

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

56. Driver's First Name: Joseph — Initial: C — Last Name: Dibenedetto

59. Sex: M

57. Number & Street: 3 DUNLIN WAY

58. City: SICKLERVILLE — State: NJ — Zip: 08081

60. Eyes: 0 5 — DL Class: - - — Restrictions: - - - - — Endorsements: - -

61. State: NJ

62. Driver's License Number: D4039 41063 10665

63. DOB (mm dd yy): 1 0 0 5 6 6

64. Expires (mm yy): 0 4 1 6

65. Owner's First Name: United States Postal Service - Deptford — Initial — Last Name

☐ Same as Driver

66. Number & Street: 1265 Hurffville RD

67. City: Deptford — State: NJ — Zip: 08096

68. Make: - — 69. Model: - — 70. Color: WT — 71. Year: - — 72. Plate No.: 022660 — 73. State: NJ

74. VIN: - - - - - - - - - - - - - - - - -

75. Expires: - -

76. Vehicle Removed to: -

☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

77. Authority: ☐ Owner ☒ Driver ☐ Police

78. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending

79. Hazardous Material — ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -

80. Carrier No. — ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -

81. GVWR / GCWR (trucks & buses only) — ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.

82. Motor Carrier or Government Entity: -

Number & Street: -

City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No

-

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
1	-	-	2	-	-

Oper.	140. Charge	141. Summons No.	Oper.	142. Charge	143. Summons No.
1	-	-	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	27	M	-	-	03	09	04	-	-	Gray, Julian A & 984 LOWER LANDING ROAD, BLACKWOOD, NJ, 08012
B	1	03	01	-	29	M	-	-	03	04	04	-	-	Meduri, Matthew S & 590 LOWERLANDING RD 15C, BLACKWOOD, NJ, 08012
C	1	07	01	-	27	M	-	-	03	04	04	-	-	Oneill, Joseph W & 101 E9TH AVE, RUNNEMEDE, NJ, 08078
D	2	01	01	-	52	M	-	-	03	04	04	-	-	Dibenedetto, Joseph C & 3 DUNLIN WAY, SICKLERVILLE, NJ, 08081

Page 2 of 4 ☐ Fatal

New Jersey Police Crash Investigation Report

☐ Reportable ☒ Non-Reportable ☐ Change Report

96: 05 | 97: 01 | 98: 01 | 99: 05 | 100a: 01 | 100b: - | 101: 02 | 102: 01 | 103: 01 | 104: 03 | 105: 01 | 106: - | 107: - | 108: 05 | 109: - | 110: 02 | 111: - | 112: - | 113: - | 114: - | 115: - | 116: 02 | 117: -

1. Case Number: 2014019973
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 0 5 1 6 1 4
5. Day of Week: Su M Tu W Th F Sa
6. Time (use 2400 hrs.): 1 7 3 6
7. Municipality Code: 0 8 0 2
8. Total Killed: - -
9. Total Injured: - -
10. Crash Occurred On: Cooper ST (Road Name) - (Dir) of: Almonesson RD
☐ At Intersection with
☒ Feet ☐ Miles — 50 (14, 15)
☐ N ☒ E ☐ S ☐ W (16)
11. Speed Limit: 3 5
12. Route No.: - - - -
Suffix: -
13. Milepost: - - - . - -
18. Speed Limit: 3 5
19. Ramp ☐ To: ☐ From:
17. Cross Road Name/Route No.: -
☐ NB ☐ EB ☐ SB ☐ WB
20 Route Name/Route No.:
21. Latitude: - - . - - - - - -
22. Longitude: - - . - - - - - -

118a: 25 | 118b: - | 119a: - | 119b: - | 120a: 01 | 120b: - | 121a: - | 121b: - | 122: 08 | 123: - | 124: 04 | 125: - | 126a: 26 | 126b: - | 126c: - | 126d: - | 126e: - | 127a: - | 127b: - | 127c: - | 127d: - | 127e: - | 128: - | 129: 06 | 130: 06 | 131: - | 132: - | 133: - | 134: -

23. Veh. # 3 — 24. Policy No.: QAU0213971 — 25. NJ Ins. Code: 279
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
26. Driver's First Name: Kevin — Initial: P — Last Name: White — 29. Sex: M
27. Number & Street: 1415 Good Intent RD
28. City: Deptford — State: NJ — Zip: 08096
30. Eyes: 0 4 — DL Class: - - — Restrictions: - - - - — Endorsements: - - — 31. State: NJ
32. Driver's License Number: W3512 | 43377 | 02654
33. DOB (mm dd yy): 0 2 1 1 6 5
34. Expires (mm yy): 0 2 1 7
35. Owner's First Name: Ltd construction — Initial — Last Name
☐ Same as Driver
36. Number & Street: 918 lakeview dr
37. City: Laurel Springs — State: NJ — Zip: 08021
38. Make: FORD — 39. Model: 500 — 40. Color: WT — 41. Year: 04 — 42. Plate No.: XF557M — 43. State: NJ
44. VIN: 1 F T N X 2 1 P 7 4 E B 6 0 2 3 3 — 45. Expires: 03 15
46. Vehicle Removed to: -
☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded
☐ Left at Scene ☐ Towed Impounded
47. Authority: ☐ Owner ☒ Driver ☐ Police
48. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
50. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

53. Veh. # - — 54. Policy No.: - — 55. NJ Ins. Code: -
☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run
56. Driver's First Name: - — Initial: - — Last Name: - — 59. Sex: -
57. Number & Street: -
58. City: - — State: - — Zip: -
60. Eyes: - - — DL Class: - - — Restrictions: - - - - — Endorsements: - - — 61. State: -
62. Driver's License Number: - | - | -
63. DOB (mm dd yy): - - - - - -
64. Expires (mm yy): - - - -
65. Owner's First Name: - — Initial: - — Last Name: -
☐ Same as Driver
66. Number & Street: -
67. City: - — State: - — Zip: -
68. Make: - — 69. Model: - — 70. Color: - — 71. Year: - — 72. Plate No.: - — 73. State: -
74. VIN: - - - - - - - - - - - - - - - - - — 75. Expires: - -
76. Vehicle Removed to: -
☐ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded
☐ Left at Scene ☐ Towed Impounded
77. Authority: ☐ Owner ☐ Driver ☐ Police
78. Alcohol Drug Test — Given: ☐ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
80. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
82. Motor Carrier or Government Entity: -
Number & Street: -
City: - — State: - — Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No
-

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
3	-	-	-	-	-
Oper.	140. Charge	141. Summons No.	Oper.	142. Charge	143. Summons No.
3	-	-	-	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	3	01	01	-	53	M	-	-	03	09	04	-	-	White, Kevin P & 1415 Good Intent RD, Deptford, NJ, 08096
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

New Jersey Police Crash Investigation Report	Case Number 2014019973	Page 3 of 4

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow
(Not to Scale)

145. Crash Description/Narrative

The Crash Description begins on continuation page

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Graham, James	5220	McShane, Ian A	5182	☐ Pending ☒ Complete

New Jersey Police Crash Investigation Report Motor Vehicle Crash Description	Police Dept: Deptford Police Department Code: 01 Station: Patrol Case No: 2014019973

145. Crash Description

Operator of V#1 stated that he was traveling East on Cooper Street near Almonesson Road. While traveling East, he did not realize traffic was stopped in front of his vehicle. Operator of V#1 stated that he was unable to stop in time and struck the rear bumper of V#2. After striking the rear bumper of V#2, V#2 was then pushed forward into V#3.

Operator of V#2 stated that he was stopped in traffic on East bound Cooper Street behind V#3. While stopped in traffic, V#1 struck the rear bumper of his vehicle. After V#1 struck his rear bumper, he was pushed forward and struck the trailer hitch of V#3.

Operator of V#3 stated that he was stopped in traffic on East bound Cooper Street. While stopped in traffic, his vehicle's rear hitch was struck by V#2.

V#1 sustained heavy front end damage and was towed from the scene by Advanced Towing. V#2 sustained damage to the rear and front bumper. V#3 sustained minor damage to the rear hitch. No injuries were reported or observed at the scene.

V#1 is a self insured vehicle through the government insurance.

My initial investigation is complete.

Graham, James
Officer's Signature

5220
Badge Number

Page 1 of 3 ☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

96 05 | 97 01 | 98 01 | 99 05 | 100a 01 | 100b - | 101 02 | 102 01 | 103 01 | 104 02 | 105 01 | 106 - | 107 - | 108 05 | 109 01 | 110 01 | 111 01 | 112 - | 113 - | 114 - | 115 - | 116 04 | 117 04

1. Case Number: 2014018812

2. Police Dept. of: Deptford Police Department — Code: 01

3. Station/Precinct: Patrol

4. Date of Crash (mm dd yy): 0 5 0 9 1 4

5. Day of Week: Su M Tu W Th ⊖ Sa

6. Time (use 2400 hrs.): 1 7 2 3

7. Municipality Code: 0 8 0 2

8. Total Killed: - -

9. Total Injured: 0 1

10. Crash Occurred On: Cooper ST (Road Name) - (Dir) of: Almonesson RD

☐ At Intersection with ☒ Feet ☐ Miles — 750 (14, 15) — ☐ N ☒ E ☐ S ☐ W (16)

11. Speed Limit: 3 5

12. Route No. - - - - Suffix - 13. Milepost - - - . - -

18. Speed Limit: 3 5

19. Ramp ☐ To: ☐ From: 17. Cross Road Name/Route No. - ☐ NB ☐ EB ☐ SB ☐ WB

21. Latitude - - . - - - - - - 20 Route Name/Route No. - - 22. Longitude . - - - - - -

23. Veh. #: 1 — 24. Policy No.: 4285-16-70-21 — 25. NJ Ins. Code: 148

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

26. Driver's First Name: Brittney — Initial: M — Last Name: Jowett — 29. Sex: F

27. Number & Street: 76 E WOODBURN AVE

28. City: PINE HILL NJ — State: NJ — Zip: 08021

30. Eyes: - - — DL Class: - - — Restrictions: - - - - — Endorsements: - - — 31. State: NJ

32. Driver's License Number: J6885 | 10074 | 58875 — 33. DOB (mm dd yy): 0 8 0 8 8 7 — 34. Expires (mm yy): 0 3 1 7

35. Owner's First Name: ☐ Same as Driver David — Initial: V — Last Name: Jowett

36. Number & Street: 76 EAST WOODBURN AVE

37. City: PINE HILL — State: NJ — Zip: 08021

38. Make: FORD — 39. Model: F15 — 40. Color: GN — 41. Year: 12 — 42. Plate No.: X41CEV — 43. State: NJ

44. VIN: 1 F T F W 1 E T 1 C F B 6 7 9 5 5 — 45. Expires: 08 16

46. Vehicle Removed to: -

☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

47. Authority: ☐ Owner ☒ Driver ☐ Police

48. Alcohol Drug Test: Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0. - - % ☐ Pending

49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -

50. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -

51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.

52. Motor Carrier or Government Entity: -

Number & Street: -

City: - — State: - — Zip: -

53. Veh. #: 2 — 54. Policy No.: AO7-238-045366-40 3 8 — 55. NJ Ins. Code: 914

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

56. Driver's First Name: Troy — Initial: D — Last Name: Pawlikowski — 59. Sex: M

57. Number & Street: 701 FOUNTAIN AVE

58. City: CINNAMINSON — State: NJ — Zip: 08077

60. Eyes: 0 4 — DL Class: - - — Restrictions: - - - - — Endorsements: - - — 61. State: NJ

62. Driver's License Number: P0936 | 75164 | 02944 — 63. DOB (mm dd yy): 0 2 0 9 9 4 — 64. Expires (mm yy): 0 2 1 5

65. Owner's First Name: ☐ Same as Driver Darin — Initial: T — Last Name: Pawlikowski

66. Number & Street: 701 FOUNTAIN AVE

67. City: CINNAMINSON — State: NJ — Zip: 08077

68. Make: INFI — 69. Model: G35 — 70. Color: SL — 71. Year: 06 — 72. Plate No.: PL88AR — 73. State: NJ

74. VIN: J N K C V 5 1 F 8 6 M 6 1 5 6 2 2 — 75. Expires: 08 14

76. Vehicle Removed to: -

☒ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☐ Left at Scene ☐ Towed Impounded

77. Authority: ☐ Owner ☒ Driver ☐ Police

78. Alcohol Drug Test: Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0. - - % ☐ Pending

79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -

80. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -

81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.

82. Motor Carrier or Government Entity: -

Number & Street: -

City: - — State: - — Zip: -

118a 25 | 118b - | 119a 02 | 119b - | 120a 01 | 120b - | 121a 01 | 121b - | 122 08 | 123 07 | 124 04 | 125 04 | 126a 26 | 126b - | 126c - | 126d - | 126e - | 127a 26 | 127b - | 127c - | 127d - | 127e - | 128 - | 129 06 | 130 06 | 131 12 | 132 12 | 133 - | 134 -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No

-

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
1	-	-	2	39:4-97	0802 C050837
1	140. Charge: -	141. Summons No.: -	2	142. Charge: -	143. Summons No.:

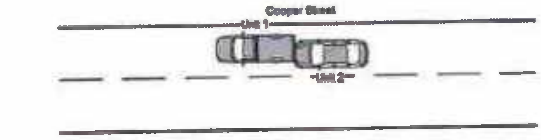
	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	31	F	-	-	03	09	04	-	-	Jowett, Brittney M & 76 E WOODBURN AVE, PINE HILL NJ, NJ, 08021
B	2	01	01	-	24	M	-	-	03	09	04	-	-	Pawlikowski, Troy D & 701 FOUNTAIN AVE, CINNAMINSON, NJ, 08077
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

New Jersey Police Crash Investigation Report	Case Number 2014018812	Page 2 of 3

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)



NOT TO SCALE

145. Crash Description/Narrative

The Crash Description begins on continuation page

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Huffman, John W Jr	5188	Smith, Joseph J	5180	☐ Pending ☒ Complete

New Jersey Police Crash Investigation Report Motor Vehicle Crash Description	Police Dept: Deptford Police Department Code: 01 Station: Patrol Case No: 2014018812

145. Crash Description

On 05-09-2014, I, P/O John Huffman #5188 responded to Cooper Street near Almonesson Road for a report of a motor vehicle crash. Deptford Township BLS was also dispatched for the report of minor injury. Upon arrival, I checked the occupants of each vehicle to ensure that everyone was uninjured. The juvenile child complained of pain to the back of her head as a result of the collision. Deptford BLS arrived on location to render any medical aid. The juvenile appeared to be okay and her mother refused any further medical treatment at this time. All other occupants advised that they were uninjured s a result of the collision.

Operator #1 stated that she was traveling West on Cooper Street and was at a stop in traffic. Operator #1 advised that while she was stopped, the front end of Vehicle #2 impacted the rear of her vehicle. I observed minor damage to the rear bumper area of Vehicle #1.

Operator #2 stated that he was traveling West on Cooper Street attempting to come to a stop in traffic behind Vehicle #1. Operator #2 advised that he was looking down to read his bank statement and did not realize how close he was to Vehicle #1. Operator #2 stated that he was unable to stop quick enough and the front end of his vehicle impacted the rear of Vehicle #1. I observed minor damage to the front end of Vehicle #2.

Operator #2 was issued motor vehicle summonses for careless driving N.J.S. 39:4-97 (Summons# 0802 C 050837) and creating risk of accident N.J.S. 39:4-56 (Summons# 0802 C50838). Both operators advised that they were okay to drive and they drove away from the crash scene at their own request. There is no further information; crash scene investigation complete.

Huffman, John W Jr
Officer's Signature

5188
Badge Number

Page 1 of 3 ☐ Fatal

New Jersey Police Crash Investigation Report

☒ Reportable ☐ Non-Reportable ☐ Change Report

1. Case Number: 2014001126
2. Police Dept. of: Deptford Police Department — Code: 01
3. Station/Precinct: Patrol
4. Date of Crash (mm dd yy): 01 10 14
5. Day of Week: Su M Tu W Th F Sa
6. Time (use 2400 hrs.): 0850
7. Municipality Code: 0802
8. Total Killed: - -
9. Total Injured: - -
10. Crash Occurred On: Cooper ST (Road Name) - (Dir)
At Intersection with ☐ / ☒ Feet ☐ Miles — 300 (14) (15) — ☐ N ☒ E ☐ S ☐ W (16) of: Almonesson RD
11. Speed Limit: 35
12. Route No.: 706 — Suffix: - — 13. Milepost: - - - . - -
18. Speed Limit: 35
19. Ramp ☐ To: ☐ From: — 17. Cross Road Name/Route No.: - — ☐ NB ☐ EB ☐ SB ☐ WB
20. Route Name/Route No.: - - . - - - - - - - — 21. Latitude: - - . - - - - - - — 22. Longitude: - - . - - - - - - -

	23. Veh. #	24. Policy No.	25. NJ Ins. Code	26. Driver's First Name	Initial	Last Name	29. Sex	27. Number & Street	28. City	State	Zip
Vehicle 1	1	4284132919	100	Ashley	L	Desimone	F	219 Balin CT	Mantua	NJ	08051

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

30. Eyes	DL Class	Restrictions	Endorsements	31. State	32. Driver's License Number	33. DOB (mm dd yy)	34. Expires (mm yy)
06	- -	- - - -	- -	NJ	D2804 06373 62866	12 15 86	06 16

35. Owner's First Name	Initial	Last Name	36. Number & Street	37. City	State	Zip
☐ Same as Driver Michael	A	Wilson	518 Fern AVE	Deptford	NJ	08096

38. Make	39. Model	40. Color	41. Year	42. Plate No.	43. State	44. VIN	45. Expires
NISS	MAX	BK	09	C41CFK	NJ	1N4AA51E39C825024	08 14

46. Vehicle Removed to: -
☐ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☒ Left at Scene ☐ Towed Impounded
47. Authority: ☐ Owner ☒ Driver ☐ Police
48. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
49. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
50. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
51. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
52. Motor Carrier or Government Entity: -
Number & Street: -
City: - State: - Zip: -

	53. Veh. #	54. Policy No.	55. NJ Ins. Code	56. Driver's First Name	Initial	Last Name	59. Sex	57. Number & Street	58. City	State	Zip
Vehicle 2	2	5196449	228	Albert	M	Koch	M	11 BEECH DR	BLENHEIM	NJ	08012

☐ Parked ☐ Ped ☐ Pedalcyclist ☐ Resp. to Emergency ☐ Hit & Run

60. Eyes	DL Class	Restrictions	Endorsements	61. State	62. Driver's License Number	63. DOB (mm dd yy)	64. Expires (mm yy)
02	- -	- - - -	- -	NJ	K6038 01774 12692	12 06 69	05 16

65. Owner's First Name	Initial	Last Name	66. Number & Street	67. City	State	Zip
☐ Same as Driver Verizon Services Corp			Po Box 612744	Dallas	TX	75261

68. Make	69. Model	70. Color	71. Year	72. Plate No.	73. State	74. VIN	75. Expires
CHEV	EXP	WT	08	XP681H	NJ	1GCGG25C681215445	08 14

76. Vehicle Removed to: -
☐ Driven ☐ Towed Disabled ☐ Towed Disabled & Impounded ☒ Left at Scene ☐ Towed Impounded
77. Authority: ☐ Owner ☒ Driver ☐ Police
78. Alcohol Drug Test — Given: ☒ No ☐ Yes ☐ Refused — Type: ☐ Breath ☐ Blood ☐ Urine — Results: 0.- - % ☐ Pending
79. Hazardous Material: ☐ None ☐ On Board ☐ Spill — Hazard Class: - — Placard No.: - - - -
80. Carrier No.: ☐ USDOT - - - - - - - ☐ None — ☐ MC/MX - - - - - - -
81. GVWR / GCWR (trucks & buses only): ☐ ≤ 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ ≥ 26,001 lbs.
82. Motor Carrier or Government Entity: -
Number & Street: -
City: - State: - Zip: -

135. Damage to Other Property ☐ Yes (If Yes, describe) ☒ No
-

Oper.	136. Charge	137. Summons No.	Oper.	138. Charge	139. Summons No.
1	-	-	2	-	-
1	-	-	2	-	-

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
A	1	01	01	-	32	F	-	-	-	09	04	-	-	Desimone, Ashley L & 219 Balin CT, Mantua, NJ, 08051
B	1	03	01	-	31	M	-	-	-	09	04	-	-	Wilson, Michael A & 518 Fern AVE, Deptford, NJ, 08096
C	1	06	01	-	6	F	-	-	-	05	05	-	-	Wilson, Arianna & 518 Fern AVE, Deptford, NJ, 08096
D	2	01	01	-	49	M	-	-	-	09	04	-	-	Koch, Albert M & 11 BEECH DR, BLENHEIM, NJ, 08012

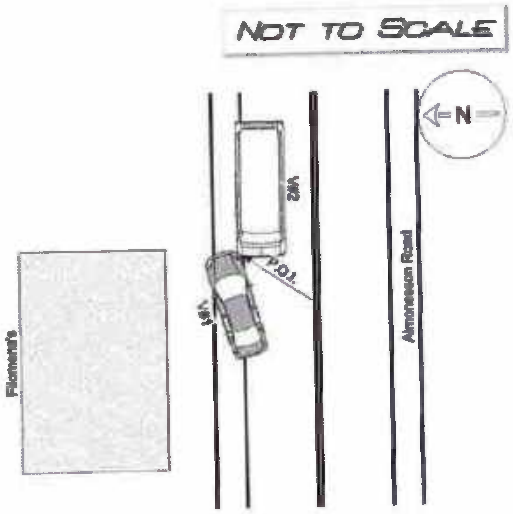
New Jersey Police
Crash Investigation Report

Case Number 2014001126

	83	84	85	86	87	88	89	90	91	92	93	94	95	Names & Addresses of Occupants If Deceased, Date & Time of Death
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-	-	-	-	-	-

144. Crash Diagram

Show NORTH by Arrow (Not to Scale)



145. Crash Description/Narrative

The Crash Description begins on continuation page

146. Officer's Signature	147. Badge #	148. Reviewer	Badge #	149. Case Status
Riggs, Michael S	5224	Hubert, David R	5181	☐ Pending ☒ Complete

New Jersey Police Crash Investigation Report
Motor Vehicle Crash Description

Police Dept: Deptford Police Department Code: 01
Station: Patrol Case No: 2014001126

145. Crash Description

Vehicle #1 was traveling East on Cooper Street, when Vehicle #1 slid into the Westbound lane of Cooper Street, and was struck by Vehicle #2 before running off the road to the left.

Operator #1 advised me that she was operating her vehicle West on Cooper Street, when she lost control of her vehicle, due to the icy road conditions, and crossed over the center double yellow line. Operator #1 stated that the front of her vehicle was then struck by Vehicle #2, and her Vehicle then ran off of the road.

Operator #2 stated that he observed Vehicle #1 lose control of the vehicle, and attempted to stop his vehicle, however his vehicle slid, due to the icy road conditions. Operator #2 advised me that the front of his vehicle then struck the front of Vehicle #1.

I observed moderate damage to the front passenger side of Vehicle #1 and moderate damage to the front passenger side of Vehicle #2. Due to the icy road conditions, there was no evidence of skidmarks in the roadway.

The occupants of both vehicles claimed no injuries, therefore medical assistance was not needed.

Both Vehicle #1 and Vehicle #2 were able to be moved into the parking lot of Filomenas.

Crash investigation complete.

Riggs, Michael S
Officer's Signature

5224
Badge Number

ENVIRONMENTAL SCREENING

For

FY 2018 GLOUCESTER COUNTY LOCAL CONCEPT DEVELOPMENT STUDY: COOPER STREET (COUNTY ROUTE 706) OVER ALMONESSON CREEK /AT ALMONESSON LAKE (BRIDGE 3-K-3)

DEPTFORD TOWNSHIP, GLOUCESTER COUNTY NEW JERSEY

April, 2019

PREPARED FOR:

French & Parrello Associates
1800 Route 34 | Suite 101
Wall, NJ 07719
Attn: William Pyontek PE. PP

SUBMITTED TO:

Delaware Valley Regional Planning Commission
The ASP Building
190 N. Independence Mall West
Philadelphia, PA 19106

PREPARED BY:

Amy S. Greene Environmental Consultants, Inc.
4 Walter E. Foran Boulevard, Suite 209
Flemington, New Jersey 08822
Robert Piel, Sr. Project Manager
ASGECI PROJECT #4376

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Figure 5 – Wetlands and Streams Map
Figure 6 – Landscape Project v.3.3 Map

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APPENDIX C - Agency Correspondence

Letter from the NJ Natural Heritage Program (dated March 5, 2019)
US Fish and Wildlife Service IPAC Report (dated May 7, 2019)

APPENDIX D – Hazardous Waste Screening Study, Cooper Street Bridge 3K-3 CR 706, Township of Deptford, Gloucester County, NJ.

APPENDIX E – USEPA EJSCREEN Report (Version 2018) Cooper Street Bridge Over Almonesson Creek at Almonesson Lake (Bridge 3-K-3), Deptford Township Gloucester County, NJ

1.0 INTRODUCTION

An Environmental Screening study was performed by Amy S. Greene Environmental Consultants, Inc. (ASGECI) in conjunction with French and Parrello Associates (FPA) for the Cooper Street (County Route 706) bridge over Almonesson Creek at Almonesson Lake (Bridge 3-K-3) in Deptford Township, Gloucester County, New Jersey. The bridge is part of an existing dam and spillway which forms Almonesson Lake. This environmental screening is being prepared in support of the Local Concept Development study which will consider widening and rehabilitation of the bridge and analyze all options to bring the bridge structure, dam and embankment into compliance with current standards.

This study was performed at the request of the Delaware Valley Regional Planning Commission and Gloucester County to assist in the development of project plans and design alternatives. This Environmental Screening Report (ESR) provides a preliminary indication of the extent of environmentally sensitive resources located within the study area. The ESR is based upon a review of existing published information and the performance of qualitative field investigations.

The project area extends approximately 400 feet on either side of the centerline of the Cooper Street Bridge. The concrete bridge wall is approximately 80 feet long and the spillway which connects the lake to Almonesson Creek is approximately 20 feet wide. The creek flows south to north and Almonesson Lake is on the southern side of Cooper Street. The southern side of Cooper Street is also occupied by a day care facility, a catering facility and residential properties. To the north of Cooper street is a commercial restaurant and bar facility and Almonesson Creek Park (AKA Woodbrook Park), which is owned by Deptford Township.

The study area for this environmental screening consists of all properties within 150 feet of the 800-foot Cooper Street project area (Appendix A, Figures 1 & 2). The majority of the study area is made up of Almonesson Lake and Almonesson Creek Park. Almonesson Creek Park is a public park with both active and passive recreation activity areas and is maintained by Deptford Township. Almonesson Lake is a public lake owned by Deptford Township. The remainder of the study area is developed with residential uses and with a commercial restaurant and a catering facility.

Existing mapping, data, and records were reviewed on the Federal, State, County, and Municipal levels. A field investigation of the study area was performed on February 7, 2019 to confirm the presence or absence of mapped environmental resources and to identify any environmentally sensitive resources or areas of concern that may not have been part of the publicly available GIS coverage.

2.0 IDENTIFICATION OF ENVIRONMENTAL RESOURCES

The methodologies utilized in the preparation of this ESR included obtaining and reviewing existing data, performing visual field investigations of the study area, and evaluating all materials collected. A discussion of the technical information used to identify each resource within the study area is described in this section of the ESR. Photographs of the study area are provided in Appendix B.

2.1 Land Use

The portions of the study area that are not part of Almonesson Creek Park or Almonesson Lake have been developed with residential and commercial uses for many years (Appendix A). The southeastern quadrant of the study area is developed with a commercial catering facility known as Auletto Catering. The northwestern quadrant of the study area is also developed with a commercial facility known as Filomena Lakeview Restaurant and Bar. The southwestern quadrant of the study area is occupied by a commercial child day care facility and single family homes. It should also be noted that just beyond the study area to the northwest along Cooper Street is the Almonesson Lake Fire Company and along Copper Street and Almonesson Road is the Almonesson United Methodist Church and its facilities. The portion of Almonesson Creek Park located in the study area consists of forested wetlands and forested upland areas. The northern edge of Almenosson Lake along Cooper Street is also bordered by forested and emergent wetlands.

2.2 Surface Water Resources

2.2.1 Water Quality Classification

The watershed in which the study area is located was identified, and the water quality classifications of major surface water bodies within the study area were reviewed. Sources used to determine site drainage included USGS topographic maps, Soil Survey Geographic (SSURGO) Gloucester County Soils maps, and field observations.

The study area is located within the Woodbury/Big Timber/Newton Creek watershed and the Almonesson Creek sub-watershed. The Almonesson Creek which passes under the Cooper Street bridge is classified as Freshwater, non-trout waters, Category-2 (FW2-NT-C2) according to the NJDEP Surface Water Quality Standards (N.J.A.C.7:9B). Designated uses for FW2-NT-C2 waters include primary contact recreation; maintenance, migration and propagation of the natural and established biota, industrial and agricultural water supply, public potable water supply after conventional filtration treatment and any other reasonable uses. The project may involve minor impacts to the Almonesson Creek and the Almonesson Lake. However, the extent of the impacts will not be known until the selected alternative is designed.

2.2.2 Regulated Waters

The NJDEP Flood Hazard Area Control Act (FHACA) Rules (NJAC 7:13 et seq.) indicate that "regulated waters" in NJ include any segment of water that has a drainage area of less than 50 acres, provided that the water has a discernable channel, as well as all streams and drainage ways with an upstream drainage basin area of more than 50 acres. The Almonesson Creek and

Almonesson Lake are both regulated waters under the FHACA rules since they have drainage areas of over 50 acres (See Appendix A, Figure 4). The FHACA regulates certain activities in the Flood Hazard Areas and Riparian Zones of regulated waters. These activities include the placement of fill, construction or reconstruction of bridges and roadways, as well as many other activities. However, the reconstruction of a dam as defined by the NJDEP Dam Safety Standards (N.J.A.C. 7:20) and any regulated activity performed in association with the removal of a dam is not subject to FHACA rules provided the dam is in compliance with all applicable requirements of the Dam Safety Standards.

2.2.3 Wild and Scenic Rivers

The National Wild and Scenic River System was created by Congress in 1968 to preserve certain rivers with outstanding natural, cultural and recreational values. Rivers are designated by Congress or the Secretary of the Interior if certain requirements are met. New Jersey has approximately 6,450 miles of rivers, 262.9 of those miles are designated as Wild and Scenic. That is approximately 4% of the state's river miles. New Jersey's Wild and Scenic rivers include the Delaware River (Lower), the Delaware River (Middle), the Great Egg Harbor River, the Maurice River and the Musconetcong River. The project is not located along of any of these rivers; therefore, the project will not have any adverse impacts to Wild and Scenic Rivers.

2.2.4 Floodplains and Flood Hazard Areas

Flood hazard area mapping and the most up to date Federal Emergency Management Agency (FEMA) floodplain maps (Preliminary Digital Flood Insurance Rate Map [DFIRM]) for Gloucester County, New Jersey, dated August 2016, were analyzed to determine the approximate extent of 100-year floodplains and flood hazard areas within the project area. Federal Emergency Management Agency (FEMA) mapping shows that the study area is within the 100 year flood plain (See Appendix A-Figure 4). However, as discussed above the reconstruction of a dam and any regulated activity performed in association with the removal of a dam as defined by the NJDEP Dam Safety Standards (N.J.A.C. 7:20) is not subject to FHACA rules provided the dam is in compliance with all applicable requirements of the Dam Safety Standards.

2.2.5 Riparian Zones

Riparian Zones can extend 50 ft, 150 ft, or 300 ft from the top of bank of regulated waters. It is anticipated that the Riparian Zone associated with the Almonesson Creek within the study area will be 50 ft. This is based on the following information:

- The water quality classification of the Almonesson Creek is Freshwater, non-trout waters, Category-2, (FW2-NT-C2) according to the NJDEP Surface Water Quality Standards (N.J.A.C.7:9B).
- A review of the NJDEP Landscape Project Mapping indicates that there are no records for threatened or endangered species critically dependent on the water, or suitable habitat for such species within the study area. The anticipated 50-foot riparian zone limits are illustrated on the Environmental Constraints Map provided in Appendix A, Figure 3.

2.3 Wetlands and Wetland Transition Areas

A review of existing mapping sources and a qualitative field investigation were conducted to determine the approximate extent of wetlands and open waters within the project area. Mapping

sources reviewed included SSURGO Soils mapping for Gloucester County, US Fish and Wildlife Service National Wetlands Inventory Maps, and the New Jersey Department of Environmental Protection (NJDEP) Freshwater Wetland GIS coverage. The NJDEP wetlands maps indicate that scrub/shrub wetlands are present on the northern side of the Cooper Street Bridge along Almonesson Creek within the project area (See Appendix A Figure 5).

According to the SSURGO Soils Mapping for Gloucester County, hydric soils are present along Almonesson Creek on the northern side of Cooper Street Bridge. This includes Fluvaquents loamy soils (FmhAt) that are frequently flooded (Appendix A Figure 7). The remaining areas surrounding the project area are mapped as Freehold sandy loam (FrkB) and Freehold-Urban Complex (FrrB and FrrC). These soils are not listed as hydric soils.

A qualitative field investigation for wetlands was performed on February 6, 2019 to confirm the presence or absence of wetland areas within the project area utilizing the methodology presented in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (Federal Interagency Committee for Wetland Delineation 1989) in accordance with the NJ Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A). Based on the field investigation, ASGECI confirmed that freshwater wetlands and State open waters regulated under the NJ Freshwater Wetlands Protection Act Rules are present on both the northern and southern side of the Cooper Street Bridge within the study area. It was also observed that these wetland areas had been delineated by others as evidenced by the presence of pink wetland delineation flags on both the upstream and downstream sides of the bridge.

Under the FWPA Rules wetlands are classified by resource value and are assigned transition areas (buffers) of 0, 50, or 150 feet in width depending upon the resource value classification. Wetlands that are documented habitat for certain endangered or threatened species, or are tributary to trout-production waters are classified as exceptional resource value and are subject to 150-ft transition areas. Other wetlands such as ditches, swales, detention basins, and certain isolated wetlands can be classified as ordinary resource value and are not subject to any transition areas. All other wetlands are classified as intermediate resource value and are subject to a 50-ft transition area. Based on a review of available information, the onsite wetlands are not tributary to any trout-production waters. However, based on a review of the NJDEP Landscape Project v 3.3 mapping the wetlands to the north of the bridge are mapped as foraging habitat for the Bald Eagle (Haliaeetus leucocepphalus) which is listed in New Jersey as a threatened species. Therefore, ASGECI has determined that the wetlands identified to the north of the bridge should be classified as exceptional resource value and subject to a 150-ft standard transition area. According the NJDEP Landscape mapping, the wetlands to the south of the bridge are not habitat for any threatened or endangered species and therefore should be subject to a 50 foot wetland transition area. However, New Jersey Department of Environmental Protection would make the final decision on the resource value of the onsite wetlands if an application for a Letter of Interpretation was obtained.

2.3.1 Wetland Community Descriptions

The wetlands on the northern side of the bridge can be characterized as forested wetlands that are dominated by red maple (*Acer rubrum*), American sycamore (*Platanus occidentallis*), tulip poplar (*Liriodendron tulipifera*) and Norway maple (*Acer platanoides*) in the canopy and

northern spice bush (*Lindera benzoin*), multiflora rose (*Rosa multiflora*) and green brier (*Smilax rotundifolia*) in the shrub layer. A wetland fringe was also present along the south side of the bridge along the shoreline of Almonesson Lake. This wetland can be characterized as a scrub shrub wetland dominated by multiflora rose, greenbrier, red osier dogwood (*Cornus alba*) and red maple saplings.

2.3.2 Upland Community Descriptions

Upland areas within the study area on the southern side of the bridge were developed with a catering facility, a preschool/daycare center and single-family residences. The upland areas on the northern side of the bridge that were not developed by the restaurant and bar were dominated by forested uplands. These forested areas were dominated by black cherry (*Prunus serotina*), American sycamore, Norway maple and northern catalpa (*Catalpa speciosa*) in the canopy. The shrub layer was dominated by multiflora rose, greenbrier, Japanese honeysuckle, and Asian bittersweet (*Celastrus orbiculatus*). A portion of the study area in the northeast quadrant of the study area is Almonesson Creek Park. Portions of the park in the study area include a gravel parking lot and maintained lawn. Some early successional herbaceous vegetation was identified in the park. Some of the species identified include crab grass (Digiteria sp.), white clover (*Trifolium repens*), ragweed (*Ambrosia artemisiifolia*), mugwort (*Artemisia vulgaris*) and Queen Anne's lace (*Daucus pusillus*).

2.4 Sole Source Aquifers

Sole-source aquifers (SSA) are those aquifers that contribute more than 50% of the drinking water to a specific area and the water would be impossible to replace if the aquifer were contaminated. Sole-source aquifers are defined with guidelines set forth by the U.S. Environmental Protection Agency (EPA) as authorized in section 1424(e) of the Safe Drinking Water Act of 1974. The project area is located within the Coastal Plain SSA as mapped by New Jersey Geological Survey (digital Sole Source Aquifer Coverage, 1998). However, the project does not propose to discharge any pollutants into the aquifer as part of the bridge and dam reconstruction project; therefore, no impacts to any underlying aquifer are anticipated.

2.5 Threatened and Endangered Species

The potential for the presence of threatened and endangered species in the study area was assessed by obtaining NJ Natural Heritage Program (NHP) database records and the USFWS Information, Planning and Consulting System (IPAC System) records. The New Jersey Natural Heritage Program of the Office of Natural Lands Management (NHP) maintains a database of natural communities and documented sightings of threatened and endangered species. Their data also includes information from the NJDEP Landscape Project v.3.3. The NHP, in a letter dated March 5, 2019 (Appendix C) indicates that the project area may be foraging habitat for the state endangered Bald Eagle (*Haliaeetus leucocephalus*).

The NHP letter also indicates that one species of "Special Concern" occurs in the study area. That is the Great Blue Heron (*Ardea Herodias*). Currently, there are no regulatory implications associated with the presence of a NJ species of "Special Concern" onsite. The NHP

correspondence further indicates that there are no records for occurrences of rare plant species or rare ecological communities within the study area.

In addition to the species listed above, a search of the U.S. Fish and Wildlife Service (USFWS), NJ Field Office (http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html) website and the IPAC system was used to identify the potential presence of federally listed threatened or endangered species within the project area. According to the information from the New Jersey Field Office of the USFWS and the IPAC Report dated May 7, 2019, the project area may contain suitable habitat for the federally threatened Northern long-eared bat (*Myotis septentrionalis*) and the federally threatened flowering plant swamp pink (*Helonias bullata*) (See Appendix C). A habitat assessment for these federally listed species may be required by the USFWS. Once the project impacts are known, coordination with the USFWS is recommended to determine if any surveys are required.

2.6 Socioeconomic/Environmental Justice

2.6.1 Socioeconomics

The study area for the socioeconomic analysis extends 0.25 miles from the Cooper Street Bridge project area in all directions (See Appendix F, EJSCREEN Report). This study area has been made larger in order to collect sufficient data for analysis. This area was investigated to determine the various land uses and how they may be affected by the project. Existing mapping, data, and records were reviewed on the Federal, State, County, and Municipal levels. A field investigation of the study area was also performed on February 7, 2019 to confirm the presence of the various land uses.

A large portion of the study area is made up of Almonesson Lake and Almonesson Creek Park (AKA Woodbrook Park). Almonesson Creek Park is a public park with both active and passive recreation activity areas and is maintained by Deptford Township. Almonesson Lake is a public lake owned by Deptford Township. The remainder of the study area is developed with residential and commercial uses. The commercial uses include convenience stores, retail shops, gas stations restaurants and a catering facility. The largest commercial use in the study area was the Home Depot located in the northeast quadrant of the socioeconomic study area off of State Highway 41. In the northwest quadrant of the socioeconomic study area at the intersection of Cooper Street and Almonesson Road is the Almonesson Lake Fire Company and the Almonesson United Methodist Church and its facilities. A daycare facility is also located adjacent to the Cooper Street Bridge. The remainder of the study area is occupied by residential uses. Residential uses include single family homes and multi-family homes. The majority of these residential uses are owner occupied (88%) and the remainder are rental properties.

Cooper Street (County Route 706) serves as a connecting roadway between County Route 534 in the adjacent municipality of Woodbury to the west and to State Highway 41 and Almonesson Road the east. Any alternatives that would reduce the link between these two communities should consider the socioeconomic impact of that alternative.

The project area has a low-income population of 25%. This is equivalent to the state average (25%) but lower than the EPA Region average (30%). As the project design progresses it is

recommended that the impacts to the low-income population be evaluated further by including them in the public outreach process. As project alternatives are developed, socioeconomic impacts to the residential and commercial uses in the area should also be considered. Further discussions with the residents and business owners are recommended to see how the project may affect adjacent properties and to obtain recommendations for project improvements and construction impacts.

2.6.2 Environmental Justice

The US EPA's EJSCREEN mapping and screening tool, Version 2018, was used to identify any potential areas of Environmental Justice concern in the socioeconomic study area. The purpose of the tool is to analyze compiled Census Bureau Data to ensure that projects will not have a disproportionally high or adverse effect on low income and/or minority communities and that proposed projects are in compliance with goals of Executive Order 12898 and the requirements of the Civil Rights Act of 1964.

To determine if any environmental justice issues exist, a demographic breakdown of the project area was investigated within a 0.25 mile radius of the Cooper Street Bridge. This study area has been made larger in order to collect sufficient data for this analysis. The investigation has produced the following data:

Demographic Data

Category	Numerical Value or Percentile	State Average	EPA Region Average
Minority %	9%	43%	44%
Low Income	25%	25%	30%
Linguistically Isolated Population	0%	7%	8%
Population of Study Area	277		

*Data based on EJ SCREEN Report v. 2018, 2/28/19 (Appendix F)

Population by Race

White		Black / African American		American Indian / Alaska Native		Hispanic or Latino		Asian		Other/2 or More races		Total Pop.
pop	%	pop	%	pop	%	pop	%	pop	%	pop	%	
251	91%	8	3%	0	0	9	3%	8	3%	9	3%	277

*Data based on EJSCREEN ACS Summary Report 2/28/2109 (Appendix F)

Based on the data evaluated by the US Environmental Protection Agency's Environmental Justice Screening and Mapping tool (EJSCREEN), the study area has a smaller percentage of

minority residents (9%) than the state average (43%) and the EPA regional average (44%). The study area has an equal percentage of low-income population as the state average (25%) and a lower percentage of low-income population than the EPA regional average (30%). The majority of the population is made up of people who represent themselves as White (97%). The remainder of the population is made up of Hispanic or Latino races (3%), Black (3%) and Asian (3%) races. The population reported as other races is also 3%. The EJSCREEN report also indicates that 25% of the population in the study area is low income. The average in the state is 25% and the EPA Region average is 30%; therefore, the project area has the same proportion of low-income residents as the state and a lower proportion than the EPA Region. It should also be noted that the areas immediately adjacent to the Cooper Street Bridge where construction will take place are occupied by a large catering facility, a large restaurant/bar, a preschool, a municipal park and Almonesson Lake. Based on this information it does not appear that the project will have a disproportionate impact on minority or low-income populations in the study area. As the project moves forward additional outreach to the community and local officials is recommended to collect up to date information on the community and the population and to further evaluate the impacts of the project on the minority and low-income residents. A copy of the EJSCREEN Report (Version 2018) is included as Appendix F.

2.7 Hazardous Waste Investigation

The study area for the purpose of this investigation consisted of the bridge and areas within 300 feet on either side of the bridge as discussed in the Hazardous Waste Screening Study (Appendix D). This study was conducted to assess the potential for the presence of hazardous waste and was performed by FPA. The study consisted of a review of Federal and State databases to assess environmental conditions within the study corridor and to identify sites that may pose an environmental concern to the area surrounding Gloucester County Bridge 3K-3. No sites within the study corridor were identified in the databases searched relating to the presence of hazardous wastes, site contamination or previous site remediation activity. Based on documentary research and site reconnaissance, no sites of questionable integrity and no areas of concern were identified. No further investigation is recommended.

2.8 Section 4(f) Land (Recreational)

Any lands within the study area that may be categorized as publically owned parks, recreational areas, wildlife refuges or public or private historic sites that may be impacted by the project may be subject to analysis under Section 4(f) of the US Department of Transportation Act. In order to identify these areas, a search of the publically available Geographic Information Systems data was reviewed as was the NJDEP Green Acres Program Recreational Open Space Inventory (ROSI). The ROSI lists one parcel within the project area that could be affected by the project. This parcel is known as Almonesson Creek Park (AKA Woodbrook Park) and is known as Block 238, Lot 1 in Deptford Township, Gloucester County. The park is listed on the Gloucester County Tax records as being owned by Deptford Township and is located north of Cooper Street. The portion of the park within the proposed project area is mostly forested wetlands and forested upland. There is also a gravel parking lot and hiking trails in the park which are located in the southeast quadrant of the study area. The Almonseeon Creek also flows south to north through this portion of the park. The park makes up the majority of the northern portion of the study area

(Figure 3). It should also be noted that Almonesson Lake is listed in the Gloucester County Tax records (Block 245, Lot 2) as being owned by Deptford Township. However, there is no record in the Green Acres ROSI database that indicates the lake is part of the park. In addition, Block 239 Lot 1 and Block 240 Lot 1 which are located east of Block 238 Lot 1 are also listed in the Gloucester County Tax records as Almonesson Creek Park and are owned by Deptford Township. Should the project area expand to the east these lots may also be affected by the project. The Green Acres rules at 7:38-25.2 identify uses for parkland that do not constitute a diversion of parkland. One of these uses is the "replacement or enlargement of a highway or pedestrian bridge within an existing road right-of-way...". As the project design develops any encroachments into these publically owned parcels will need to be evaluated further and coordination with the Green Acres Program is recommended to ensure that a Section 4(f) Evaluation is not needed and that the NJDEP Green Acres diversion process will not need to be completed.

2.9 Forested Areas

Project activities conducted by a State Agency which result in the deforestation of one-half acre or more of forest must comply with the standards of the No Net Loss Reforestation Act (P.L. 2001 Chapter 10 (amending P.L. 1993, c. 106[C.13:1L-14.2]) and will require a reforestation plan. Based on the site inspection on February 16, 2019 there are forested areas within the project area. However, because the project sponsors, Gloucester County and the Delaware Valley Regional Planning Commission, are not New Jersey State Agencies, the project will not be subject to the No Net Loss Reforestation Act standards.

2.10 Air/Noise Sensitive Receptors

2.10.1 Sensitive Air Quality Receptors

The NJDEP Land Use GIS coverage was investigated to identify the presence of any sensitive receptors within the study area. A site reconnaissance of the study area was also conducted on February 6, 2019 to visually confirm the presence of any potential sensitive air quality receptors. Potentially sensitive air quality receptors include but are not limited to hospitals, schools, daycare facilities, elderly housing and convalescent facilities where occupants are more susceptible to the effects of exposure to pollutants. The Christian Playcare Center is located adjacent to the Cooper Street Bridge in the southwest quadrant of the project area. At the intersection of Cooper Street and Almonesson Road is the Almonesson United Methodist Church and its facilities. There are also several residential uses including single family homes in the project area. No other sensitive air quality receptors are located within 500 feet of the project area. As project design progresses, a detailed, quantified analysis of sensitive air quality receptors and potential project impacts to such receptors should be performed.

2.10.2 Sensitive Noise Receptors

The NJDEP Land Use GIS coverage was investigated to identify the presence of any sensitive noise receptors within the study area. A site reconnaissance of the study area was conducted on February 6, 2019 to visually confirm the presence of any potential sensitive noise receptors. Potentially sensitive noise receptors are similar to or the same as the sensitive air quality receptors. These include but are not limited to hospitals, schools, daycare facilities, elderly

housing and convalescent facilities where occupants are more susceptible to the effects of exposure to noise. The Christian Playcare Center is located adjacent to the Cooper Street Bridge in the southwest quadrant of the project area. At the intersection of Cooper Street and Almonesson Road is the Almonesson United Methodist Church and its facilities. There are also several residential uses including single family homes in the project area. No other sensitive noise receptors are located within 500 feet of the project area. As project design progresses, a detailed, quantified analysis of sensitive noise sensitive receptors and potential project impacts to such receptors may be necessary.

3.0 CULTURAL RESOURCES

The New Jersey Historic Preservation Office (NJHPO) reviews projects for their effects on archaeological and historic architectural resources when federal funding, licensing, or permitting is involved under Section 106 of the National Historic Preservation Act. The NJHPO also reviews projects requiring Freshwater Wetlands, Waterfront Development, Upland Development, Coastal Area Facility Review Act (CAFRA), and Highlands Preservation Area Approval permits issued by the State of New Jersey Department of Environmental Protection's Division of Land Use Regulation (NJDEP-DLUR).

Per the approved DVRPC scope-of-work at the LCD phase, Hunter Research was requested to prepare two related work products: 1) a Cultural Resources Screening Report and 2) Intensive-Level Architectural Survey forms. Upon completions of these tasks, Hunter Research determined that the preliminary Area of Potential Effects (APE) contains potentially eligible archaeological and architectural resources that may present project constraints.

Architecture. The Intensive-Level Architectural Survey identified one potentially eligible resource, which will be directly impacted by the proposed project. The Cooper Street Bridge and Dam, constructed by Gloucester County in 1926, is considered potentially eligible for the New Jersey and National Registers of Historic Places. New research demonstrates that the bridge/dam/spillway structure is the only historically intact feature in this landscape that speaks to a persistent pattern of water use, first as mill waterpower and then as a recreational feature supporting an amusement park. Cooper Street Bridge and Dam is judged to be significant under Criterion A at the local level due to a strong and influential association with the development of the surrounding community from its roots in a rural mill village to local recreational center and a mid-20th-century suburb. Cooper Street Bridge and Dam illustrate the application of an aesthetic arch design to this lakeside setting. It is one of four known instances where County Engineer William C. Cattell integrated an arch bridge with a dam and spillway from 1912 to 1926. His body of work indicates he was making deliberate choices of bridge type, likely dictated by site conditions. Cattell's long tenure as County Engineer from 1910 to 1942 had a significant and long-term influence on the county's highway transportation network. Cooper Street Bridge and Dam are judged to be significant under Criterion C at the local level as embodying a very complete example of a type, period and method of construction (integrated concrete arch bridge and earthen dam/concrete spillway of circa 1926). Hunter Research recommends submittal of the Intensive-Level Architectural Survey Forms to the NJHPO for technical review to determine if NJHPO concurs with the consultant's eligibility recommendations. If the bridge and dam are found eligible, an effects assessment and development of alternatives that avoid, minimize or

mitigate adverse effects or encroachments may be required per 36 CFR 800 and NJDEP-DLUR rules.

Archaeology. The Cultural Resources Screening identified the project's northeastern and northwestern (downstream) quadrants within Almonesson Creek Park as having archaeological potential. Depending on the selected preferred alternative, a Phase I archaeological survey may be required, if ground-disturbing activities take place immediately downstream of the bridge and dam, and in the northwestern quadrant, the site of a former late-18th and 19th-century mill, and in the northeastern quadrant, the site of a late-19th to late-20th-century amusement park. If intact archaeological resources are identified at the Phase I level, additional archaeological survey at the Phase II level may be required to determine eligibility and assess whether project alternatives will result in adverse effects per 36 CFR 800 and NJDEP-DLUR rules.

4.0 PERMITS AND APPROVALS

This section identifies potential environmental permits and approvals that may be required for proposed improvements within the study area. The following permits and authorizations may be required prior to implementation of the proposed activities including, but not limited to, the following:

Agency	Approval	Statutory Authority
Gloucester County Soil Conservation District	Soil Erosion & Sediment Control Plan Certification	NJ Soil Erosion & Sediment Control Act of 1975
NJ State Historic Preservation Office	Determination of No Adverse Effects Assessment or Memorandum of Agreement	Section 106 of the National Historic Preservation Act of 1966
NJDEP	Freshwater Wetlands General Permit 18 for Dam Repair and Freshwater Wetlands General Permit 10 A for minor road crossings	New Jersey Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A)
NJDEP	Dam Safety Permit	Dam Safety Rules (N.J.A.C. 7:20)
NJDEP	Stormwater Management Plan Approval	Stormwater Management Rules (N.J.A.C. 7:8)
NJDEP	Green Acres Diversion/State House Commission Approval	Green Acres Program Rules N.J.A.C. 7:36
USEPA	Categorical Exclusion	Section 102 of the National Environmental Policy Act

5.0 CONCLUSIONS

During this environmental screening phase, the project area was investigated for the presence of environmentally sensitive resources and for the presence of contaminated sites. As shown on Figure 3 the Almonesson Lake is located along the southern side of the Cooper Street Bridge and a fringe of scrub/shrub wetlands is also located along the lake shore on the south side of Cooper

Street. There are also forested wetlands along the northern side of Cooper Street and the Almonseeon Creek flows south to north under the Cooper Street Bridge. Almonesson Creek has a mapped FEMA floodplain which extends east and west of the creek and a riparian zone that extends 50 feet from the top of bank on either side of the creek. Almonesson Creek Park (AKA Woodbrook Park) also borders the project area north of Cooper Street. The Cooper Street Bridge has also been identified as a historic property. The NJDEP Natural Heritage database indicates the project area is suitable foraging habitat for the state endangered Bald Eagle (Haliaeetus leucocephalus). Further, according to the USFWS IPAC database the project area may contain suitable habitat for the federally threatened Northern Long-eared Bat (Myotis septentrionalis) and the federally threatened flowering plant Swamp Pink (Helonias bullata). Habitat surveys for these federally listed species may be required as the project moves forward. Coordination with the State Historic Preservation Office may also be required as the project design moves forward. NJDEP Freshwater Wetlands and Dam Safety permits will be required for the project and Soil Erosion and Sediment Control approval will be also be required from the Gloucester County Soil Erosion and Sediment Control District. Compliance with the NJDEP Stormwater Management rules may also be required. Sensitive air and noise receptors should be researched further as the project design develops and construction techniques are identified. Section 4(f) properties and Green Acres encumbered properties will also need to be addressed as the project design and construction techniques are developed. As project alternatives are developed, the potential environmental impacts to the resources described in this report should be evaluated in further detail.

6.0 LIST OF REFERENCES

Hazardous Waste Screening Study, Cooper Street Bridge 3K-3 CR 706, Township of Deptford, Gloucester County, NJ, February 8, 2019.

Federal Interagency Committee for Wetland Delineation. 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands. US Army Corps of Engineers, US Environmental Protection Agency, US Fish and Wildlife Service, and USDA Soil Conservation Service. Washington, D.C. Cooperative technical publication.

FEMA Preliminary Digital Flood Insurance Rate Map for Gloucester County New Jersey, FEMA Washington DC, August 2016.

N.J.A.C. 7:7A-1 et seq. NJ Freshwater Wetlands Protection Act Rules.

N.J.A.C. 7:13-1 et seq. NJ Flood Hazard Area Control Act Rules.

N.J.S.A. 13:9B-5. 1987. New Jersey Freshwater Wetlands Protection Act.

N.J.S.A. 7:8 et seq. NJ Stormwater Management Rules

GIS Coverages for the State of New Jersey, New Jersey Department of Environmental Protection (NJDEP), Office of Information Management (ORIM), Bureau of Geographic Information Systems (BGIS), Trenton, NJ, February 2019.

NJDEP State of New Jersey Composite of Parcels Data, NJOIT, OGIS, Trenton, NJ, July 2011.

NJDEP Known Contaminated Site List for New Jersey Site Remediation Program, Trenton, New Jersey April 2017.

NJDEP New Jersey Division of Fish and Wildlife, New Jersey Landscape Project, Version 3.3. New Jersey Department of Environmental Protection, Division of Fish and Wildlife, Endangered and Nongame Species Program, May 2017.

NJDEP Green Acres Program Recreation and Open Space Inventory (ROSI) database, March 2013.

NJDEP Site Remediation Program Classification Exemption Area/ Well Restriction Area Polygon Maps for New Jersey, Bureau of GIS Trenton NJ, September 2014.

NJDEP Natural and Historic Resources, Historic Preservation Office, Trenton New Jersey Historic Properties and Historic Districts of New Jersey, September 2016.

NJDEP Natural Heritage Program. Letter to Amy S. Greene Environmental Consultants, Inc. Office of Natural Lands Management, NJ Department of Environmental Protection dated March 5, 2019.

New Jersey 2015 High Resolution Orthphotography, NAD83 NJ State Plane Feet MrSID Tiles, State of New Jersey, Office of Information Technology, Trenton NJ, February 2016.

Lichvar, R.W. 2013. The National Wetland Plant List. 2013 wetland ratings. Phytoneuron 2013-49: 1-141.a.

Soil Survey Geographic (SSURGO) Database for Gloucester County, New Jersey, Natural Resources Conservation Service (NRCS), United States Department of Agriculture (USDA), Fort Worth, TX, December 2013.

Surface Water Quality Standards of New Jersey, New Jersey Department of Environmental Protection (NJDEP), Division of Land Use Management, Bureau of Freshwater & Biological Monitoring, Trenton, NJ, December 2010.

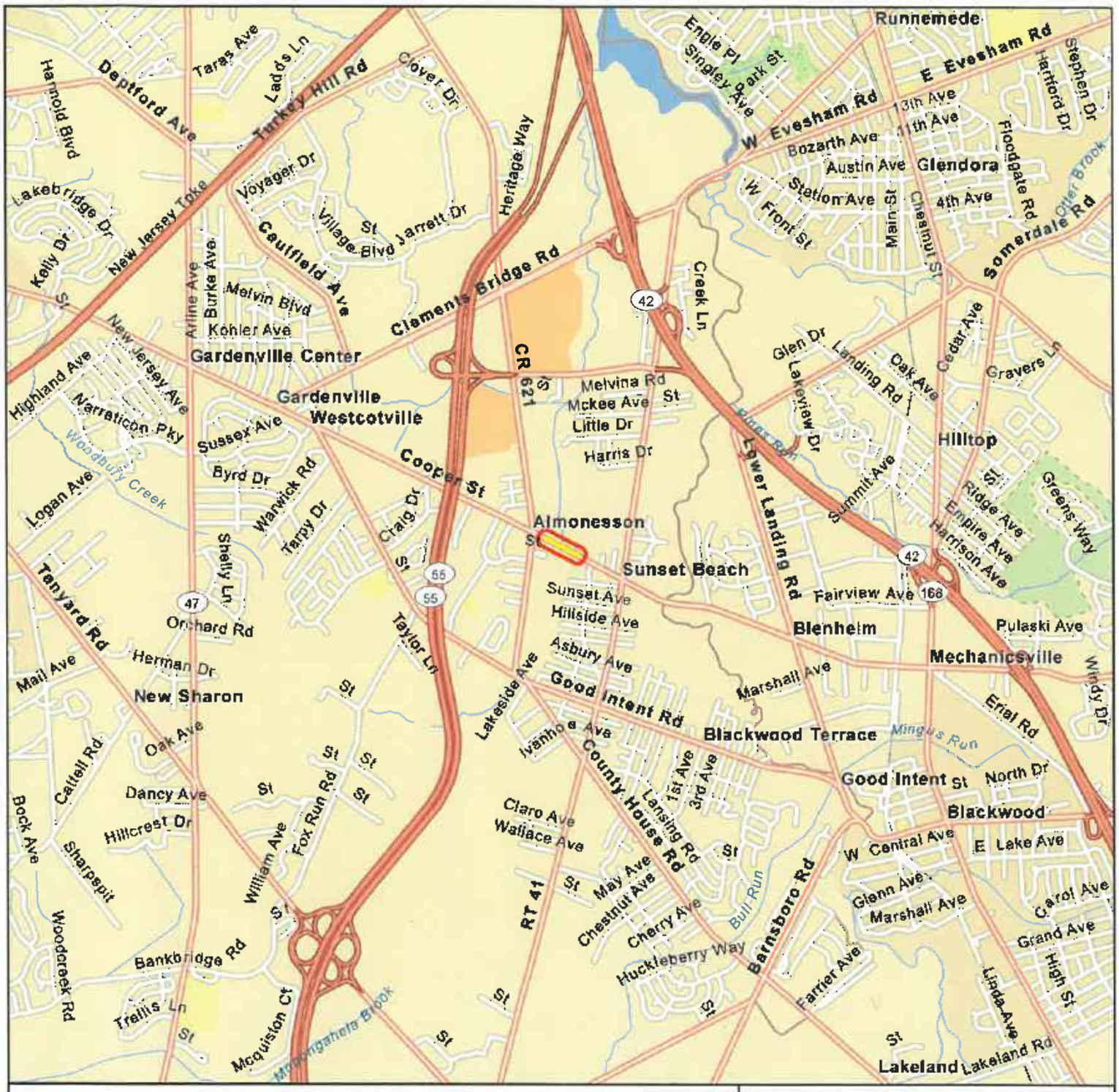
U.S. Fish and Wildlife Service, 2012, NJ Field Office Procedures for Consultation and Technical Assistance. *Federally Listed and Candidate Species Occurrences in NJ by County and Municipality* http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html.

U.S. Environmental Protection Agency, Environmental Justice Screening and Mapping Tool (Version 2018)

APPENDIX A

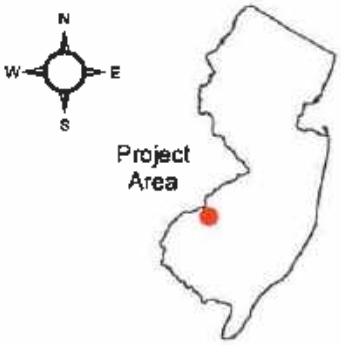
Figures

Figure 1 – Project Location Map
Figure 2 – USGS Topographic Map
Figure 3- Environmental Constraints Map
Figure 4 – FEMA Flood Map
Figure 5 – NJDEP Wetlands and Streams Map
Figure 6 – Landscape Project v.3.3 Map



Legend

- Study Area
- Project Area



Source:
ESRI Street Map North America, Tele Atlas North America, Inc., published by ESRI® Data & Maps, Redlands, California, 2010.

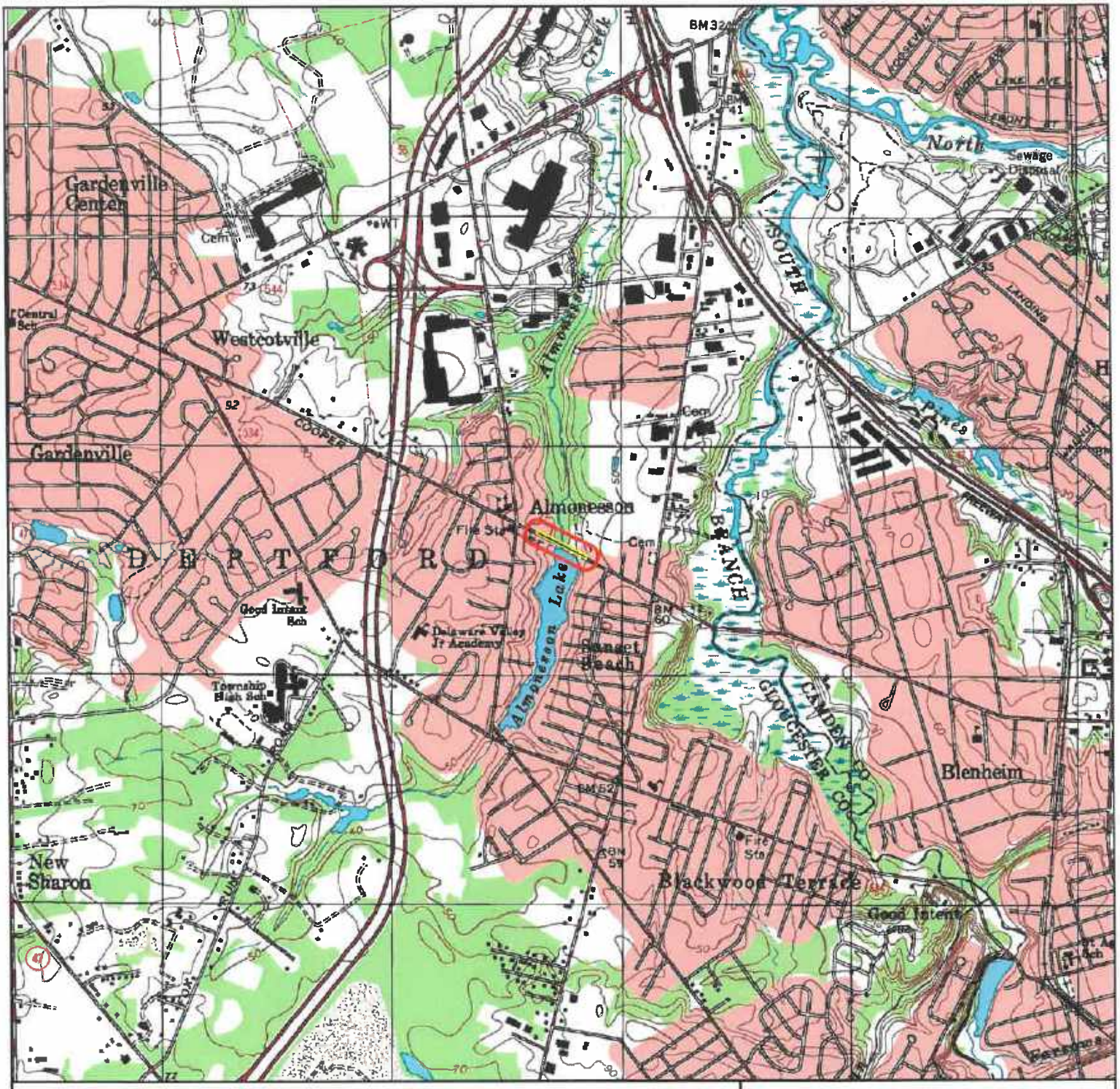
Figure 1
Project Location Map

Cooper Street (CR 706) Bridge
over Almonesson Creek
Deptford Township
Gloucester County, New Jersey

ASGECI Project # 4376

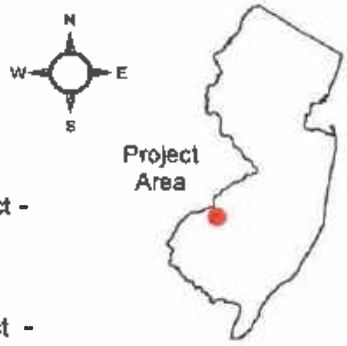
3,000
Feet

AMY S. GREENE ENVIRONMENTAL CONSULTANTS



Legend

- Study Area
- Project Area



New Jersey State Plane Coordinates in NAD83 for the approximate center of project - North: 359,211' // East: 324,579'

Latitude and Longitude Coordinates in NAD83 for the approximate center of project - N: 39° 49' 05.09" / W: 75° 05' 47.43"

Source:
Bit-Mapped 7.5 Minute Color Topographic Images of New Jersey, United States Geological Survey (USGS), Digital Raster Graphic (DRG) Topographic Series Map, Runnemede NJ Quadrangle, USGS, Reston, Va., January 9, 1996.

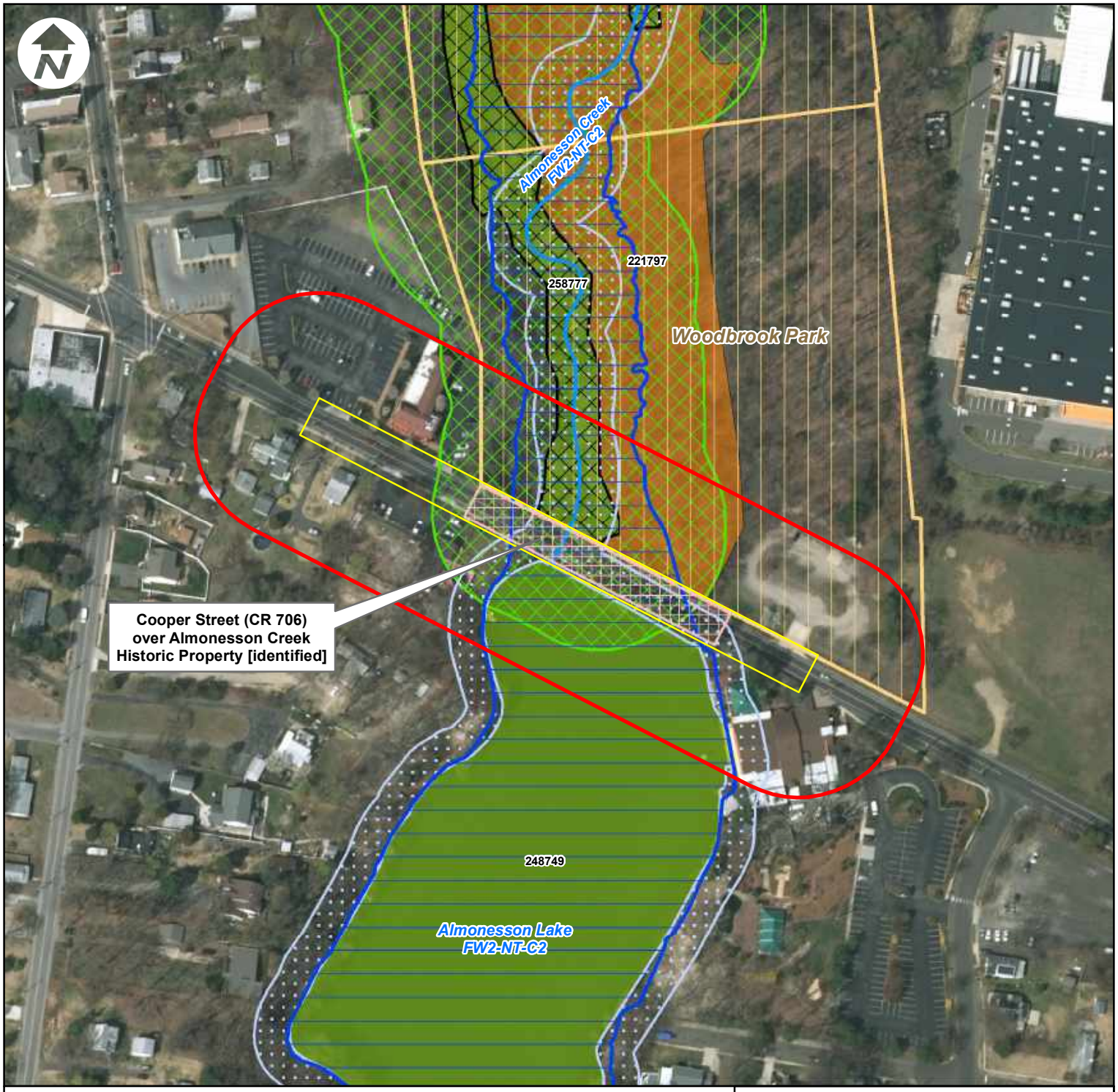
Figure 2
USGS Topographic Map

Cooper Street (CR 706) Bridge over Almonesson Creek
Deptford Township
Gloucester County, New Jersey

ASGECI Project # 4376

2,000
Feet

AMY S. GREENE ENVIRONMENTAL CONSULTANTS



Legend

- Study Area
- Project Area
- Historic Property
- Stream
- 50-foot Riparian Buffer
- 100-year FEMA Floodplain
- NJDEP Wetlands (from LULC)
- 150-foot Wetland Transition Area
- Landscape Project Rank 2 Habitat
- Landscape Project Rank 4 Habitat
- Municipal Open Space [also listed in Green Acres ROSI database]

SPECIES LIST:
221797 - Bald Eagle (Foraging)
248749 & 258777 - Great Blue Heron (Foraging)

Sources:
Federal Emergency Management Agency (FEMA) County Flood Hazard Layer, a compilation of all Digital Flood Insurance Rate Map databases for Gloucester County, NJ, distributed by FEMA Map Service Center, Washington DC, August 2016.
This map was developed using the most recent New Jersey Department of Environmental Protection Geographic Information System digital data (as of February 2019), but this secondary product has not been verified by NJDEP and is not State-authorized.

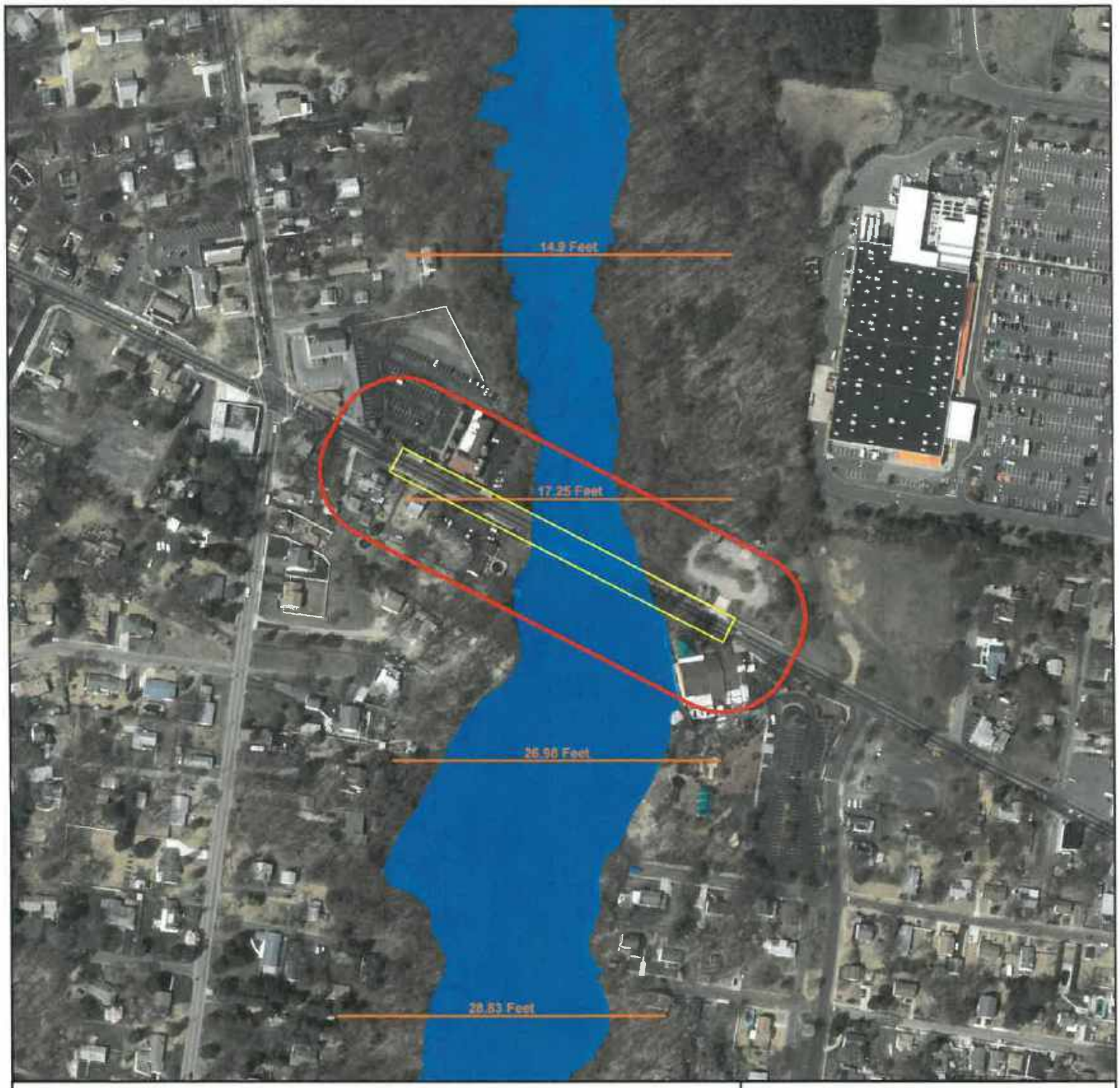
Figure 3
Environmental Constraints Map

Cooper Street (CR 706) Bridge
over Almonesson Creek
Deptford Township
Gloucester County, New Jersey

ASGECI Project # 4376

200
Feet

AMY S. GREENE ENVIRONMENTAL CONSULTANTS



Legend

- Study Area
- Project Area
- 100-year FEMA Floodplain
- Cross Section Elevation

N
W E
S

Figure 4
FEMA Flood Map

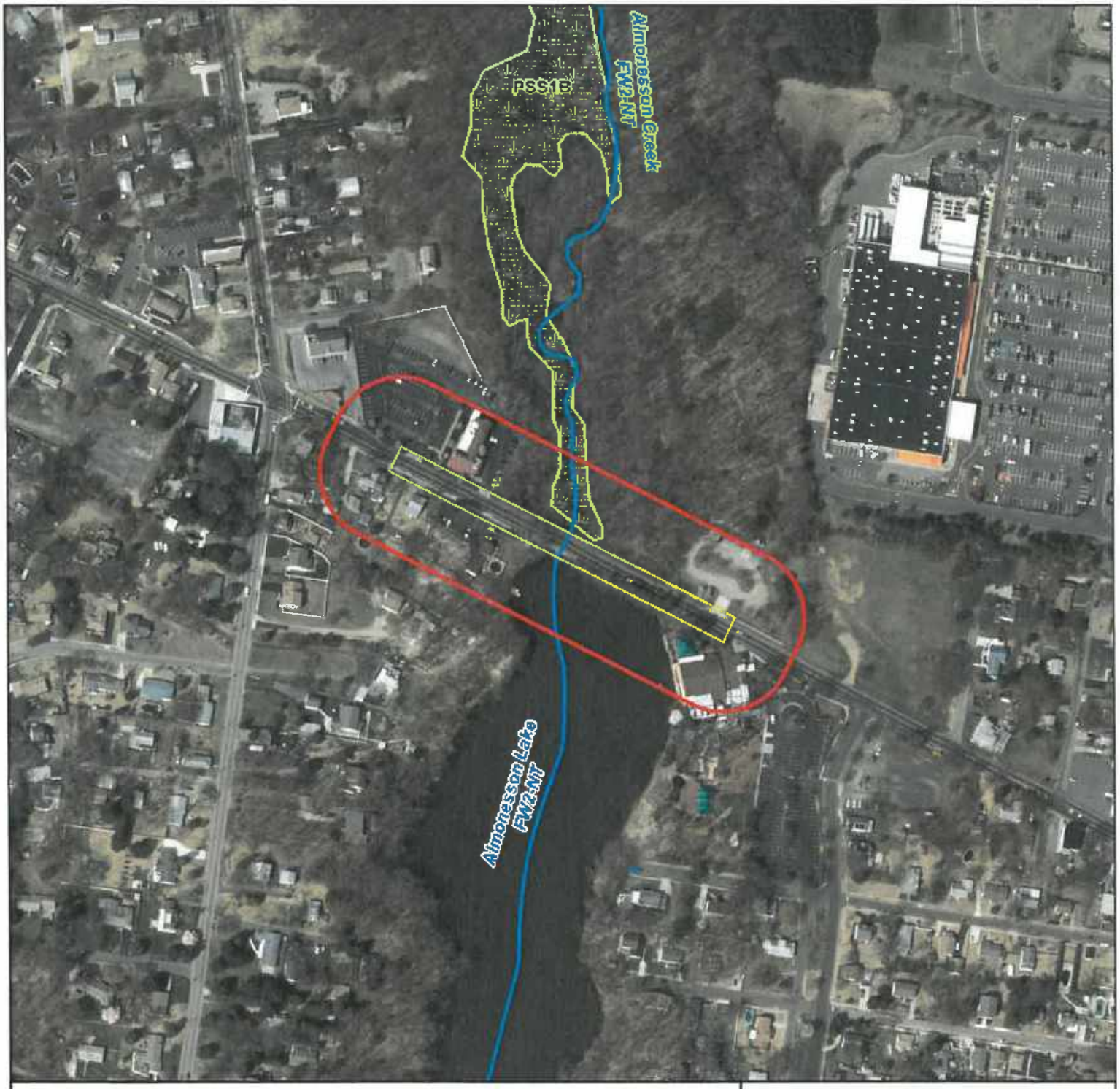
Cooper Street (CR 706) Bridge
over Almonesson Creek
Deptford Township
Gloucester County, New Jersey

ASGECI Project # 4376

300
Feet

AMY S. GREENE ENVIRONMENTAL CONSULTANTS

Sources:
Federal Emergency Management Agency (FEMA) County Flood Hazard Layer, a compilation of all Digital Flood Insurance Rate Map databases for Gloucester County, NJ, distributed by FEMA Map Service Center, Washington DC, August 2016.
New Jersey 2015 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey - Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, February 2016.



Legend

- Study Area
- Project Area
- Streams with Water Quality
- NJDEP Freshwater Wetlands

WETLAND CLASSIFICATIONS:
PSS1B - Palustrine, Scrub-Shrub, Broad-leaved Deciduous, Saturated

N
W E
S

Sources:
NJDEP Wetlands of New Jersey by County, 1986, New Jersey Department of Environmental Protection (NJDEP), Office of Information Resources Management, Bureau of Geographic Information and Analysis, NJDEP, Trenton, November 1999.
NJDEP Surface Water Quality Standards of New Jersey. NJ Department of Environmental Protection (NJDEP), Water Monitoring & Standards (WMS), Bureau of Freshwater and Biological Monitoring (BFBM), Trenton, NJ, December 2010.
New Jersey 2015 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey - Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, February 2016.

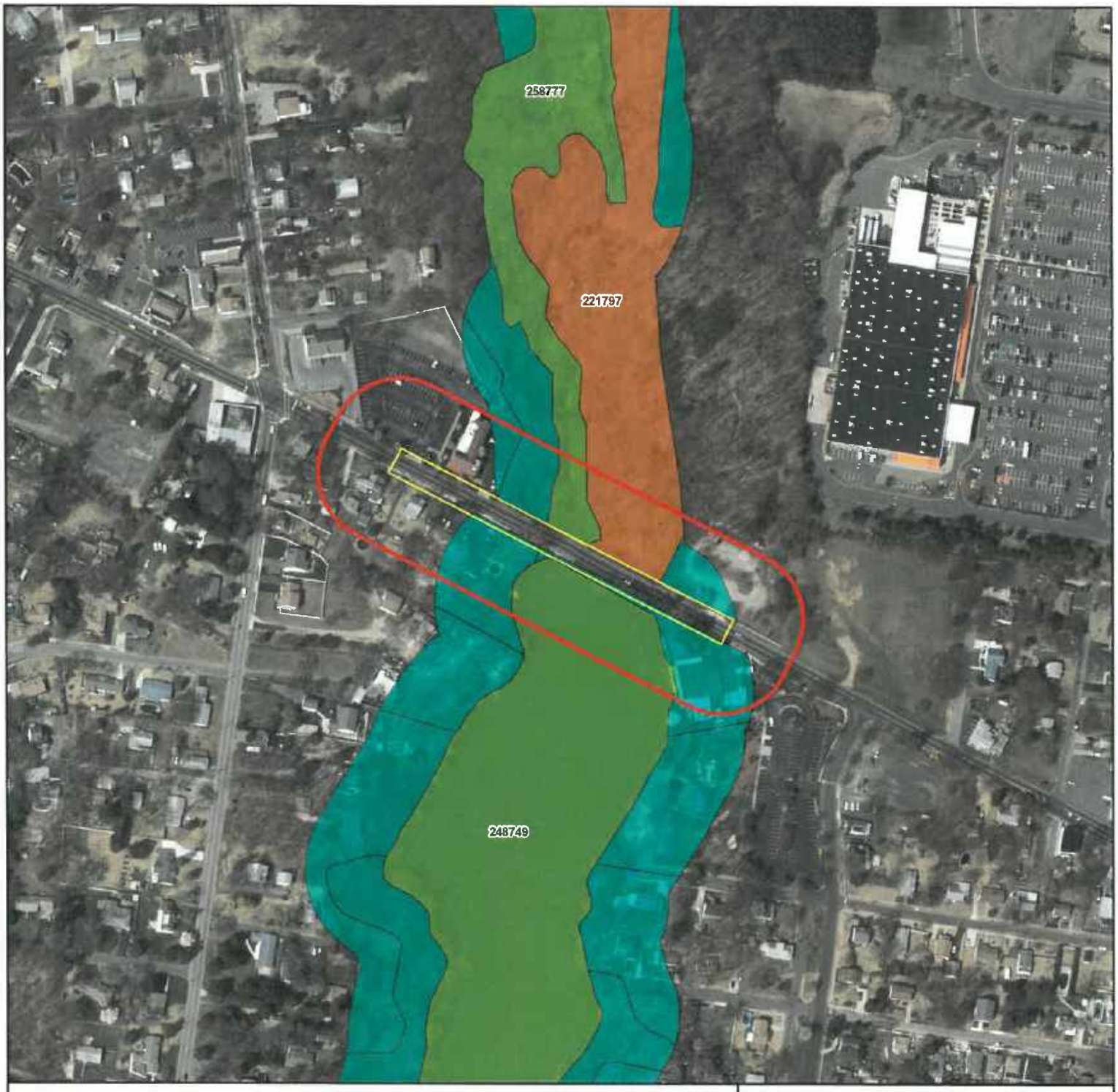
Figure 5
NJDEP Wetlands & Streams Map

Cooper Street (CR 706) Bridge
over Almonesson Creek
Deptford Township
Gloucester County, New Jersey

ASGECI Project # 4376

300
Feet

AMY S. GREENE ENVIRONMENTAL CONSULTANTS



Legend

- Study Area
- Project Area
- Rank 1 Habitat
- Rank 2 Habitat
- Rank 3 Habitat
- Rank 4 Habitat
- Rank 5 Habitat

N
W E
S

SPECIES LIST:
221797 - Bald Eagle (Foraging)
248749 & 258777 - Great Blue Heron (Foraging)

Sources:
NJDEP Species Based Habitat by Landscape Region (Version 3.3), New Jersey Department of Environmental Protection, Division of Fish and Wildlife, Endangered Non-Game Species Program, vector digital data, Division of Information Technology, Bureau of Geographic Information Systems, Trenton, NJ, May 2017.
New Jersey 2015 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey - Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, February 2016.

Figure 6
Landscape Project v3.3 Map

Cooper Street (CR 706) Bridge
over Almonesson Creek
Deptford Township
Gloucester County, New Jersey

ASGECI Project # 4376

300
Feet

AMY S. GREENE ENVIRONMENTAL CONSULTANTS.

APPENDIX B

Photographs and Descriptions

Photo A: View facing southeast of the concrete bridge wall and the concrete bridge rail which are above the spillway from Almonesson Lake. Auletto's catering is shown in distance.

Photo B: View facing south of Almonesson Lake from atop the spillway.

Photo C: View facing southwest of the Cooper Street Bridge spillway and concrete bridge wall. Almonesson Creek is in the background. Note pink wetland flag C-4 in the foreground.

Photo D: View facing southwest of the Cooper Street Bridge spillway and concrete bridge wall and Almonesson Creek.

Photo E: View facing north downstream of Cooper Street Bridge of Almonesson Creek as it enters Almonesson Park.

Photo F: View facing east of Cooper Street and the Almonesson Creek Park parking lot which is located in the northeast quadrant of the study area.

Photo G: View facing northwest of the bridge, spillway and Almonesson Creek. Filomena restaurant is shown in the distance.

Photo H View facing south of the daycare facility located in the southwest quadrant of the study area.

Photo I: View facing east of the existing vegetation located along the southern side of Cooper Street just east of the bridge. Pink wetland flag B-2 is in the foreground.

APPENDIX C

Agency Correspondence

Letter from NJ Natural Heritage Program
Dated March 5, 2019

US Fish and Wildlife Service IPAC Report
May 7, 2018

State of New Jersey
MAIL CODE 501-04
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF PARKS & FORESTRY
NEW JERSEY FOREST SERVICE
OFFICE OF NATURAL LANDS MANAGEMENT
P.O. BOX 420
TRENTON, NJ 08625-0420
Tel. (609) 984-1339 Fax (609) 984-0427

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

CATHERINE R. McCABE
Commissioner

March 5, 2019

John Pabish
Amy S. Greene Environmental Consultants, Inc.
4 Walter E. Foran Boulevard, Suite 209
Flemington, NJ 08822-4666

Re: Cooper Street (CR 706) Bridge over Almonesson Creek - ASGECI # 4376
Deptford Township, Gloucester County

Dear Mr. Pabish:

Thank you for your data request regarding rare species information for the above referenced project site.

Searches of the Natural Heritage Database and the Landscape Project (Version 3.3) are based on a representation of the boundaries of your project site in our Geographic Information System (GIS). We make every effort to accurately transfer your project bounds from the topographic map(s) submitted with the Natural Heritage Data Request Form into our Geographic Information System. We do not typically verify that your project bounds are accurate, or check them against other sources.

We have checked the Landscape Project habitat mapping and the Biotics Database for occurrences of any rare wildlife species or wildlife habitat on the referenced site. The Natural Heritage Database was searched for occurrences of rare plant species or ecological communities that may be on the project site. Please refer to Table 1 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented on site. A detailed report is provided for each category coded as 'Yes' in Table 1.

We have also checked the Landscape Project habitat mapping and Biotics Database for occurrences of rare wildlife species or wildlife habitat in the immediate vicinity (within ¼ mile) of the referenced site. Additionally, the Natural Heritage Database was checked for occurrences of rare plant species or ecological communities within ¼ mile of the site. Please refer to Table 2 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented within the immediate vicinity of the site. Detailed reports are provided for all categories coded as 'Yes' in Table 2. These reports may include species that have also been documented on the project site.

We have also checked the Landscape Project habitat mapping and Biotics Database for all occurrences of rare wildlife species or wildlife habitat within one mile of the referenced site. Please refer to Table 3 (attached) to determine if any rare wildlife species or wildlife habitat is documented within one mile of the project site. Detailed reports are provided for each category coded as 'Yes' in Table 3. These reports may include species that have also been documented on the project site.

For requests submitted as part of a Flood Hazard Area Control Act (FHACA) rule application, we report records for all rare plant species and ecological communities tracked by the Natural Heritage Program that may be on, or in the immediate vicinity of, your project site. A subset of these plant species are also covered by the FHACA rules when the records are located within one mile of the project site. One mile searches for FHACA plant species will only report precisely located occurrences for those wetland plant species identified under the FHACA regulations as being critically dependent on the watercourse. Please refer to Table 3 (attached) to determine if any precisely located rare wetland plant species covered by the FHACA rules have been documented. Detailed reports are provided for each category coded as 'Yes' in Table 3. These reports may include species that have also been documented on, or in the immediate vicinity of, the project site.

NHP File No. 19-3907571-16193

The Natural Heritage Program reviews its data periodically to identify priority sites for natural diversity in the State. Included as priority sites are some of the State's best habitats for rare and endangered species and ecological communities. Please refer to Tables 1, 2 and 3 (attached) to determine if any priority sites are located on, in the immediate vicinity, or within one mile of the project site.

A list of rare plant species and ecological communities that have been documented from the county (or counties), referenced above, can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/countylist.html. If suitable habitat is present at the project site, the species in that list have potential to be present.

Status and rank codes used in the tables and lists are defined in EXPLANATION OF CODES USED IN NATURAL HERITAGE REPORTS, which can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/nhpcodes_2010.pdf.

Beginning May 9, 2017, the Natural Heritage Program reports for wildlife species will utilize data from Landscape Project Version 3.3. If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive web application at the following URL, https://njdep.maps.arcgis.com/apps/webappviewer/index.html?id=0e6a44098c524ed99bf739953cb4d4c7, or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program at (609) 292-9400.

For additional information regarding any Federally listed plant or animal species, please contact the U.S. Fish & Wildlife Service, New Jersey Field Office at http://www.fws.gov/northeast/njfieldoffice/endangered/consultation.html.

PLEASE SEE 'CAUTIONS AND RESTRICTIONS ON NHP DATA', which can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/newcaution2008.pdf.

Thank you for consulting the Natural Heritage Program. The attached invoice details the payment due for processing this data request. Feel free to contact us again regarding any future data requests.

Sincerely,

Robert J. Cartica
Administrator

c: NHP File No. 19-3907571-16193

Table 1: On Site Data Request Search Results (6 Possible Reports)

Report Name	Included	Number of Pages
1. Possibly on Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites On Site	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat on the Project Site Based on Search of Landscape Project 3.3	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species On the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
Aves								
	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Great Blue Heron	Ardea herodias	Foraging	2	NA	Special Concern	G5	S3B,S4N

Table 2: Vicinity Data Request Search Results (6 possible reports)

Report Name	Included	Number of Pages
1. Immediate Vicinity of the Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites within the Immediate Vicinity	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat In the Immediate Vicinity of Project Site Based on Search of Landscape Project 3.3	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat In the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species In the Immediate Vicinity of the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
Aves								
	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Great Blue Heron	Ardea herodias	Foraging	2	NA	Special Concern	G5	S3B,S4N

Table 3: Within 1 Mile for FHACA Searches (6 possible reports)

Report Name	Included	Number of Pages
1. Rare Plant Species Occurrences Covered by the Flood Hazard Area Control Act Rule Within One Mile of the Project Site Based on Search of Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites within 1 mile	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat Within One Mile of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat Within One Mile of the Project Site Based on Search of Landscape Project 3.3	Yes	1 page(s) included
5. Rare Wildlife Species or Wildlife Habitat Within One Mile of the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species Within One Mile of the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

Rare Wildlife Species or Wildlife Habitat Within One Mile of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
Aves								
	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Great Blue Heron	Ardea herodias	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Red-shouldered Hawk	Buteo lineatus	Non-breeding Sighting	2	NA	Special Concern	G5	S1B,S3N
	Wood Thrush	Hylocichla mustelina	Breeding Sighting	2	NA	Special Concern	G4	S3B,S4N

Vernal Pool Habitat Within One Mile of the Project Site Based on Search of Landscape Project 3.3

Vernal Pool Habitat Type	Vernal Pool Habitat ID
Potential vernal habitat area	1039

Total number of records: 1

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Jersey Ecological Services Field Office
4 E. Jimmie Leeds Road, Suite 4
Galloway, NJ 08205
Phone: (609) 646-9310 Fax: (609) 646-0352
http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html

In Reply Refer To: May 07, 2018
Consultation Code: 05E2NJ00-2018-SLI-1013
Event Code: 05E2NJ00-2018-E-02154
Project Name: p12373 Cooper Street (CR 706) Bridge over Almonesson Creek Replacement

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species that may occur in your proposed action area and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*)

If the enclosed list indicates that any listed species may be present in your action area, please visit the New Jersey Field Office consultation web page as the next step in evaluating potential project impacts: http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html

On the New Jersey Field Office consultation web page you will find:

- habitat descriptions, survey protocols, and recommended best management practices for listed species;
- recommended procedures for submitting information to this office; and
- links to other Federal and State agencies, the Section 7 Consultation Handbook, the Service's wind energy guidelines, communication tower recommendations, the National Bald Eagle Management Guidelines, and other resources and recommendations for protecting wildlife resources.

The enclosed list may change as new information about listed species becomes available. As per Federal regulations at 50 CFR 402.12(e), the enclosed list is only valid for 90 days. Please return to the ECOS-IPaC website at regular intervals during project planning and implementation to obtain an updated species list. When using ECOS-IPaC, be careful about drawing the boundary of your Project Location. Remember that your action area under the ESA is not limited to just the footprint of the project. The action area also includes all areas that may be indirectly affected

through impacts such as noise, visual disturbance, erosion, sedimentation, hydrologic change, chemical exposure, reduced availability or access to food resources, barriers to movement, increased human intrusions or access, and all areas affected by reasonably forseeable future that would not occur without ("but for") the project that is currently being proposed.

We appreciate your concern for threatened and endangered species. The Service encourages Federal and non-Federal project proponents to consider listed, proposed, and candidate species early in the planning process. Feel free to contact this office if you would like more information or assistance evaluating potential project impacts to federally listed species or other wildlife resources. Please include the Consultation Tracking Number in the header of this letter with any correspondence about your project.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New Jersey Ecological Services Field Office
4 E. Jimmie Leeds Road, Suite 4
Galloway, NJ 08205
(609) 646-9310

Project Summary

Consultation Code: 05E2NJ00-2018-SLI-1013

Event Code: 05E2NJ00-2018-E-02154

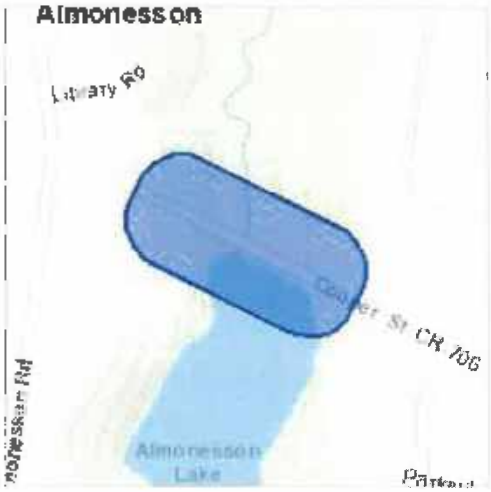
Project Name: p12373 Cooper Street (CR 706) Bridge over Almonesson Creek Replacement

Project Type: BRIDGE CONSTRUCTION / MAINTENANCE

Project Description: Bridge replacement

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/39.81806892010303N75.09645776818377W



Counties: Gloucester, NJ

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Flowering Plants

NAME	STATUS
Swamp Pink *Helonias bullata* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4333	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

REFUGE INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31
Canada Warbler *Cardellina canadensis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10

NAME	BREEDING SEASON
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum

probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

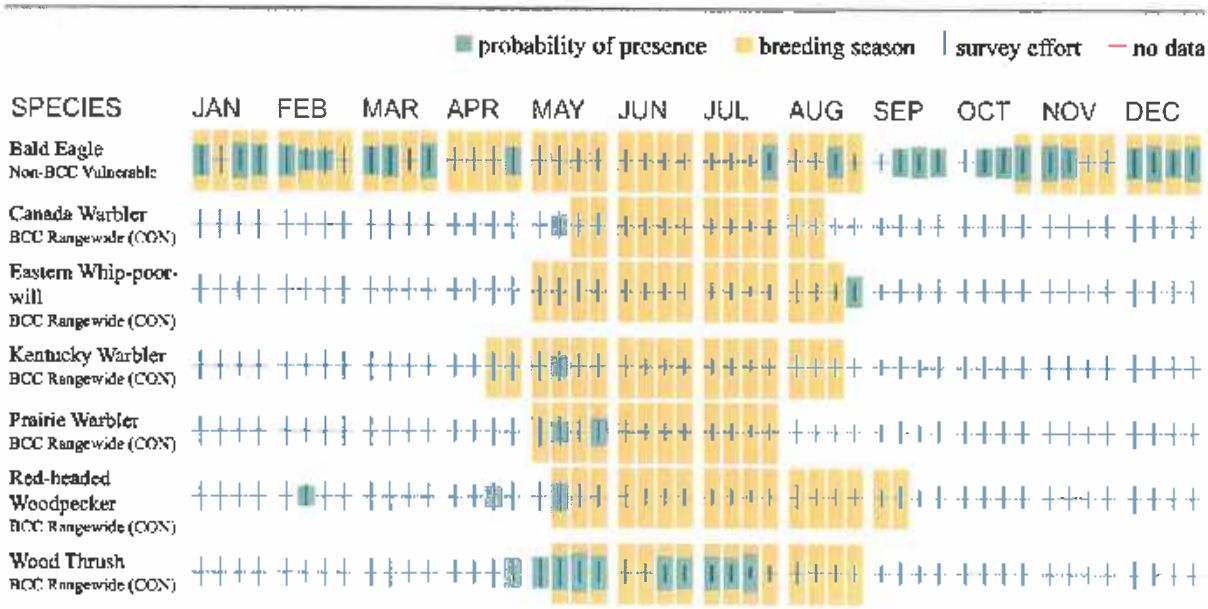
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.
Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical

Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1C

FRESHWATER POND

- PUBHh

APPENDIX D

Hazardous Waste Screening Study
Cooper Street Bridge
Bridge 3K-3, CR 706
Deptford Township, Gloucester County, NJ

Prepared By
French & Parrello Associates
February 2019

APPENDIX E

USEPA EJSCREEN Report (Version 2018)

Cooper Street Bridge Over Almonesson Creek at Almonesson Lake (Bridge 3K3), Deptford Township, Gloucester County, NJ

Save as PDF

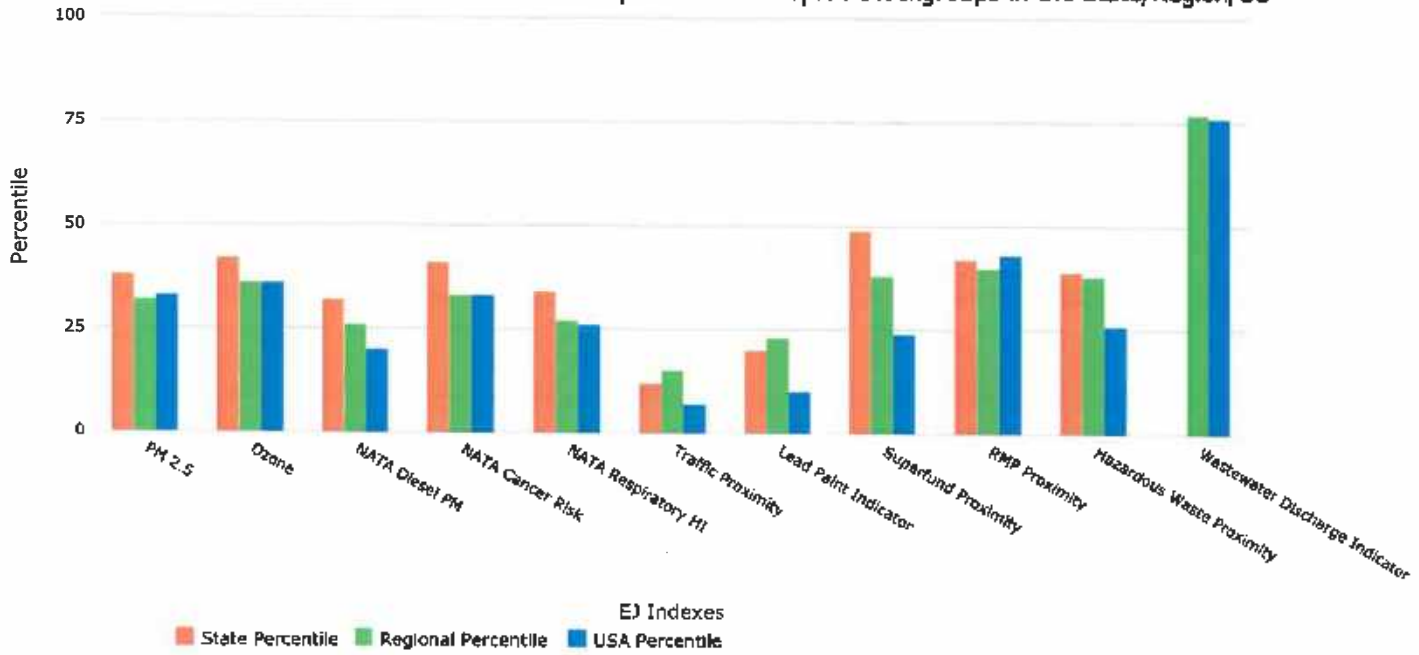
EJSCREEN Report (Version 2018)

.25 mile Ring around the Corridor
NEW JERSEY, EPA Region 2
Approximate Population: 277
Input Area (sq. miles): 0.28

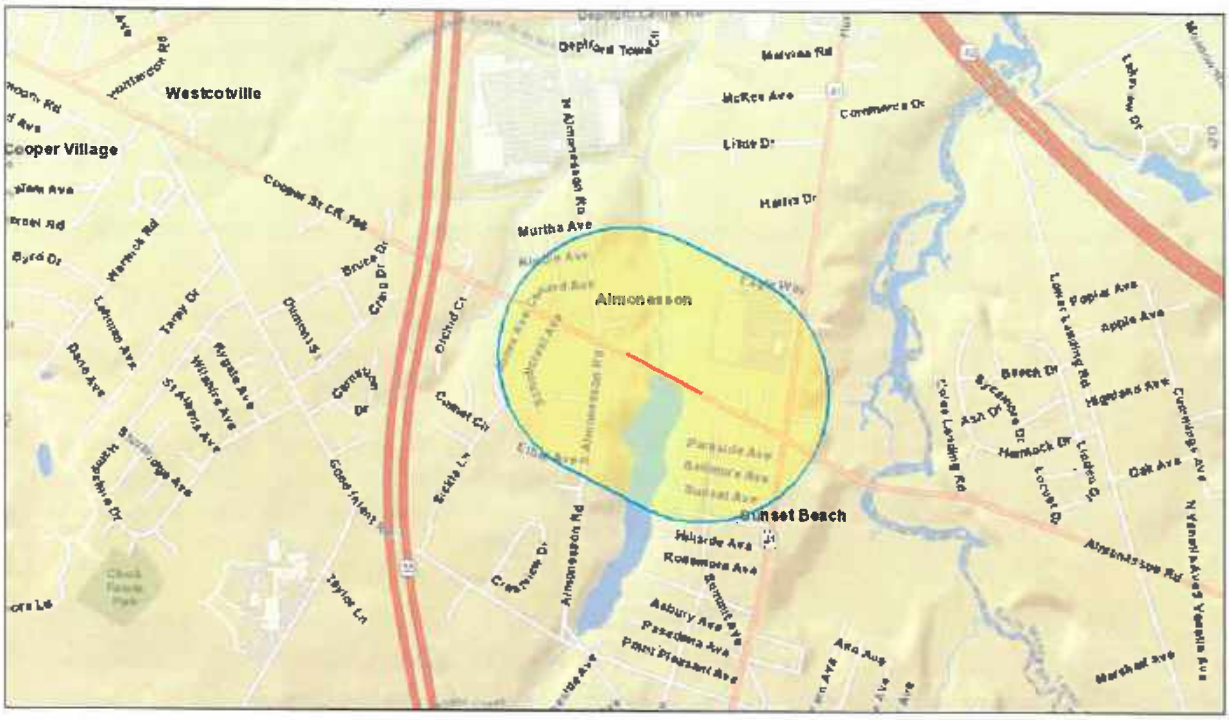
Cooper Street Bridge Over Almonesson Creek at Almonesson Lake (Bridge 3-K-3), Deptford Township, Gloucester County, NJ

Selected Variables	Percentile in State	Percentile in EPA Region	Percentile in USA
EJ Indexes			
EJ Index for Particulate Matter (PM 2.5)	38	32	33
EJ Index for Ozone	42	36	36
EJ Index for NATA* Diesel PM	32	26	20
EJ Index for NATA* Air Toxics Cancer Risk	41	33	33
EJ Index for NATA* Respiratory Hazard Index	34	27	26
EJ Index for Traffic Proximity and Volume	12	15	7
EJ Index for Lead Paint Indicator	20	23	10
EJ Index for Superfund Proximity	49	38	24
EJ Index for RMP Proximity	42	40	43
EJ Index for Hazardous Waste Proximity	39	38	26
EJ Index for Wastewater Discharge Indicator	N/A	77	76

EJ Index for the Selected Area Compared to All People's Blockgroups in the State/Region/US



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.



February 28, 2019

Buffer Area

Digitized Line

1:18,056

0 0.15 0.3 0.6 mi

0 0.25 0.5 1 km

Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

Selected Variables	Value	State Average	Percentile in State	EPA Region Average	Percentile in EPA Region	USA Average	Percentile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m³)	10.9	9.43	95	9.21	98	9.53	76
Ozone (ppb)	44.5	43.6	68	41.9	88	42.5	72
NATA* Diesel PM (µg/m³)	1.21	1.31	57	1.88	<50th	0.938	70-80th
NATA* Air Toxics Cancer Risk (risk per MM)	42	42	49	44	<50th	40	50-60th
NATA* Respiratory Hazard Index	2.2	2.1	62	2.4	50-60th	1.8	70-80th
Traffic Proximity and Volume (daily traffic count/distance to road)	750	660	77	1800	69	600	83
Lead Paint Indicator (% pre-1960s housing)	0.61	0.41	70	0.51	57	0.29	82
Superfund Proximity (site count/km distance)	0.08	0.43	16	0.28	29	0.12	65
RMP Proximity (facility count/km distance)	0.096	0.71	32	0.57	25	0.72	23
Hazardous Waste Proximity (facility count/km distance)	0.44	4.9	30	34	24	4.3	49
Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)	0	0.66	N/A	1.1	49	30	40
Demographic Indicators							
Demographic Index	17%	34%	30	37%	28	36%	23
Minority Population	9%	43%	12	44%	19	38%	21
Low Income Population	25%	25%	61	30%	50	34%	40
Linguistically Isolated Population	0%	7%	30	8%	32	4%	44
Population with Less Than High School Education	10%	11%	59	13%	50	13%	50
Population under Age 5	1%	6%	9	6%	9	6%	8
Population over Age 64	22%	15%	86	15%	85	14%	85

*The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not

provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

EJSCREEN Report (Version 2018)

.25 mile Ring around the Corridor, NEW JERSEY, EPA Region 2

Approximate Population: 277

Input Area (sq. miles): 0.28

Bridge Over Almonesson Creek at Almonesson Lake (Bridge 3-K-3), Deptford Township, Glouces

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	38	32	33
EJ Index for Ozone	42	36	36
EJ Index for NATA* Diesel PM	32	26	20
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EJ Index for Traffic Proximity and Volume	12	15	7
EJ Index for Lead Paint Indicator	20	23	10
EJ Index for Superfund Proximity	49	38	24
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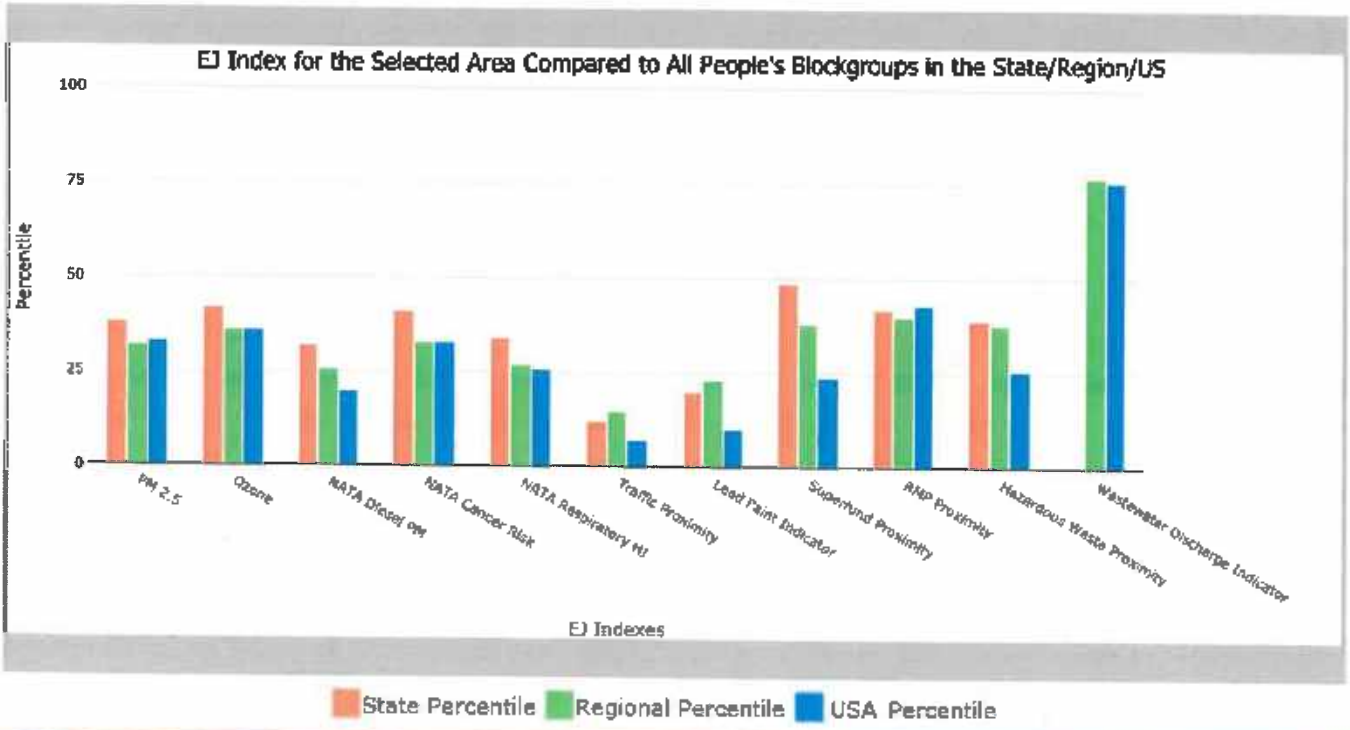

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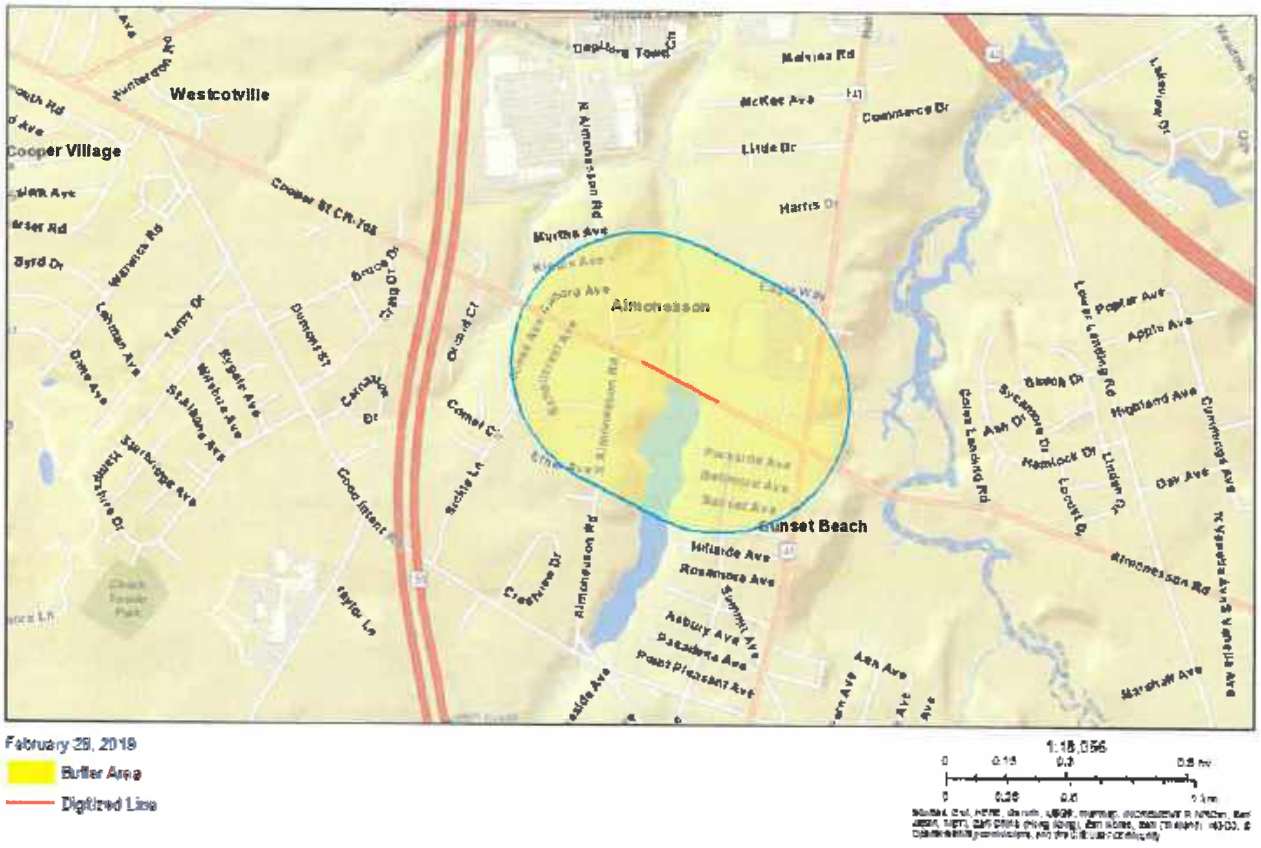

Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJSCREEN Report (Version 2018)

.25 mile Ring around the Corridor, NEW JERSEY, EPA Region 2

Approximate Population: 277

Input Area (sq. miles): 0.28

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Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m³)	10.9	9.43	95	9.21	98	9.53	76
Ozone (ppb)	44.5	43.6	68	41.9	88	42.5	72
NATA* Diesel PM (µg/m³)	1.21	1.31	57	1.88	<50th	0.938	70-80th
NATA* Cancer Risk (lifetime risk per million)	42	42	49	44	<50th	40	50-60th
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Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)	0	0.66	N/A	1.1	49	30	40
Demographic Indicators							
Demographic Index	17%	34%	30	37%	28	36%	23
Minority Population	9%	43%	12	44%	18	38%	21
Low Income Population	25%	25%	61	30%	50	34%	40
Linguistically Isolated Population	0%	7%	30	8%	32	4%	44
Population With Less Than High School Education	10%	11%	59	13%	50	13%	50
Population Under 5 years of age	1%	6%	9	6%	9	6%	8
Population over 64 years of age	22%	15%	86	15%	85	14%	85

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

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EJSCREEN Census 2010 Summary Report

Location: User-specified linear location
Ring (buffer): .25-mile radius
Description: Cooper Street Bridge Over Almonesson Creek at Almonesson Lake (Bridge 3-K-3), Deptford Township, Gloucester C

Summary	Census 2010
Population	475
Population Density (per sq. mile)	1,499
Minority Population	66
% Minority	14%
Households	189
Housing Units	198
Land Area (sq. miles)	0.32
% Land Area	97%
Water Area (sq. miles)	0.01
% Water Area	3%

Population by Race	Number	Percent
Total	475	-------
Population Reporting One Race	468	98%
White	428	90%
Black	17	4%
American Indian	2	0%
Asian	10	2%
Pacific Islander	0	0%
Some Other Race	10	2%
Population Reporting Two or More Races	7	2%
Total Hispanic Population	34	7%
Total Non-Hispanic Population	441	93%
White Alone	409	86%
Black Alone	17	4%
American Indian Alone	1	0%
Non-Hispanic Asian Alone	10	2%
Pacific Islander Alone	0	0%
Other Race Alone	0	0%
Two or More Races Alone	5	1%

Population by Sex	Number	Percent
Male	232	49%
Female	243	51%

Population by Age	Number	Percent
Age 0-4	23	5%
Age 0-17	98	21%
Age 18+	377	79%
Age 65+	65	14%

Households by Tenure	Number	Percent
Total	189	
Owner Occupied	165	88%
Renter Occupied	23	12%

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, Census 2010 Summary File 1.

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): .25-mile radius
Description: Cooper Street Bridge Over Almonesson Creek at Almonesson Lake (Bridge 3-K-3), Deptford Township, Gloucester County, NJ

Summary of ACS Estimates	2012 - 2016
Population	277
Population Density (per sq. mile)	879
Minority Population	25
% Minority	9%
Households	148
Housing Units	162
Housing Units Built Before 1950	43
Per Capita Income	31,455
Land Area (sq. miles) (Source: SF1)	0.31
% Land Area	97%
Water Area (sq. miles) (Source: SF1)	0.01
% Water Area	3%

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	277	100%	204
Population Reporting One Race	267	97%	312
White	251	91%	197
Black	8	3%	33
American Indian	0	0%	12
Asian	8	3%	46
Pacific Islander	0	0%	12
Some Other Race	0	0%	12
Population Reporting Two or More Races	9	3%	52
Total Hispanic Population	9	3%	52
Total Non-Hispanic Population	267		
White Alone	251	91%	197
Black Alone	8	3%	33
American Indian Alone	0	0%	12
Non-Hispanic Asian Alone	8	3%	46
Pacific Islander Alone	0	0%	12
Other Race Alone	0	0%	12
Two or More Races Alone	0	0%	12
Population by Sex			
Male	143	52%	144
Female	133	48%	111
Population by Age			
Age 0-4	4	1%	25
Age 0-17	39	14%	72
Age 18+	237	86%	145
Age 65+	61	22%	65

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016.

EJSCREEN ACS Summary Report

Location: User-specified linear location

Ring (buffer): .25-mile radius

Description: Cooper Street Bridge Over Almonesson Creek at Almonesson Lake (Bridge 3-K-3), Deptford Township, Gloucester County

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	222	100%	146
Less than 9th Grade	6	3%	25
9th - 12th Grade, No Diploma	17	8%	37
High School Graduate	73	33%	75
Some College, No Degree	91	41%	101
Associate Degree	31	14%	58
Bachelor's Degree or more	35	16%	51
Population Age 5+ Years by Ability to Speak English			
Total	272	100%	202
Speak only English	255	93%	167
Non-English at Home[1+2+3+4]	18	7%	45
[1]Speak English "very well"	11	4%	36
[2]Speak English "well"	0	0%	12
[3]Speak English "not well"	7	3%	31
[4]Speak English "not at all"	0	0%	12
[3+4]Speak English "less than well"	7	3%	31
[2+3+4]Speak English "less than very well"	7	3%	31
Linguistically Isolated Households*			
Total	0	0%	12
Speak Spanish	0	0%	12
Speak Other Indo-European Languages	0	0%	12
Speak Asian-Pacific Island Languages	0	0%	12
Speak Other Languages	0	0%	12
Households by Household Income			
Household Income Base	148	100%	84
< $15,000	6	4%	25
$15,000 - $25,000	29	20%	51
$25,000 - $50,000	45	30%	68
$50,000 - $75,000	28	19%	41
$75,000 +	40	27%	54
Occupied Housing Units by Tenure			
Total	148	100%	84
Owner Occupied	130	87%	80
Renter Occupied	19	13%	37
Employed Population Age 16+ Years			
Total	241	100%	165
In Labor Force	138	57%	130
Civilian Unemployed in Labor Force	3	1%	15
Not In Labor Force	103	43%	91

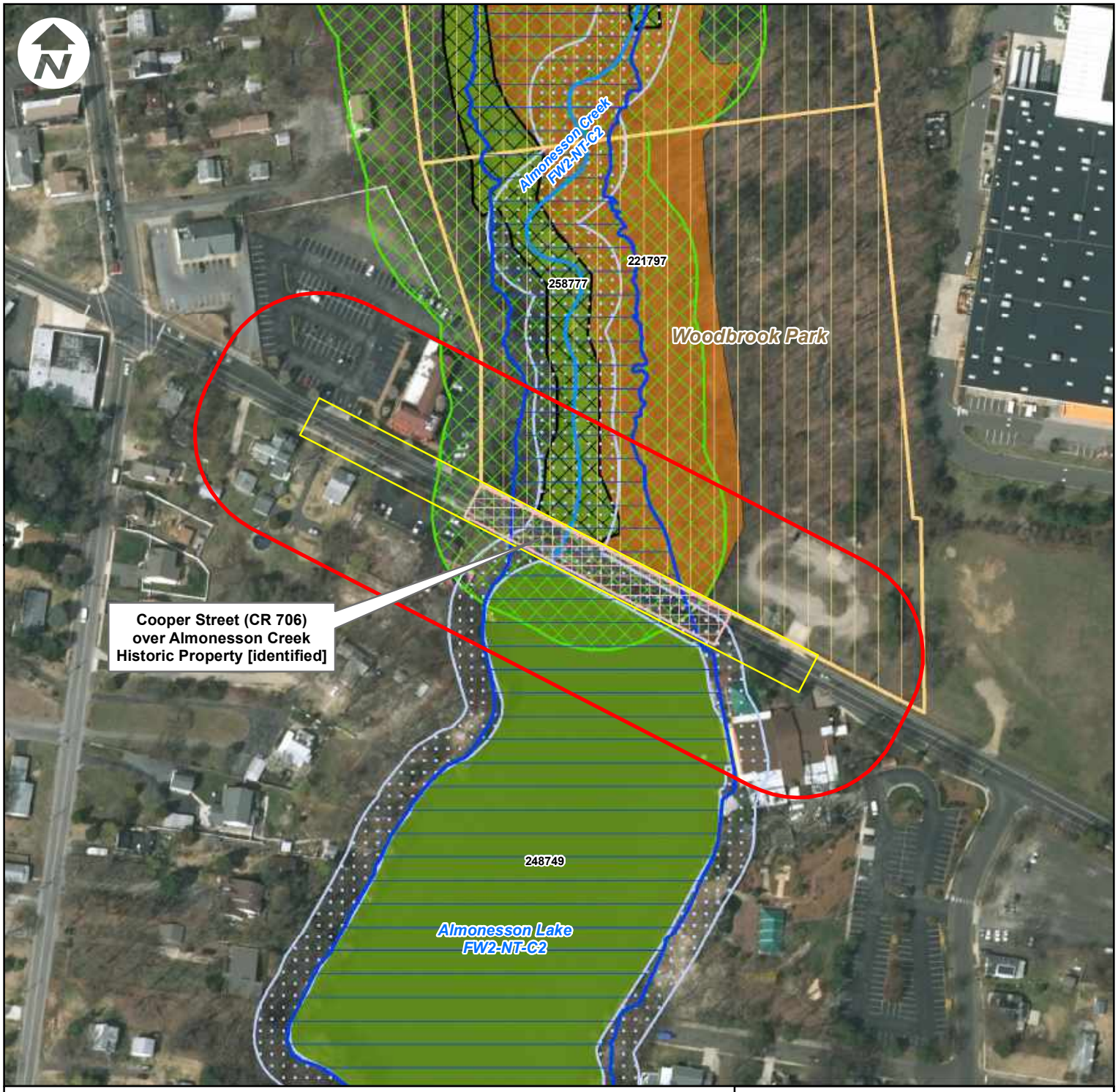
Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS)
*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): .25-mile radius
Description: Cooper Street Bridge Over Almonesson Creek at Almonesson Lake (Bridge 3-K-3), Deptford Township, Gloucester County

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	1,389	100%	295
English	1,151	83%	325
Spanish	82	6%	251
French	11	1%	63
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	3	0%	14
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	31	2%	79
Chinese	36	3%	145
Japanese	N/A	N/A	N/A
Korean	0	0%	17
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	0	0%	17
Other Asian	4	0%	25
Tagalog	24	2%	69
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	25	2%	123
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	0	0%	17
Total Non-English	238	17%	439

Data Note: Detail may not sum to totals due to rounding. Hispanic popultion can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016.
*Population by Language Spoken at Home is available at the census tract summary level and up.



Legend

- Study Area
- Project Area
- Historic Property
- Stream
- 50-foot Riparian Buffer
- 100-year FEMA Floodplain
- NJDEP Wetlands (from LULC)
- 150-foot Wetland Transition Area
- Landscape Project Rank 2 Habitat
- Landscape Project Rank 4 Habitat
- Municipal Open Space [also listed in Green Acres ROSI database]

SPECIES LIST:
221797 - Bald Eagle (Foraging)
248749 & 258777 - Great Blue Heron (Foraging)

Sources:
Federal Emergency Management Agency (FEMA) County Flood Hazard Layer, a compilation of all Digital Flood Insurance Rate Map databases for Gloucester County, NJ, distributed by FEMA Map Service Center, Washington DC, August 2016.
This map was developed using the most recent New Jersey Department of Environmental Protection Geographic Information System digital data (as of February 2019), but this secondary product has not been verified by NJDEP and is not State-authorized.

Environmental Constraints Map

Cooper Street (CR 706) Bridge
over Almonesson Creek
Deptford Township
Gloucester County, New Jersey

ASGECI Project # 4376

200
Feet

AMY S. GREENE ENVIRONMENTAL CONSULTANTS

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April 8, 2019
Revised March 6, 2020

Mr. William Pyontek, PE
Project Manager
French & Parrello Associates
1800 Route 34, Suite 101
Wall, NJ 07719

By e-mail

Re: Cultural Resources Screening Report and Intensive-Level Architectural Survey
Cooper Street (CR 706) Bridge over Almonesson Creek
Deptford Township, Gloucester County, New Jersey

Dear Mr. Pyontek,

Please accept this letter report and attachments as Hunter Research's Cultural Resources Screening Report and Intensive-Level Architectural Survey of the Cooper Street (CR 706) Bridge over Almonesson Creek project area. These materials have been prepared in connection with the proposed Delaware Valley Regional Planning Commission (DVRPC) Local Concept Development (LCD) Study.

It is our understanding that the LCD Study is developing alternatives to address the condition of the bridge and its associated dam. Alternatives under evaluation include replacement of the bridge, consideration of rehabilitating and widening the existing bridge, and related activities to bring the dam and embankment into compliance with the New Jersey Department of Environmental Protection (NJDEP) dam safety standards.

Introduction

The New Jersey Historic Preservation Office (NJHPO) reviews projects for their effects on archaeological and historic architectural resources when federal funding, licensing, or permitting is involved under Section 106 of the National Historic Preservation Act. The NJHPO also reviews projects requiring Freshwater Wetlands, Waterfront Development, Upland Development, Coastal Area Facility Review Act (CAFRA), and Highlands Preservation Area Approval permits issued by the State of New Jersey Department of Environmental Protection's Division of Land Use Regulation (NJDEP-DLUR).

Per the approved DVRPC scope-of-work at the LCD phase, Hunter Research was requested to prepare two related work products: 1) a Cultural Resources Screening Report and 2) Intensive-Level Architectural Survey forms.

Hunter Research, Inc. Historic Resource Consultants 120 West State Street, Trenton NJ 08608-1185 609/695-0122 609/695-0147 Fax
hri@hunterresearch.com www.hunterresearch.com
Member of the American Cultural Resources Association

A Cultural Resources Screening Report is a professional assessment of compliance issues that could impact the proposed project if any of the above listed NJHPO reviews are found to apply. The screening is a preliminary assessment intended to progress project planning at the LCD Study phase. It is not a full Phase I Cultural Resources Survey prepared in accordance with NJHPO guidelines and is not intended for submittal to the NJHPO as such.

Attachments to this screening report and survey include:

- Attachment A: Project Location Map and Preliminary Area of Potential Effects (APE)
- Attachment B: Historic Maps
- Attachment C: Current Site Condition Photographs and Key Map
- Attachment D: Intensive-Level Architectural Survey Forms

Intensive-Level architectural Survey Forms (Attachment D) were prepared to NJHPO *Guidelines for Architectural Survey.* They provide a professional assessment of the potential eligibility of above-ground resources in the project area's APE, which in this instance was defined as the bridge, dam and those properties adjacent to or within the visual sight lines of the project (Attachment A).

Historical Background

Cooper Street (CR 706) Bridge over Almonesson Creek is situated in Almonesson, a village now enveloped by suburban Deptford Township. This village developed around an inn and mill with origins *circa* 1750 to 1800 and was initially referred to as Jenningsville. Around this time a bridge and dam were constructed across Almonesson Creek more-or-less on the alignment of the current concrete arch bridge and earthen dam, which were constructed in 1926 by Gloucester County to replace earlier wood structures.

The oldest property in continuous use along Cooper Street in the vicinity of the bridge is the Almonesson Inn (currently Filomena's Lakeview Restaurant at 1738 Cooper Street). In his *Notes on Old Gloucester County*, historian Frank H. Stewart noted that Joseph Tatem received a license for his house to serve as an inn in Deptford Township in 1767 (Stewart 1917:63). Although it has been speculated that the present restaurant may incorporate Tatem's house, it seems more likely that the inn's historic gambrel-roofed core dates to the second quarter of the 19th century when Almonesson expanded as a mill village. The building has undergone several late-20th-century and early-21st-century enlargements and modifications. Please see the intensive-level survey form in Attachment D for fuller assessment of the inn.

A former site of a grist and textile mill, on a currently wooded and vacant lot, is at the northwest quadrant of the current bridge and dam. A grist mill was established "as early as 1800" by Daniel Lamb who also used the mill pond for ice harvesting in winter. Lamb reportedly removed (or more likely converted) the grist mill to a cotton mill in 1830. Lamb also built several dwellings in Almonesson village for his workers. A house presently located across from the former mill site (1723-1725 Cooper Street) is judged to have been built *circa* 1830 as one of these workers' houses. Lamb's cotton mill was reportedly destroyed in 1842. Joseph Conrow then purchased the property and constructed another grist mill in 1854 or 1855, which was removed (or perhaps once again updated) in 1873 by its next owner G.D.

Carman. The village was formally named Almonesson with the establishment of a post office at the inn in 1872-73. The Carman mill was later owned by Joseph Rawl and operated by Nathan Jennings but had gone out of business by the last decade of the 19th century (Cushing and Sheppard 1883: 198; Scholding 2003: 7-8).

All of these 19th-century industrial enterprises drew water from a manmade reservoir, usually referred to as Almonesson Lake, formed by a dam across Almonesson Creek. This dam is consistently shown by 19th-century maps to be just to the southeast and downstream of the mill, along or very near the present alignment of Cooper Street. The street was by the early 19th century crossing the creek abreast the dam and bridging its spillway, much as it does today. The current earthen dam and concrete arch bridge of 1926 are a direct successor of these earlier structures. Historic maps and aerial photographs illustrate the development of the project area (Appendix B, Attachments B.1 to B.3) (Stansbie 1849; Lake 1861; Everts & Stewart 1876).

Almonesson Lake became a focal point for a local amusement park, known as Almonesson Lake Park, which was established immediately northeast of the bridge and dam in 1874. A trolley that began operating in 1894 ran between Woodbury and Almonesson brought visitors to the park and a boardwalk along the lake. The park continued to develop and gain local popularity throughout the early 20th century. A subdivision plan for Lakeview Heights, filed with the County in 1914, illustrates the proposed development of the land surrounding the Almonesson Lake by developer Charles Chrstos [sic] (Attachment B.4). This drawing places the bridge and dam on a curved horizontal alignment, which superimposed on the present-day alignment of Cooper Street indicates the dam and road were some 50' to 150' downstream of the present-day alignment, which was established when the current arch bridge and dam were constructed in 1926 (Attachment B.5). Several structures, including a merry-go-round, a bowling alley and a roller skating rink, were constructed at the eastern quadrants of the dam. In 1920, a second dam was constructed about 300' downstream of the present dam carrying Cooper Street. This dam impounded water to create a large rectangular swimming pool visible in aerial photographs. The park and beaches were open to the public until early 1970s when the amusement park structures were no longer functional and the beaches closed (Scholding 2003).

The area surrounding the lake began to develop into a suburban, mixed-use neighborhood during the 1950s and 1960s. Residential developments with curvilinear residential streets were built along Almonesson Lake to the south of Cooper Street. Aerial photographs also show the gradual removal of buildings associated with the former amusement park and the decline of the public beaches at Almonesson Lake. By the mid-1970s, the amusement and recreational facilities and landscape associated with the lake were largely removed.

<u>Source Consulted</u>

1. New Jersey Historic Preservation Office library, maps and files:

   There are no designated historic properties within the project APE or its visual area of potential effect.

   Designated Eligible/Listed Historic or Archaeological Properties within One Mile of Project Site:

- Upton Log Cabin – NJHPO Opinion 8/13/2015; 0.50 miles from project site; late 17th- to early 18th-century log cabin dwelling
- Robert Marshall House – NR 1/16/2008; 0.78 miles from project site; late 18th-century, Federal-style dwelling with *circa* 1810 modifications
- Cooper-Moore House – NJHPO Opinion 9/14/1982; 0.87 miles from project site; 2-story frame farmhouse constructed in 1735 on Elm Avenue and moved to current location in 1951
- Prehistoric Site (28-Gl-469) – see description from New Jersey State Museum below

Other Surveyed Historic Architectural Properties within One Mile of Project Site:

- Cooper Street (CR 706) Bridge over Almonesson Creek – project site; reinforced concrete arch bridge constructed in 1926 with a small upstream dam; identified as "not eligible" in NJDOT's Historic Bridge Inventory (A.G. Lichtenstein & Associates, Inc. 1995)
- Pierce-Jaggard House – 0.29 miles from project site; 18th-century dwelling with an early 19th-century addition (GCCRS #0802-02)
- Board of Education Administration Building – 0.70 miles from the project site; Colonial Revival-style institutional building (GCCRS #0802-08)

Other Surveyed Archaeological Resources within One Mile of Project Site:

All surveyed archaeological resources within one mile of the project site are documented by the New Jersey State Museum (see below).

Cultural Resource Studies Performed within One Mile of Project Site:

- Camden County, New Jersey, Waste Water Management and Facilities Study, Preliminary Inventory of Natural and Socio-Economic Resources, Jack McCormick & Associates, Inc. (1974) – resources inventoried during county-wide survey in conjunction with waste water management facility development; 9 resources identified in Gloucester Township; none are within a 1-mile radius of the project site
- Cultural Resources Inventory, Proposed Route 55 Freeway Right-of-Way "S2" Alignment, Gloucester County, New Jersey, Environmental Assessment Council (1977) – survey along proposed Route 55 corridor 0.48 miles northwest of the project site; identified a mid-19th century midden, a 20th-century midden, a prehistoric site and the Cooper-Moore House
- Cultural Resources Survey, Delaware Basin, District I, Camden County, New Jersey, Stage IA Update and Stage IB, Historic Conservation and Interpretation, Inc. (1980) – survey performed along proposed municipal utility lines that passes 0.93 miles southeast of the project site; a historic farmstead and two prehistoric sites were identified; none are within a 1-mile radius of the project site
- Phase I Cultural Resource Survey, Alternate 8 – Route 55, Gloucester County, New Jersey, Environmental Assessment Council (1980) – survey along proposed Route 55 corridor 0.85 miles southwest of the project site that documented the Cooper-Moore House
- An Archaeological Survey for Route 41, Sections 1A and 2A and Route 42, Section 14M, Deptford Township, Gloucester County, New Jersey, Bureau of Environmental Analysis, New Jersey Department of Transportation (1985) – survey documented three archaeological

sites (two prehistoric and one historic) that were all determined eligible for NR listing; none are within a 1-mile radius of the project site

- Report of Archaeological Investigations of Proposed New Postal Facility, Deptford Township, Gloucester County, New Jersey, R. Alan Mounier (1989) – survey conducted at Block 203, Lot 7 between Route 41 and Big Timber Creek; a prehistoric site was identified within the project site boundaries, approximately 0.62 miles from the current project site
- Phase I and II Archaeological Surveys at the Proposed Timber Creek Shopping Center, Deptford Township, Gloucester County, New Jersey, Hunter Research, Inc. (1996) – survey conducted approximately 0.48 miles from the current project site for the proposed Timber Creek Shopping Center; two ineligible loci of prehistoric material were found with late-19th and early-20th century artifacts
- Historic Architectural Resources and Phase IA Archaeological Assessment, South Jersey – Routes 55/42/676 Bus Rapid Transit, City of Philadelphia, Pennsylvania, City of Camden, Gloucester and Winslow Townships, Camden County and Deptford Township, Gloucester County, New Jersey, AECOM (2014) – survey conducted in advance of the development of Bus Rapid Transit project in South Jersey; survey found 12 previously identified NR-listed or eligible resources and identified an additional 11 resources in the APE; none are within a 1-mile radius of the current project site
- Phase I Archaeological Survey of a Proposed Commercial Development Project, Block 199, Lot 24, Deptford Township, Gloucester County, New Jersey, Dovetail Cultural Resource Group (2018) – survey conducted approximately 0.89 miles from the current project site prior to commercial development; prehistoric site (28-Gl-469) found in survey area

2. New Jersey State Museum maps and files:

There are no documented prehistoric archaeological sites within the project site limits.

Archaeological Sites within One Mile of Project Site:

- Big Timber Creek [Site 28-Gl-371] – 0.65 miles from project site; a Late Woodland Period prehistoric site found in 1996
- Almonesson Tributary South [Site 28-Gl-140] – 0.76 miles from project site; a prehistoric hunting/foraging site from the Archaic/Woodland Period found in 1983
- Almonesson Tributary North [Site 28-Gl-138] – 0.82 miles from project site; a prehistoric hunting/foraging site from the Archaic Period found in 1983
- Deptford P.O. [Site 28-Gl-213] – 0.83 miles from project site; a Late Archaic-Late Woodland Period prehistoric site with a mid-19th century historic house site found in 1989
- Almonesson Tributary West [Site 28-Gl-139] – 0.86 miles from project site; a prehistoric hunting/foraging site from the Archaic/Woodland Period found in 1983
- Glendora West [Site 28-Gl-196] – 0.88 miles from project site; a prehistoric site with unknown cultural affiliations
- Deptford [Site 28-Gl-277] – 0.88 miles from project site; a Late Archaic/Early Woodland Period prehistoric site found in 1994
- Unnamed Site [Site 28-Gl-469] – 0.89 miles from project site; a Woodland Period camp site found in 2018

3. In-house and Online Research Data (historic maps, aerials and published sources):

Cartographic Sources

- *1828 Gordon Map* – Almonesson Creek and Lake shown with skewed street carried over bodies of water
- *1833 Gordon Map* – Almonesson Creek shown with skewed street carried over creek
- *1849 Stansbie, Keily, Rea & Smith Map* – Almonesson Creek and Lake shown with street carried over bodies of water; J. Conroe's Grist Mill marked adjacent to northwest corner of project site; Almonesson Factory marked along same street as grist mill (now Cooper Street)
- *1861 Lake and Beers Map* – Almonesson Creek and Lake shown as Jenningsville (later Almonesson) with street carried over bodies of water; grist mill marked on northwest corner of project site adjacent to creek with mill race visible; neighboring property to the northwest of the mill owned by C. Murphy (current site of 1738 Cooper Street); properties on south side of street owned by J. Huling (current site of 1709 and 1723-1725 Cooper Street); road along west of Almonesson Lake (now Almonesson Road) connected with road crossing south of lake (now Good Intent Road)
- *1869 Lake and Beers Map* – same details as previous 1861 map
- *1872 Beers Map* – Almonesson Creek and Lake shown with street carried over bodies of water; grist mill marked on northwest corner of project site adjacent to creek
- *1876 Everts & Stewart Map* – Almonesson Creek and Lake shown with street carried over bodies of water; area now labeled Almonesson; grist mill site no longer marked as such; G.D. Carman owned property northwest of mill site (current site of 1738 Cooper Street); four dwellings along south side of road owned by G. Cattell, S. Peacock, W. Eastlack and A. Barber (current sites of 1709, 1723-1725, 1731 and 1737 Cooper Street)
- *1877 Hopkins Map* – Almonesson Creek and Lake shown with street carried over bodies of water; one structure marked on north side of street between current Almonesson Road and creek; area labeled as Jenningsville
- *1913 Farm Journal* – Almonesson Creek shown with street carried over creek; an interurban electric line is visible along the south side of the current Good Intent Road south of Almonesson Lake
- *1914 Plan of Lots of Lakeview Heights, situate at Almonesson, Dept. Twp. Gloucester Co., N.J.* – Almonesson Lake shown with dam and bridge on a curved alignment downstream of the present-day alignment
- *1930 Aerial* (NJ GeoWeb) – Almonesson Creek and Lake shown with street carried over lake; amusement park structures visible immediately northeast of the project site; body of water on downstream side of bridge also visible; structure northwest of project site visible (current site of 1738 Cooper Street)
- *1931 Aerial* – similar landscape to that shown in 1930 aerial
- *1940 Aerial* – similar landscape to that shown in 1930 aerial; more defined residential streets along eastern and western sides of Almonesson Lake
- *1951, 1956 Aerials* – more dense development on the eastern and western sides of Almonesson Lake; vegetation infilling north of Cooper Street (CR 706) over Almonesson Creek
- *1963 Aerial* – curvilinear development northwest of Cooper Street (CR 706) over Almonesson Creek established; thick vegetation north of Cooper Street along Almonesson Creek

- *1965, 1970 Aerials* – similar landscape to that shown in 1963 aerial
- *1981 Aerial* – amusement park structures removed; beaches along lake no longer visible; dense residential development on all sides of lake; beginnings of commercial development northwest of the project site
- *1995 Aerial* – parking lot created for Almonesson Creek Park; similar landscape to that shown in 1981 aerial
- *2002 Aerial* – large-scale commercial development northwest of the project site; similar residential landscape to that shown in 1995 aerial
- *2006, 2007, 2008, 2010, 2012, 2013 Aerials* – similar landscape to that shown in 2002 aerial

Published Sources

- *History of the Counties of Gloucester, Salem, and Cumberland, New Jersey, with Biographical Sketches of their Prominent Citizens*, Thomas Cushing and Charles E. Sheppard (Philadelphia: Everts & Peck, 1883) – This text served to supplement the history of the project site and the properties surveyed within the APE.
- *Notes on Old Gloucester County, New Jersey: Historical Records Published by The New Jersey Society of Pennsylvania*, Frank H. Stewart (Camden, NJ: Sinnickson Chew & Sons Company, 1917) – This text served to supplement the history of the project site and the properties surveyed within the APE.
- *Images of America: Deptford Township*, Marie Scholding with the Deptford Public Library Staff (Charleston, SC: Arcadia Publishing, 2003). – This text primarily served as a source of historic photographs of the bridge and neighboring properties surveyed within the APE. It was also useful for clarifying details related to the bridge, creek, lake and neighboring properties.

Site Visit

Prior to a site visit, a preliminary Area of Potential Effects (APE) was created to establish a survey area and determine which properties immediately adjacent to the project site as defined by French & Parrello Associates could potentially be impacted either directly or indirectly (visually) by the proposed project (Attachment A). Areas were examined for evidence of prior ground disturbance as a preliminary assessment for archaeological potential.

Hunter Research, Inc. visited the project site on January 29, 2018 and inspected the project site and its immediate surroundings for evidence of potentially significant historic architectural and archaeological resources. The properties identified in the APE were photographed, with all elevations and related structures captured for documentation. Eight properties in all were surveyed, including the bridge, lake, creek, adjacent park, residences and commercial properties. Photographs of the general setting of the bridge, streetscapes, landscape features and structures were taken (Attachment C).

The project site carries the two-lane Cooper Street over Almonesson Creek and through a primarily mixed-use residential and commercial area that experienced much of its development since the 1950s. While a few of the properties along Cooper Street were built during the late 18th to 19th century, the residential areas surrounding Almonesson Lake were developed much later. Cooper Street, which

serves as a local arterial county highway, also has experienced a good deal of commercialization over the past 30 years or so, intermixed with older buildings and residential developments. The immediate vicinity does not have the architectural or historical consistency or cohesiveness of a potential historic district and no longer retains the character or feel of a 19th-century mill village, although the village's inn and one house remain extant, if very heavily modified.

The upstream elevation of the bridge faces Almonesson Lake and the downstream elevation faces Almonesson Creek and the heavily wooded area of the Township's Almonesson Creek Park. Areas along the highway right-of-way exhibit signs of ground disturbance, most prominently storm sewers running along the north bank of the lake and the creek at the bridge and dam's western quadrants, and a storm sewer running parallel to Cooper Street along the street's western edge.

The wooded area north of the bridge along Almonesson Creek and the thick brush south of the bridge create visual barriers between the eastern and western sides of Cooper Street. Cooper Street is lined with residential and small commercial properties that are situated a short distance from the road. All of the commercial properties within the APE have asphalt parking lots.

Archaeological Assessment

Prehistoric Archaeological Potential – The project site is located within 1 mile of seven previously identified prehistoric sites that relate to the Almonesson Creek/Big Timber Creek drainages. The area has a demonstrated history of prehistoric archaeological potential. That said, work within the existing right-of-way of Cooper Street is unlikely to encounter prehistoric resources due to the past history of ground disturbing activities, principally the construction of the current bridge and dam and its predecessors, storm sewers, and alterations to the drainage for past industrial and recreational activities. Prehistoric archaeological potential is judged to increase downstream of the bridge and dam in Almonesson Creek Park where there is less history of ground disturbance, however, due to the pre-1926 alignment of a prior bridge and dam, as well as activities associated with construction of an earlier grist mill (northwest quadrant), storm sewers and an amusement park (northeast quadrant), the potential for intact prehistoric archaeological resources is low within 150' of the present-day alignment of Cooper Street.

Hunter Research anticipates that the NJHPO may require a Phase I archaeological assessment if the preferred select alternative results in ground disturbing downstream beyond the existing Cooper Street right-of-way and area of sheet piling downstream of the dam.

Historic and Industrial Archaeology – The northwestern quadrant of the project site was the location of a grist mill at least as early as *circa* 1800. This mill evolved over time with various owners and uses, including a period of use as a cotton textile mill during the period *circa* 1830-1842. The locus of industrial activity was the bridge/dam's northwest quadrant, however the potential for waterpower related features may be anticipated passing under the road or through the dam, if not destroyed by subsequent construction. The current dam structure could potentially be proximate to remnants of earlier mill waterpower systems and technology (e.g. headrace, gates, timber dam remnants), although none are currently observable above the ground surface or in the water. Construction of the current bridge

and dam in 1926, as well as later storm sewer easements across the site of the mill, may have impacted the mill site's archaeological potential.

The quadrant northeast of the bridge and dam proximate to the entrance and parking lot to Almonesson Creek Park was the locus of an amusement park of *circa* 1874 to 1970. While all standing structures are gone, there is the possibility that archaeological resources remain in this vicinity. Concrete foundations interpreted as having been related to the amusement park were noted (see Intensive-Level Architectural Survey Form for Almonesson Creek Park).

Hunter Research anticipates that the NJHPO may require a Phase I archaeological survey to determine if elements of the mill water power system survive if the selected preferred alternative results in removal or exposure of the dam's foundations and abutments.

Hunter Research anticipates that the NJHPO may require a Phase I archaeological survey of the areas of the former mill site and amusement park site if the selected preferred alternative results in ground-disturbing activities in the properties located immediately northwest and northeast of the bridge and dam.

Historic Architectural Assessment

Intensive-Level Architectural Survey resulted in the completion of NJHPO survey forms for eight (8) properties (Table 1, Appendix D).

Table 1: Summary of Intensive-Level Architectural Survey

Property Name	Year Constructed and Altered	Description	Historical Integrity?	Eligibility Recommendation
Cooper Street Bridge and Dam	1926	Concrete arch bridge, spillway and earthen dam	Yes	Eligible
Almonesson Lake Landscape	1874-1974, current landscape c*irca* 1975 to present	Public lake, now surrounded by private development	No	Not eligible
Almonesson Creek Park Landscape	1874-1974, current landscape 1975 to present	Former amusement park, now public park with trails and parking lot	No	Not eligible
1723-1725 Cooper Street	*Circa* 1830, 20th-c.	Vernacular, wood-frame duplex, highly altered	No	Not eligible

Property Name	Year Constructed and Altered	Description	Historical Integrity?	Eligibility Recommendation
1731 Cooper Street	1952	Vernacular, minimal traditional dwelling	Yes	Not eligible
1737 Cooper Street	*Circa* 1988	Childcare center	n/a	Not 50 years of age
1738 Cooper Street (Filomena's Lakeview Restaurant)	*Circa* 1825-1850, 1875, 1920, 1930, 2002, 2004, 2017	Former tavern/inn, heavily altered into	No	Not eligible
1849 Cooper Street	*Circa* 1920, 1975, 1988, 2007	Former beach pavilion, converted into catering venue	No	Not eligible

Eligibility of Cooper Street Bridge and Dam – NJDOT's 1994 Historic Bridge Inventory did not recommend Cooper Street (CR 706) over Almonesson Creek as an eligible resource. This recommendation was based on comparison with the other Gloucester County arch bridges and the conclusion that the population was not differentiated and, at least from a statewide perspective, did not rise to a threshold needed for eligibility. The National Register Criteria for Evaluation allow that the passage of time may result in changing perceptions of historical significance. In this instance, it does appear that the passage of time and the presentation of new information about the Cooper Street Bridge and Dam's historic associations with a pattern of community development at Lake Almonesson justifies reconsideration of eligibility of the NJDOT Historic Bridge Inventory, which was completed about 25 years ago.

Cooper Street Bridge and Dam have a specific local context that illustrates the development of the village of Almonesson and Almonesson Lake amusement park in Gloucester County. This context was not considered by the NJDOT historic bridge inventory. New research demonstrates that the bridge/dam/spillway structure and the lake it creates is the only intact feature in this landscape that speaks to a persistent pattern of water use, first as mill waterpower and then as recreational feature supporting an amusement park that would not have existed without the dam and its lake. Cooper Street Bridge and Dam are judged to be significant under Criterion A at the local level due to a strong and influential association with the development of the surrounding community from its roots in a rural mill village to local recreational center and a mid-20th-century suburb.

Cooper Street Bridge and Dam illustrate the application of an aesthetic arch design to this lakeside setting. It is one of four known instances where County Engineer William C. Cattell integrated an arch bridge with a dam and spillway from 1912 to 1926. While the evidence is such that Cattell is known to have favored single-span arch design, he also designed concrete slabs and T-beams, as well as steel stringers. His body of work indicates he was making deliberate choices of bridge type, likely dictated by site conditions. Cattell's long tenure as County Engineer from 1910 to 1942 had a significant and long-term influence on the county's highway transportation network. Cooper Street Bridge and Dam

are judged to be significant under Criterion C at the local level as embodying a very complete example of a type, period and method of construction (integrated concrete arch bridge and earthen dam/concrete spillway, circa 1910-1926).

The Intensive-Level architectural Survey identified one potentially eligible resource that will be directly impacted by the proposed project. It is the professional opinion of Hunter Research that the Cooper Street Bridge and Dam, constructed by Gloucester County in 1926, is potentially eligible for the New Jersey and National Registers of Historic Places.

Summary of Results and Recommendations:

Hunter Research's cultural resources screening indicates the project's APE contains potentially eligible archaeological and architectural resources.

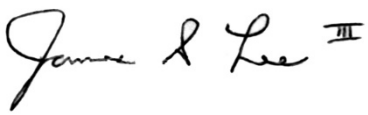
Archaeology – Depending on the selected preferred alternative, a Phase I archaeological survey may be required, particularly if ground-disturbing activities take place immediately downstream of the bridge and dam, and in the northwestern quadrant, the site of a former mill, and in the northeastern quadrant, the site of an amusement park

Architecture – Hunter Research recommends submittal of the Intensive-Level Architectural Survey Forms to the NJHPO for technical review to determine if NJHPO concurs with the consultant's eligibility recommendations. If the bridge and dam are found eligible, an effects assessment and development of alternatives that avoid, minimize or mitigate adverse effects or encroachments may be required per 36 CFR 800 and NJDEP-DLUR rules.

If you have any questions regarding this screening report or its conclusions, please feel to contact me at 609-695-0122, ext. 115 or pharshbarger@hunterresearch.com.

Yours sincerely,

Patrick Harshbarger
Vice President/Principal Historian/Architectural Historian



James Lee
Vice President/Principal Investigator/Archaeologist

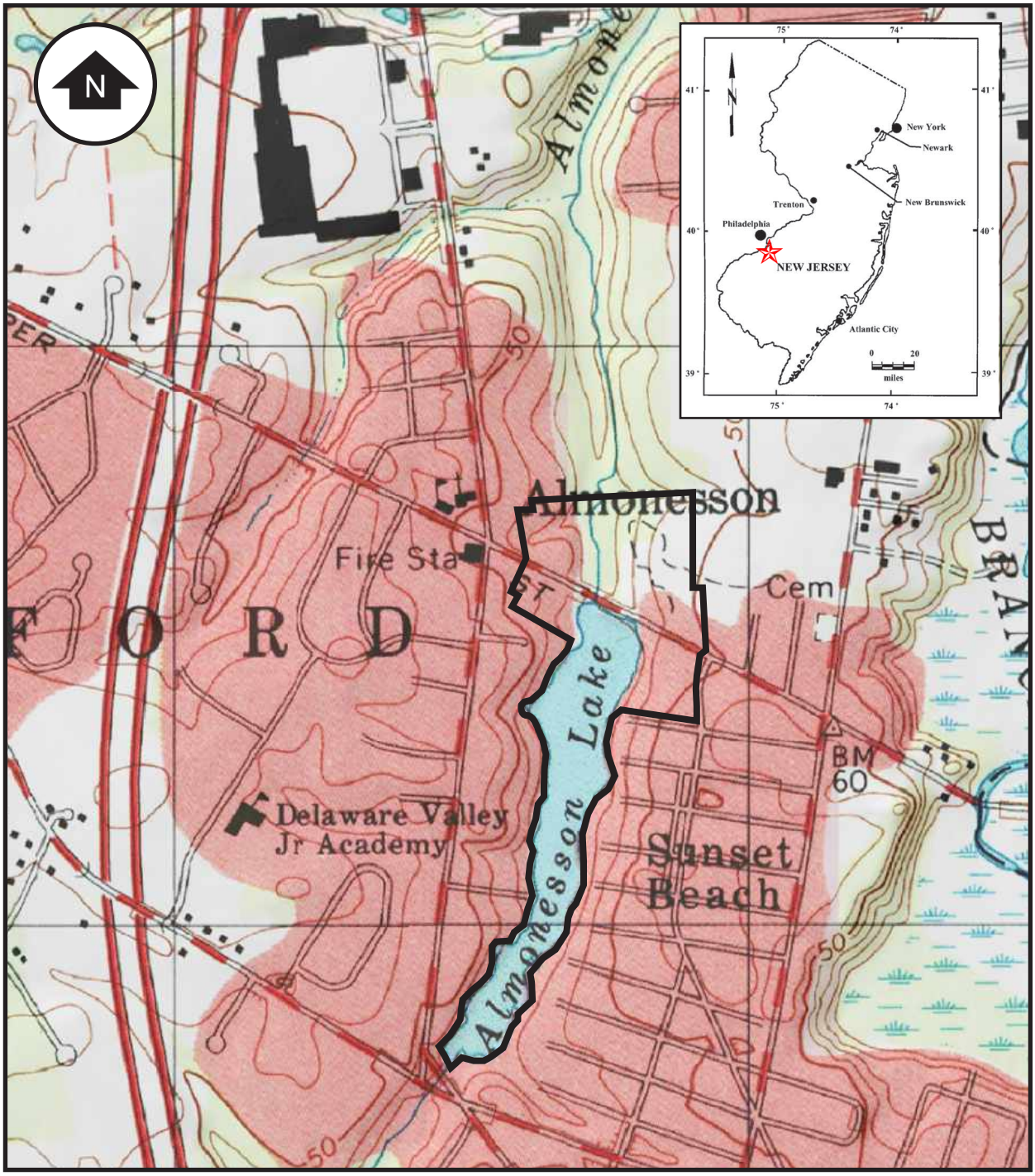
cc. Ian Mueller, FPA
Jon Moren, FPA
Rachel Craft, HRI
Richard Hunter, HRI

Attachments

A. Project Location Map and Preliminary Area of Potential Effects (APE)
B. Historic Maps
C. Current Site Condition Photographs and Key Map
D. Intensive-Level Architectural Survey Forms

ATTACHMENT A

PROJECT LOCATION MAP AND
RELIMINARY AREA OF POTENTIAL EFFECTS (APE)



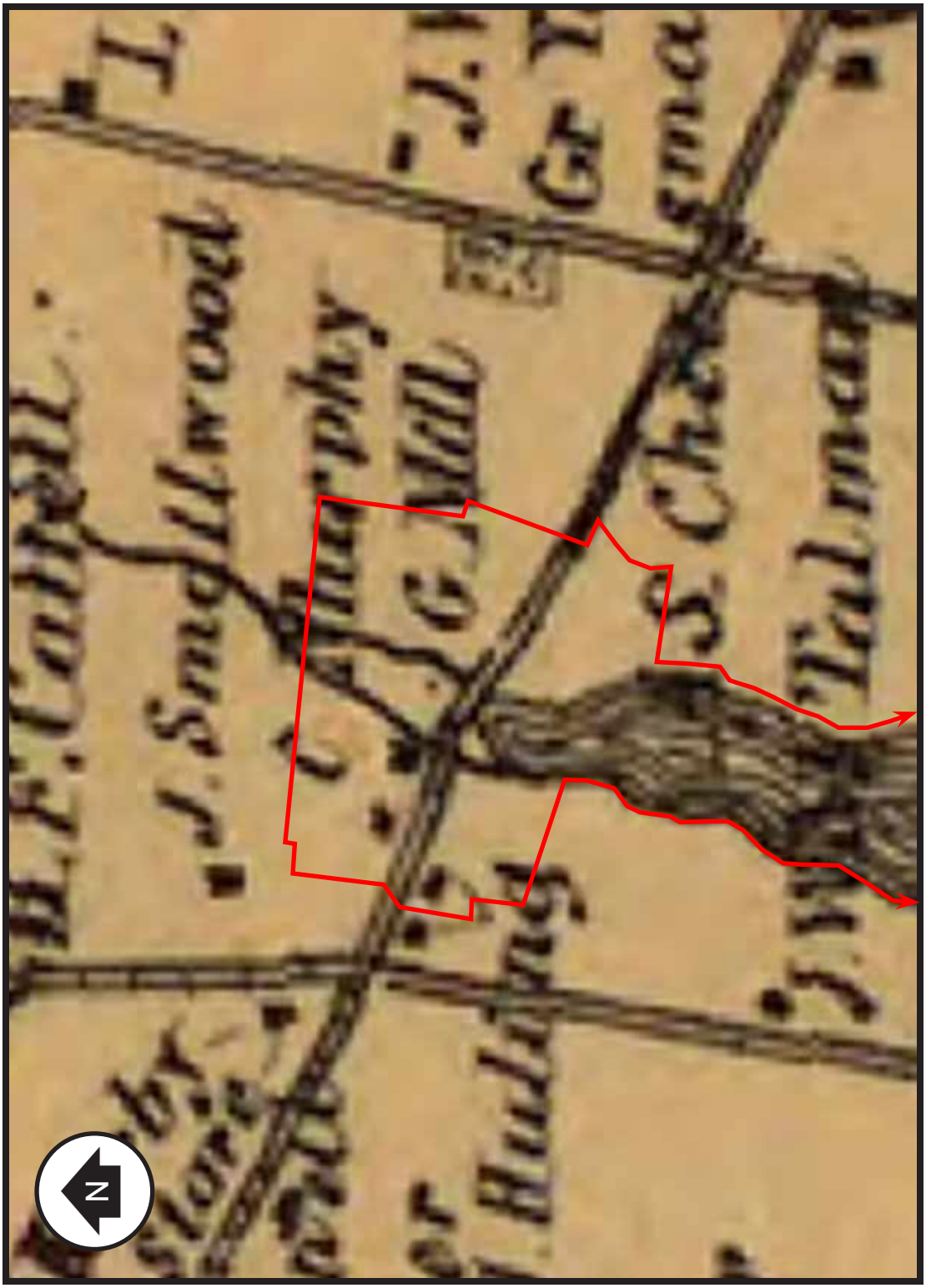
Attachment A.1. Location of Project Site. Source: USGS 7.5' Runnemede, N.J. Quadrangle (1967 [photorevised 1994]). Scale: 1 inch = 1,000.

Attachment A.2. Aerial Photograph of Area of Potential Effects (APE). APE delineated by Hunter Research based on project alternatives. Source: New Jersey Department of Environmental Protection 2019.

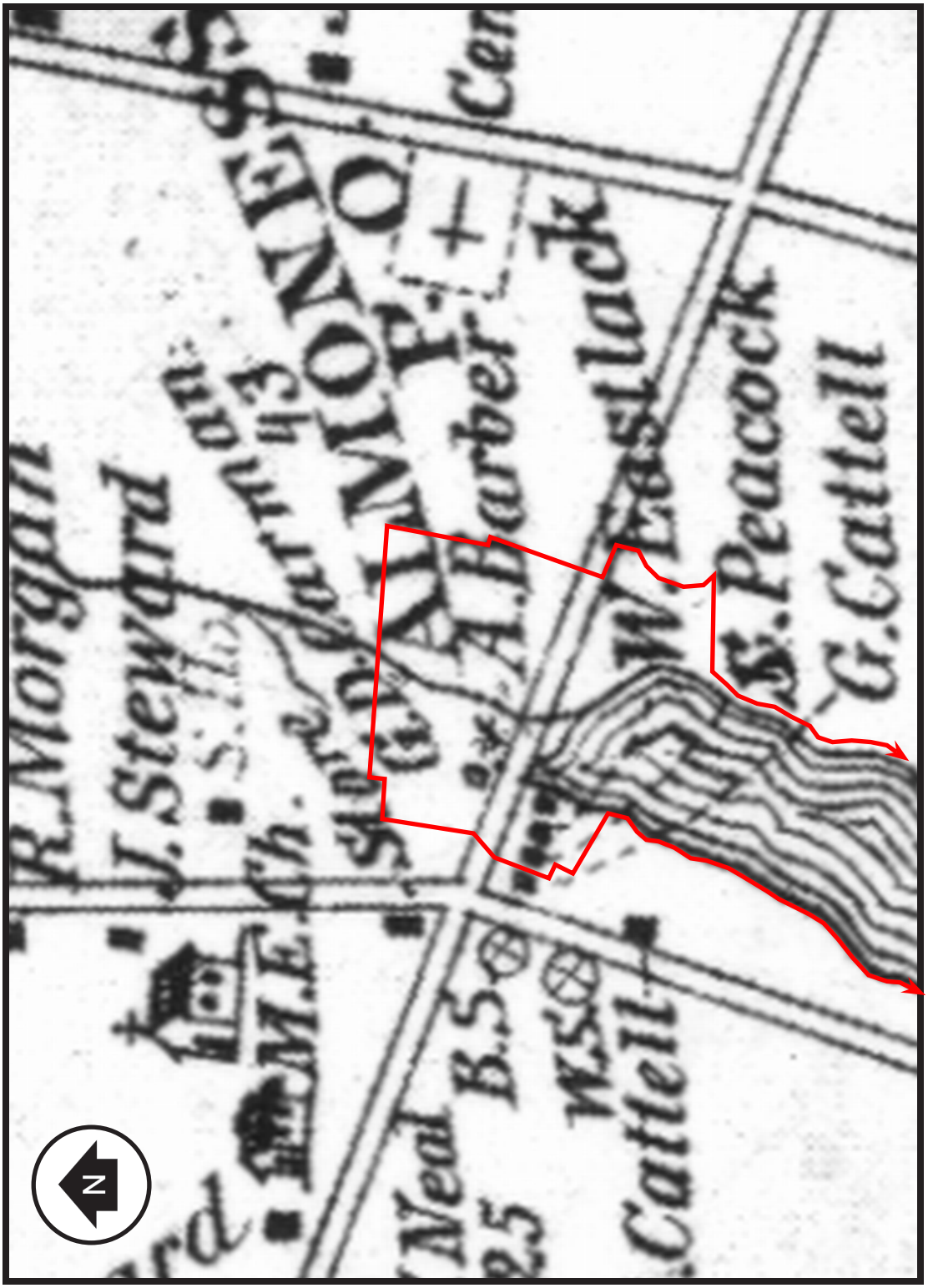
ATTACHMENT B

HISTORIC MAPS

Attachment B.1. Stansbie, Alexander C., James Keily & Samuel M. Rea. Detail of *A Map of the Counties of Salem and Gloucester, New Jersey From Original Surveys.* 1849. Scale: 1 inch = 560 feet (approximately). APE boundary outlined.



Attchment B. 2. Lake, D. J. and S. N. Beers. Detail of *Map of the Vicinity of Philadelphia*. 1861. Scale: 1 inch = 450 feet (approximately). APE boundary outlined.



Attachment B.3. Everts & Stewart. Detail of "Map of Deptford Township" from *Combination Atlas Map of Salem & Gloucester Counties, New Jersey. Compiled, Drawn and Published From Personal Examinations and Surveys.* 1876. Scale: 1 inch = 470 feet (approximately). APE boundary outlined.

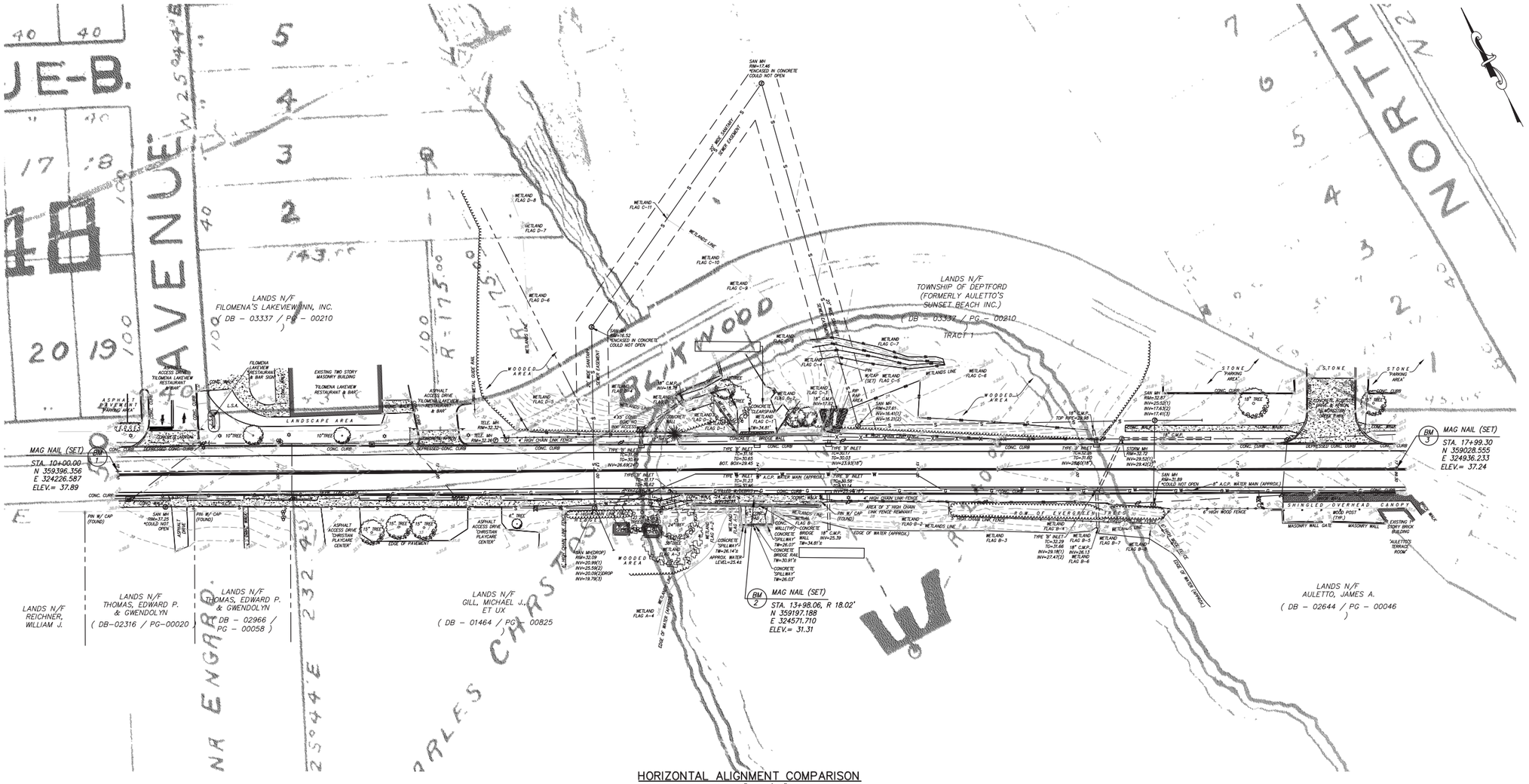
Attachment B.4. Carter, J. Owen. *Plan of Lots of Lakeview Heights, situate at Almonesson, Dept. Twp., Gloucester County, N.J.* 1914.

STATE	ENGINEERING PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	1716	1	1

STRUCTURE NO. 0803-K03

STRUCTURE NAME

BRIDGE 3-K-3 COOPER STREET (CR 706) OVER ALMONESSON CREEK / AT ALMONESSON LAKE



HORIZONTAL ALIGNMENT COMPARISON

SCALE: 1" = 30'-0"

NOTES:

1. EXISTING TOPOGRAPHIC CONDITIONS SHOWN HEREON WERE SURVEYED BY REMINGTON & VERNICK ENGINEERS AND COMPLETED ON JANUARY 25, 2019.
2. THE MAP ENTITLED "PLAN OF LAKEVIEW HEIGHTS SITUATE AT ALMONESSON DEPT. TWP. GLOUCESTER CO., N.J." DATED 1914 AND PREPARED BY J. OWEN CARTER WAS GEOREFERENCED TO ASSOCIATE THE INFORMATION SHOWN TO THE SPATIAL LOCATIONS OF THE EXISTING TOPOGRAPHIC CONDITIONS.

REVISION	BY	C'K'D	DATE

COUNTY OF GLOUCESTER
OFFICE OF THE COUNTY ENGINEER

HORIZONTAL ALIGNMENT COMPARISON
1914 & CURRENT

FY 2018 GLOUCESTER COUNTY LOCAL CONCEPT DEVELOPMENT STUDY
COOPER STREET (COUNTY ROUTE 706) BRIDGE
OVER ALMONESSON CREEK / AT ALMONESSON LAKE (BRIDGE 3-K-3)
TOWNSHIP OF DEPTFORD
GLOUCESTER COUNTY, NEW JERSEY

FRENCH AND PARRELLO ASSOCIATES
PROFESSIONAL ASSOCIATION

1
1

USER: IAN MUELLER
DATE & TIME: March 2, 2020
EXPORT LOCATION: J:\1716\1360013633 - COOPER STREET BRIDGE OR 706\13633.001 DESIGN\CADD\DWG\WORKING\13633.001 - 1914 FILED MAP OVERLAY.DWG - Plan

Attachment B.5. French & Parrello Associates. Horizontal Alignment Comparison 1914 and Current. Superimposes the 1914 plan (Attachment B.4) on a present-day survey. 2020.

Attachment B.6. Aerial photograph. 1930. Scale 1: inch = 310 feet (approximately). Source: New Jersey Department of Environmental Protection 2019. APE boundary outlined.

ATTACHMENT C

CURRENT SITE CONDITION PHOTOGRAPHS AND KEY MAP

Attachment C.1. Photograph key of overview photographs of project site. Project site outlined. Approximate locations of grist mill site (A) and amusement park (B) outlined with dashed lines. Source: Google Maps 2019.

Photograph 1. Through view of Cooper Street over Almonesson Creek, looking west (Photographer: Rachel Craft, January 2019) [HRI Neg. #18078/D1-117].

Photograph 2. Through view of Cooper Street over Almonesson Creek, looking east (Photographer: Rachel Craft, January 2019) [HRI Neg. #18078/D1-137].

Photograph 3. View of the upstream elevation of the bridge and dam from a residential street, looking northwest (Photographer: Rachel Craft, January 2019) [HRI Neg. #18078/D1-140].

Photograph 4. View of the downstream elevation of the bridge with the spillway and dam gates visible through the bridge's arch, looking south (Photographer: Rachel Craft, January 2019) [HRI Neg. #18078/D1-3].

Photograph 5. View of the top of the downstream elevation showing the heavily wooded area at the northeast corner of the bridge, looking northeast (Photographer: Rachel Craft, January 2019) [HRI Neg. #18078/D1-121].

Photograph 6. View from the northeast corner of the bridge on the downstream side, looking to the northwest corner and the former site of the grist mill (Photographer: Rachel Craft, January 2019) [HRI Neg. #18078/D1-123].

Photograph 7. View of the thick vegetation at the southeast corner of the bridge on the upstream side, looking southeast with 1849 Cooper Street in the background (Photographer: Rachel Craft, January 2019) [HRI Neg. #18078/D1-135].

Photograph 8. View of the sheds at 1737 Cooper Street and the thick vegetation at the southwest corner of the bridge, looking southwest (Photographer: Rachel Craft, January 2019) [HRI Neg. #18078/D1-90].

ATTACHMENT D

INTENSIVE-LEVEL ARCHITECTURAL SURVEY FORMS

BASE FORM

Historic Sites #:

Property Name: Cooper Street (CR 706) Bridge and Dam over Almonesson Creek

Street Address: *Street #:* _____ (Low) _____ (High) *Apartment #:* _____ (Low) _____ (High)

Prefix: _____ *Street Name:* Cooper *Suffix:* _____ *Type:* St.

County(s): Gloucester **Zip Code:** 08096

Municipality(s): Deptford Township **Block(s):** _____

Local Place Name(s): _____ **Lot(s):** _____

Ownership: Public **USGS Quad(s)** Runnemede

Photograph:

Photo 1: Cooper Street Bridge over Almonesson Creek, view looking northwest
(Rachel Craft, photographer, January 29, 2019; HRI Negative # 18078_D1_00117).

Description: Cooper Street Bridge over Almonesson Creek is a single span, reinforced-concrete, three-centered arch bridge constructed in 1926 with a connected earthen dam and concrete spillway. The bridge and dam replaced an earlier timber bridge and dam connected to a mill. The mill was located at the northwest quadrant from *circa* 1800 to *circa* 1900. The arch has a clear span of 20' and the bridge is 80' long out-to-out between the ends of the wingwalls. It is 42' wide. Concrete parapets line the length of the bridge. The bridge and Cooper Street are abreast a 312'-long earthen gravity dam, according plans prepared by County Engineer William Cattell in 1926. A rectangular-plan, concrete-frame spillway extends upstream from the bridge's south elevation. The spillway has two gates operated by a single hand-cranked mechanism. A concrete drop inlet (invert) spillway flows under the arch. A plaque indicating the date of construction, contractors and owners of the bridge is set in the middle column of the southern parapet. A concrete sidewalk carries foot traffic over the bridge along the southern parapet. Storm drains at the street curb level are located on both sides of Cooper Street. Chain link fencing lines both sides of Cooper Street along the northern drop-off to Almonesson Creek and the southern

BASE FORM

Historic Sites #:

drop-off to Almonesson Lake.

Registration and Status Dates:

National Historic Landmark:		SHPO Opinion:	
National Register:		Local Designation:	
New Jersey Register:		Other Designation:	
Determination of Eligibility:		Other Designation Date:	

Location Map:

See attachment.

Site Map and Photograph Key:

Bibliography/Sources:

A.G. Lichtenstein and Associates, Inc. *The New Jersey Historic Bridge Survey*. September 1994. On file at the New Jersey Historic Preservation Office, Trenton, N. J.

Application in Re Dam. Almonesson Bridge and Spillway No. 3-K-3. 1926. On file at Bureau of Dam Safety, Trenton, N. J.

Bureau of Dam Safety. Dams in New Jersey – Reference Data, Almonesson Creek No. 31-33. 1925. On file at Bureau of Dam Safety, Trenton, N. J.

Bureau of Dam Safety. Dams in New Jersey – Reference Data, Almonesson Creek No. 31-34. 1925. On file at Bureau of Dam Safety, Trenton, N. J.

Bureau of Dam Safety. “Foundation for bridge and dam Gloucester County on Almonesson Creek at Almonesson.” 1926. On file at Bureau of Dam Safety, Trenton, N. J.

Cattell, William C. County Engineer. Gloucester County, N. J., Concrete Bridge and Spillway No. 3-K-3 over Almonesson Brach at Almonesson. 1926. On file at Bureau of Dam Safety, Trenton, N. J.

Cattell, William C. County Engineer. Gloucester County, N. J., Road Across Almonesson Lake, Almonesson. 1926. On file at Bureau of Dam Safety, Trenton, N. J.

Cushing, Thomas and Charles E. Sheppard. *History of the Counties of Gloucester, Salem, and Cumberland, New Jersey, with Biographical Sketches of their Prominent Citizens*. Philadelphia: Everts & Peck, 1883.

Department of the Army. Almonesson Lake Dam, NJ 00401, Phase I Inspection Report National Dam Safety Program. February 1979. On file at the Bureau of Dam Safety, Trenton, N. J.

Everts & Stewart. Detail of “Map of Deptford Township” from *Combination Atlas Map of Salem & Gloucester Counties, New Jersey. Compiled, Drawn and Published From Personal Examinations and Surveys*. 1876.

Jackson, Donald C. *A National Trust Guide: Great American Bridges and Dams*. Washington, D. C.: The Preservation Press, 1988.

BASE FORM

Historic Sites #:

Kalman Steel Co. Inc. Bridge and Spillway 3-K-3, Almonesson, N. J., Detail of Reinforcing. 1926. On file at Bureau of Dam Safety, Trenton, N. J.

Lichtenstein Consulting Engineers, Inc. *Delaware's Historic Bridges: Survey and Evaluation of Historic Bridges with Historic Contexts for Highways and Railroads*. 2000.

Nationwide Environmental Title Research (NETR). Almonesson, Deptford Township, Gloucester County, New Jersey, 1931-2015. Accessed March 5, 2019, https://www.historicaerials.com/.

Scholding, Marie with the Deptford Public Library Staff. *Images of America: Deptford Township*. Charleston, S. C.: Arcadia Publishing, 2003.

Stansbie, Alexander C., James Keily & Samuel M. Rea. *A Map of the Counties of Salem and Gloucester, New Jersey From Original Surveys*. 1849.

Additional Information:

More Research Needed?

☐ Yes ☒ No

INTENSIVE LEVEL USE ONLY

Attachments Included:

☐ Building ☒ Structure ☐ Object ☐ Bridge
☐ Landscape ☐ Industry

Within Historic District? ☐ Yes ☒ No

Status: ☐ Key-Contributing ☐ Contributing ☐ Non-Contributing

Associated Archaeological Site/Deposit? ☐ Yes ☐ No
(Known or potential Sites – if yes, please describe briefly)

STRUCTURE ATTACHMENT

Historic Sites #:

Common Name: Cooper Street (CR 706) Bridge and Dam over Almonesson Creek (3-K-3)
Historic Name:
Present Use: Bridge and dam
Historic Use: Bridge and dam
Construction Date: 1926 **Source:** Plaque/Original Plans
Alteration Date(s): **Source:**
Designer: William C. Cattell, County Engineer **Physical Condition:** Fair
Builder: E.P. Henry & Sons **Remaining Historic Fabric:** High
Type: Reinforced Concrete Arch/Earth Gravity Dam
Roof Finish Materials: N/A
Exterior Finish Materials N/A

Exterior Description: Cooper Street (CR 706) over Almonesson Creek is a combination earthen gravity dam with reinforced-concrete arch over the dam's spillway. The dam and bridge are structurally integral and were built at the same time in 1926. Cooper Street crosses the creek abreast the dam in a northwest-to-southeast direction. The bridge and dam are documented by original plans signed by County Engineer William C. Cattell in 1926 (Figures 1-3).

Arch Bridge (Photographs 1-5) – The visually dominant feature of the structure is a single-span, reinforced-concrete, three-centered arch bridge. The arch has a 20'-long clear span flanked to either side by 30'-long, U-plan, concrete wing walls. The bridge's roadway width is 31' and its overall width between the parapets is 42'. The bridge's maximum height from the base of the spillway to the top of the parapets is 23'. The bridge is supported by concrete abutments, which, according to plans of 1926, are founded on a matt of yellow pine timber piles. The bridge has aesthetically pleasing lines and proportions, with detailing in a minimalist classical-revival style, drawn from influences of the City Beautiful movement, and typical of many concrete bridges of the early 20th century. The downstream spandrel and wing walls are articulated by plain concrete pilasters, emphasizing the bridge's three-part composition (wing wall-arch-wing wall). The pilasters extend upward into the parapets. The upstream spandrel and wing walls are low profile due to being on the upstream side of the dam with the lake's elevation normally being about 5' below the level of the roadway. The parapets are completed by concrete coping and end posts, with the parapets exhibiting an exposed-aggregate finish contrasting with the smooth finish of the spandrels and wing walls, although a coating of white paint somewhat obscures the original finish. A plaque with the bridge's construction details is located in the middle of the south parapet. The plaque acknowledges Gloucester County officials, Wm. C. Cattell (county engineer), E.P. Henry & Sons (contractors) and includes the date of construction of 1926. Since the bridge is integral with a dam, the downstream elevation is more clearly visible than the upstream elevation, which is obscured by the lake and the dam's upstream face, the lake's elevation normally being about 5' below the level of the roadway.

Dam and Spillway (Photographs 6-8) – The bridge spans the concrete spillway of a 312'-long earthen dam with the spillway located approximately 50' to 70' from the dam's western end. The dam has a trapezoidal cross section, measuring 42'-wide at the crest and approximately 84'-wide at the base. According to plans prepared in 1926, the dam has a core of 2" x 8" yellow-pine timber sheet piling. The dam is founded on yellow timber piles. The slopes of the dam's upstream and downstream faces are approximately 1.5 to 1, per original plans. A box-plan concrete drop inlet spillway controls water flow from Almonesson Lake to Almonesson Creek upstream of the bridge's arch. Two gates are situated above the spillway and can be controlled via a hand-cranked mechanism in the center of the 22'-wide concrete box frame. A concrete operator's platform is located on the upstream side of

STRUCTURE ATTACHMENT

Historic Sites #:

the bridge's parapet. The spillway is capped by a two-rail-high concrete railing and pipe handrails. The arch spans a concrete slab invert that terminates in a vertical spillway at the arch's downstream opening.

Alterations – The structure has no history of major alterations to impact historical integrity of design, materials or workmanship. Two lines of steel sheet piling has been placed downstream of the bridge to either stream bank to arrest erosion.

Interior Description: N/A

Setting: The bridge and dam carry Cooper Street (CR 706) over Almonesson Creek in a mixed-used suburban setting. Almonesson Creek, which flows north from the bridge and dam, passes through a heavily wooded area that is the current location of the Deptford Towsnhip-owned Almonesson Creek Park. South of the bridge is Almonesson Lake, which is surrounded by residential and commercial properties, mostly dating from the 1960s and later. Some of the properties have recreational docks on the lake. Immediately east of the bridge is the commercial property at 1849 Cooper Street (Auletto's Caterers; modified to current state *circa* 1988), and immediately west of the bridge are the commercial properties of 1738 Cooper Street (Filomena's Lakeview Restaurant; modified to current state *circa* 1920, *circa* 1930, 2002, *circa* 2004 and *circa* 2017) and 1737 Cooper Street (Christian Playcare, LLC; *circa* 1988). Few residential properties front Cooper Street.

ELIGIBILITY WORKSHEET

Historic Sites #:

History: Designed by William C. Cattell, Gloucester County's Engineer, and built by E.P. Henry & Son, Cooper Street Bridge and Dam over Almonesson Creek was constructed in 1926 to replace an older bridge and dam that impounded Almonesson Lake. The bridge, dam and spillway were constructed simultaneously to control the flow of water from Almonesson Lake into Almonesson Creek. According to a 1979 inspection report, no modifications had been made to the bridge at the time of inspection (Department of the Army 1979:12). The bridge and dam's original structure has remained unchanged since its construction.

Local history describes the presence of a grist mill along Almonesson Creek "as early as 1800," implying a dam at this location by that time. The mill property was later purchased by Daniel Lamb, who reportedly removed the grist mill in 1830 to construct a cotton factory. Lamb also constructed housing near the mill for his workers. The cotton factory was "destroyed by water in 1842," and the property was then purchased by Joseph Conrow. Conrow built another grist mill in 1854 or 1855. The mill property changed ownership again after being purchased by Joseph Rawl, who removed Conrow's brick mill and constructed a frame mill that was present in 1883 (Cushing and Sheppard 1883:198).

In 1874, an amusement park opened at Almonesson Lake, signaling the transition of the mill pond into a local recreation feature. Initially, the lake served bathers, boaters and had a popular boardwalk for promenading along its shores. A trolley line began operating along Cooper Street from Woodbury to the amusement park in Almonesson in 1894. The park developed as the Almonesson Amusement Park, and later Lakeview Heights Park and Sunset Beach until its eventual closure and the removal of its related structures *circa* 1975. A photograph of the bridge and dam spillway, estimated to date circa 1890-1910, documents a short-span, presumably wood stringer bridge between high masonry abutments (Photograph 9). A plan for the Lakeview Heights subdivision, filed with the County in 1914, places the dam and bridge immediately preceding the current structure on a curved horizontal alignment some 50' to 150' downstream of its replacement (Scholding 2003: 59).

Further documentation is provided by Bureau of Dam Safety inspection reports dating from 1925, the year before the old mill dam's replacement. The dam inspector recorded that Charles Chr[i]stos owned the "old" dam, described as an earthen-filled gravity dam with a spillway of rubble masonry "in cement." A dam inspection photograph from 1925 documents the upstream appearance of the Cooper Street bridge and dam (Photograph 10). It appears on the upstream elevation as a series of timber spans on timber piles with wood railings, possibly carrying the trolley line based on overhead wires and light poles. In 1920, Christos had constructed another dam approximately 300' north (upstream) of the old dam to create a swimming pool, located in the valley below the mill dam's spillway. Christos' swimming pool dam was 250' long, 7.5' high, and had a concrete arch spillway (Photograph 11). Aerial photography shows that Christos' swimming pool remained until about 1940 (Dams in New Jersey – Reference Data, Almonesson Creek No. 31-33 and No. 31-34 1925; NETR 1931, 1940).

It was into this recreational setting defined by the lake and an amusement park, a trolley line, beaches, boating and a swimming pool that County Engineer Cattell designed a new Cooper Street bridge and dam in 1926. In selecting an arch design, Cattell offered an improvement over the worn out and somewhat ramshackle appearing timber bridge of the former mill dam (Photograph 10). The design of the arch was conventional but it spoke to period aesthetics that had been heavily influenced by the City Beautiful Movement, which held that well-designed infrastructure raised the quality of urban, at this point, suburban and small town life. Concrete was particularly well-suited to City Beautiful-inspired designs due to the ability to mold concrete into classically inspired forms. The arch bridge would have formed an appropriate backdrop to Christos' swimming pool and the Almonesson Amusement Park and Lake as place for local recreational opportunities. The 42'-wide bridge, amply wide for its time when many bridges were built only 16' to 24' wide for two lanes of traffic, was apparently designed to accommodate two traffic lanes, a sidewalk and a trolley line. A photograph of the bridge and dam under construction in 1926 shows the significant manipulation of the ground surfaces and drainage (Photograph 12).

ELIGIBILITY WORKSHEET

Historic Sites #:

Significance and Integrity: The Cooper Street Bridge and Dam's historical significance is largely at the local level and related to the recreational and transportation context into which it was built as described above. It is not surprising that a handsome but not overly elaborate reinforced-concrete arch bridge was built here as a more than utilitarian response to its setting. It fits squarely with a pattern of events where rural areas near large towns and cities evolved in the streetcar era (circa 1880s to 1920s) and early automobile era (circa 1900s to 1940s) to meet new needs for recreation. Amusement parks were a regular feature at the end of trolley lines in most major American cities and towns, even as the trolleys and then cars promoted suburban residential development and more decentralized patterns of living.

Technologically, the Cooper Street Bridge and Dam are representative of early 20th century engineering and property types, specifically reinforced-concrete arch bridges and earthen gravity dams, although not always employed together in this combination of an arch spanning a dam's spillway. Reinforced concrete as a building material emerged circa 1885-1900 and became increasingly common during the first decade of the 20th century, particularly in industrial/commercial building framing systems and various bridge types. Arch bridges were both economically and aesthetically appealing and met with great deal of praise and enthusiasm from the engineering profession, as well as the public at large. In New Jersey, reinforced concrete arch bridges were commonplace after 1905. The bridge type was a visually appealing means of improving infrastructure during the 1920s and the City Beautiful movement, and became a popular type to incorporate into urban and park settings (Lichtenstein Consulting Engineers, Inc. 2000:155-157; A. G. Lichtenstein & Associates, Inc. 1994:65-66).

The 1994 New Jersey DOT Historic Bridge Inventory provides the most comprehensive assessment of the state's arch highway bridges, although this data is now 25 years old and the number of demolitions is difficult to assess. As of 1994, the state had 173 inventoried reinforced-concrete deck arch highway bridges over 20' span. The Inventory noted that only 4 of the 21 counties did not have representative examples of the reinforced-concrete arch bridge type (Atlantic, Cape May, Hunterdon and Union counties). Bergen County, in particular, was singled out as an "innovator in an important modern construction technique" while other counties throughout the state constructed reinforced-concrete arches in connection with urban developments, parks and railroad passages. Two other counties stood out as having county engineers with a particular affinity for reinforced-concrete arch bridges over an extended period of time. One was Camden County Engineer John J. Albertson, who designed six reinforced concrete arches between 1915 and 1919, but one of the most prolific was Gloucester County Engineer William C. Cattell, who during his long tenure as County Engineer from 1909 to 1942 oversaw the construction of at least 19 reinforced-concrete arch bridges, accounting for over 10% of the pre-World War II reinforced-concrete arch bridges in the State of New Jersey (Table 1). Cattell's body of work was extensive and includes a total of 57 bridges in the NJDOT inventory, inclusive of 22 concrete slabs, 19 arches, 6 steel stringers, 5 concrete T-beams, 3 pipe culverts, 1 through girder and 1 swing span (A. G. Lichtenstein & Associates, Inc. 1994:105-114).

Table 1: Concrete Arch Bridges in Gloucester County, Designed by William C. Cattell, 1912-1940

Bridge Name/Number	Date	Description
Commissioners Road over Oldmans Creek/0808F02	1912	Single span, 36'-long arch over Algonkin Lake circular spillway associated with dam
Mantua-Glassboro Road over Chestnut Branch/0805I03	1915, strengthened in 1926, replaced in 1994	Single span, 32'-long arch
Mill Street over Oldmans Creek/0807E07	1917	Single span, 33'-long arch over Harrisonville Lake box spillway associated with dam
Tomlin Station Road over Rattling Run/0804F05	1919	Single span, 30'-long arch
Rattling Run Road over Rattling Run/0804F03	1920	Single span, 26'-long arch
NJ 45 over Edwards Run/0808151	1920	Single span, 22'-long arch

ELIGIBILITY WORKSHEET

Historic Sites #:

CR 618 over South Branch Raccoon Creek/0806G08	1920	Single span 28'-long arch
Barnsboro-Fairview Road over Chestnut Branch/0805I01	1922	Single span, 36'-long arch
CR 538 over Narraticon Run/0805D05	1925, replaced in 2009	Single span, 30'-long arch
Jessups Mill Road over Edwards Run/0804H05	1925, reconstructed in 1940, replaced in 2005	Single span, 30'-long arch
Cooper Street over Almonesson Creek/0803K03	1926	Single span, 30'-long arch over Almonesson Lake box spillway associated with dam
Aurora-Mullica Hill Road over Clems Run/0806H05	1926	Single span, 31'-long arch over Kincaid Lake box spillway associated with dam
Tyler's Mill Road over Chestnut Branch/0805I02	1926	Single span, 24'-long arch
US 322 over Raccoon Creek/0825150	1928	Single span, 36'-long arch in Mullica Hill Historic District (contributing)
Evergreen Avenue over Woodbury Creek/0802I11	1929	Single span, 45'-long arch
Delaware Street over Starrs Ditch/0802H03	1930, replaced in 2009	Single span, 30'-long arch
CR 635 over Mantua Creek/0805J06	1932	Single span, 28'-long arch
Main Street over Raccoon Creek/0807H01	1938	Single span, 28'-long arch
Mullica Hill-Swedesboro Road over South Branch Raccoon Creek/0805F04	1940	Single span, 34'-long arch

Based on a review of current National Bridge Inventory data, 15 the 19 Cattell-designed concrete arch bridges identified by the 1994 NJDOT Historic Bridge inventory are extant in 2017. The remaining 15 reinforced concrete arches share several similarities in design and construction. They are all single-span bridges, ranging between 22' and 45' long. They have concrete parapets and typically have a plaque detailing construction information. Of the remaining arch bridges designed by Cattell, four of them, including the Cooper Street bridge, were designed structurally integral to dams and spillways to form lakes upstream of the bridges

Historical Integrity –Cooper Street over Almonesson Creek Bridge and Dam retains its original form and has remained largely unchanged since its construction. It retains high integrity of design, materials and workmanship. It retains integrity of location. Integrity of setting has been diminished due to modern redevelopment and demolition, most notably the removal of the Almonesson Lake amusement park, however, Almonesson Lake formed by the dam remains as a key feature in the landscape attesting to the dam's purpose of creating and maintaining a recreational feature. The bridge retains integrity of historical feeling and association.

Eligibility for New Jersey and National Registers: ☒ Yes ☐ No **National Register Criteria:** ☒ A ☐ B ☒ C ☐ D

Level of Significance ☒ Local ☐ State ☐ National

Survey Name: **Cooper Street Bridge over Almonesson Creek Intensive-Level Survey** Date: January 2019

Surveyor: Rachel Craft and Patrick Harshbarger, Architectural Historians

Organization: Hunter Research, Inc. – 120 West State Street, Trenton, NJ 08608

ELIGIBILITY WORKSHEET

Historic Sites #:

Justification of Eligibility/Ineligibility:

New Information – NJDOT's 1994 Historic Bridge Inventory did not recommend Cooper Street (CR 706) over Almonesson Creek as an eligible resource. This recommendation was based on comparison with the other Gloucester County arch bridges and the conclusion that the population was not differentiated and, at least from a statewide perspective, did not rise to a threshold needed for eligibility. The National Register Criteria for Evaluation allow that the passage of time may result in changing perceptions of historical significance. In this instance, it does appear that the passage of time and the presentation of new information about the Cooper Street Bridge and Dam's historic associations with a pattern of community development at Lake Almonesson justifies reconsideration of eligibility.

Cooper Street Bridge and Dam have a specific local context that illustrates the development of the village of Almonesson in Gloucester County. This context was not considered by the NJDOT historic bridge inventory. New research demonstrates that the bridge/dam/spillway structure and the lake it creates is the only intact feature in this landscape that speaks to a persistent pattern of water use, first as mill waterpower and then as recreational feature supporting an amusement park that would not have existed without the dam and its lake. Cooper Street Bridge and Dam are judged to be significant under Criterion A at the local level due to a strong and influential association with the development of the surrounding community from its roots in a rural mill village to a mid-20th-century suburb.

Cooper Street Bridge and Dam illustrate the application of an aesthetic arch design to this lakeside setting. It is one of four known instances where Cattell integrated an arch bridge with a dam and spillway from 1912 to 1926. While the evidence is such that Cattell is known to have favored single-span arch design, he also designed concrete slabs and T-beams, as well as steel stringers. His body of work indicates he was making deliberate choices, likely dictated by site conditions. Cattell's long tenure as County Engineer from 1910 to 1942 had a significant and long-term influence on the county's highway transportation network. Cooper Street Bridge and Dam are judged to be significant under Criterion C at the local level as embodying a very complete example of a type, period and method of construction (integrated concrete arch bridge and earthen dam/concrete spillway, circa 1910-1926).

For Historic Districts Only:

Property Count: Key Contributing: _____ Contributing: _____ Non Contributing: _____

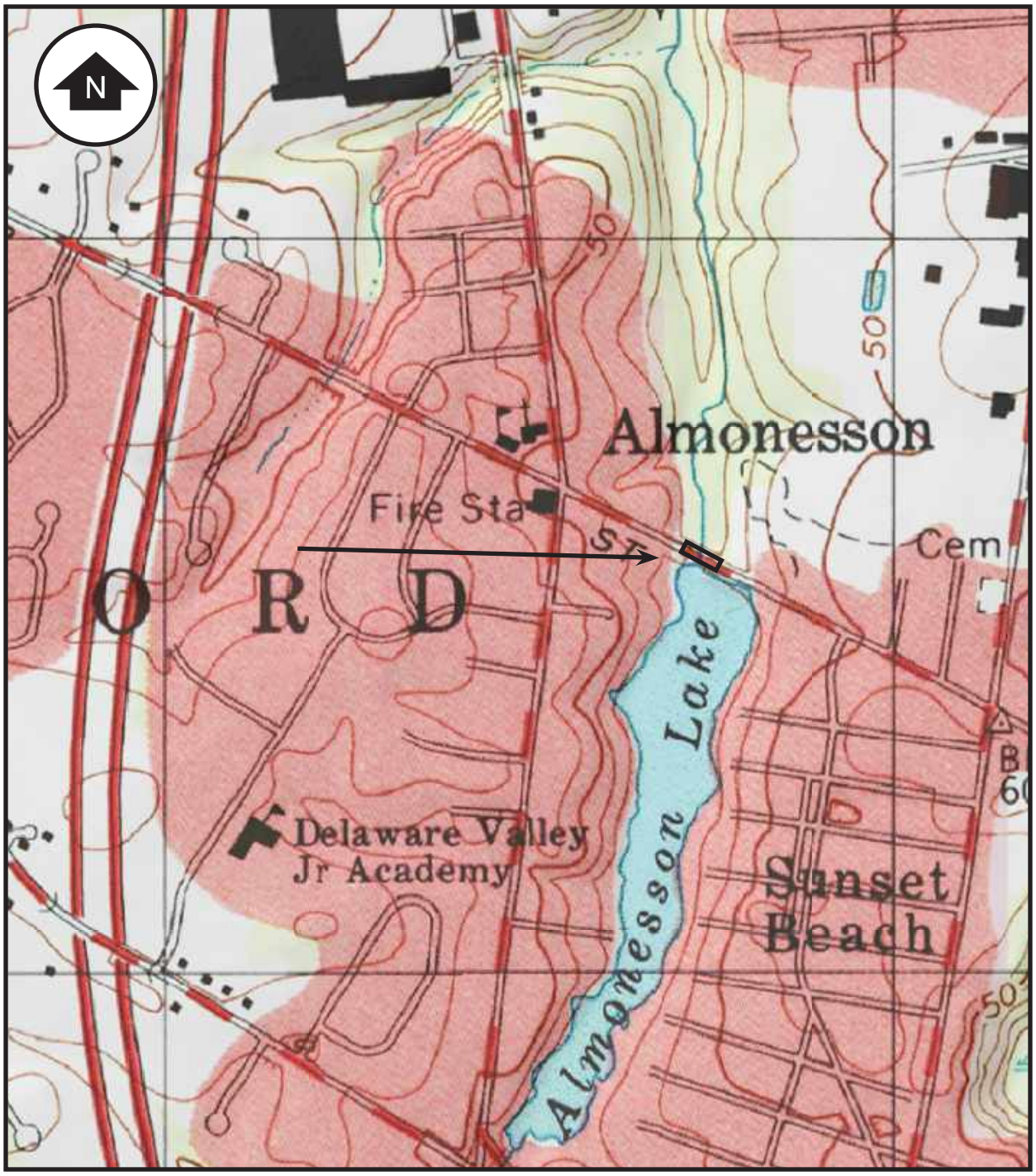
For Individual Properties Only:

List the completed attachments related to the property's significance:

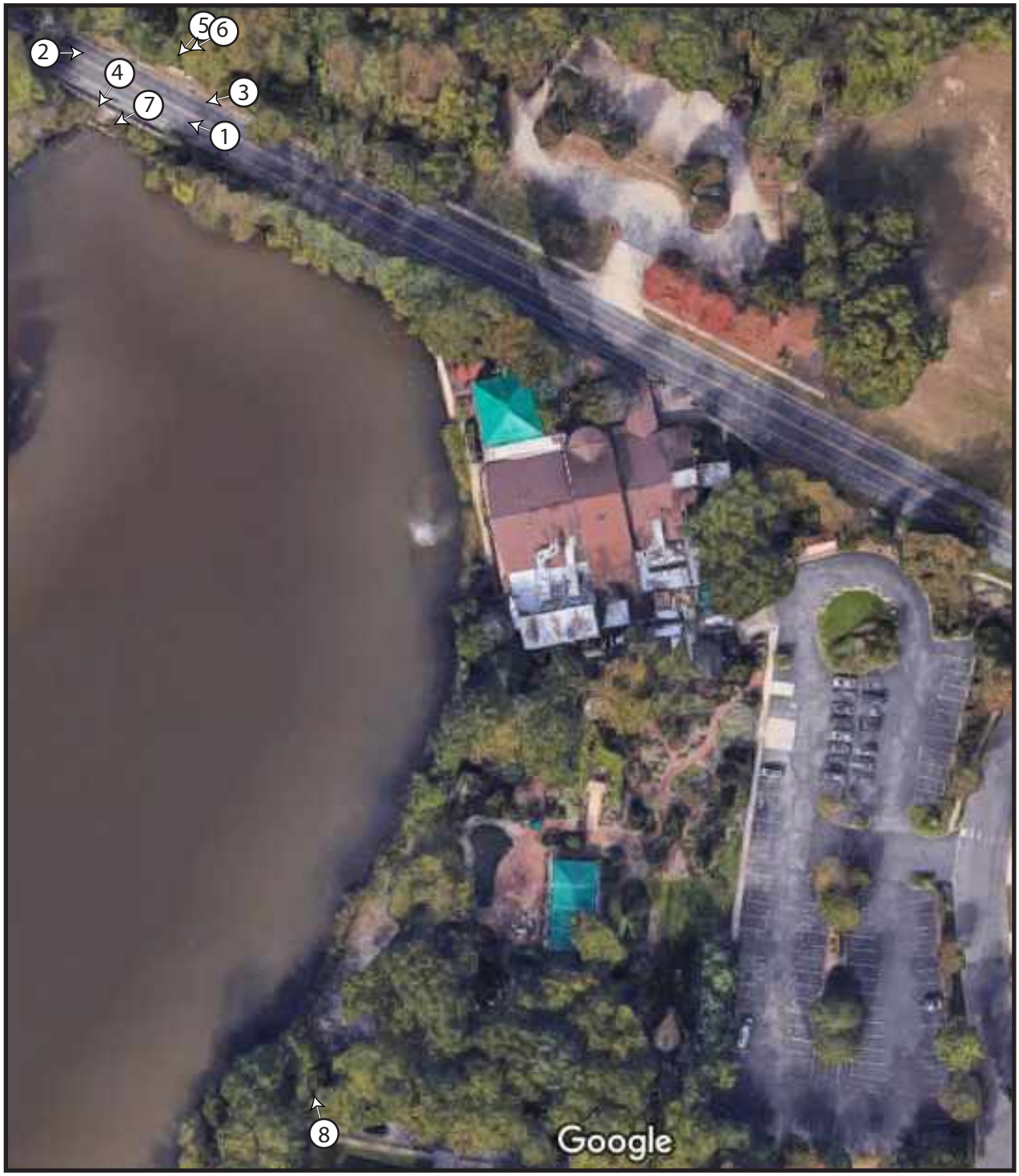
1 Structure Attachment

Narrative Boundary Description: The significant resource is located within the public right-of-way of Cooper Street and is inclusive of the approximately 312'-long and 84'-wide (at base) earthen dam, concrete spillway and concrete arch bridge.

CONTINUATION SHEET Cooper Street over Almonesson Creek



CONTINUATION SHEET Cooper Street over Almonesson Creek



Survey Name: **Cooper Street Bridge over Almonesson Creek Intensive-Level Survey** Date: January 2019

Surveyor: Rachel Craft, Architectural Historians

Organization: Hunter Research, Inc. – 120 West State Street, Trenton, NJ 08608

CONTINUATION SHEET Cooper Street over Almonesson Creek

Photograph 2: North parapet of Cooper Street over Almonesson Creek, view looking northeast.

CONTINUATION SHEET Cooper Street over Almonesson Creek

Photograph 3: South parapet of Cooper Street over Almonesson Creek, view looking southwest.

CONTINUATION SHEET Cooper Street over Almonesson Creek

Photograph 4: Plaque on south parapet of Cooper Street over Almonesson Creek, view looking south.

CONTINUATION SHEET Cooper Street over Almonesson Creek

Photograph 5: Downstream (north) elevation of Cooper Street over Almonesson Creek, view looking south.

CONTINUATION SHEET Cooper Street over Almonesson Creek

Photograph 6: Gates and spillway as seen through downstream elevation of arch, view looking south.

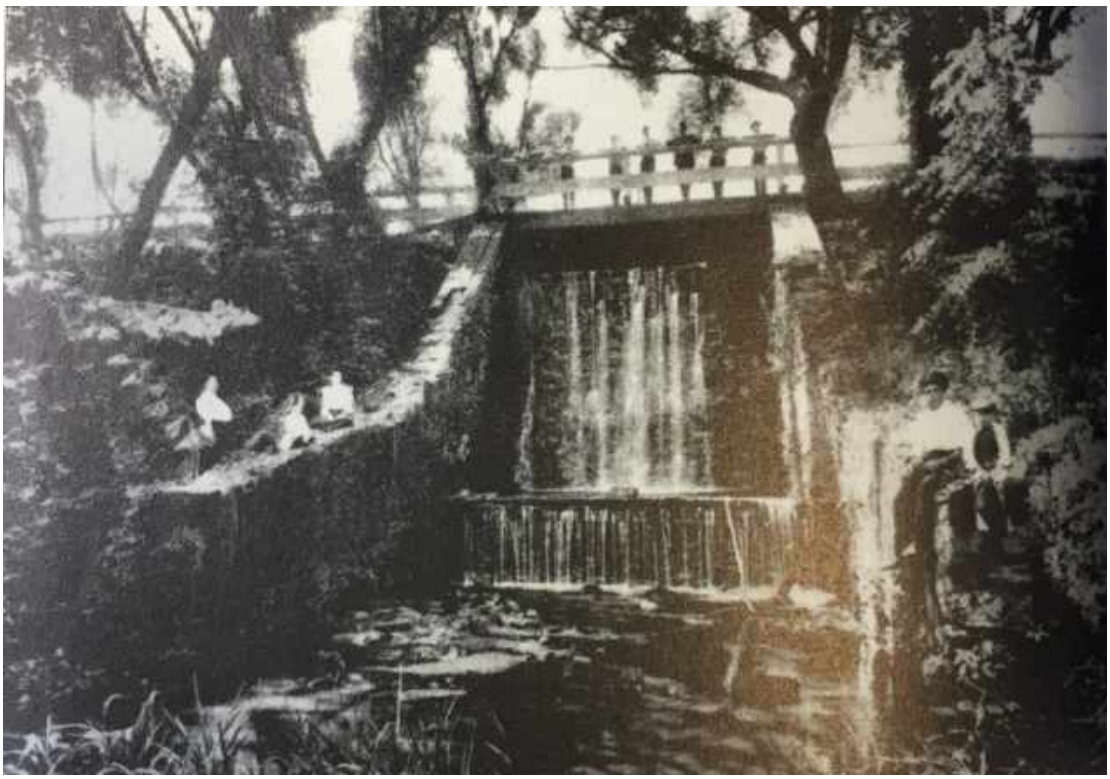
CONTINUATION SHEET Cooper Street over Almonesson Creek

Photograph 7: Concrete frame around spillway on upstream elevation, view looking southwest.

CONTINUATION SHEET Cooper Street over Almonesson Creek

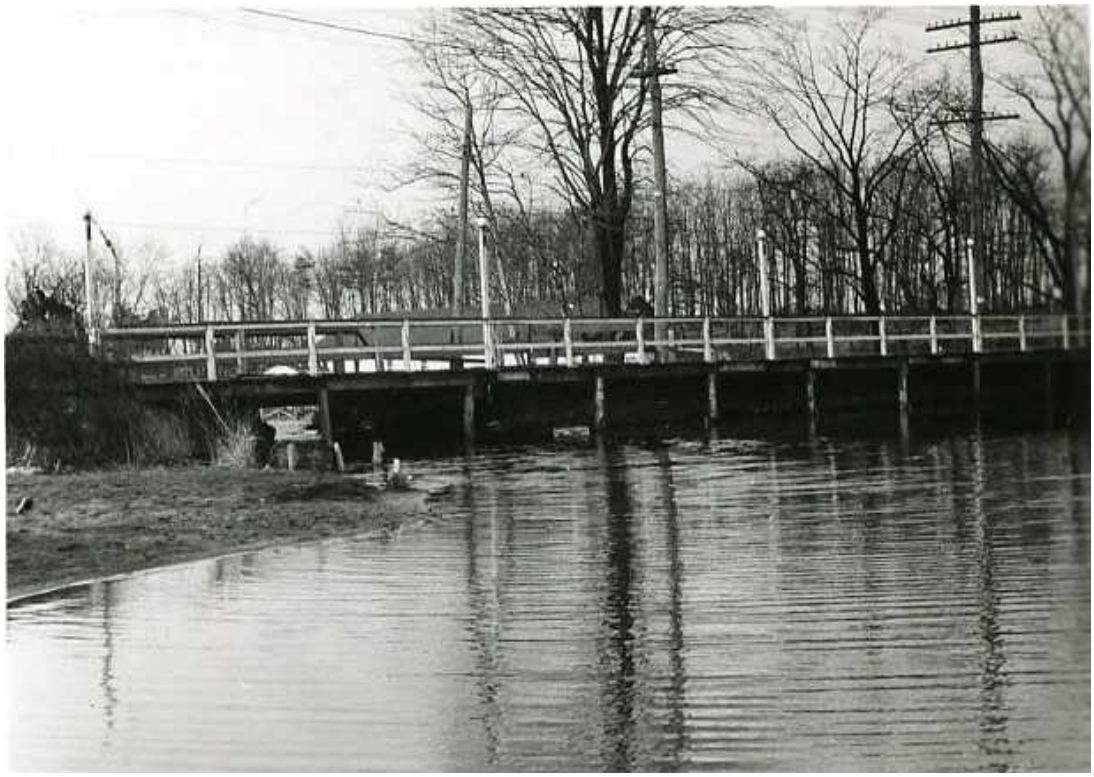
Photograph 8: View of lake and bridge/dam's upstream elevation, looking north.

CONTINUATION SHEET Cooper Street over Almonesson Creek



Photograph 9: A circa 1890-1910 view of Almonesson Lake spillway (Source: Marie Scholding with the Deptford Public Library staff, 2003).

CONTINUATION SHEET Cooper Street over Almonesson Creek



Photograph10: A 1925 photograph of the upstream elevation of the previous bridge carrying Cooper Street over Almonesson Creek (Source: Bureau of Dam Safety 1925).

Photograph 11: A 1925 photograph of the downstream elevation of the Christos swimming pool dam, downstream of the Cooper Street bridge (Source: Bureau of Dam Safety 1925

CONTINUATION SHEET Cooper Street over Almonesson Creek

Photograph 12: A 1926 photograph of the construction of the current bridge to carry Cooper Street over Almonesson Creek (Source: Bureau of Dam Safety 1926).

CONTINUATION SHEET Cooper Street over Almonesson Creek

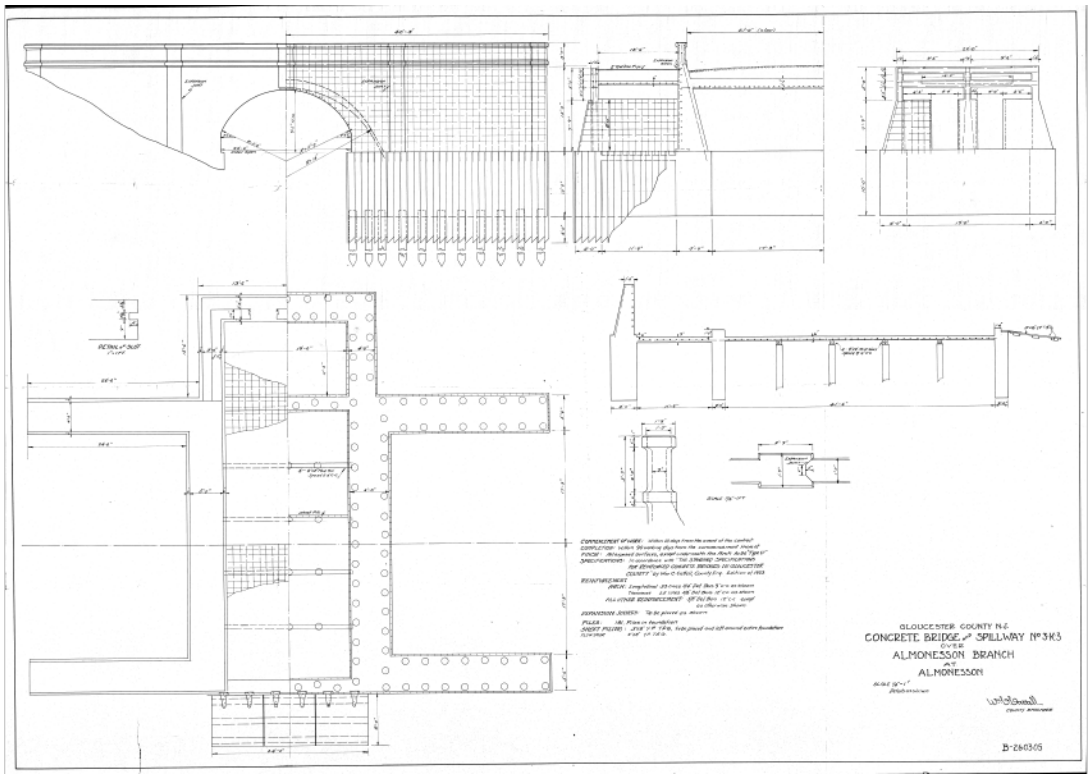


Figure 1. William C. Cattell, County Engineer, Gloucester County N.J., Concrete Bridge and Spillway No. 3-K-3 over Almonesson Branch at Almonesson, 1926.

CONTINUATION SHEET Cooper Street over Almonesson Creek

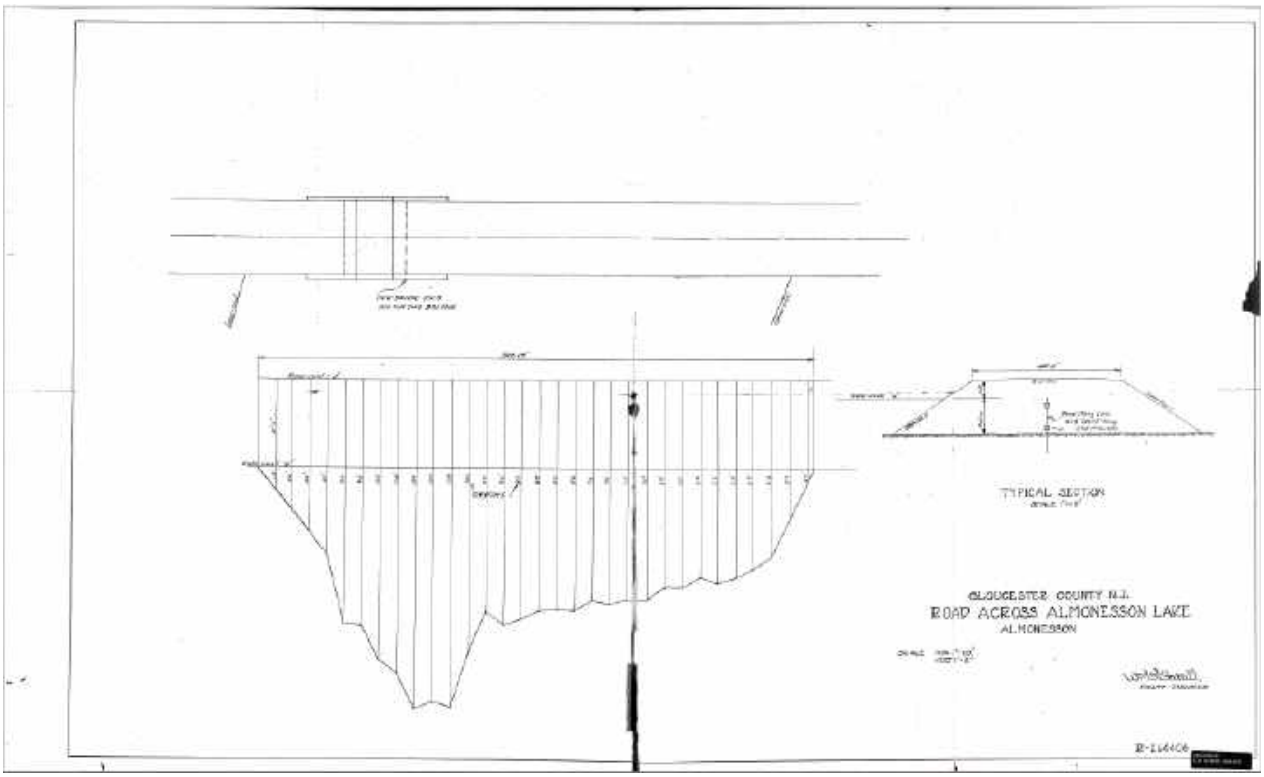


Figure 2. William C. Cattell, County Engineer, Gloucester County N.J., Road Across Almonesson Lake, Almonesson.

CONTINUATION SHEET Cooper Street over Almonesson Creek

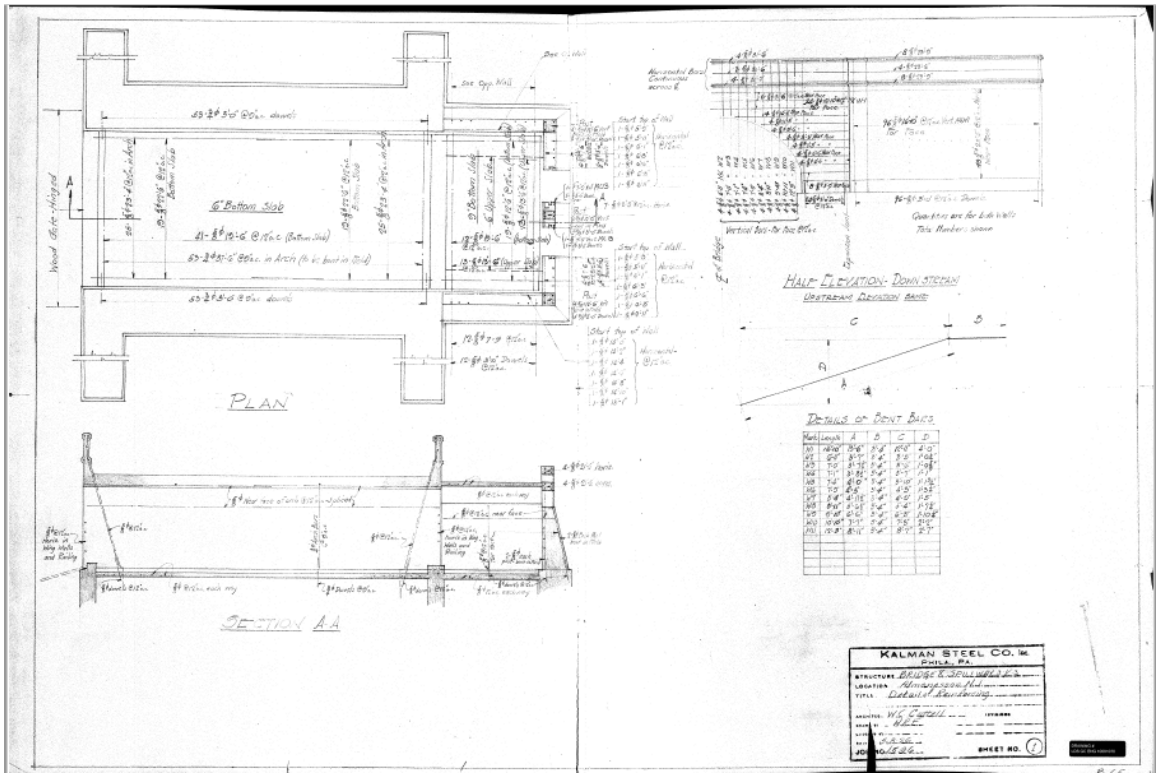


Figure 3. Kalman Steel Co. Inc., Bridge and Spillway 3-K-3, Almonesson, N.J., Detail of Reinforcing, 1926 (Source: Bureau of Dam Safety).

BASE FORM

Historic Sites #:

Property Name: Almonesson Lake Landscape

Street Address: *Street #:* _____ (Low) _____ (High) *Apartment #:* _____ (Low) _____ (High)

Prefix: _____ *Street Name:* Cooper *Suffix:* _____ *Type:* St.

County(s): Gloucester **Zip Code:** 08096

Municipality(s): Deptford Township **Block(s):** _____

Local Place Name(s): _____ **Lot(s):** _____

Ownership: Private **USGS Quad(s)** Runnemede

Photograph:

Photo 1: Almonesson Lake, view looking south
(Rachel Craft, photographer, January 29, 2019; HRI Negative # 18078_D1_00136).

Description: Almonesson Creek forms Almonesson Lake via the earthen gravity dam on the south elevation of the bridge that carries Cooper Street over Almonesson Creek. Almonesson Creek flows south-to-north and is a tributary of Big Timber Creek. The conflux of Almonesson Creek with Big Timber Creek is approximately two miles northeast of the bridge and dam at Cooper Street.

Almonesson Lake, which has a history of being an active public recreation area, is bound by Cooper Street to the north via a dam, private properties to the east and west, and culverts on Good Intent Road and Almonesson Road to the south. The lake no longer serves as a location of active recreation as there are no docks associated with the private properties on the lake and fencing prevents access to much of the lake. The lake occupies about 18 acres and is publicly owned. The area surrounding the lake is wooded, though residential streets and private residences, mostly dating to the 1960s or later, break up some of the wooded areas. Almonesson Lake transitioned from a public recreation area to its current state *circa* 1975 with the removal of recreational buildings,

BASE FORM

Historic Sites #:

the flooding of the beaches along the waterfront southeast of the bridge.

Registration and Status Dates:

National Historic Landmark:		SHPO Opinion:	
National Register:		Local Designation:	
New Jersey Register:		Other Designation:	
Determination of Eligibility:		Other Designation Date:	

Location Map:

See attachment.

Site Map and Photograph Key:

Bibliography/Sources:

Cushing, Thomas and Charles E. Sheppard. *History of the Counties of Gloucester, Salem, and Cumberland, New Jersey, with Biographical Sketches of their Prominent Citizens*. Philadelphia: Everts & Peck, 1883.

Lake, D. J. and S. N. Beers. *Map of the Vicinity of Philadelphia*. 1861

Nationwide Environmental Title Research (NETR). Almonesson, Deptford Township, Gloucester County, New Jersey, 1931-2015. Accessed March 5, 2019, https://www.historicaerials.com/.

Scholding, Marie with the Deptford Public Library Staff. *Images of America: Deptford Township*. Charleston, S. C.: Arcadia Publishing, 2003.

Stansbie, Alexander C., James Keily & Samuel M. Rea. *A Map of the Counties of Salem and Gloucester, New Jersey From Original Surveys*. 1849.

Additional Information:

More Research Needed?

☐ Yes ☒ No

INTENSIVE LEVEL USE ONLY

Attachments Included:

☐ Building ☐ Structure ☐ Object ☐ Bridge
☒ Landscape ☐ Industry

Within Historic District? ☐ Yes ☒ No

Status: ☐ Key-Contributing ☐ Contributing ☐ Non-Contributing

Associated Archaeological Site/Deposit? ☐ Yes ☐ No

BASE FORM

Historic Sites #:

(Known or potential Sites – if yes, please describe briefly)

LANDSCAPE ATTACHMENT

Historic Sites #:

Common Name: Almonesson Lake Landscape
Historic Name: Almonesson Amusement Park, Lakeview Heights Park, Sunset Beach
Present Use: Passive recreation
Historic Use: Active recreation
Construction Date: 1874 **Source:** Scholding 2003
Alteration Date(s): ca. 1975 **Source:** NETR 1931-2015
Primary Landscape Architect/Designer: Unknown
Type: parks and campgrounds **Physical Condition:** Good
Style: none **Remaining Historic Fabric:** Low
Acreage: approximately 18 acres
Hardscape:
Plantings:
Other Features:

Description: Almonesson Lake, originally a mill pond of circa 1800 and then formerly associated with the site of an amusement park from circa 1874 to 1975, is formed by a dam and spillway at its northern end. Cooper Street crosses abreast the dam (see form for Cooper Street Bridge and Dam). Almonesson Creek is a tributary of Big Timber Creek, which it meets approximately two miles northeast of Cooper Street. The amusement park was established in 1874 with a bathing beach and boardwalk on the Lake's eastern shore just south of Cooper Street. Other structures associated with the park including a carousel and swimming pool were located north of Cooper Street in an area now designated Almonesson Creek Park (Deptford Township-owned, see separate form).

Today, Almonesson Lake is an 18-acre water feature, approximately 450' wide east-to-west at its greatest extent and 2,800' long north-to-south. There is no direct public access to the lake. It is bound by Cooper Street to the north; commercial and residential properties to the east and west with private access to the lake; and culverts to the south along Good Intent Road and Almonesson Road (Photographs 1-3). The lake is bound by trees and private lawns. The lake reached its current landscape *circa* 1975 with the removal of the amusement park structures and the flooding of the public beaches.

Setting: Almonesson Lake is located in a mixed-use suburban setting with most lakeside residences constructed in the 1960s or later

ELIGIBILITY WORKSHEET

Historic Sites #:

History: Almonesson Lake was formed circa 1800 when a grist mill was established by Daniel Lamb immediately northwest of where Cooper Street crossed Almonesson Creek. Lamb also used the mill pond for ice harvesting in winter. Lamb reportedly removed (or more likely converted) the grist mill to a cotton mill in 1830. Lamb also built several dwellings in Almonesson village for his workers. Lamb's cotton mill was reportedly destroyed in 1842. Joseph Conrow then purchased the property and constructed another grist mill in 1854 or 1855, which was removed (or perhaps once again updated) in 1873 by its next owner G.D. Carman. The village was formally named Almonesson with the establishment of a post office at the inn in 1872-73. The Carman mill was later owned by Joseph Rawl and operated by Nathan Jennings but had gone out of business by the last decade of the 19th century (Cushing and Sheppard 1883: 198; Scholding 2003: 7-8).

Almonesson Lake became a focal point for a local amusement park, known as Almonesson Lake Park, which was established immediately northeast of the bridge and dam in 1874. A trolley that began operating in 1894 ran between Woodbury and Almonesson brought visitors to the park and a boardwalk along the lake. The park continued to develop and gain local popularity throughout the early 20th century. Several structures, including a merry-go-round, a bowling alley and a roller skating rink, were constructed at the eastern quadrants of the dam. The lake was a focal point of a bath house and beaches, later known as Sunset Beach (Photographs 4-6). Sunset Beach was located on the lake's northeastern shore, south of Cooper Street. The park and beaches were open to the public until early 1970s (Scholding 2003).

The area surround the lake began to develop into a suburban, mixed-use neighborhood during the 1950s and 1960s. Residential developments with curvilinear residential streets were built along Almonesson Lake to the south of Cooper Street. Aerial photographs also show the gradual removal of buildings associated with the former amusement park and the decline of the public beaches at Almonesson Lake. By the mid-1970s, the amusement and recreational facilities and landscape associated with the lake were largely removed.

Significance and Integrity: The Almonesson Lake Landscape is an evolved landscape of mill pond to casual park landscape, focused around a beach and boathouse on the lake's northeastern shore, and finally during the last 40 years or so, a water feature with private access and very little recreational use. During its heyday, the park was a popular recreational spot but it declined during the 1950s and 1960s as the area became more suburban and densely populated. The landscape has no integrity of design, materials or workmanship, other than maintaining the overall form of the lake controlled by a dam and spillway at its northern end. The lake does not retain integrity of setting, feeling or association due to the loss of the park features (beach, boathouse, etc.).

Eligibility for New Jersey and National Registers: ☐ Yes ☒ No **National Register Criteria:** ☐ A ☐ B ☐ C ☐ D

Level of Significance ☐ Local ☐ State ☐ National

Justification of Eligibility/Ineligibility: Almonesson Lake Landscape is a water feature that no longer retains historical integrity to the period of circa 1874-1975 during which it functioned as a locally popular park and bathing//boating attraction. Although it has some potential significance at the local level under Criterion A for its association with the pattern of events surrounding the use of the lake and the development of local suburban recreational features, it retains insufficient integrity to convey this significance. It has no associations with significant individuals under Criterion B. It is not a significant landscape property type, period or method of construction under Criterion C, retaining no specific historic landscape features other than the gross geographic form of the lake itself.

For Historic Districts Only:

Property Count: Key Contributing: _____ Contributing: _____ Non Contributing: _____

ELIGIBILITY WORKSHEET

Historic Sites #:

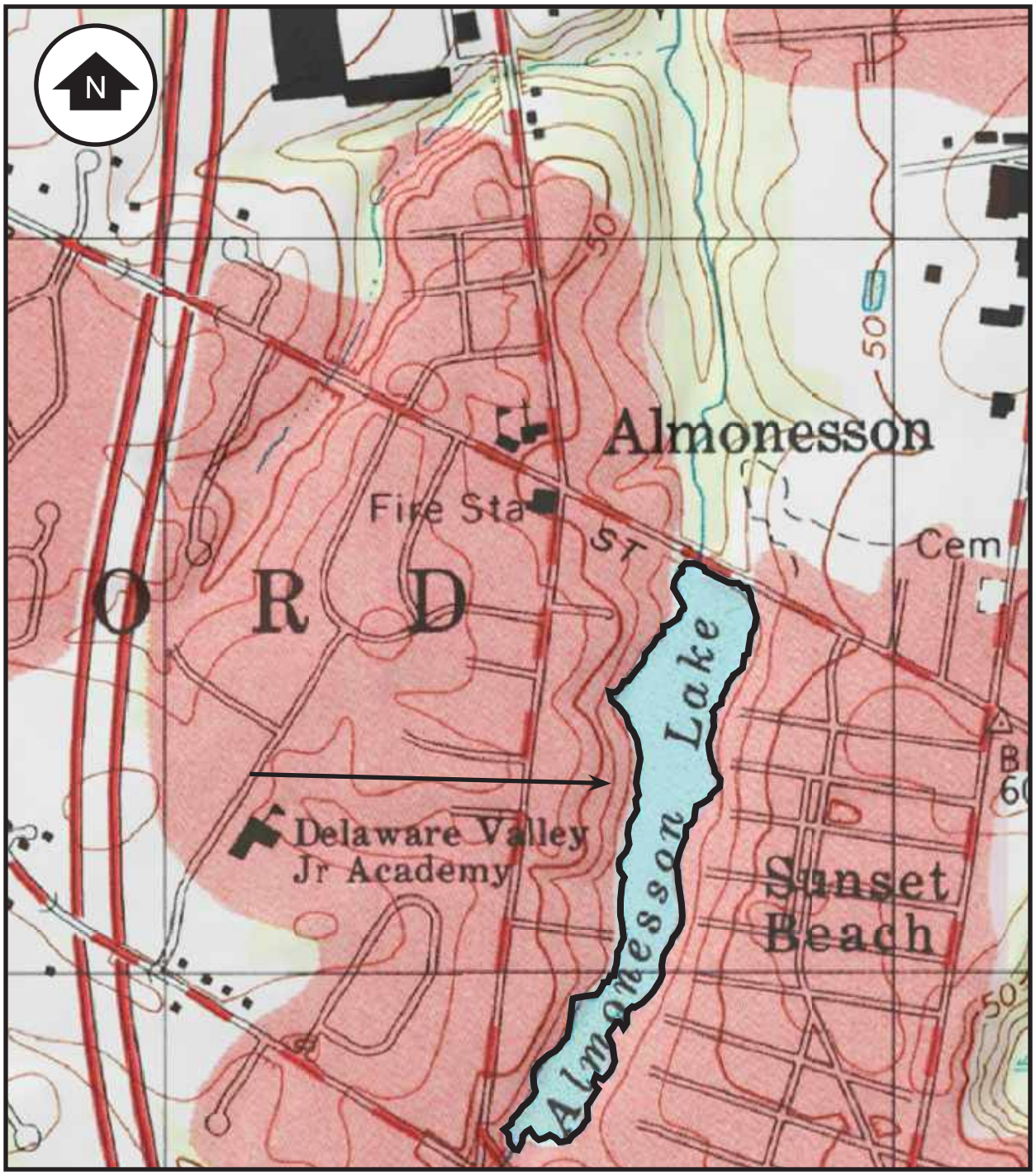
For Individual Properties Only:

List the completed attachments related to the property's significance:
Landscape Form

Narrative Boundary Description:

CONTINUATION SHEET

Almonesson Lake Landscape



CONTINUATION SHEET

Almonesson Lake Landscape

CONTINUATION SHEET Almonesson Lake Landscape

Photograph 2: A view of Almonesson Lake from the end of a residential street, looking southwest.

CONTINUATION SHEET Almonesson Lake Landscape

Photograph 3: A view of Almonesson Lake from Good Intent Road, view looking northeast.

CONTINUATION SHEET Almonesson Lake Landscape

Photograph 4: A pre-1940 photograph of the pavilion at Lakeview Heights Park, which later became the Sunset Beach roller skating rink and ballroom (Source: Scholding with the Deptford Public Library Staff, 2003).

CONTINUATION SHEET Almonesson Lake Landscape

Photograph 5: A 1942 photograph of Sunset Beach on Almonesson Lake with the building that would become the Sunset Beach Ballroom in the background (Source: Scholding with the Deptford Public Library Staff, 2003).

Photograph 6: A 1942 photograph of a first aid station at Sunset Beach on Almonesson Lake (Source: Scholding with the Deptford Public Library Staff, 2003).

BASE FORM

Historic Sites #:

Property Name: Almonesson Creek Park Landscape

Street Address: *Street #:* _____ (Low) _____ (High) *Apartment #:* _____ (Low) _____ (High)

Prefix: _____ *Street Name:* Cooper *Suffix:* _____ *Type:* St.

County(s): Gloucester **Zip Code:** 08096

Municipality(s): Deptford Township **Block(s):** 238 and 239

Local Place Name(s): _____ **Lot(s):** 1 and 1 (respectively)

Ownership: Public **USGS Quad(s)** Runnemede

Photograph:

Photo 1: Almonesson Creek Park, view looking northwest
(Rachel Craft, photographer, January 29, 2019; HRI Negative # 18078_D1_00114).

Description: Almonesson Creek Park, a township park and historically the site of the Almonesson Amusement Park dating to 1874, retains little of this fabric save for concrete foundations and a concrete staircase that comprised some of the amusement park's structures. The amusement park was located on the east bank of the creek downstream of the Cooper Street Bridge and Dam (see separate forms). A grist mill of circa 1800-1900 was located on the west bank of the creek within what today comprises the township park. No remnants of the grist mill remain visible above aground. According to historic aerial photographs, the buildings associated with the amusement park remained on the property until *circa* 1975. The park's current landscape, which is primarily the regrowth of a heavily wooded area, was formed after the removal of the amusement park buildings by 1981 and the reshaping of the current parking area and walking trails by 1995 (NETR 1970, 1981, 1995). Signage installed in 2010 at the park's entrance gives details about the park's history.

BASE FORM

Historic Sites #:

Registration and Status Dates:

National Historic Landmark:		SHPO Opinion:	
National Register:		Local Designation:	
New Jersey Register:		Other Designation:	
Determination of Eligibility:		Other Designation Date:	

Location Map:

Site Map and Photograph Key:

See attachment.

Bibliography/Sources:

Cushing, Thomas and Charles E. Sheppard. *History of the Counties of Gloucester, Salem, and Cumberland, New Jersey, with Biographical Sketches of their Prominent Citizens*. Philadelphia: Everts & Peck, 1883.

Lake, D. J. and S. N. Beers. *Map of the Vicinity of Philadelphia*. 1861

Nationwide Environmental Title Research (NETR). Almonesson, Deptford Township, Gloucester County, New Jersey, 1931-2015. Accessed March 5, 2019, https://www.historicaerials.com/.

Scholding, Marie with the Deptford Public Library Staff. *Images of America: Deptford Township*. Charleston, S. C.: Arcadia Publishing, 2003.

Stansbie, Alexander C., James Keily & Samuel M. Rea. *A Map of the Counties of Salem and Gloucester, New Jersey From Original Surveys*. 1849.

Additional Information:

More Research Needed?

☐ Yes ☒ No

INTENSIVE LEVEL USE ONLY

Attachments Included:

☐ Building ☐ Structure ☐ Object ☐ Bridge
☒ Landscape ☐ Industry

Within Historic District? ☐ Yes ☒ No

Status: ☐ Key-Contributing ☐ Contributing ☐ Non-Contributing

Associated Archaeological Site/Deposit? ☒ Yes ☐ No

BASE FORM

Historic Sites #:

(Known or potential Sites – if yes, please describe briefly) – Potential location of archaeological remnants of amusement park (east bank of Almonesson Creek) and grist/cotton mill (west bank of Almonesson Creek)

LANDSCAPE ATTACHMENT

Historic Sites #:

Common Name: Almonesson Creek Park Landscape

Historic Name: Almonesson Amusement Park, Lakeview Heights Park, Sunset Beach

Present Use: Passive recreation

Historic Use: Passive recreation

Construction Date: 1874 **Source:** Scholding 2003

Alteration Date(s): ca. 1940, ca. 1945, ca. 1975 **Source:** NETR 1931-2015

Primary Landscape Architect/Designer: Unknown

Type: Parks and campgrounds **Physical Condition:** Good

Style: Other **Remaining Historic Fabric:** Low

Acreage: 26.8 acres

Hardscape: Driveways, gravel; Walkways, asphalt

Plantings: Other

Other Features: Other

Description: Almonesson Creek Park, formerly the site of a grist mill dating to circa 1800 and an amusement park dating to 1874 with several modifications completed on the grounds throughout the 20th century, is currently a public park with a gravel parking lot facing Cooper Street, a small gazeebo to the northeast of the parking lot, several concrete foundations and a concrete staircase associated with the property's history as an amusement park and asphalt walking trails (Photographs 2-7). Benches and waste receptacles dot the walkways close to the parking lot. No complete structures related to the park's history as an amusement park are extant. Other than the parking area, the remainder of the park is heavily wooded (Photograph 8). Almonesson Creek flows north near the western boundary of the park (Photograph 9). The amusement park was located on the eastern bank of the creek while an earlier grist/textile mill was located on the west bank north of Cooper Street. A sign at the entrance to the park details the park's history as an amusement park (Photograph 10). Among the amusement park structures were a merry-go-round and a bowling alley (Photographs 11 and 12). The park is bound by private and residential properties to the north; Cooper Street to the south; First Flight Park and a mid-20th-century shopping center to the east; and commercial and residential properties to the west.

Setting: Almonesson Creek Park is located in a mixed-use suburban setting. The entrance to the park fronts Cooper Street, from which a concrete apron leads to a gravel parking lot. Almonesson Creek flows near the western boundary of the park. The park is situated immediately across Cooper Street from 1849 Cooper Street and Almonesson Lake (see separate forms).

ELIGIBILITY WORKSHEET

Historic Sites #:

History: Almonesson Lake was formed circa 1800 when a grist mill was established by Daniel Lamb immediately northwest of where Cooper Street crossed Almonesson Creek. Lamb also used the mill pond for ice harvesting in winter. Lamb reportedly removed (or more likely converted) the grist mill to a cotton mill in 1830. Lamb also built several dwellings in Almonesson village for his workers. Lamb's cotton mill was reportedly destroyed in 1842. Joseph Conrow then purchased the property and constructed another grist mill in 1854 or 1855, which was removed (or perhaps once again updated) in 1873 by its next owner G.D. Carman. The village was formally named Almonesson with the establishment of a post office at the inn in 1872-73. The Carman mill was later owned by Joseph Rawl and operated by Nathan Jennings but had gone out of business by the last decade of the 19th century. The mill was located on the west side of the creek within property now part of Almonesson Creek Park. No above ground remnants of the mill were noted during a site inspection in January 2019 (Cushing and Sheppard 1883: 198; Scholding 2003: 7-8).

Almonesson Lake became a focal point for a local amusement park, known as Almonesson Lake Park, which was established immediately northeast of the bridge and dam in 1874. A trolley that began operating in 1894 ran between Woodbury and Almonesson and brought visitors to the park and a boardwalk along the lake. The park continued to develop and gain local popularity throughout the early 20th century. Several structures, including a merry-go-round, a bowling alley and a roller skating rink, were constructed at the eastern quadrants of the dam (Photographs 11-12). In 1920, a second dam was constructed about 300' downstream of the present dam carrying Cooper Street. This dam impounded water to create a large rectangular swimming pool visible in aerial photographs. The lake was a focal point of a bath house and beaches, later known as Sunset Beach. Sunset Beach was located on the lake's northeastern shore, south of Cooper Street. The park and beaches were open to the public until early 1970s (Scholding 2003).

The area surround the lake began to develop into a suburban, mixed-use neighborhood during the 1950s and 1960s. Residential developments with curvilinear residential streets were built along Almonesson Lake to the south of Cooper Street. Aerial photographs also show the gradual removal of buildings associated with the former amusement park and the decline of the public beaches at Almonesson Lake. By the mid-1970s, the amusement and recreational facilities and landscape associated with the lake were largely removed.

Significance and Integrity: The Almonesson Creek Park landscape no longer retains any building or structures associated with its nearly 100 year history as an amusement park. The present-day landscape has been allowed to reforest with some minimal post-1990 landscaping for parking, trails, benches and a gazebo. The landscape has no integrity of design, materials, workmanship, setting or feeling.

Eligibility for New Jersey and National Registers: ☐ Yes ☒ No **National Register Criteria:** ☐ A ☐ B ☐ C ☐ D

Level of Significance ☐ Local ☐ State ☐ National

Justification of Eligibility/Ineligibility: Almonesson Creek Park no longer retains historical integrity to the period of circa 1874-1975 during which it functioned as a locally popular amusement park and bathing//boating attraction. Although it has some potential significance at the local level under Criterion A for its association with the pattern of events surrounding the use of the lake and the development of a local amusement park, it retains insufficient integrity to convey this significance. It has no associations with significant individuals under Criterion B. It is not a significant landscape property type, period or method of construction under Criterion C, retaining no specific historic landscape features.

ELIGIBILITY WORKSHEET

Historic Sites #:

The property may have some potential for archaeological significance under Criterion D related to foundations or other buried material cultural features that may provide information on the layout and evolution of a 19th-century grist and textile mill (west bank of creek) and a late-19th century amusement park (east bank of creek). Further research and survey would be required to determine archaeological potential.

For Historic Districts Only:

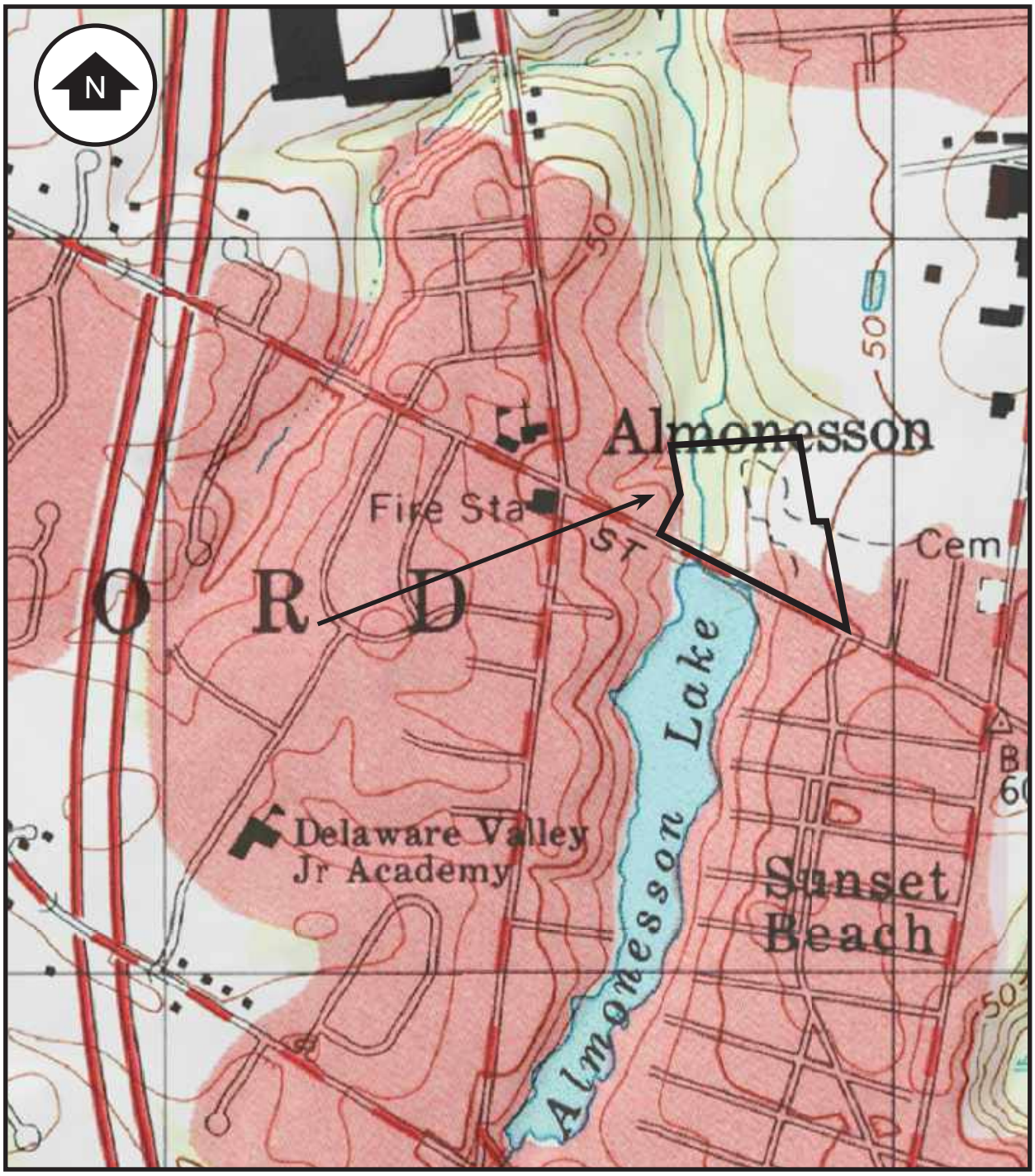
Property Count: Key Contributing: _____ Contributing: _____ Non Contributing: _____

For Individual Properties Only:

List the completed attachments related to the property's significance:
Landscape Form

Narrative Boundary Description:

CONTINUATION SHEET Almonesson Creek Park Landscape



CONTINUATION SHEET Almonesson Creek Park Landscape

CONTINUATION SHEET Almonesson Creek Park Landscape

Photograph 2: View of the Almonesson Creek Park sign at the park's entrance and an asphalt walking trail, looking northwest.

CONTINUATION SHEET Almonesson Creek Park Landscape

Photograph 3: A gazeebo at the northeast corner of the parking lot, view looking south.

CONTINUATION SHEET Almonesson Creek Park Landscape

Photograph 4: A concrete staircase with metal railings north of the parking lot, view looking northeast.

CONTINUATION SHEET Almonesson Creek Park Landscape

Photograph 5: A partial concrete block foundation located north of the parking lot, view looking northeast.

CONTINUATION SHEET Almonesson Creek Park Landscape

Photograph 6: A concrete block and slab foundation located west of the parking lot, view looking northwest.

CONTINUATION SHEET Almonesson Creek Park Landscape

Photograph 7: A concrete slab foundation located west of the parking lot, view looking west.

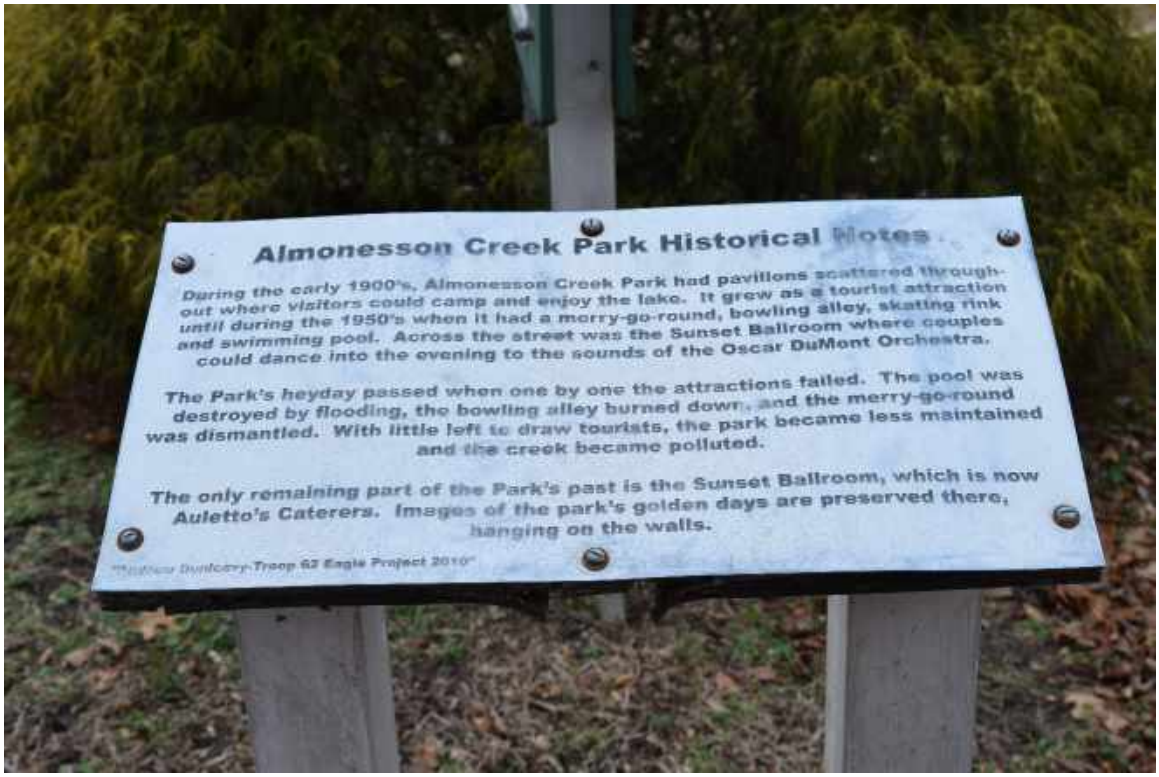
CONTINUATION SHEET Almonesson Creek Park Landscape

Photograph 8: View of an unpaved trail leading toward Almonesson Creek from the parking lot, looking northwest.

CONTINUATION SHEET Almonesson Creek Park Landscape

Photograph 9: View of Almonesson Creek, looking northwest.

CONTINUATION SHEET Almonesson Creek Park Landscape



Photograph 10: Signage at the entrance to Almonesson Creek Park detailing the park's history, view looking south.

Photograph 11: The merry-go-round at Sunset Beach, undated (Source: Scholding with the Deptford Public Library Staff, 2003).

Photograph 12: The bowling alley at Sunset Beach, undated (Source: Scholding with the Deptford Public Library Staff, 2003).

BASE FORM

Historic Sites #:

Property Name: 1723-1725 Cooper Street

Street Address: *Street #:* 1723 *(Low)* 1725 *(High)* *Apartment #:* _____ *(Low)* _____ *(High)*

Prefix: _____ *Street Name:* Cooper *Suffix:* _____ *Type:* St.

County(s): Gloucester **Zip Code:** 08096

Municipality(s): Deptford Township **Block(s):** 246

Local Place Name(s): _____ **Lot(s):** 2-3

Ownership: Private **USGS Quad(s)** Runnemede

Photograph:

Photo 1: 1723-1725 Cooper Street, view looking southwest
(Rachel Craft, photographer, January 29, 2019; HRI Negative # 18078_D1_00059).

Description: This two-and-one-half-story, four-bay, wood-frame, irregular-plan duplex was constructed *circa* 1830, according to historic maps and secondary sources. It is believed that the duplex was constructed as workers' housing for the cotton factory established in Almonesson *circa* 1830. The building has attic-level, rear and side additions and all visible exterior fabric is modern in character. There have been significant alterations to fenestration, particularly to the right side of the duplex. Three outbuildings are associated with the property – a garage and two sheds.

Registration and Status Dates:

National Historic Landmark: _____ SHPO Opinion: _____

National Register: _____ Local Designation: _____

New Jersey Register: _____ Other Designation: _____

BASE FORM

Historic Sites #:

Determination of Eligibility: _____ Other Designation Date: _____

Location Map:

Site Map and Photograph Key:

See attachment.

Bibliography/Sources:

Cushing, Thomas and Charles E. Sheppard. *History of the Counties of Gloucester, Salem, and Cumberland, New Jersey, with Biographical Sketches of their Prominent Citizens*. Philadelphia: Everts & Peck, 1883.

Lake, D. J. and S. N. Beers. *Map of the Vicinity of Philadelphia*. 1861

Nationwide Environmental Title Research (NETR). Almonesson, Deptford Township, Gloucester County, New Jersey, 1931-2015. Accessed March 5, 2019, https://www.historicaerials.com/.

Scholding, Marie with the Deptford Public Library Staff. *Images of America: Deptford Township*. Charleston, S. C.: Arcadia Publishing, 2003.

Stansbie, Alexander C., James Keily & Samuel M. Rea. *A Map of the Counties of Salem and Gloucester, New Jersey From Original Surveys*. 1849.

Additional Information:

More Research Needed?

☐ Yes ☒ No

INTENSIVE LEVEL USE ONLY

Attachments Included:

☒ Building ☐ Structure ☐ Object ☐ Bridge
☐ Landscape ☐ Industry

Within Historic District? ☐ Yes ☒ No

Status: ☐ Key-Contributing ☐ Contributing ☐ Non-Contributing

Associated Archaeological Site/Deposit? ☐ Yes ☐ No
(Known or potential Sites – if yes, please describe briefly)

BUILDING ATTACHMENT

Historic Sites #:

Common Name: 1723-1725 Cooper Street
Historic Name:
Present Use: Residential
Historic Use: Residential
Construction Date: ca. 1830 **Source:** Stansbie, Keily and Rea 1849; Cushing and Sheppard 1883
Alteration Date(s): 20th-c. **Source:** Physical Form and Materials
Designer: **Physical Condition:** Good
Builder: **Remaining Historic Fabric:** Low
Style: None
Form: Duplex **Stories:** 2.5
Type: **Bays:** 4
Roof Finish Materials: Asphalt shingles
Exterior Finish Materials Vinyl siding

Exterior Description: The duplex at 1723-1725 Cooper Street was built *circa* 1830 according to historic maps and secondary sources as factory workers' housing. The building is two-and-one-half stories with four bays and a cross-gabled historic core with additions to the rear (south) elevations. It is unclear from historic aerial photographs when the additions were completed. A concrete-coated chimney is situated just below the roof's ridge between the two halves of the duplex. A shed-roof porch supported by wood posts that has a concrete deck spans the width of the front (north) elevation. The two sides of the duplex have different architectural characters based on alterations undertaken by the owners.

1723 Cooper Street (right half of duplex) – The side-gabled right half of the duplex likely represents the original roof form of both sides of the duplex. The building is vinyl sided and there is no visible original exterior fabric. The fenestration has been altered with no original window openings and only one overlarge replacement 1/1 window at the second story. The side (west) elevation has a projecting, 2.5-story, single-bay el and another single-story, single-bay addition that houses a secondary entry (Photograph 2). One 20th-century shed-roofed garage is located immediately south of the dwelling (Photograph 3). A concrete driveway leads from Cooper Street to the garage.

1725 Cooper Street (left half of duplex) – The left half of the duplex has a hipped roof with shed dormers on the front (north) and side (east) elevations, interpreted as being a late 19th or early 20th century change to the building's original side-gabled roof. The dormers have modern stained-glass panes over replacement louvre windows. A one-story addition extends to the rear (south) elevation (Photograph 4). Other windows are a mixture of replacement louvre and double-hung 1/1 metal sash. A modern front-gabled shed is located immediately south of the dwelling, and another front-gabled shed is located southeast of the dwelling at the edge of the property (Photographs 5-6). The property is also occupied by a vinyl and composite wood deck and a pool near the rear (south) elevation of the dwelling. An asphalt driveway is shared by 1725 Cooper Street and 1731 Cooper Street.

Interior Description: Not inspected.

BUILDING ATTACHMENT

Historic Sites #:

Setting: 1723-1725 Cooper Street is located in a mixed-use suburban setting adjacent to a mid-20th-century shopping center. The duplex fronts Cooper Street and is situated approximately 413 feet west of Almonesson Creek facing north. The property on which the building sits consists of a grass yard with concrete and asphalt paving for driveways and sidewalks. Immediately across from 1723-1725 Cooper Street is the parking lot of 1738 Cooper Street. Immediately adjacent to 1723-1725 Cooper Street is a *circa* 1935 residence at 1731 Cooper Street.

ELIGIBILITY WORKSHEET

Historic Sites #:

History: The duplex at 1723-1725 Cooper Street is estimated to have been constructed on the south side of Cooper Street *circa* 1830 according to historic maps and secondary sources (Stansbie, Keily, Rea & Smith 1849; Cushing and Sheppard 1883:198). It is reported that in 1830, Daniel Lamb, the owner of the grist mill formerly located immediately west Almonesson Creek, constructed a cotton factory on the same site. He also built housing for workers at the factory, as reported by local historians Cushing and Sheppard in 1883 (198). A duplex of similar form and massing is located at the southeast corner of the intersection of Almonesson Road and Cooper Street. Though it is unclear when the additions to the rear and side elevations of the buildings were completed, they were not likely part of the duplex's original construction (Photographs 2 and 4).

Significance and Integrity: 1723-1725 Cooper Street is historically associated with Almonesson village's 19th-century rural industrial phase of development (*circa* 1800-1875). It is a common form of workers' housing regionally, a two-story, side-gabled duplex that likely originally was 2 over 2 fenestration on both of its halves. While the original form of the dwelling can be conjectured, it has a high degree of alteration including changes to the roof line, fenestration pattern, rear and side elevation additions, and no significant original exterior fabric. The building lacks material integrity, and has low integrity of design. The building does not retain integrity of setting due to 20th and 21st-century suburban mixed-use development on Cooper Street. Integrity of feeling and association with a 19th-century mill village are also greatly diminished by modern development.

Eligibility for New Jersey and National Registers: ☐ Yes ☒ No **National Register Criteria:** ☐ A ☐ B ☐ C ☐ D

Level of Significance ☐ Local ☐ State ☐ National

Justification of Eligibility/Ineligibility: 1723-1725 Cooper Street is undistinguished, altered vernacular duplex, and, therefore, is not a significant representative example of its architectural type under Criterion C. Replacement materials, including some vinyl siding and metal, vinyl and louvre windows, constitute alterations to the dwelling. Additions to the rear and side elevations of the duplex have altered its form and massing. Its replacement materials and additions have negatively impacted integrity of design, materials and workmanship. The property has no known associations with significant historical events or people under Criteria A or B.

For Historic Districts Only:

Property Count: Key Contributing: _____ Contributing: _____ Non Contributing: _____

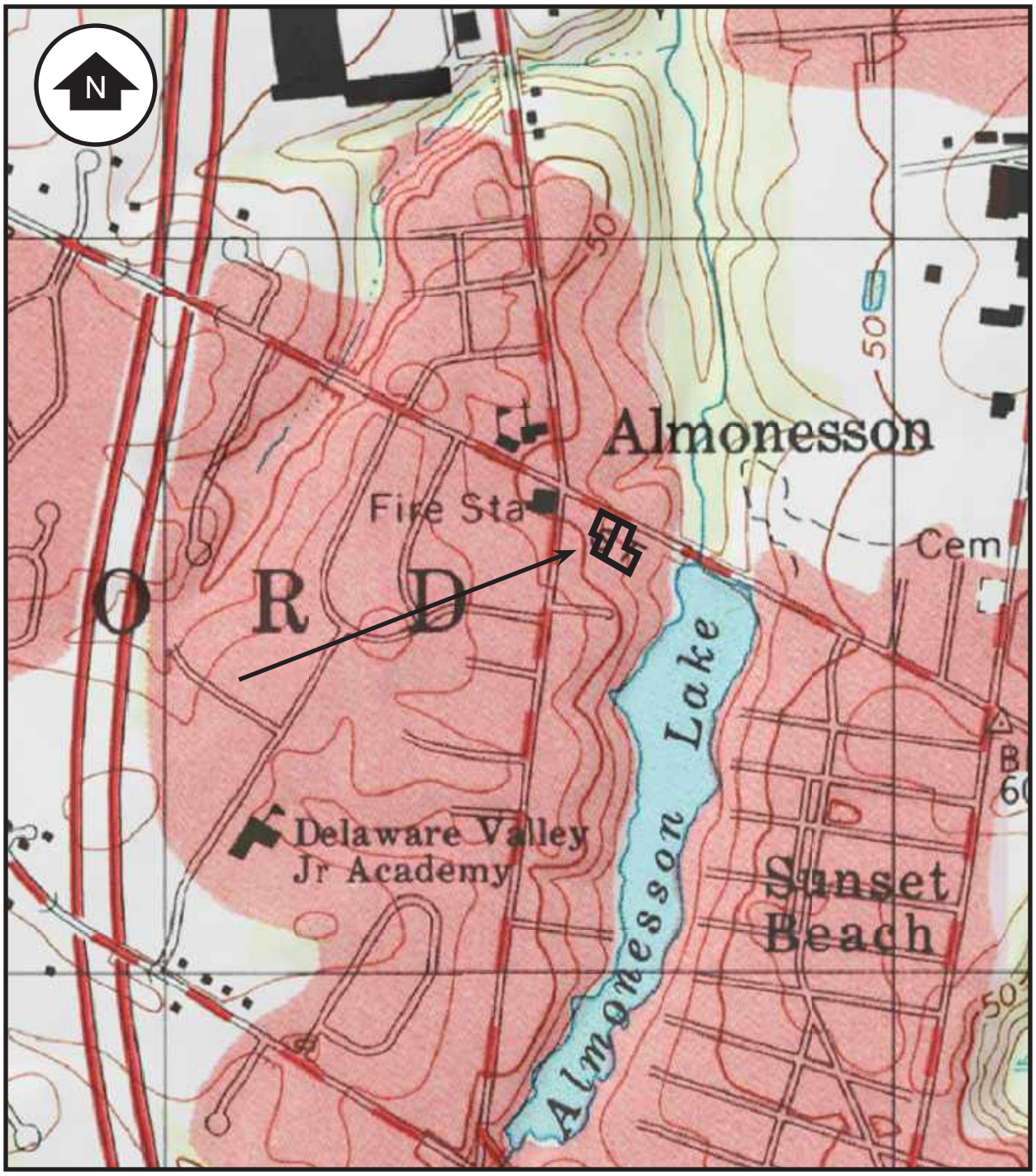
For Individual Properties Only:

List the completed attachments related to the property's significance:

Narrative Boundary Description:

CONTINUATION SHEET

1723-1725 Cooper Street



Survey Name: **Cooper Street Bridge over Almonesson Creek Intensive-Level Survey** Date: January 2019

Surveyor: Rachel Craft, Architectural Historians

Organization: Hunter Research, Inc. – 120 West State Street, Trenton, NJ 08608

CONTINUATION SHEET

1723-1725 Cooper Street

CONTINUATION SHEET 1723-1725 Cooper Street

Photograph 2: 1723-25 Cooper Street, view looking southeast.

CONTINUATION SHEET 1723-1725 Cooper Street

Photograph 3: Garage behind 1723 Cooper Street, view looking southeast.

CONTINUATION SHEET 1723-1725 Cooper Street

Photograph 4: 1723-25 Cooper Street, view looking southwest.

CONTINUATION SHEET 1723-1725 Cooper Street

Photograph 5: Shed behind 1725 Cooper Street, view looking southwest.

CONTINUATION SHEET 1723-1725 Cooper Street

Photograph 6: Shed on lot of 1725 Cooper Street, view looking southwest.

BASE FORM

Historic Sites #:

Property Name: 1731 Cooper Street

Street Address: *Street #:* 1731 (Low) _____ (High) *Apartment #:* _____ (Low) _____ (High)

Prefix: _____ *Street Name:* Cooper *Suffix:* _____ *Type:* St.

County(s): Gloucester **Zip Code:** 08096

Municipality(s): Deptford Township **Block(s):** 246

Local Place Name(s): _____ **Lot(s):** 12

Ownership: Private **USGS Quad(s)** Runnemede

Photograph:

Photo 1: 1731 Cooper Street, view looking southwest
(Rachel Craft, photographer, January 29, 2019; HRI Negative # 18078_D1_00075).

Description: This one-and-one-half-story, three-bay, cross-gabled "minimal traditional" dwelling was constructed in 1952 according to tax records. It has an asphalt-shingle roof and is clad with aluminum siding and a stone-patterned concrete veneer. A brick chimney is centered on the roof's ridge. The dwelling rests on a concrete foundation. It is an architecturally undistinguished example of a common mid-20th-century vernacular house type.

Registration and Status Dates:

National Historic Landmark: _____ SHPO Opinion: _____

National Register: _____ Local Designation: _____

New Jersey Register: _____ Other Designation: _____

Determination of Eligibility: _____ Other Designation Date: _____

BASE FORM

Historic Sites #:

Location Map:

Site Map and Photograph Key:

See attachment.

Bibliography/Sources:

Nationwide Environmental Title Research (NETR). Almonesson, Deptford Township, Gloucester County, New Jersey, 1931-2015. Accessed March 5, 2019, https://www.historicaerials.com/.

NJ Parcels.com. 1731 Cooper Street. Accessed March 5, 2019, https://njparcels.com/property/.

Additional Information:

More Research Needed?

☐ Yes ☒ No

INTENSIVE LEVEL USE ONLY

Attachments Included:

☒ Building ☐ Structure ☐ Object ☐ Bridge
☐ Landscape ☐ Industry

Within Historic District? ☐ Yes ☒ No

Status: ☐ Key-Contributing ☐ Contributing ☐ Non-Contributing

Associated Archaeological Site/Deposit? ☐ Yes ☐ No
(Known or potential Sites – if yes, please describe briefly)

BUILDING ATTACHMENT

Historic Sites #:

Common Name: 1731 Cooper Street
Historic Name:
Present Use: Residential
Historic Use: Residential
Construction Date: 1952 **Source:** Tax records; NETR 1931-2015
Alteration Date(s): **Source:**
Designer: **Physical Condition:** Good
Builder: **Remaining Historic Fabric:** Medium
Style:
Form: Minimal Traditional **Stories:** 1.5
Type: **Bays:** 3
Roof Finish Materials: Asphalt shingles
Exterior Finish Materials Aluminum siding, stone-patterned concrete

Exterior Description: The 1.5-story, 3-bay, minimal traditional dwelling's cross-gabled roof is covered in asphalt shingles and the exterior is covered in aluminum siding on its side (east and west) elevations and a stone-patterned concrete veneer on the front-facing (north) gable. A brick chimney is centered on the roof's ridge. A partial-width porch is enclosed with a glazed exterior door and tripled horizontal pane windows. Other windows are a mixture of double-hung 1/1 vinyl and metal sashes. A one-story, shed roof addition original to the construction of the dwelling spans the length of the rear (south) elevation and contains tripled horizontal pane windows. The dwelling rests on a concrete foundation. A concrete sidewalk and staircase lead to the main entry.

Interior Description: Not inspected.

Setting: 1731 Cooper Street is located in a mixed-use suburban setting adjacent to a mid-20th-century shopping center. The dwelling fronts Cooper Street and is situated approximately 302 feet southwest of Almonesson Creek. The property on which the dwelling sits is occupied by a large grass yard and a shared asphalt driveway between this dwelling and the dwelling at 1725 Cooper Street.

ELIGIBILITY WORKSHEET

Historic Sites #:

History: The dwelling at 1731 Cooper Street was constructed in 1952 according to tax records, a date that is confirmed by historic aerial photography. The dwelling retains its original form and massing, and the property has remained largely unchanged except for the paving of a shared driveway between the dwellings at 1725 and 1731 Cooper Street.

Significance and Integrity: 1731 Cooper Street is an individually undistinguished example of early- to mid-20th-century housing. The dwelling retains its cross-gabled minimal traditional form, but contains some replacement vinyl and horizontal pane windows. Integrity of design is retained although integrity of materials and workmanship is diminished somewhat by replacement siding and windows. Integrity of setting is diminished by mixed-use development along Cooper Street. The other aspects of integrity (location, feeling, association) are present.

Eligibility for New Jersey and National Registers: ☐ Yes ☒ No **National Register Criteria:** ☐ A ☐ B ☐ C ☐ D

Level of Significance ☐ Local ☐ State ☐ National

Justification of Eligibility/Ineligibility: 1731 Cooper Street is architecturally undistinguished example of a common mid-20th-century house form, sometimes referred to as “minimal traditional.” Houses of this cross-gabled form with a projecting window bay were built widely from the 1930s to the 1960s, usually with little ornamentation and often using simulated stone finishes, reflecting a relatively low-cost approach to single-family housing. The house has some diminishment of integrity of materials/workmanship and is judged to not be significant under Criterion C. The property has no known associations with significant historical events or people under Criteria A or B.

For Historic Districts Only:

Property Count: Key Contributing: _____ Contributing: _____ Non Contributing: _____

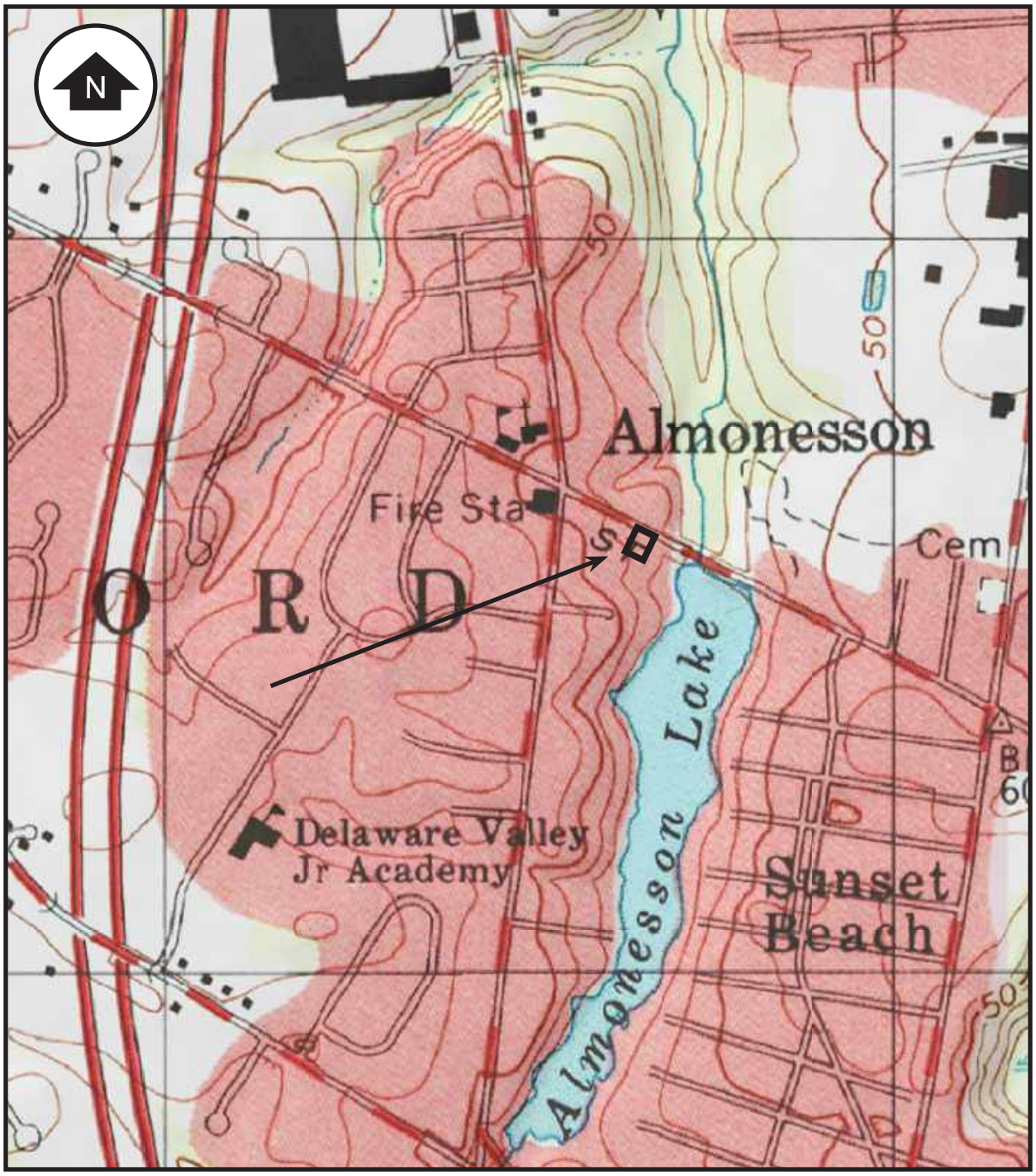
For Individual Properties Only:

List the completed attachments related to the property’s significance:
Building Attachment

Narrative Boundary Description:

CONTINUATION SHEET

1731 Cooper Street



CONTINUATION SHEET

1731 Cooper Street

CONTINUATION SHEET 1731 Cooper Street

Photograph 2: Oblique view of 1731 Cooper Street showing the front (north) and side (east) elevations, view looking southwest.

CONTINUATION SHEET 1731 Cooper Street

Photograph 3: Oblique view of 1731 Cooper Street showing the front (north) and side (west) elevations, view looking southeast.

BASE FORM

Historic Sites #:

Property Name: 1737 Cooper Street (Christian Playcare, LLC)

Street Address: *Street #:* 1737 (Low) _____ (High) *Apartment #:* _____ (Low) _____ (High)

Prefix: _____ *Street Name:* Cooper *Suffix:* _____ *Type:* St.

County(s): Gloucester **Zip Code:** 08096

Municipality(s): Deptford Township **Block(s):** 246

Local Place Name(s): _____ **Lot(s):** 4

Ownership: Private **USGS Quad(s)** Runnemede

Photograph:

Photo 1: 1737 Cooper Street, view looking southeast
(Rachel Craft, photographer, January 29, 2019; HRI Negative # 18078_D1_00085).

Description: This two-story, two-bay, rectangular-plan building that currently serves as a child care center was constructed *circa* 1988. It has a domestic residential form and may have started as a single-family house. It has an asphalt-shingle roof and is clad in vinyl siding. The building's varied roofline has a partial gambrel section to the north and a gabled section to the south. The gambrel roof hangs over a porch on the side (west) elevation and shields the main entry. There are three detached, one-story, gable-front sheds to the south and northeast of the building.

The building is not 50 years old at the time of this survey and thus does not meet the age threshold for eligibility consideration.

BASE FORM

Historic Sites #:

Registration and Status Dates:

National Historic Landmark: _____
SHPO Opinion: _____
National Register: _____
Local Designation: _____
New Jersey Register: _____
Other Designation: _____
Determination of Eligibility: _____
Other Designation Date: _____

Location Map:

Site Map and Photograph Key:

See attachment.

Bibliography/Sources:

Nationwide Environmental Title Research (NETR). Almonesson, Deptford Township, Gloucester County, New Jersey, 1931-2015. Accessed March 6, 2019, https://www.historicaerials.com/.

NJ Parcels.com. 1731 Cooper Street. Accessed March 5, 2019, https://njparcels.com/property/.

Additional Information:

More Research Needed?

☐ Yes ☒ No

INTENSIVE LEVEL USE ONLY

Attachments Included:

☒ Building ☐ Structure ☐ Object ☐ Bridge
☐ Landscape ☐ Industry

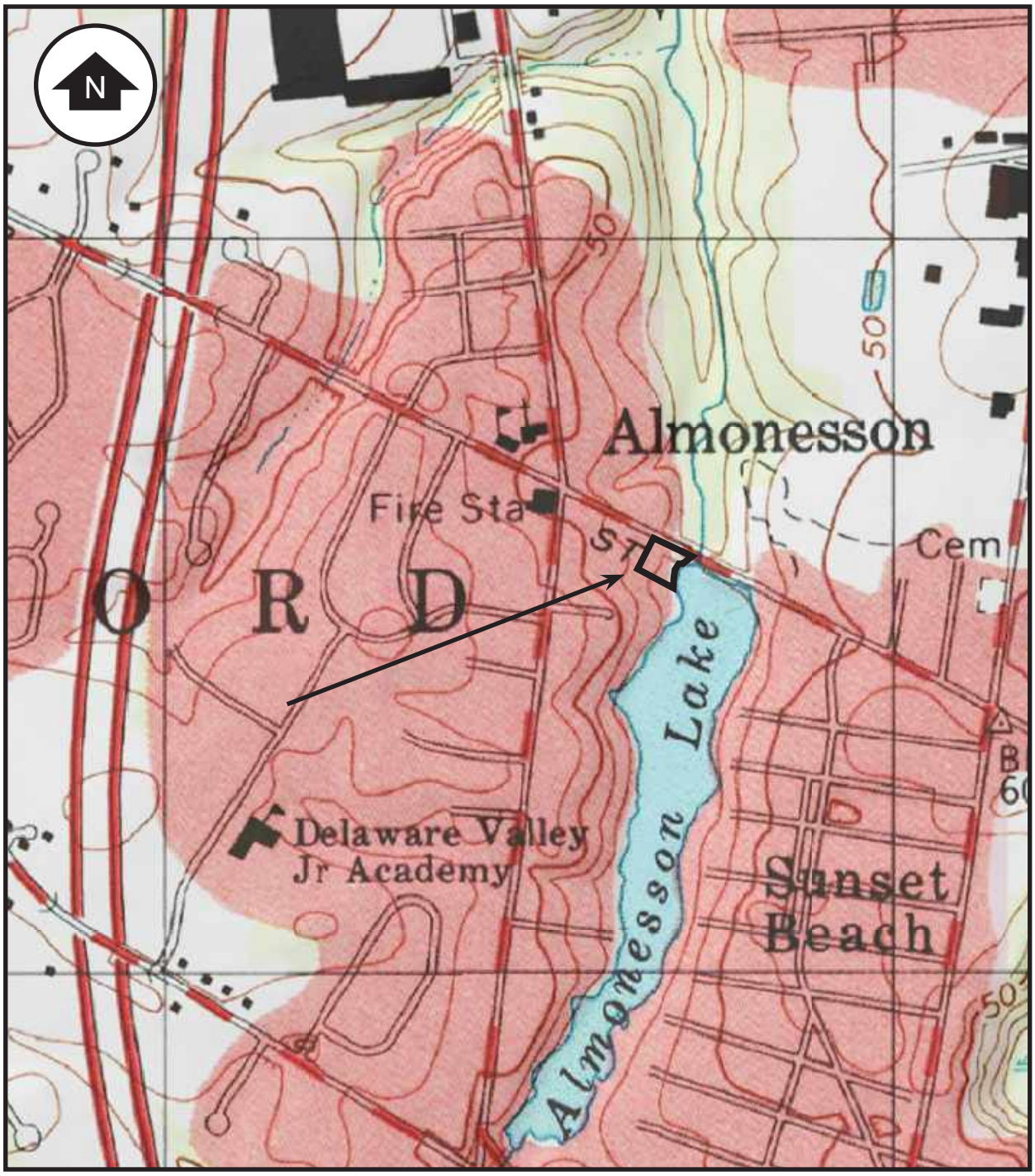
Within Historic District? ☐ Yes ☒ No

Status: ☐ Key-Contributing ☐ Contributing ☐ Non-Contributing

Associated Archaeological Site/Deposit? ☐ Yes ☐ No
(Known or potential Sites – if yes, please describe briefly)

CONTINUATION SHEET

1737 Cooper Street



CONTINUATION SHEET

1737 Cooper Street

CONTINUATION SHEET 1737 Cooper Street

Photograph 2: View of the side (north) elevation 1737 Cooper Street, view looking south.

CONTINUATION SHEET 1737 Cooper Street

Photograph 3: View of the rear (east) elevation of 1737 Cooper Street, view looking southwest.

CONTINUATION SHEET 1737 Cooper Street

Photograph 4: The west elevation of 1737 Cooper Street with a shed visible immediately south of the building.

CONTINUATION SHEET 1737 Cooper Street

Photograph 5: Two joined sheds at the northeast corner of the property.

CONTINUATION SHEET 1737 Cooper Street

Photograph 6: A playground on the property of 1737 Cooper Street, view looking southwest.

BASE FORM

Historic Sites #:

Property Name: 1738 Cooper Street (Filomena's Lakeview Restaurant)

Street Address: *Street #:* 1738 *(Low)* _____ *(High)* *Apartment #:* _____ *(Low)* _____ *(High)*

Prefix: _____ *Street Name:* Cooper *Suffix:* _____ *Type:* St.

County(s): Gloucester **Zip Code:** 08096

Municipality(s): Deptford Township **Block(s):** 238

Local Place Name(s): _____ **Lot(s):** 3

Ownership: Private **USGS Quad(s)** Runnemede

Photograph:

Photo 1: 1738 Cooper Street, view looking northwest
(Rachel Craft, photographer, January 29, 2019; HRI Negative # 18078_D1_00049).

Description: This two-and-one-half-story building, which currently serves as a restaurant, was built in at least six phases to reach its current irregular plan and massing. The building's historic core (Phase I) consists of a gambrel-roof, rectangular plan building, which local history reports as having been established as a stagecoach stop before 1750 (Scholding 2003:30), but in scale and massing appears to date to the second quarter of the 19th century. A *circa* 1920, two-story, front-gabled, rectangular-plan addition (Phase 2) extends from the rear (north) elevation. A *circa* 1930 addition (Phase 3) is to the side (west) elevation of the *circa* 1920 addition. Phase 3 is one story and spans the depth of Phase 2. The building was converted into Filomena's Lakeview Restaurant in 2002, and its exterior changed from wood clapboard to stucco. A *circa* 2004 two-story addition (Phase 4) modified the building's wraparound porch on the east elevation. Two additional one-story, rectangular-plan additions (Phases 5 and 6) were completed *circa* 2017 on the side (east and west) elevations and partially extend the lengths of the previous additions.

BASE FORM

Historic Sites #:

Registration and Status Dates:

National Historic Landmark:		SHPO Opinion:	
National Register:		Local Designation:	
New Jersey Register:		Other Designation:	
Determination of Eligibility:		Other Designation Date:	

Location Map:

See attachment.

Site Map and Photograph Key:

Bibliography/Sources:

Cushing, Thomas and Charles E. Sheppard. *History of the Counties of Gloucester, Salem, and Cumberland, New Jersey, with Biographical Sketches of their Prominent Citizens*. Philadelphia: Everts & Peck, 1883.

Everts & Stewart. Detail of "Map of Deptford Township" from *Combination Atlas Map of Salem & Gloucester Counties, New Jersey. Compiled, Drawn and Published From Personal Examinations and Surveys*. 1876.

Gordon, Thomas. *A Map of the State of New Jersey with Part of the Adjoining States*. Thomas Gordon, Trenton, N. J. and H. S. Tanner, Philadelphia, 1828.

Lake, D. J. and S. N. Beers. *Map of the Vicinity of Philadelphia*. 1861

Nationwide Environmental Title Research (NETR). Almonesson, Deptford Township, Gloucester County, New Jersey, 1931-2015. Accessed March 5, 2019, https://www.historicaerials.com/.

Scholding, Marie with the Deptford Public Library Staff. *Images of America: Deptford Township*. Charleston, S. C.: Arcadia Publishing, 2003.

Stansbie, Alexander C. Stansbie, James Keily and Samuel M Rea. *A Map of the Counties of Salem and Gloucester, New Jersey*. 1849. Smith & Wistar, Philadelphia.

Stewart, Frank H.. *Notes on Old Gloucester County, New Jersey: Historical Records Published by The New Jersey Society of Pennsylvania*. Camden, N. J.: Chew & Sons Company, 1917..

Additional Information:

More Research Needed?

☐ Yes ☒ No

INTENSIVE LEVEL USE ONLY

Attachments Included:

☒ Building ☐ Structure ☐ Object ☐ Bridge
☐ Landscape ☐ Industry

Survey Name: **Cooper Street Bridge over Almonesson Creek Intensive-Level Survey** Date: January 2019
Surveyor: Rachel Craft, Architectural Historian
Organization: Hunter Research, Inc. – 120 West State Street, Trenton, NJ 08608

BASE FORM

Historic Sites #:

Within Historic District?	☐ Yes	☒ No		
	Status:	☐ Key-Contributing	☐ Contributing	☐ Non-Contributing
Associated Archaeological Site/Deposit? (Known or potential Sites – if yes, please describe briefly)	☐ Yes	☐ No		

BUILDING ATTACHMENT

Historic Sites #:

Common Name: 1738 Cooper Street (Filomena's Lakeview Restaurant)
Historic Name: Almonesson Inn
Present Use: Commercial, eating, drinking
Historic Use: Inn and tavern
Construction Date: ca. 1825-1850 **Source:** Style; Scholding 2003
Alteration Date(s): ca. 1875, 1920, 1930, 2002, 2004, 2017 **Source:** Physical Evidence; Scholding 2003; NETR 1931-2015
Designer: **Physical Condition:** Good
Builder: **Remaining Historic Fabric:** Low
Style: None
Form: **Stories:** 2.5
Type: **Bays:** 5
Roof Finish Materials: Asphalt Shingle
Exterior Finish Materials Stucco

Exterior Description: This rambling multi-phase building was historically used as an inn and tavern and is now a restaurant. The two-and-a-half-story, five-bay, side gambrel-roofed core (Photograph 1), which faces Cooper Street, has been reported by local history to have been constructed before 1750 as stagecoach stop. The scale and massing of the Phase 1 core, however, is not consistent with an early colonial date of construction for an inn and tavern at a rural location on what was historically the local road from Woodbury to Bleinheim. The core is judged to most likely have a *circa* 1825-50 date of having reached its current scale and massing under the gambrel roof, which has two wide and capped stuccoed chimneys – an exterior chimney on the east and an interior chimney on the west elevation. It is possible that an even older core is subsumed in the footprint of the existing building but no physical evidence of this was observed. A thorough interior inspection was not undertaken.

Three late-19th-century arched dormers with floral designs, end returns and wood framing are concentrated in the gambrel section of the Phase I roof. All windows contain modern replacement vinyl casements with faux muntins. Based on comparison with early 20th century photographs (Photographs 7-9), all of the second story windows on the façade have been shortened and two doors have been added to access a second-story balcony with a modern wrought-iron railing. The roof hangs over the second story, which has an open porch enclosed with stuccoed columns and metal fencing. The second story porch is supported by non-original paired Doric columns. The first story porch is partially enclosed at the fourth and fifth bays, covering the main entrance to the building. The first story of the front elevation is lined with a non-original stone veneer. The foundation of the historic core is not visible.

The rear and side elevations of the building have experienced heavy alterations, modifying the building from a rectangular plan to a T-plan (Photographs 2-4). The first addition to the rear of the building was completed *circa* 1920 as a rectangular, gabled enlargement (Photograph 9). The full-width porch was modified into a wraparound porch on the east elevation. A one-story, flat-roof, rectangular-plan addition was completed on the west elevation *circa* 1930. The building was remodeled and converted into Filomena's Lakeview Restaurant in 2002. The exterior was coated in stucco, and a one-story, flat-roof, square addition was added to the ell of the *circa* 1930 addition. A two-story, flat-roof addition truncated the wraparound porch on the east elevation *circa* 2004. Two one-story, flat-

BUILDING ATTACHMENT

Historic Sites #:

roof, rectangular-plan additions were completed *circa* 2017 on the east elevation behind the *circa* 2004 addition and the west elevation of the *circa* 1930 addition. There is a one-story, one-bay shed and a waste container structure at the northeast corner of the property (Photograph 5).

Interior Description: Not inspected.

Setting: 1738 Cooper Street is located in a mixed-use suburban setting adjacent to a mid-20th-century shopping center. The building fronts Cooper Street and is situated approximately 230 feet northwest of Almonesson Creek facing south with views of Almonesson Lake to the southeast beyond the properties on the south side of the street. The property on which the building sits is occupied by a large surface parking lot for restaurant patrons. Immediately across from 1738 Cooper Street are a small 1952 residence at 1731 Cooper Street and a modern child care center at 1737 Cooper Street.

ELIGIBILITY WORKSHEET

Historic Sites #:

History: The Almonesson Inn, later the Lakeview Inn, is estimated to have been established prior to the American Revolution as an inn and tavern along Cooper Street. According to Frank H. Stewart's *Notes on Old Gloucester County*, Joseph Tatem was an inn keeper who was granted a license for his house in Deptford Township to serve as an inn in 1767 (Stewart 1917:63). It is possible that the two-and-one-half story, five-bay, gambrel-roof core of the building incorporates a mid-18th-century structure, but the scale and massing of this building, quite large for a rural colonial tavern and inn, suggests a somewhat later date of construction in the second quarter of the 19th century when Almonesson was expanded as a mill village. The building appears on historic maps, most often as the neighbor of a non-extant grist mill constructed between the inn and Almonesson Creek in the early 19th century (Gordon 1828; Stansbie, Keily, Rea & Smith 1849). Lake and Beers maps from 1861 and 1869 indicate that the inn was owned by C. Murphy. A series of early 20th-century photographs document the Almonesson Inn as a gambrel-roofed, clapboarded, five-bay building with a classicized single-bay portico sheltering a centered main entry (Photographs 6 and 7).

According to Marie Scholding and the Deptford Public Library Staff, the Almonesson Inn was modified in the early 1920s and had rooms available for rent into the 1950s (Scholding 2003:30). Historic aerial photographs document several phases of expansion. The first phase of alterations to the building were completed in the early 1920s with the addition of a two-story, gabled section to the rear of the historic core. About the same time, a full-width one-story open porch replaced the portico The addition changed the building's form to an L-plan (Photograph 8). A *circa* 1930, 1-story, rectangular-plan addition was completed on the west elevation of the rear addition.

The building was purchased by its current owners in 2002 and changed to Filomena's Lakeview Restaurant (Scholding 2003:30). The building was extensively remodeled in the style of an Italian restaurant. Among the many changes were coating the exterior in stucco and stone veneer and adding balconies and iron railings. The building's wraparound porch was terminated by a two-story, two-bay, flat-roof addition *circa* 2004. Two more additions were completed on the east and west elevations *circa* 2017.

Significance and Integrity: 1738 Cooper Street is the former Almonesson Inn, a local tavern and inn that can trace its origins to at least *circa* 1767 and has been in what appears to be nearly continuous use to the present day. Architecturally, the oldest surviving section of the building appears in scale and form to date to the second quarter of the 19th century. The building is locally recognized for its age and long-time use as a place to meet and socialize. The building does not retain integrity of design, materials or workmanship to any particular period of its use, and has undergone a significant change in character over the past 20 years as an Italian restaurant. There is no visible historic exterior fabric, and other than the overall massing of the gambrel-roof core, integrity of design has also been lost due to later alterations and additions. Integrity of setting is no longer present due to the mixed use development on Cooper Street. Integrity of feeling has been diminished, although integrity of association remains relatively strong in the local community.

Eligibility for New Jersey and National Registers: ☐ Yes ☒ No **National Register Criteria:** ☐ A ☐ B ☐ C ☐ D

Level of Significance ☐ Local ☐ State ☐ National

ELIGIBILITY WORKSHEET

Historic Sites #:

Justification of Eligibility/Ineligibility: 1738 Cooper Street is a heavily altered commercial building developed in several phases, and is therefore not a significant representative example of an inn or tavern property type, period or method of construction under Criterion C. Its many alterations, including its form and mass-altering additions, its stuccoed and stone-veneer exterior and its replacement vinyl windows have negatively impacted its ability to convey architectural significance.

The property has no known associations with significant individuals under Criterion B.

The inn has strong historic associations with a pattern of events related to the development of Almonesson from a mill village to a local recreational center with inn, amusement park and lake. The significant period of this local pattern of events was circa 1800 to 1875 for the mill village and circa 1875 to 1975 for the amusement park and lake (see forms for Almonesson Lake Landscape and Almonesson Creek Park Landscape). While the potential significance of this local pattern of events is acknowledged, the inn no longer retains sufficient aspects of integrity to represent the historic character it achieved during either of Almonesson's mill village or amusement park eras.

For Historic Districts Only:

Property Count: Key Contributing: _____ Contributing: _____ Non Contributing: _____

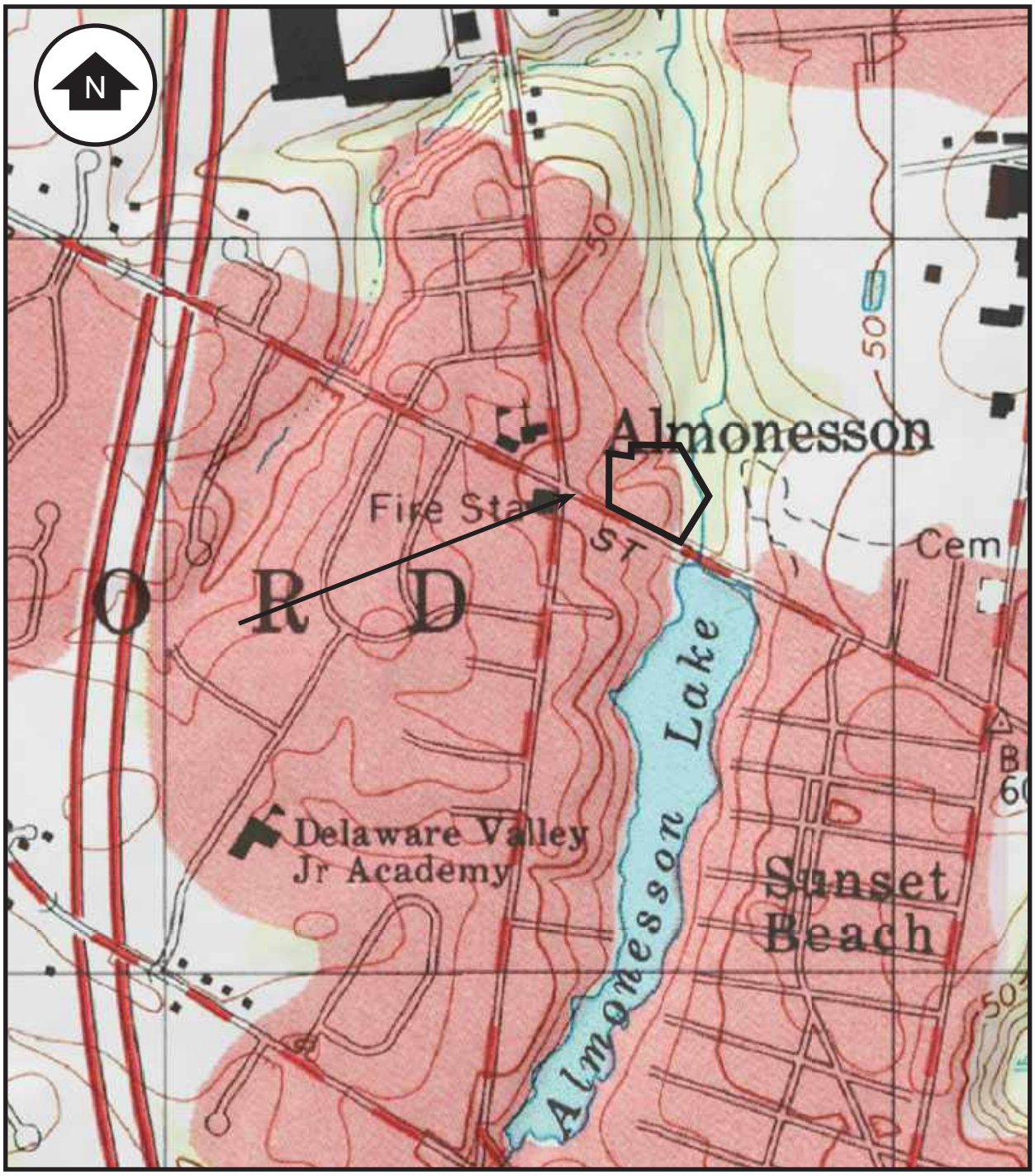
For Individual Properties Only:

List the completed attachments related to the property's significance:
Building attachment

Narrative Boundary Description:

CONTINUATION SHEET

1738 Cooper Street



CONTINUATION SHEET

1738 Cooper Street

CONTINUATION SHEET 1738 Cooper Street

Photograph 2: The side (west) elevation of 1738 Cooper Street, looking east.

CONTINUATION SHEET 1738 Cooper Street

Photograph 3: View of the rear (north) elevation of 1738 Cooper Street, looking southeast.

CONTINUATION SHEET 1738 Cooper Street

Photograph 4: View of the side (east) elevation of 1738 Cooper Street, looking northwest.

CONTINUATION SHEET 1738 Cooper Street

Photograph 5: View of the shed (left) and waste disposal structure (right), looking north.

CONTINUATION SHEET 1738 Cooper Street

Photograph 6: View of the parking lot on the property of 1738 Cooper Street, looking northwest.

Photograph 7: A *circa* 1900 view of the Almonesson Inn (Source: Marie Scholding with the Deptford Public Library staff, 2003).

Photograph 8: A 1918 view of the Almonesson Inn (Source: Marie Scholding with the Deptford Public Library staff, 2003).

Photograph 9: A pre-1940 aerial view of the Almonesson Inn (Source: Marie Scholding with the Deptford Public Library staff, 2003).

BASE FORM

Historic Sites #:

Property Name: 1849 Cooper Street (Auletto's Catering)

Street Address: *Street #:* 1849 *(Low)* _____ *(High)* *Apartment #:* _____ *(Low)* _____ *(High)*

Prefix: _____ *Street Name:* Cooper *Suffix:* _____ *Type:* St.

County(s): Gloucester **Zip Code:** 08096

Municipality(s): Deptford Township **Block(s):** 245

Local Place Name(s): _____ **Lot(s):** 1

Ownership: Private **USGS Quad(s)** Runnemede

Photograph:

Photo 1: 1849 Cooper Street, view looking northwest
(Rachel Craft, photographer, January 29, 2019; HRI Negative # 18078_D1_00019).

Description: This two-story, seven-bay, irregular, rambling building, which currently serves houses a catering business and reception hall, was initially constructed *circa* 1920 as a pavilion for visitors to the beaches at Almonesson Lake. The building's historic core, which is now completely concealed by post-modern additions, consisted of a gable-front building that fronted Almonesson Lake. The Auletto family has operated business on the property since 1945. The property previously served as the Sunset Beach pavilion and bath/boathouse for a recreational park and swimming spot. A *circa* 1975 one-story addition was added to the north (side) elevation. Other additions were completed on the south (side) and east (front) elevations *circa* 1988, which expanded the building to its current form and massing. Other detached buildings associated with the property when it operated as Sunset Beach were removed and several of the property's current detached outbuildings were in place by 2007 (NETR 1970-2015). The property has also been altered on several occasions since the 1980s in landscaping and hardscaping to fit its current function as an event venue. Walls, fencing, landscaping and the property's downward grade toward the lake obscure much of the property from view.

BASE FORM

Historic Sites #:

Registration and Status Dates:

National Historic Landmark:		SHPO Opinion:	
National Register:		Local Designation:	
New Jersey Register:		Other Designation:	
Determination of Eligibility:		Other Designation Date:	

Location Map:

See attachment.

Site Map and Photograph Key:

Bibliography/Sources:

Scholding, Marie with the Deptford Public Library Staff. *Images of America: Deptford Township*. Charleston, S. C.: Arcadia Publishing, 2003.

Nationwide Environmental Title Research (NETR). Almonesson, Deptford Township, Gloucester County, New Jersey, 1931-2015. Accessed March 5, 2019, https://www.historicaerials.com/.

The Philadelphia Inquirer. "Announcing the Opening of Auletto's Sunset Beach and Park – For The Season." June 19, 1970. Accessed March 7, 2019, https://newspapers.com.

Additional Information:

More Research Needed?

☐ Yes ☒ No

INTENSIVE LEVEL USE ONLY

Attachments Included:

☒ Building ☐ Structure ☐ Object ☐ Bridge
☐ Landscape ☐ Industry

Within Historic District? ☐ Yes ☒ No

Status: ☐ Key-Contributing ☐ Contributing ☐ Non-Contributing

Associated Archaeological Site/Deposit? ☐ Yes ☐ No
(Known or potential Sites – if yes, please describe briefly)

BUILDING ATTACHMENT

Historic Sites #:

Common Name: 1849 Cooper Street (Auletto's Catering)
Historic Name: Sunset Beach Ballroom
Present Use: Commercial, eating, drinking
Historic Use: Commercial, Recreational
Construction Date: ca. 1920 **Source:** Scholding 2003; NETR 1931-2015
ca. 1975
ca. 1988
Alteration Date(s): 2007 **Source:** NETR 1931-2015
Designer: **Physical Condition:** Good
Builder: **Remaining Historic Fabric:** Low
Style: None
Form: Irregular **Stories:** 2
Type: **Bays:** 7
Roof Finish Materials: Asphalt shingle, metal
Exterior Finish Materials Wood planks, stucco

Exterior Description: This rambling multi-phase building was historically used as a pavilion/boat and bath house, and later a ballroom for the recreational beaches at Almonesson Lake. The building now serves as an event and catering venue. The two-story, seven-bay, gable-front historic core of the building, which faces Almonesson Lake, was constructed prior to 1930. The building's front (east) elevation is skewed in its alignment to Cooper Street. It has a stepped roof with a flat and thick metal cornice. Windows, which are a mixture of modern picture and casement types, and doors on the front elevation are shielded by hipped, standing seam metal awnings. A long portico on the first story is supported by square Doric columns and covers much of the sidewalk to the glazed and paneled main entry. An extension of the front elevation projects to the south and contains picture windows and a glazed entry (Photograph 2). The side (south) elevation of the building has a varied roofline due to the *circa* 1988 additions to the historic core of the building (Photograph 3). Much of the side elevation of the building is concealed because of the property's downward slope toward Almonesson Lake. The rear (west) elevation of the building shows much of the historic core of the building, though modern modifications have been made to the façade (Photograph 4). The entirety of the historic core is situated under the gable facing the lake. Added picture windows are shielded by the overhanging roof of the gable and the standing seam rooves of the second and first story overhangs. The *circa* 1988 addition to the south elevation is visible to the right of the gable-front historic core. The side (north) elevation is mostly obscured by a stuccoed concrete wall and an awning over the sidewalk (Photograph 5). The awning extends along Cooper Street from a *circa* 1988 one-story, side-gable addition the front elevation. The one-story addition has a brick veneer that covers the bottom half of the structure. The awning's roof is covered with asphalt shingles, has exposed rafter tails and is supported by wood posts. Beyond the stuccoed wall is a conical tower that was added to the side (north) elevation. The foundations of the historic core and additions were not visible.

Additional detached structures and features of the property, which include gazeebos, metal tent fixtures, sheds, hardscaping and landscaping, were added to the property following its conversion into a private event venue (Photograph 6). The current structures and features of the property were completed by 2007 (NETR 1970-2015). A large surface parking lot comprises much of the property (Photograph 7).

BUILDING ATTACHMENT

Historic Sites #:

Interior Description: Not inspected.

Setting: 1849 Cooper Street is located in a mixed-use suburban setting. The building is skewed along Cooper Street while its rear elevation faces Almonesson Lake. It is situated approximately 267 feet southeast of Almonesson Creek. The property on which the building sits is occupied by a large surface parking lot for Auletto's Catering patrons. Immediately across from 1849 Cooper Street is Almonesson Creek Park, the former site of an amusement park associated with Sunset Beach.

ELIGIBILITY WORKSHEET

Historic Sites #:

History: 1849 Cooper Street is estimated to have been constructed circa 1920 as a pavilion for visitors to the beach at Almonesson Lake. The building first appears on a historic aerial photograph from 1930 along with buildings across Cooper Street associated with the amusement park adjacent to Almonesson Creek. The building served as the Lakeview Heights Park pavilion (Photograph 8). The recreational area was renamed Sunset Beach in 1940, and the building was renovated into a roller skating rink (Photographs 9-10). It was converted into the Sunset Beach Ballroom *circa* 1945. The Auletto family operated Sunset Beach as a seasonal recreation area, offering picnic areas, swimming and other activities (*The Philadelphia Inquirer* 1970). Signage at Almonesson Creek Park indicates that the popularity of the park and beach declined as its attractions began to fail. According to historic aerial photographs, the beach on the property of 1849 Cooper Street was flooded and swimming features removed from the lake *circa* 1975 (NETR 1970, 1981). The building was modified *circa* 1988 with large-scale additions to the north, south and east elevations, covering its historic core. The property reached its current form *circa* 2007 (NETR 1931-2015).

Significance and Integrity: 1849 Cooper Street is a heavily altered lakeside pavilion associated with Almonesson Lake's period of recreational use from circa 1874 to 1975. The pavilion appears to have been built circa 1920 as bath and boathouse, and quickly transitioned into a roller skating rink and then a ballroom. By the 1970s, the lakeshore recreational activities closed and the building transitioned into serving as catering and event venue, taking advantage of views of the lake. While the building has historic associations with a local recreational attraction during its heyday, it has undergone significant changes in design, materials and workmanship, no longer conveying, and in many respects completely obscuring, its original use and form. The integrity of setting and feeling has been impacted by modern commercial development on Cooper Street and the loss of the other amusements and activities at the lake. The building retains integrity of historic association and location.

Eligibility for New Jersey and National Registers: ☐ Yes ☒ No **National Register Criteria:** ☐ A ☐ B ☐ C ☐ D

Level of Significance ☐ Local ☐ State ☐ National

Justification of Eligibility/Ineligibility: 1849 Cooper Street is a heavily altered recreational building developed in several phases for various evolving uses, and is therefore not a significant representative example of a period, type or method of construction of an early-20th-century, lakeside pavilion under Criterion C. Its many alterations, including its form and massing-altering additions, its replacement exterior materials and its replacement vinyl windows have negatively impacted integrity of design, materials, workmanship and feeling.

The property has no known associations with significant historical people under Criterion B.

1849 Cooper Street has historic associations with a pattern of events related to the development of Lake Almonesson as local recreational center with inn, amusement park and outdoor activities. The significant period of this local pattern of events was circa 1875 to 1975 for the amusement park and lake (see forms for Almonesson Lake Landscape and Almonesson Creek Park Landscape). While the potential significance of this local pattern of events is acknowledged, the property no longer retains sufficient aspects of integrity to represent the historic character it achieved during the amusement park era.

For Historic Districts Only:

Property Count: Key Contributing: _____ Contributing: _____ Non Contributing: _____

For Individual Properties Only:

List the completed attachments related to the property's significance:

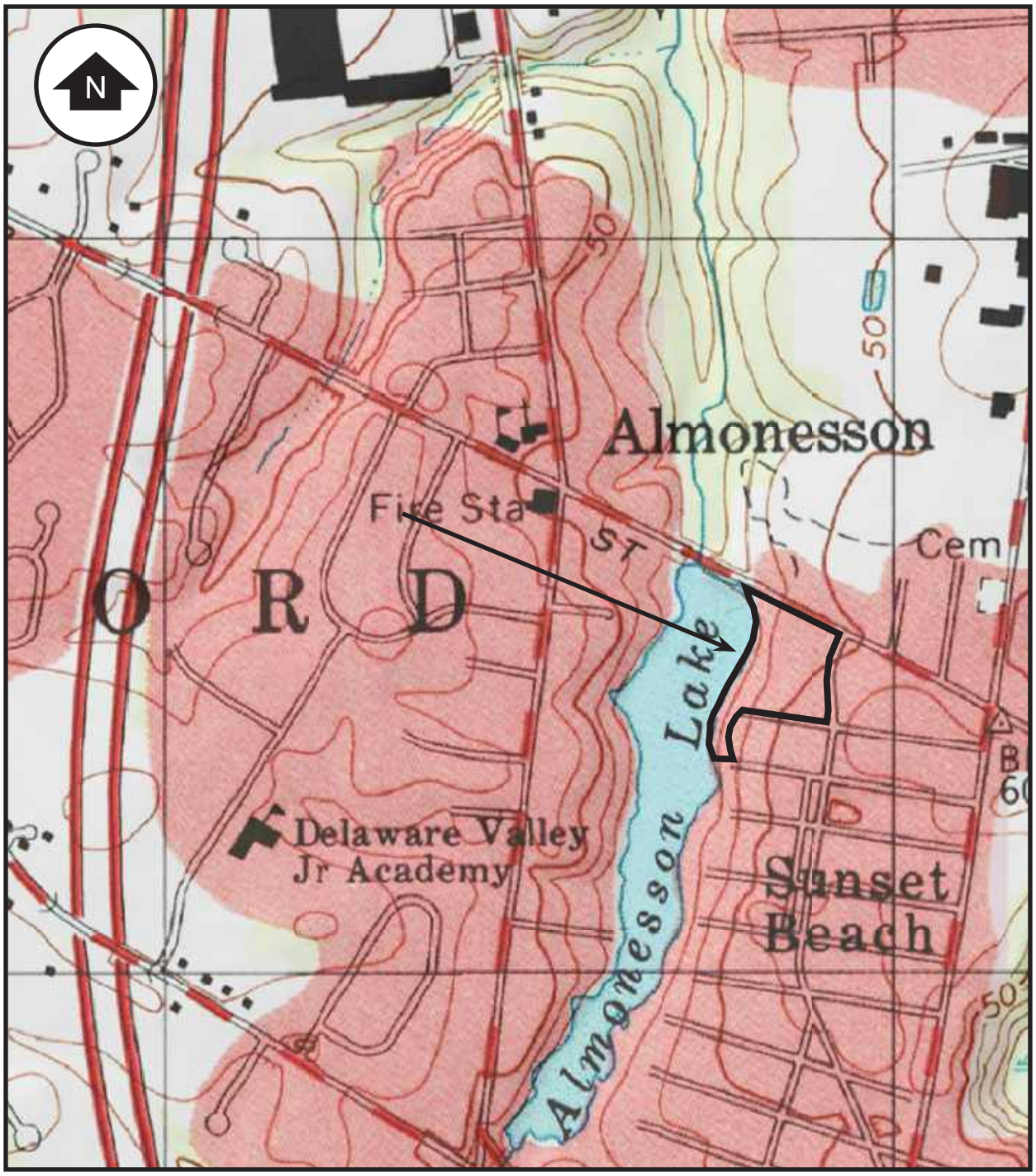
ELIGIBILITY WORKSHEET

Historic Sites #:

Narrative Boundary Description:

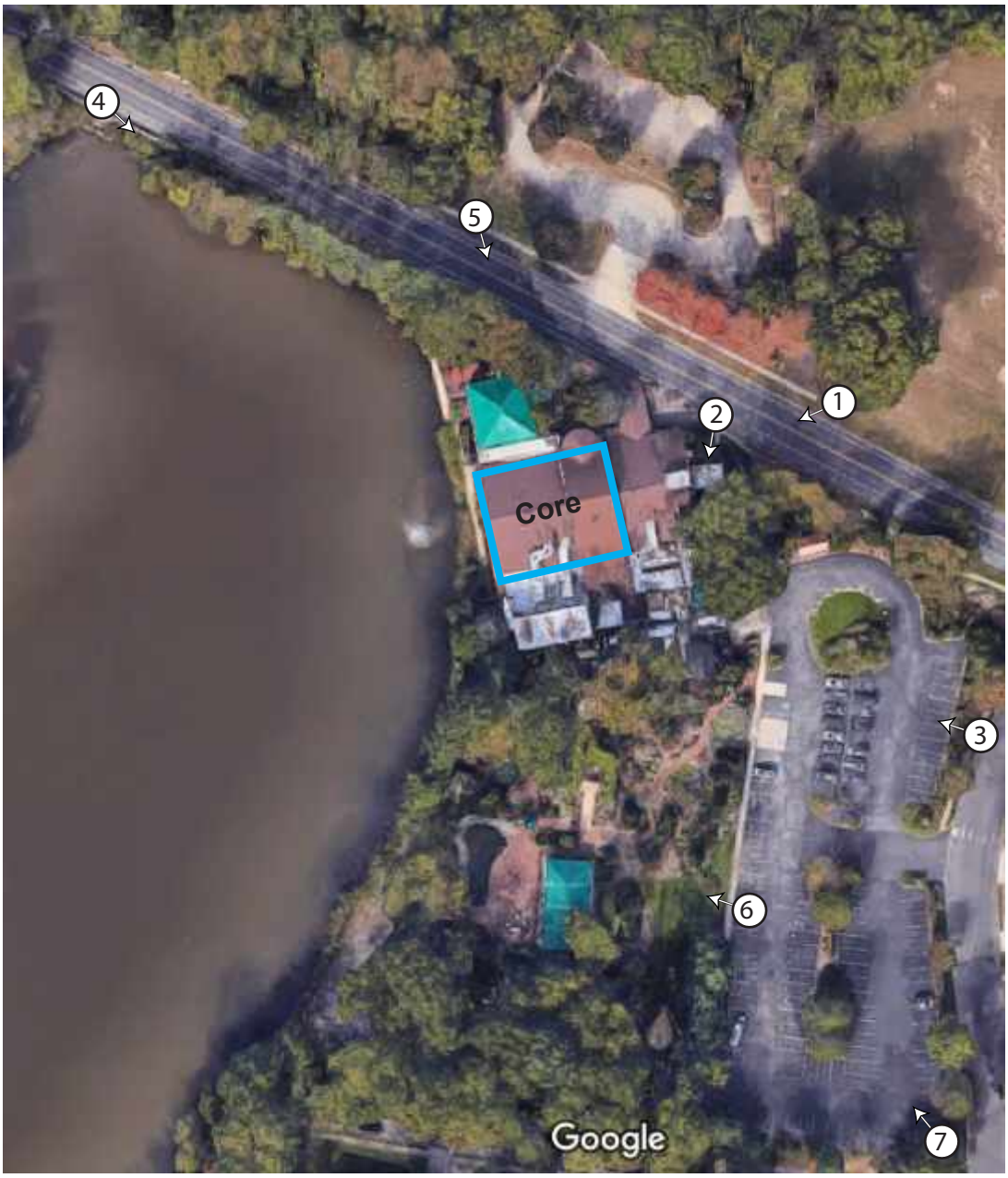
CONTINUATION SHEET

1849 Cooper Street



CONTINUATION SHEET

1849 Cooper Street



CONTINUATION SHEET 1849 Cooper Street

Photograph 2: Detailed view of the front (east) elevation of 1849 Cooper Street, looking southwest.

Photograph 3: View of the side (south) elevation of 1849 Cooper Street, looking northwest.

Photograph 4: View of the rear (west) elevation of 1849 Cooper Street, looking southeast.

Photograph 5: View of the covered walkway on the north side of the property at 1849 Cooper Street, looking southeast.

Photograph 6: View of landscaping, hardscaping and downward grade of the property at 1849 Cooper Street, looking northwest.

Photograph 7: View of surface parking lot at 1849 Cooper Street, looking north.

Photograph 8: A pre-1940 photograph of the pavilion at Lakeview Heights Park, which later became the Sunset Beach roller skating rink and ballroom (Source: Scholding with the Deptford Public Library Staff, 2003).

Photograph 9: A *circa* 1940 photograph of the Sunset Beach roller skating rink prior to its conversion to the Sunset Beach Ballroom (Source: Scholding with the Deptford Public Library Staff, 2003).

FRENCH & PARRELLO ASSOCIATES

Advancing Our Client's Vision
IMPROVING OUR WORLD

DRAINAGE REPORT
FOR

FY 2018 GLOUCESTER COUNTY LCD STUDY
COOPER STREET (COUNTY ROUTE 706) BRIDGE OVER ALMONESSON CREEK/ AT ALMONESSON LAKE

Township of Deptford
Gloucester County, New Jersey

Prepared for:

Delaware Valley Regional Planning Commission
190 N. IndependenceMall West, 8th Floor
Philadelphia, Pennsylvania 19106-1520

and:

County of Gloucester
Department of Public Works
Office of the County Engineer
1200 N. Delsea Drive
Clayton, New Jersey 08312

8/29/2019
FPA No. 13633.001

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fpaengineers.com

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Appendix B. Existing Topographic Conditions B-1

Appendix C. Soils Data C-1

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Appendix G. Spread Calculations G-1

1. Introduction & Project Background

This report documents the evaluation of the existing storm sewer system and provides a conceptual storm sewer system in support of the DVRPC Local Concept Development project of the Cooper Street (CR 706) Bridge over Almonesson Creek / Almonesson Lake (Bridge 3-K-3) in the Township of Deptford, Gloucester County, New Jersey.

CR 706 within the project limits is a two-lane urban minor arterial with a general east-west orientation and is under the jurisdiction of Gloucester County. The westerly end of the project is approximately 400 feet east of the intersection of CR 706 at Almonesson Road (CR 621). The easterly end of the project is approximately 330 feet west of the intersection of CR 706 at Summit Ave. Within the project limits, CR 706 traverses the Almonesson Lake dam crest and Bridge structure 0803-K03 (aka Bridge 3-K-3) carries CR 706 over the dam spillway and Almonesson Creek / at Almonesson Lake. The project limits extend a total of approximately 700 feet, approximately 300 feet east and 400 feet west of Bridge 3-K-3. A copy of the USGS map showing the project location has been provided in **Appendix A.**

The proposed improvements to CR 706 within the project limits include replacement of the Bridge 3-K-3 and spillway, rehabilitation of the Almonesson Lake dam, and slight widening of the roadway to provide 5'-0" shoulders in both directions. The existing pavement to remain will be milled and resurfaced.

All proposed work will occur within the limits of the existing dam, therefore, the lead agency on the project is anticipated to be the Division of Dam Safety. Additionally, the total area of disturbance within freshwater wetlands or transition areas associated with the project is anticipated to be no more than 1 acre and only a GP-18 permit would be required; all wetlands disturbances will be accounted for under a GP-18 permit. As this project is considered a dam rehabilitation project, the project is anticipated to be exempt from compliance with the NJDEP Stormwater Management regulations

Information Review

The following information was reviewed and referenced in conjunction with the preparation of this report:

1. *Roadway Design Manual 2015 (NJDOT-RDM)*, New Jersey Department of Transportation (NJDOT), last revised December 20, 2017
2. *HEC-22 Urban Drainage Design Manual,* Federal Highway Administration, last revised August 2013
3. *Gloucester County Specifications Manual (GCSM), Design Standards for Highway and Related land Improvements in Gloucester County,* Gloucester County Office of the County Engineer, last revised December 2006
4. Map Entitled *"Existing Topographic Conditions Gloucester County Local Concept Development Study Cooper Street (County Route 706) Bridge over Almonesson Creek*

(Bridge 3-K-3) Township of Deptford, Gloucester County, New Jersey" Dated March 1, 2019, Prepared by Remington & Vernick Engineers **(Appendix B)**

5. *USGS Lidar Point Cloud DE DelawareValley-HD 2015*, U.S. Geological Survey, 2015
6. *USDA Web Soil Survey,* U.S. Department of Agriculture, visited July 9, 2019 **(Appendix C)**
7. *Point Precipitation Frequency Estimates, NOAA Atlas 14, Volume 2, Version 3,* NOAA, National Weather Service visited July 9, 2019 **(Appendix D)**
8. *Land Use/Land Cover 2012 Update (Generalized), Edition 20150217 (Land_lu_2012_gen),* New Jersey Department of Environmental Protection (NJDEP), February 17, 2015
9. *Bridge Evaluation Survey Report, Structure No. 0803K03, CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake, Deptford Township, Gloucester County, New Jersey, Cycle No. 21*, Johnson, Miriam, & Thompson, April 11, 2018.

2. Existing Conditions

Roadway Geometry

The existing pavement width along CR 706 is generally 30 feet throughout the project limits. An existing low point is located approximately 50 feet east of Bridge 3-K-3. The existing profile grades range from 2.13% on the west approach to 3.32% on the east approach.

Soil Quality

The soils within the project limits and surrounding areas are predominately classified as FrrB, Freehold-Urban land complex, 0 to 5 percent slopes, per the USDA Natural Resources Conservation Service, having a hydrologic group rating of B. Additional soil information from the USDA has been provided in **Appendix B.**

Existing Storm Sewer System

The topography of the project limits and surrounding area was established using the existing conditions survey, prepared by Remington & Vernick Engineers (RVE) in support of this project, and supplemented by 3DEP lidar data from the USGS. The topography was examined to determine the drainage areas which contribute runoff to the project site. The drainage areas contributing to the roadway storm sewer system along CR 706 include roadway pavement areas, commercial properties, residential properties, and recreation/open space. The drainage areas identified can be seen in **Appendix D**. The drainage areas should be further refined during the later phases of the project using watershed mapping to identify topographic features, watershed boundaries, existing drainage patterns, and ground cover.

No discernible storm sewer system was identified along CR 706 and within the surrounding neighborhoods along Schollcrest Ave and Almonesson Road (CR 621) to the west of the project limits. A single type B inlet exists on Summit Ave to the east of the project limits near the intersection of Summit Ave at CR 706.

The existing storm sewer system within the project limits is comprised of six (6) type B inlets surrounding Bridge 3-K-3. The existing systems appears random and is suspected to have been constructed on an as needed basis. Inlets exist through the centerline of Bridge 3-K-3, at each

curb line (not shown on the original construction documents), and approximately 50 feet east and 50 feet west of Bridge 3-K-3, at each curb line. The inlets through the centerline of the bridge drain directly down into the culvert. The inlets on either side of the bridge drain directly through the embankment via independent outfall structures consisting of 18" or 24" corrugated metal pipes (CMP). The size of the existing CMP outfalls are suspected to be adequate for the individual inlets, however given their vulnerability to damage and deterioration, and the existing conditions observed in the field, the outfalls are obsolete and should be modernized.

The drainage system for highway pavement must adequately collect runoff in the gutter and convey the runoff to inlets. As the depth of flow in gutter increases the horizontal spread from the curb increases. This horizontal spread must be limited to reduce the potential risk of traffic accidents, delays, and hazards to pedestrians. For land-service highways, the NJDOT-RDM limits the allowable spread to the width of the shoulder plus one-third of the lane width. Based upon our review of the surrounding topography, drainage areas, and existing conditions, the existing system does not meet the current NJDOT gutter spread requirements. Additional inlets upgrade would be required to comply with the NJDOT requirements.

3. Proposed Conditions

The objective of the conceptual system is to improve upon the existing system by installing supplemental inlets to reduce the spread of water onto the roadway surface to within the allowable limits and discharge storm water into the proposed bridge. The conceptual system was designed to accommodate a 25-year storm, as per the GCSM, and according to NJDOT-RDM criteria for drainage of highway and pavements.

The existing roadway grades and drainage patterns will generally be maintained throughout the project, however, to improve drainage around the bridge the profile would be raised to create low points on both sides of Bridge 3-K-3 with supplemental inlets installed upgrade of the proposed bridge to capture gutter flow before it passes onto the bridge. Discharge points will be provided within the proposed bridge. The conceptual drainage system is presented in **Appendix E.**

A minimum inside diameter of 18" for storm sewer pipe was used as per the GCSM. Pipe Calculations for the proposed conditions have been provided in **Appendix F**. The allowable spread was assumed to be 7.67' using a 4'-0" shoulder and 11'-0" lanes throughout CR 706; a uniform cross slope of 2.0% is assumed throughout. Inlet elevations were determined from the existing topographic conditions plan supplemented by USGS Lidar data. Spread calculations for the proposed conditions have been provided in **Appendix G.** The achieve the allowable spread, the conceptual system assumes supplemental inlets would be installed upgrade and expand the system beyond the project limits at the following areas:

- Along the south curbline from CR 621 to Summit Ave and east of Summit Ave
- Along the north curbline from CR 621 to Martanna Ave
- Along CR 706 west of CR 621

4. Conclusions

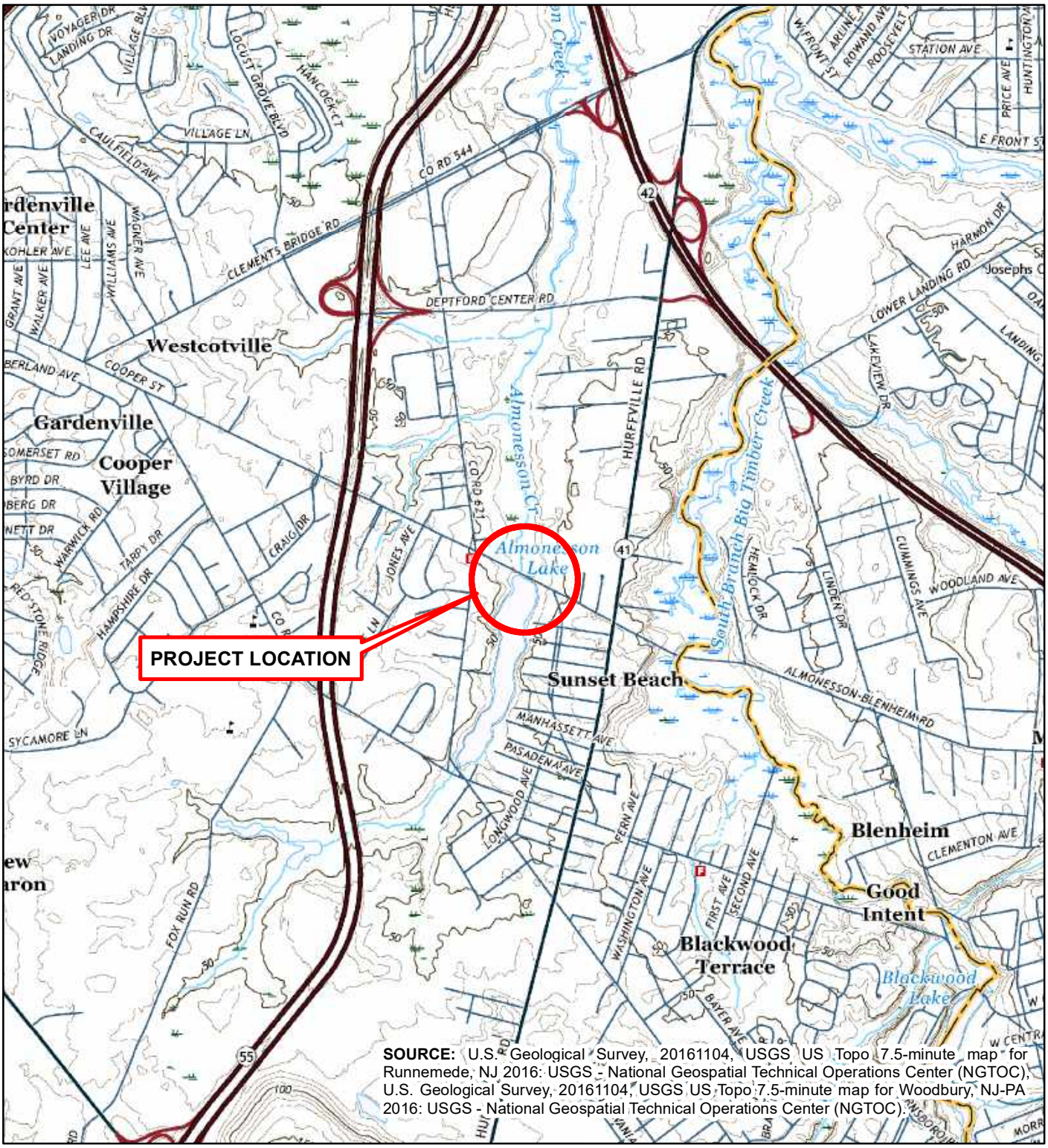
The existing storm sewer system within the project limits, comprised of six (6) type B inlets surrounding Bridge 3-K-3, is obsolete and inadequate to capture the storm water runoff. Based upon our review of the surrounding topography, drainage areas, and existing conditions, the existing system does not meet the current NJDOT gutter spread requirements. Additional inlets upgrade would be required to comply with the NJDOT requirements.

The drainage areas contributing to the roadway storm sewer system along CR 706 include roadway pavement areas, commercial properties, residential properties, and recreation/open space. The contributing drainage areas were determined by examining the topographic conditions of the surrounding area and existing storm sewer systems. The drainage areas should be further refined during the later phases of the project using watershed mapping to identify topographic features, watershed boundaries, existing drainage patterns, and ground cover.

The conceptual drainage systems will improve on the existing system by installing supplemental inlets upgrade of Bridge 3-K-3 and prevent runoff of gutter flow across the bridge. The system has been designed in accordance with the current NJDOT Roadway Design Manual Section 10 for land service highways and the Gloucester County Specification Manual.

As this project is considered a dam rehabilitation project, the project is anticipated to be exempt from compliance with the NJDEP Stormwater Management regulations.

Appendix A. USGS Map



SOURCE: U.S. Geological Survey, 20161104, USGS US Topo 7.5-minute map for Runnemede, NJ 2016: USGS - National Geospatial Technical Operations Center (NGTOC), U.S. Geological Survey, 20161104, USGS US Topo 7.5-minute map for Woodbury, NJ-PA 2016: USGS - National Geospatial Technical Operations Center (NGTOC).

0 2,000
Feet

Document Path: O:\13K\13600\13633 - Cooper Street Bridge CR 706\13633.001 Design\CADD\GIS\13633.001 - USGSTopoMap.mxd
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COOPER STREET LCD STUDY

TOWNSHIP OF DEPTFORD
GLOUCESTER COUNTY, NEW JERSEY

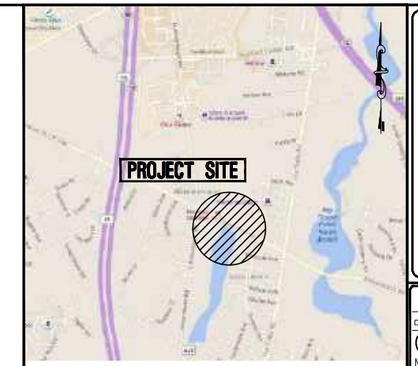
TOPOGRAPHIC MAP

SCALE:	BLOCK:	LOT:	DRAWING #
1 " = 2,000 '	SEE MAP	SEE MAP	1
DATE:	DRAWN BY:	PROJECT NUMBER:	
08/08/2019	IAM	13633.001	

Appendix B. Existing Topographic Conditions

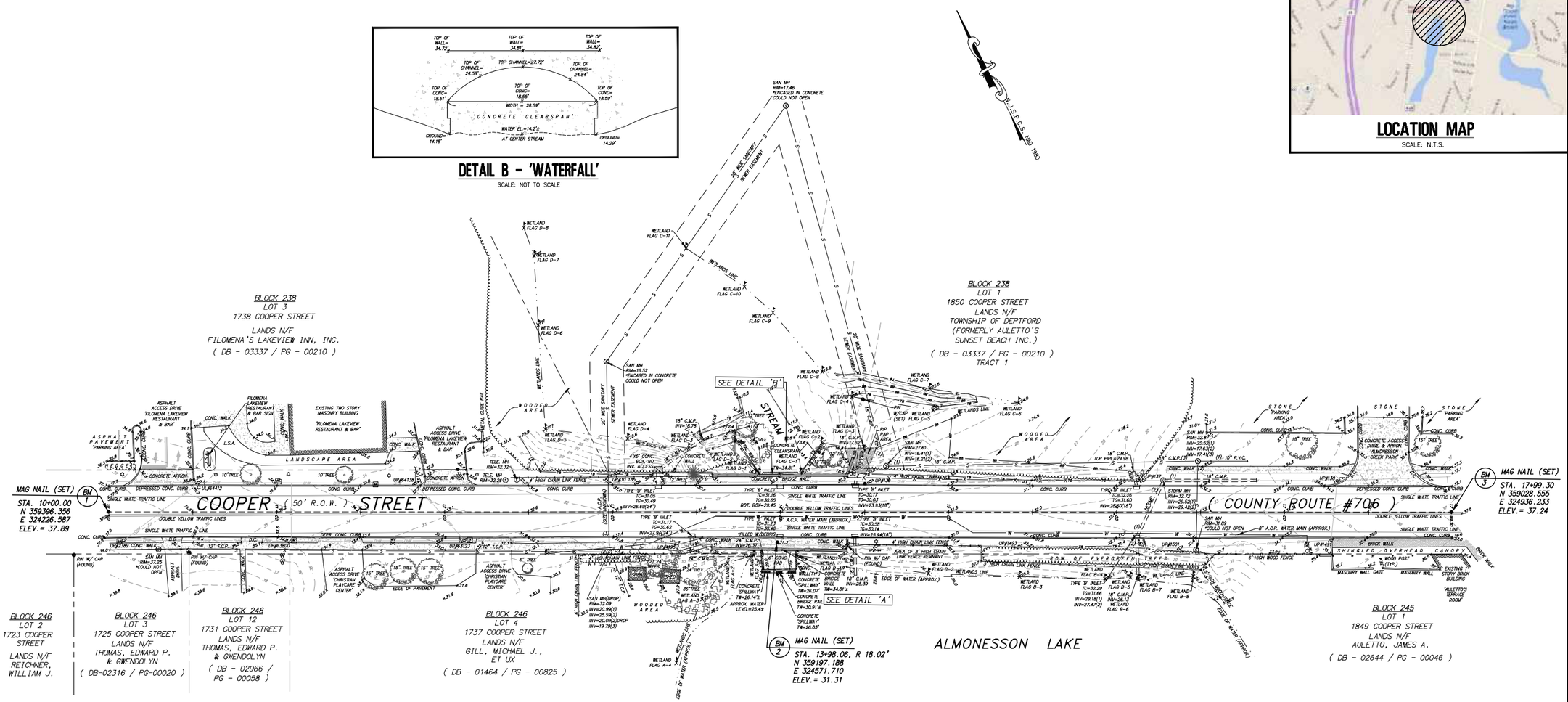
DETAIL B - 'WATERFALL'

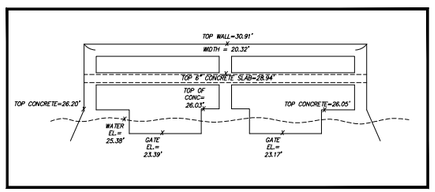
SCALE: NOT TO SCALE



LOCATION MAP

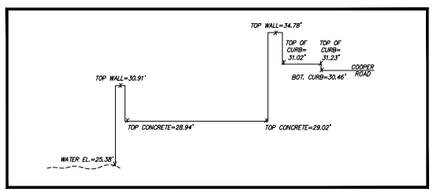
SCALE: N.T.S.





DETAIL A - 'BRIDGE RAIL'

SCALE: NOT TO SCALE



DETAIL A - 'CONCRETE PROFILE'

SCALE: NOT TO SCALE

SURVEY NOTES & REFERENCES:

1. THE HORIZONTAL DATUM IS BASED ON THE NEW JERSEY STATE PLANE COORDINATE SYSTEM (NAD-1983) AND THE VERTICAL DATUM IS BASED ON NAVD-1988 - 2012B ADJ. (ADD 1.18 FEET TO THESE ELEVATIONS TO CONVERT TO NGVD-1929 DATUM)
2. PROPERTY AND RIGHT-OF-WAY LINES SHOWN ON THESE PLANS ARE APPROXIMATE LOCATIONS BASED ON THE CURRENT TAX MAPS OF THE TOWNSHIP OF DEPTFORD, GLOUCESTER COUNTY, NEW JERSEY. PROPERTY AND RIGHT-OF-WAY LINES ARE SHOWN FOR GRAPHICAL INFORMATION ONLY AND HAVE NOT BEEN FIELD VERIFIED.
3. EXISTING TOPOGRAPHIC CONDITIONS WERE SURVEYED BY REMINGTON & VERNICK ENGINEERS UNDER THE SUPERVISION OF CHARLES E. ADAMSON, NJPLS LICENSE NO. 42627. THE SURVEY WORK WAS COMPLETED ON JANUARY 25, 2019.
4. REFERENCE PLAN ENTITLED, 'PLAN OF LOTS OF LAKEVIEW HEIGHTS SITUATE AT ALMONESSON - DEPT. TWP.'

GRAPHIC SCALE

30 0 15 30

(IN FEET)
1 inch = 30 ft.

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No.	REVISION	DATE	BY	CHK

EXISTING TOPOGRAPHIC CONDITIONS

GLOUCESTER COUNTY LOCAL DEVELOPMENT STUDY

COOPER STREET (COUNTY ROUTE 706) BRIDGE OVER ALMONESSON CREEK (BRIDGE 3-K-3)

TOWNSHIP OF DEPTFORD GLOUCESTER COUNTY NEW JERSEY

DRAWN BY:	DESIGN BY:	CHECKED BY:	SCALE:
JS		CEA	NOTED
DATE: 1		SHEET No.: 1 of 1	
JOB No.: 3949 X 001			

© Survey Projects/New Jersey/Gloucester County/Deptford Township/3949X001 - ALMONESSON BRIDGE 3-K-3/CAD/Dwg/3949 - ALMONESSON BRIDGE 3-K-3 EXIST CONDS.dwg 3/12/2019 11:41:46 PM

Appendix C. Soils Data

United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Gloucester County, New Jersey

July 9, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

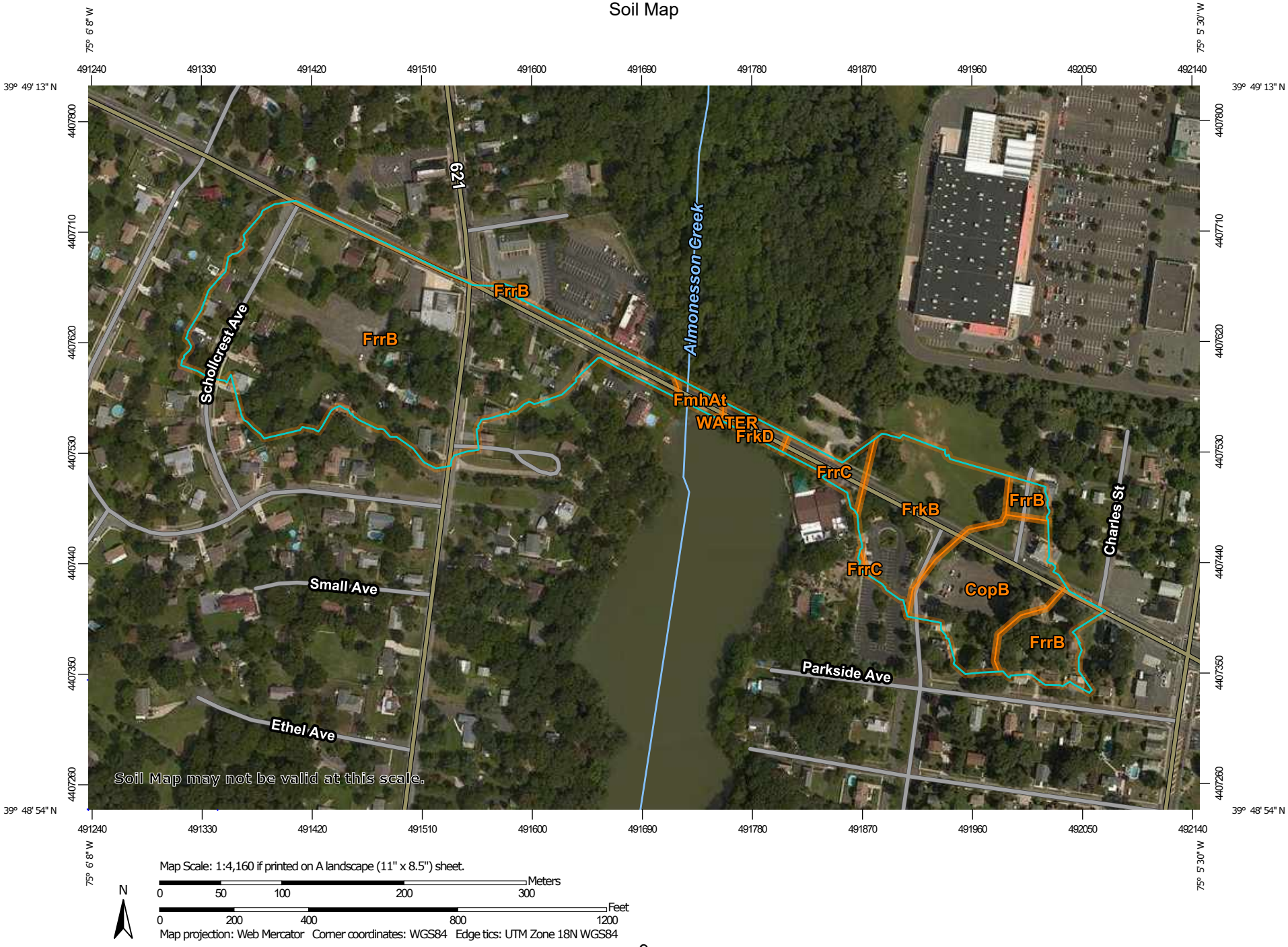
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:4,160 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Gloucester County, New Jersey
Survey Area Data: Version 16, Sep 15, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 11, 2014—Sep 17, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CopB	Collington-Urban land complex, 0 to 5 percent slopes	2.4	13.3%
FmhAt	Fluvaquents, loamy, 0 to 3 percent slopes, frequently flooded	0.1	0.8%
FrkB	Freehold sandy loam, 2 to 5 percent slopes	2.6	14.5%
FrkD	Freehold sandy loam, 10 to 15 percent slopes	0.2	1.1%
FrrB	Freehold-Urban land complex, 0 to 5 percent slopes	12.0	67.8%
FrrC	Freehold-Urban land complex, 5 to 10 percent slopes	0.4	2.4%
WATER	Water	0.0	0.0%
Totals for Area of Interest		**17.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit

descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Gloucester County, New Jersey

CopB—Collington-Urban land complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 15km5
Elevation: 40 to 100 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Not prime farmland

Map Unit Composition

Collington and similar soils: 60 percent
Urban land: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Collington

Setting

Landform: Low hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Glauconite bearing loamy fluviomarine deposits

Typical profile

Ap - 0 to 9 inches: sandy loam
Bt1 - 9 to 22 inches: loam
Bt2 - 22 to 30 inches: loam
BC - 30 to 38 inches: sandy loam
C1 - 38 to 43 inches: stratified sandy loam to loamy fine sand
C2 - 43 to 80 inches: stratified sandy loam to fine sandy loam to loamy fine sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Low hills

Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Marlton
Percent of map unit: 5 percent
Landform: Flats
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Freehold
Percent of map unit: 5 percent
Landform: Low hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

FmhAt—Fluvaquents, loamy, 0 to 3 percent slopes, frequently flooded

Map Unit Setting
National map unit symbol: 15kn8
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition
Fluvaquents, loamy, frequently flooded, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fluvaquents, Loamy, Frequently Flooded

Setting
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Recent alluvium

Typical profile

A1 - 0 to 5 inches: loam
A2 - 5 to 12 inches: silt loam
C1 - 12 to 18 inches: sandy clay loam
C2 - 18 to 24 inches: sandy clay loam
C3 - 24 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water storage in profile: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Udifluvents, frequently flooded

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Fluvaquents, loamy, frequently flooded

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

FrkB—Freehold sandy loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 15knp
Elevation: 40 to 110 feet
Mean annual precipitation: 28 to 59 inches

Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Freehold and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freehold

Setting

Landform: Knolls, low hills
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Glauconite bearing loamy eolian deposits and/or glauconite bearing loamy fluviomarine deposits

Typical profile

Ap - 0 to 10 inches: sandy loam
Bt1 - 10 to 14 inches: sandy loam
Bt2 - 14 to 21 inches: sandy clay loam
Bt3 - 21 to 35 inches: sandy loam
C - 35 to 80 inches: loamy sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Colts neck

Percent of map unit: 5 percent
Landform: Knolls, low hills
Down-slope shape: Convex, linear
Across-slope shape: Linear
Hydric soil rating: No

Collington

Percent of map unit: 5 percent
Landform: Low hills, knolls
Down-slope shape: Linear, convex

Across-slope shape: Linear
Hydric soil rating: No

Shrewsbury
Percent of map unit: 5 percent
Landform: Flats, depressions
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

FrkD—Freehold sandy loam, 10 to 15 percent slopes

Map Unit Setting
National map unit symbol: 15knt
Elevation: 40 to 110 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of local importance

Map Unit Composition
Freehold and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freehold

Setting
Landform: Low hills, knolls
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Glauconite bearing loamy eolian deposits and/or glauconite bearing loamy fluviomarine deposits

Typical profile
Ap - 0 to 7 inches: sandy loam
Bt1 - 7 to 11 inches: sandy loam
Bt2 - 11 to 18 inches: sandy clay loam
Bt3 - 18 to 35 inches: sandy loam
C - 35 to 80 inches: loamy sand

Properties and qualities
Slope: 10 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Available water storage in profile: Moderate (about 7.8 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Colts neck
Percent of map unit: 5 percent
Landform: Low hills, knolls
Down-slope shape: Linear, convex
Across-slope shape: Linear
Hydric soil rating: No

Collington
Percent of map unit: 5 percent
Landform: Low hills, knolls
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

FrrB—Freehold-Urban land complex, 0 to 5 percent slopes

Map Unit Setting
National map unit symbol: 15knz
Elevation: 40 to 110 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Not prime farmland

Map Unit Composition
Freehold and similar soils: 60 percent
Urban land: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freehold

Setting
Landform: Low hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Glauconite bearing loamy eolian deposits and/or glauconite bearing loamy fluviomarine deposits

Typical profile

Ap - 0 to 10 inches: sandy loam
Bt1 - 10 to 14 inches: sandy loam
Bt2 - 14 to 21 inches: sandy clay loam
Bt3 - 21 to 35 inches: sandy loam
C - 35 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Low hills
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Colts neck

Percent of map unit: 5 percent
Landform: Low hills, knolls
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Collington

Percent of map unit: 5 percent
Landform: Low hills, knolls
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

FrrC—Freehold-Urban land complex, 5 to 10 percent slopes

Map Unit Setting

National map unit symbol: 15kp0
Elevation: 40 to 110 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Not prime farmland

Map Unit Composition

Freehold and similar soils: 60 percent
Urban land: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freehold

Setting

Landform: Knolls, low hills
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Glauconite bearing loamy eolian deposits and/or glauconite bearing loamy fluviomarine deposits

Typical profile

Ap - 0 to 10 inches: sandy loam
Bt1 - 10 to 14 inches: sandy loam
Bt2 - 14 to 21 inches: sandy clay loam
Bt3 - 21 to 35 inches: sandy loam
C - 35 to 80 inches: loamy sand

Properties and qualities

Slope: 5 to 10 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B

Hydric soil rating: No

Description of Urban Land

Setting

Landform: Low hills, knolls
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Colts neck

Percent of map unit: 5 percent
Landform: Low hills, knolls
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Collington

Percent of map unit: 5 percent
Landform: Low hills, knolls
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

WATER—Water

Map Unit Setting

National map unit symbol: 15ktd
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Appendix D. Point Precipitation Frequency Estimates

NOAA Atlas 14, Volume 2, Version 3
Location name: Deptford, New Jersey, USA*
Latitude: 39.818°, Longitude: -75.0965°
Elevation: 27.95 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	4.19 (3.83-4.57)	4.99 (4.56-5.45)	5.88 (5.36-6.42)	6.54 (5.95-7.15)	7.34 (6.65-8.03)	7.91 (7.14-8.66)	8.47 (7.61-9.32)	8.99 (8.02-9.92)	9.61 (8.46-10.7)	10.1 (8.81-11.3)
10-min	3.34 (3.06-3.65)	3.99 (3.65-4.36)	4.71 (4.30-5.15)	5.23 (4.76-5.72)	5.85 (5.30-6.40)	6.30 (5.68-6.91)	6.73 (6.05-7.40)	7.12 (6.35-7.87)	7.60 (6.70-8.45)	7.95 (6.94-8.90)
15-min	2.79 (2.55-3.04)	3.34 (3.06-3.65)	3.97 (3.62-4.34)	4.41 (4.02-4.82)	4.94 (4.48-5.41)	5.32 (4.80-5.83)	5.67 (5.10-6.24)	5.99 (5.34-6.62)	6.38 (5.62-7.09)	6.65 (5.80-7.45)
30-min	1.91 (1.75-2.09)	2.31 (2.11-2.52)	2.82 (2.58-3.08)	3.19 (2.91-3.49)	3.66 (3.32-4.00)	4.00 (3.61-4.39)	4.34 (3.90-4.78)	4.66 (4.16-5.15)	5.07 (4.47-5.64)	5.39 (4.70-6.03)
60-min	1.19 (1.09-1.30)	1.45 (1.32-1.58)	1.81 (1.65-1.98)	2.08 (1.89-2.28)	2.44 (2.21-2.67)	2.71 (2.45-2.97)	2.99 (2.69-3.29)	3.27 (2.92-3.61)	3.64 (3.21-4.05)	3.93 (3.43-4.40)
2-hr	0.716 (0.651-0.789)	0.871 (0.794-0.960)	1.10 (0.994-1.21)	1.27 (1.15-1.40)	1.50 (1.35-1.65)	1.69 (1.51-1.86)	1.87 (1.66-2.07)	2.06 (1.82-2.29)	2.32 (2.02-2.60)	2.52 (2.17-2.84)
3-hr	0.522 (0.476-0.575)	0.633 (0.577-0.697)	0.798 (0.725-0.878)	0.928 (0.840-1.02)	1.10 (0.992-1.22)	1.25 (1.11-1.37)	1.39 (1.23-1.54)	1.54 (1.35-1.72)	1.75 (1.51-1.96)	1.92 (1.63-2.16)
6-hr	0.325 (0.296-0.359)	0.393 (0.358-0.435)	0.493 (0.448-0.545)	0.576 (0.521-0.635)	0.692 (0.621-0.764)	0.789 (0.702-0.873)	0.892 (0.786-0.989)	1.00 (0.871-1.11)	1.16 (0.986-1.30)	1.29 (1.08-1.45)
12-hr	0.196 (0.178-0.217)	0.236 (0.215-0.262)	0.298 (0.271-0.330)	0.351 (0.318-0.389)	0.430 (0.384-0.475)	0.497 (0.440-0.550)	0.570 (0.498-0.634)	0.650 (0.559-0.727)	0.769 (0.645-0.865)	0.871 (0.716-0.987)
24-hr	0.113 (0.104-0.123)	0.137 (0.126-0.149)	0.175 (0.161-0.191)	0.208 (0.190-0.227)	0.257 (0.234-0.279)	0.299 (0.271-0.324)	0.346 (0.311-0.375)	0.398 (0.354-0.430)	0.477 (0.418-0.514)	0.545 (0.472-0.587)
2-day	0.065 (0.059-0.071)	0.078 (0.072-0.086)	0.100 (0.092-0.110)	0.119 (0.109-0.130)	0.146 (0.133-0.160)	0.170 (0.153-0.185)	0.196 (0.175-0.213)	0.224 (0.199-0.244)	0.266 (0.234-0.290)	0.303 (0.263-0.330)
3-day	0.045 (0.042-0.050)	0.055 (0.051-0.060)	0.070 (0.064-0.077)	0.083 (0.076-0.091)	0.102 (0.093-0.111)	0.118 (0.107-0.128)	0.135 (0.122-0.147)	0.155 (0.138-0.167)	0.183 (0.161-0.198)	0.207 (0.181-0.225)
4-day	0.036 (0.033-0.039)	0.043 (0.040-0.047)	0.055 (0.051-0.060)	0.065 (0.060-0.071)	0.080 (0.073-0.086)	0.092 (0.083-0.099)	0.105 (0.095-0.114)	0.120 (0.107-0.129)	0.141 (0.125-0.153)	0.160 (0.140-0.173)
7-day	0.024 (0.022-0.026)	0.029 (0.027-0.031)	0.036 (0.033-0.039)	0.042 (0.039-0.046)	0.051 (0.047-0.055)	0.059 (0.054-0.063)	0.067 (0.061-0.072)	0.076 (0.068-0.082)	0.089 (0.079-0.096)	0.099 (0.088-0.108)
10-day	0.019 (0.018-0.020)	0.023 (0.021-0.024)	0.028 (0.026-0.030)	0.032 (0.030-0.035)	0.039 (0.036-0.042)	0.044 (0.040-0.047)	0.049 (0.045-0.053)	0.055 (0.050-0.059)	0.063 (0.057-0.068)	0.071 (0.063-0.076)
20-day	0.013 (0.012-0.014)	0.015 (0.014-0.016)	0.018 (0.017-0.019)	0.021 (0.019-0.022)	0.024 (0.023-0.026)	0.027 (0.025-0.029)	0.030 (0.027-0.032)	0.032 (0.030-0.035)	0.036 (0.033-0.039)	0.039 (0.036-0.042)
30-day	0.011 (0.010-0.011)	0.013 (0.012-0.013)	0.015 (0.014-0.016)	0.017 (0.016-0.018)	0.019 (0.018-0.020)	0.021 (0.020-0.022)	0.023 (0.021-0.024)	0.025 (0.023-0.026)	0.027 (0.025-0.029)	0.029 (0.027-0.031)
45-day	0.009 (0.008-0.009)	0.011 (0.010-0.011)	0.012 (0.012-0.013)	0.014 (0.013-0.014)	0.015 (0.014-0.016)	0.017 (0.016-0.017)	0.018 (0.017-0.019)	0.019 (0.018-0.020)	0.020 (0.019-0.022)	0.022 (0.020-0.023)
60-day	0.008 (0.008-0.009)	0.009 (0.009-0.010)	0.011 (0.010-0.011)	0.012 (0.011-0.013)	0.013 (0.013-0.014)	0.014 (0.013-0.015)	0.015 (0.014-0.016)	0.016 (0.015-0.017)	0.017 (0.016-0.018)	0.018 (0.017-0.019)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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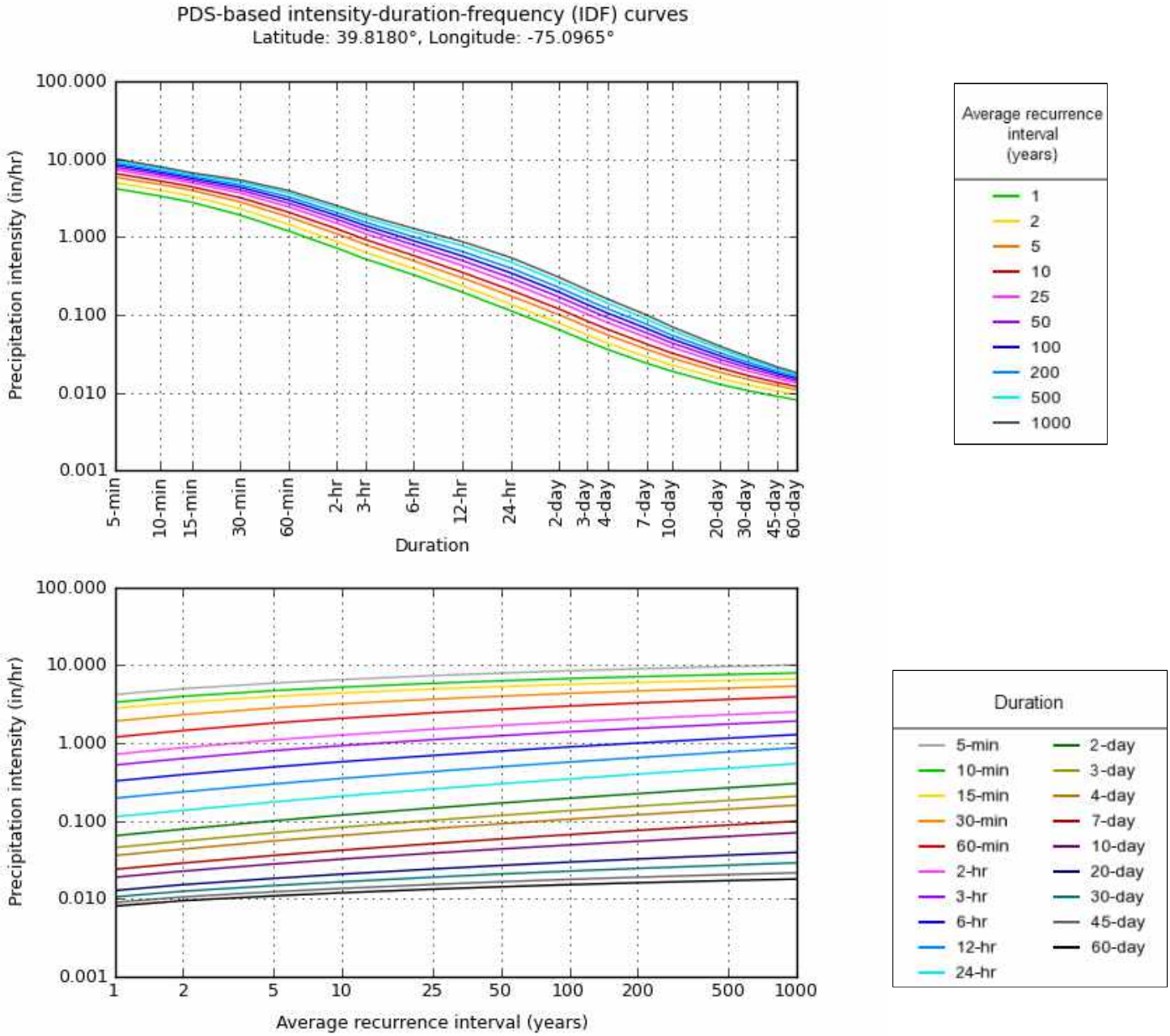
PF graphical



NOAA Atlas 14, Volume 2, Version 3

Created (GMT): Thu Aug 29 13:54:58 2019

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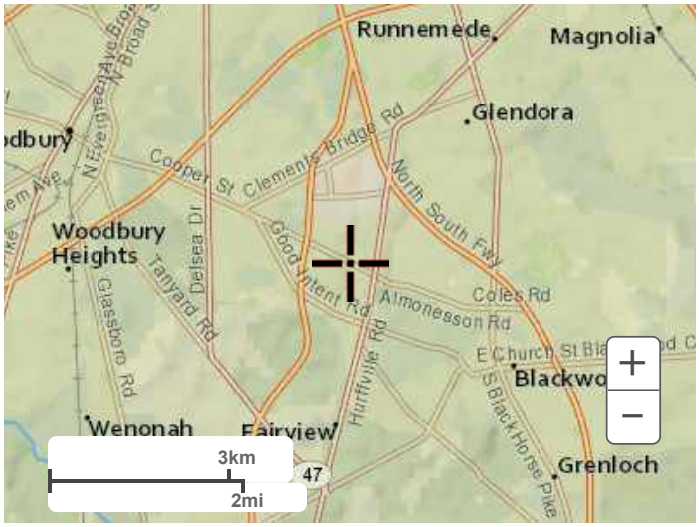
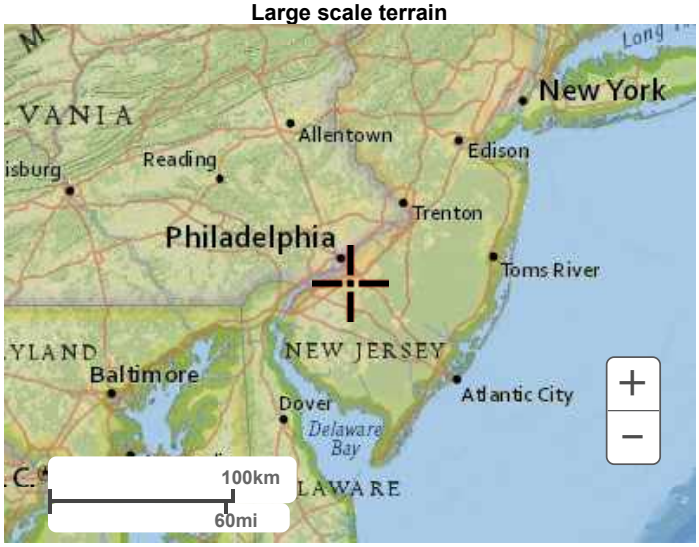
Maps & aerials

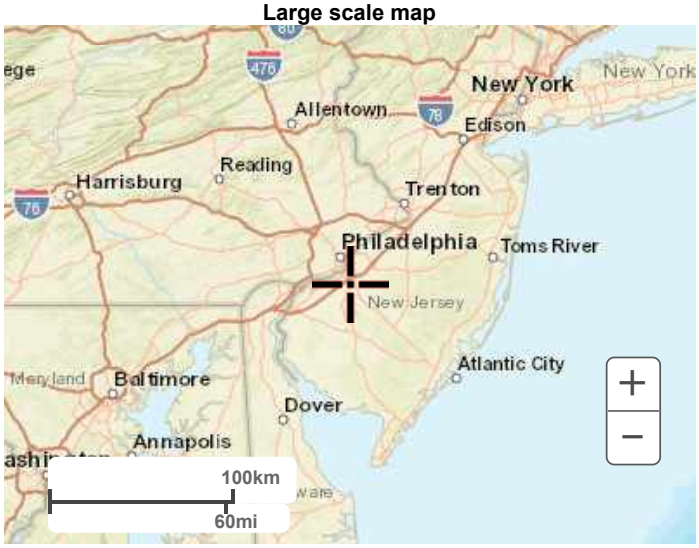
Small scale terrain



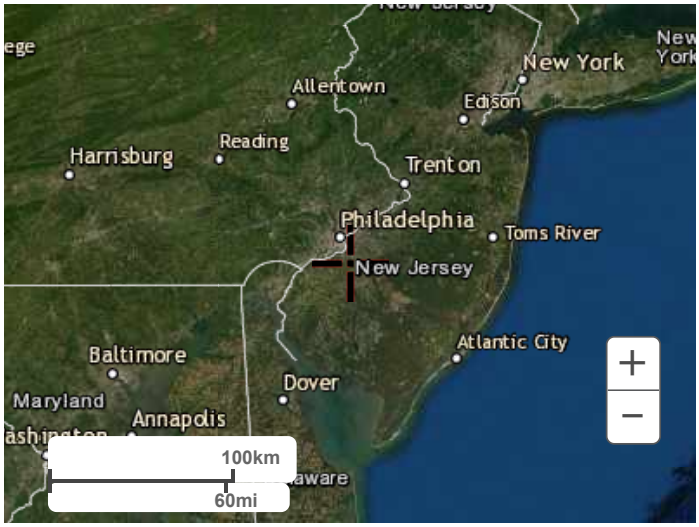
Large scale terrain



Large scale map



Large scale aerial



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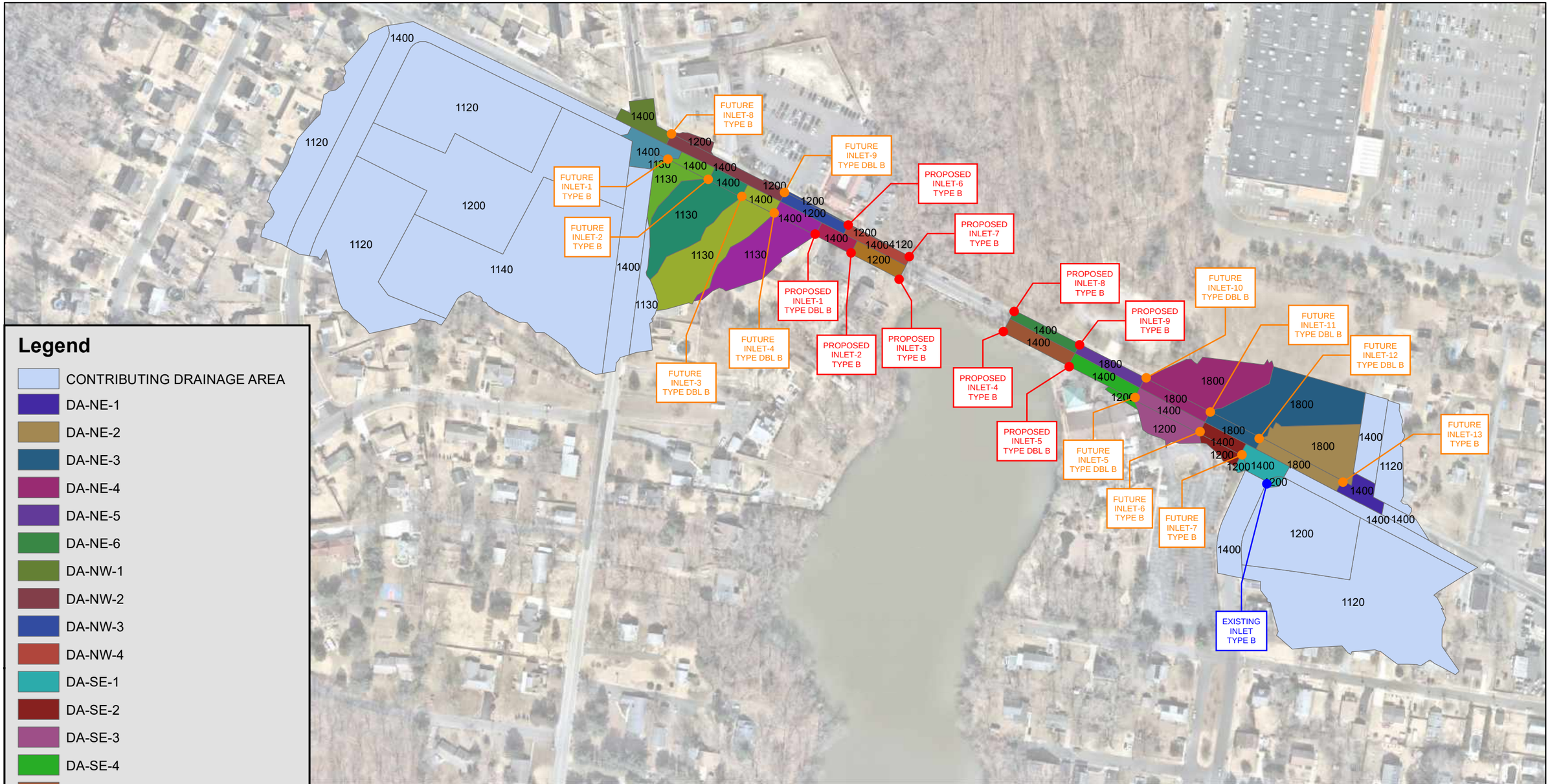
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Appendix E. Drainage Area Maps



Legend

- CONTRIBUTING DRAINAGE AREA
- DA-NE-1
- DA-NE-2
- DA-NE-3
- DA-NE-4
- DA-NE-5
- DA-NE-6
- DA-NW-1
- DA-NW-2
- DA-NW-3
- DA-NW-4
- DA-SE-1
- DA-SE-2
- DA-SE-3
- DA-SE-4
- DA-SE-5
- DA-SW-1
- DA-SW-2
- DA-SW-3
- DA-SW-4
- DA-SW-5
- DA-SW-6
- DA-SW-7

N

0 200
Feet

FRENCH & PARRELLO ASSOCIATES
1800 Route 34, Suite 101 ▪ Wall, NJ ▪ 07719 ▪ 732-312-9800

COOPER STREET LCD

TOWNSHIP OF DEPTFORD
GLOUCESTER COUNTY, NEW JERSEY

STORM SEWER DRAINAGE AREAS

SCALE:	BLOCK:	LOT:	DRAWING #
1 " = 200 '	XXX	XX	1
DATE: 07/19/2019	DRAWN BY: IAM	PROJECT NUMBER: 13633.001	

Document Path: O:\13K\13600\13633 - Cooper Street Bridge CR 706\13633.001 Design\CADD\GIS\13633.001 - Drainage Area Expanded.mxd
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Appendix F. Pipe Calculations

FRENCH & PARRELLO ASSOCIATES

JOB:	13633.001 - Bridge 3-K-3		
CALCULATED BY:	IAM	**DATE:**	7/19/2019
CHECKED BY:		**DATE:**	

INPUT | CALC | LINK

STORM DRAIN COMPUTATION FORM - WEST APPROACH

REFERENCE:

1 NJDOT Roadway Design Manual, 2015
2 Gloucester County Specifications Manual, 2006
3 Point Precipitation Frequency Estimates, NOAA Atlas 14, Volume 2, Version 3
4 AASHTO Standard Specifications for Trans. Materials and Methods of Sampling and Testing, 30th Ed., 2010.
5 American Concrete Pipe Association Concrete Pipe Design Manual, 2011

Design Storm Event P = 25 year *Gloucester County Specifications Manual, Chapter 3, Section 6*
Pavement thickness t_{pave} = 0.50 ft.

AASHTO Pipe class: M170 Class III
Required cover over pipe t_{cover} = 3.00 ft.

Station and Offset (1)		L (ft)	Drainage Area "A" (Acres)		Runoff Coef-ficient "C"	"A" x "C"		Flow Time "Tc" (min.)			Rainfall "I" (in/hr)	Total Runoff Q=CIA (ft^3/S)	Dia. Pipe (in.)	Pipe Wall Thick. (in.)	Manning's Coeff.	Slope (ft/ft)	Capacity Full (ft^3/S)	Capacity Check
Junction From	Junction To		Incre-ment	Total		Incre-ment	Total	Overland To Inlet	In U/S Pipe	Cum. Total in Pipe*								
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(13a)	(13b)	(14)	(15)	(15a)
-	SW-00	215	8.536	8.536	0.69	5.879	5.879	10.0		10.0	5.850	34.393						
SW-00	SW-1	115	0.122	8.658	0.97	0.118	5.997	10.0		10.0	5.850	35.083	30	3.500	0.0120	0.0075	38.48	OK
NW-1	SW-1	55	0.111	0.111	0.99	0.110	0.110	10.0		10.0	5.850	0.642	18	2.500	0.0120	0.0200	16.09	OK
SW-1	SW-2	75	0.178	8.947	0.67	0.120	6.227	10.0		10.0	5.850	36.426	30	3.500	0.0120	0.0075	38.48	OK
SW-2	SW-3	75	0.468	9.415	0.60	0.279	6.506	10.0		10.0	5.850	38.058	30	3.500	0.0120	0.0075	38.48	OK
NW-2	SW-4	50	0.170	0.170	0.97	0.970	0.970	10.0		10.0	5.850	5.674	18	2.500	0.0120	0.0200	16.09	OK
SW-3	SW-4	75	0.543	9.958	0.59	0.320	6.826	10.0		10.0	5.850	39.932	30	3.500	0.0120	0.0081	39.88	NG
SW-4	SW-5	95	0.426	10.554	0.62	0.262	8.058	10.0		10.0	5.850	47.141	36	4.000	0.0120	0.0075	62.58	OK
NW-3	SW-6	60	0.080	0.080	0.98	0.078	0.078	10.0		10.0	5.850	0.457	18	2.500	0.0120	0.0200	16.09	OK
SW-5	SW-6	80	0.055	10.609	0.99	0.054	8.112	10.0		10.0	5.850	47.457	36	4.000	0.0120	0.0075	62.58	OK
NW-4	SW-7	50	0.069	0.069	0.99	0.069	0.069	10.0		10.0	5.850	0.403	18	2.500	0.0120	0.0200	16.09	OK
SW-6	SW-7	110	0.076	10.764	0.99	0.075	8.265	10.0		10.0	5.850	48.352	36	4.000	0.0120	0.0075	62.58	OK

NOTES:

1. Pipe cover = ([Ground or Rim Elevation] - [Pipe invert elev.]) - t_{pave} - t_{wall} - [pipe dia.]

* For time of concentration, use larger of overland flow to inlet or cumultative time in pipe.

FRENCH & PARRELLO ASSOCIATES

JOB:	13633.001 - Bridge 3-K-3		
CALCULATED BY:	IAM	**DATE:**	7/19/2019
CHECKED BY:		**DATE:**	

INPUT | CALC | LINK

STORM DRAIN COMPUTATION FORM - WEST APPROACH

Velocity (ft/s)						Invert Elevation		Ground Elevation		Pipe Cover			
Flowing Full	Velocity Check	Design Flow	Central Angle (rad.)	Flow Check (ft^3/S)	Velocity Check	U/S End	D/S End	U/S End	D/S End	U/S Pipe Cover (ft.)	U/S Cover Check	D/S Pipe Cover (ft.)	D/S Cover Check
(16)	(16a)	(17)	(17a)	(17b)	(17c)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
7.84	OK	8.886	4.188	0.000	OK	38.171	37.308	47.20	43.60	5.74	OK	3.00	OK
9.11	OK	4.437	1.513	0.000	OK	39.492	38.392	44.60	43.60	2.90	NG	3.00	OK
7.84	OK	8.919	4.308	-0.001	OK	35.371	34.808	43.60	41.10	4.94	OK	3.00	OK
7.84	OK	8.937	4.478	0.000	OK	32.671	32.108	41.10	38.40	5.14	OK	3.00	OK
9.11	OK	8.316	2.780	0.000	OK	31.692	30.692	36.90	36.90	3.00	OK	4.00	OK
8.12	OK	9.261	4.535	0.000	OK	31.213	30.608	38.40	36.90	3.90	OK	3.00	OK
8.85	OK	9.724	3.743	0.000	OK	28.679	27.967	36.90	34.80	4.39	OK	3.00	OK
9.11	OK	4.007	1.389	0.000	OK	28.392	27.192	33.60	32.90	3.00	NG	3.50	OK
8.85	OK	9.737	3.756	0.000	OK	26.667	26.067	34.80	32.90	4.30	OK	3.00	OK
9.11	OK	3.858	1.346	0.000	OK	23.692	22.692	28.90	28.90	3.00	OK	4.00	OK
8.85	OK	9.772	3.792	0.000	OK	22.892	22.067	32.90	28.90	6.18	OK	3.00	OK

FRENCH & PARRELLO ASSOCIATES

JOB:	13633.001 - Bridge 3-K-3		
CALCULATED BY:	IAM	**DATE:**	7/19/2019
CHECKED BY:		**DATE:**	

INPUT | CALC | LINK

STORM DRAIN COMPUTATION FORM - EAST EXPANDED

REFERENCE:

1 NJDOT Roadway Design Manual, 2015
2 Gloucester County Specifications Manual, 2006
3 Point Precipitation Frequency Estimates, NOAA Atlas 14, Volume 2, Version 3
4 AASHTO Standard Specifications for Trans. Materials and Methods of Sampling and Testing, 30th Ed., 2010.
5 American Concrete Pipe Association Concrete Pipe Design Manual, 2011

Design Storm Event P = 25 year *Gloucester County Specifications Manual, Chapter 3, Section 6*
Pavement thickness t_{pave} = 0.50 ft.

AASHTO Pipe class: M170 Class III
Required cover over pipe t_{cover} = 3.00 ft.

Station and Offset (1)		L (ft)	Drainage Area "A" (Acres)		Runoff Coef-ficient "C"	"A" x "C"		Flow Time "Tc" (min.)			Rainfall "I" (in/hr)	Total Runoff Q=CIA (ft^3/S)	Dia. Pipe (in.)	Pipe Wall Thick. (in.)	Manning's Coeff.	Slope (ft/ft)	Capacity Full (ft^3/S)	Capacity Check
Junction From	Junction To		Incre-ment	Total		Incre-ment	Total	Overland To Inlet	In U/S Pipe	Cum. Total in Pipe*								
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(13a)	(13b)	(14)	(15)	(15a)
NE-00	NE-1		0.463	0.463	0.78	0.360	0.360	10.0		10.0	5.850	2.105						
NE-1	NE-2	185	0.086	0.550	0.99	0.086	0.445	10.0		10.0	5.850	2.605	18	2.500	0.0120	0.0200	16.09	OK
SE-00	SE-1		2.972	2.972	0.69	2.049	2.049	10.0		10.0	5.850	11.985						
NE-2	SE-1	55	0.435	0.985	0.43	0.187	0.633	10.0		10.0	5.850	3.701	18	2.500	0.0120	0.0200	16.09	OK
SE-1	SE-2	95	0.122	3.957	0.97	0.118	2.681	10.0		10.0	5.850	15.686	24	2.500	0.0120	0.0158	30.77	OK
NE-3	SE-2	50	0.635	0.635	0.33	0.208	0.208	10.0		10.0	5.850	1.218	18	2.500	0.0120	0.0200	16.09	OK
SE-2	SE-3	150	0.097	4.690	0.95	0.092	2.982	10.0		10.0	5.850	17.442	24	3.000	0.0120	0.0150	30.02	OK
NE-4	SE-3	50	0.478	0.478	0.38	0.179	0.179	10.0		10.0	5.850	1.049	18	2.500	0.0120	0.0200	16.09	OK
SE-3	SE-4	150	0.217	5.384	0.94	0.203	3.364	10.0		10.0	5.850	19.681	24	3.000	0.0120	0.0130	27.91	OK
NE-5	SE-4	50	0.075	0.075	0.99	0.074	0.074	10.0		10.0	5.850	0.436	18	2.500	0.0120	0.0200	16.09	OK
SE-4	SE-5	150	0.103	5.562	0.99	0.102	3.541	10.0		10.0	5.850	20.712	30	3.500	0.0120	0.0100	44.44	OK
NE-6	SE-5	50	0.069	0.069	0.99	0.069	0.069	10.0		10.0	5.850	0.401	18	2.500	0.0120	0.0200	16.09	OK
SE-5	SE-6	130	0.103	5.734	0.99	0.102	3.711	10.0		10.0	5.850	21.710	30	3.500	0.0120	0.0100	44.44	OK

NOTES:

1. Pipe cover = ([Ground or Rim Elevation] - [Pipe invert elev.]) - t_{pave} - t_{wall} - [pipe dia.]

* For time of concentration, use larger of overland flow to inlet or cumultative time in pipe.

FRENCH & PARRELLO ASSOCIATES

JOB:	13633.001 - Bridge 3-K-3		
CALCULATED BY:	IAM	**DATE:**	7/19/2019
CHECKED BY:		**DATE:**	

INPUT | CALC | LINK

STORM DRAIN COMPUTATION FORM - EAST EXPANDED

Velocity (ft/s)						Invert Elevation		Ground Elevation		Pipe Cover			
Flowing Full	Velocity Check	Design Flow	Central Angle (rad.)	Flow Check (ft^3/S)	Velocity Check	U/S End	D/S End	U/S End	D/S End	U/S Pipe Cover (ft.)	U/S Cover Check	D/S Pipe Cover (ft.)	D/S Cover Check
(16)	(16a)	(17)	(17a)	(17b)	(17c)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
9.11	**OK**	**6.695**	2.195	**0.000**	**OK**	45.892	42.192	53.10	47.40	**5.00**	**OK**	**3.00**	**OK**
9.11	**OK**	**7.396**	2.431	**0.000**	**OK**	42.192	41.092	47.40	46.60	**3.00**	**OK**	**3.30**	**OK**
9.79	**OK**	**9.841**	3.165	**0.000**	**OK**	39.889	38.392	46.60	43.60	**4.00**	**OK**	**2.50**	**NG**
9.11	**OK**	**5.366**	1.784	**0.000**	**OK**	38.392	37.392	43.60	43.60	**3.00**	**OK**	**4.00**	**OK**
9.55	**OK**	**9.911**	3.331	**0.000**	**OK**	36.400	34.150	43.60	39.90	**4.45**	**OK**	**3.00**	**OK**
9.11	**OK**	**5.135**	1.716	**0.000**	**OK**	34.692	33.692	39.90	39.90	**3.00**	**OK**	**4.00**	**OK**
8.88	**OK**	**9.626**	3.624	**0.000**	**OK**	30.195	28.250	39.90	34.00	**6.96**	**OK**	**3.00**	**OK**
9.11	**OK**	**3.950**	1.372	**0.000**	**OK**	28.792	27.792	34.00	34.00	**3.00**	**OK**	**4.00**	**OK**
9.05	**OK**	**8.893**	3.061	**0.000**	**OK**	27.408	25.908	34.00	32.20	**3.30**	**OK**	**3.00**	**OK**
9.11	**OK**	**3.854**	1.345	**0.000**	**OK**	26.992	25.992	32.20	32.20	**3.00**	**OK**	**4.00**	**OK**
9.05	**OK**	**9.000**	3.115	**0.000**	**OK**	25.908	24.608	32.20	32.20	**3.00**	**OK**	**4.30**	**OK**

Appendix G. Spread Calculations

FRENCH & PARRELLO ASSOCIATES

JOB:	13633.001 - BRIDGE 3-K-3		
CALCULATED BY:	IAM	**DATE:**	7/19/2019
CHECKED BY:		**DATE:**	

INPUT	CALC	LINK

GUTTER SPREAD, BYPASS FLOW, & INLET EFFICIENCY COMPUTATION FORM - WEST APPROACH

REFERENCE:

1 NJDOT Roadway Design Manual, 2015
2 FHWA HEC-22

ASSUMPTIONS:

1 Contributing flow west of the CR 706 and CR 621 intersection (upgrade of F-INLET-1 and F-INLET-8) is adequately captured and conveyed to the conceptual system.

Junction From	Junction To	U/S Overland Flow (ft^3/S)	Contrib. Flow (ft^3/S)	Q Rate of Discharge (ft^3/S)	n Manning's Coeff.	U/S Ground Elev. (ft.)	D/S Ground Elev. (ft.)	Flow Length (ft.)	S_L Long. Slope (ft./ft.)	S_x Cross Slope (ft./ft.)	T Actual Spread (ft.)	T_{all} Allowable Spread (ft.)	Spread Check	y Gutter Flow Depth (ft.)	Cw Weir Coeff.	P Inlet Perimeter	Q_i Intercept. Flow Rate (ft^3/S)	Q_b Bypass Flow (ft^3/S)	E Inlet Efficiency (%)	Efficiency Check (≥75%)
-	F-INLET-1	0.690	0.000	0.690	0.013	47.60	43.70	115	0.034	0.020	4.616	7.6670	OK	0.092			0.576	0.114	0.834	OK
F-INLET-1	F-INLET-2	0.701	0.114	0.815	0.013	43.70	41.30	75	0.032	0.020	4.967	7.6670	OK	0.099			0.636	0.179	0.780	OK
F-INLET-2	F-INLET-3	1.631	0.179	1.811	0.013	41.30	39.10	75	0.029	0.020	6.809	7.6670	OK	0.136			2.026	-0.216	1.119	OK
F-INLET-3	F-INLET-4	1.874	0.000	1.874	0.013	39.10	37.70	75	0.019	0.020	7.508	7.6670	OK	0.150			2.120	-0.246	1.131	OK
F-INLET-4	P-INLET-1	1.535	0.000	1.535	0.013	37.70	34.38	75	0.044	0.020	5.924	7.6670	OK	0.118			1.800	-0.265	1.173	OK
P-INLET-1	P-INLET-2	0.316	0.000	0.316	0.013	34.38	33.10	75	0.017	0.020	3.918	7.6670	OK	0.078			0.381	-0.065	1.205	OK
P-INLET-2	P-INLET-3	0.438	0.000	0.438	0.013	33.10	32.20	75	0.012	0.020	4.729	7.6670	OK	0.095	3.000	6.960	0.607	-0.169	1.386	OK
-	F-INLET-8	0.642	0.000	0.642	0.013	48.20	44.40	115	0.033	0.020	4.513	7.6670	OK	0.090			0.553	0.089	0.861	OK
F-INLET-8	F-INLET-9	0.963	0.089	1.052	0.013	44.40	36.10	260	0.032	0.020	5.468	7.6670	OK	0.109			1.474	-0.422	1.401	OK
F-INLET-9	P-INLET-6	0.457	0.000	0.457	0.013	36.10	33.59	145	0.017	0.020	4.484	7.6670	OK	0.090			0.471	-0.014	1.031	OK
P-INLET-6	P-INLET-7	0.403	0.000	0.403	0.013	33.59	32.20	140	0.010	0.020	4.748	7.6670	OK	0.095	3.000	6.960	0.611	-0.208	1.517	OK

NOTES:

1 See storm sewer drainage areas plan for location of future and proposed inlets.
2 "F-INLET-#" denotes a future inlet not proposed as part of the LCD study concepts; "P-INLET-#" denotes a proposed inlet included in the LCD conceptual plans.

FRENCH & PARRELLO ASSOCIATES

JOB:	13633.001 - BRIDGE 3-K-3		
CALCULATED BY:	IAM	DATE:	7/19/2019
CHECKED BY:		DATE:	

INPUT	CALC	LINK

GUTTER SPREAD, BYPASS FLOW, & INLET EFFICIENCY COMPUTATION FORM - EAST APPROACH

REFERENCE:

1 NJDOT Roadway Design Manual, 2015
2 FHWA HEC-22

ASSUMPTIONS:

1 Contributing flow east of the CR 706 and Summit Ave intersection (upgrade of F-INLET-7) and contributing flow east of the CR 706 and Martanna Ave (upgrade of F-INLET-13) is adequately captured and conveyed to the conceptual system.

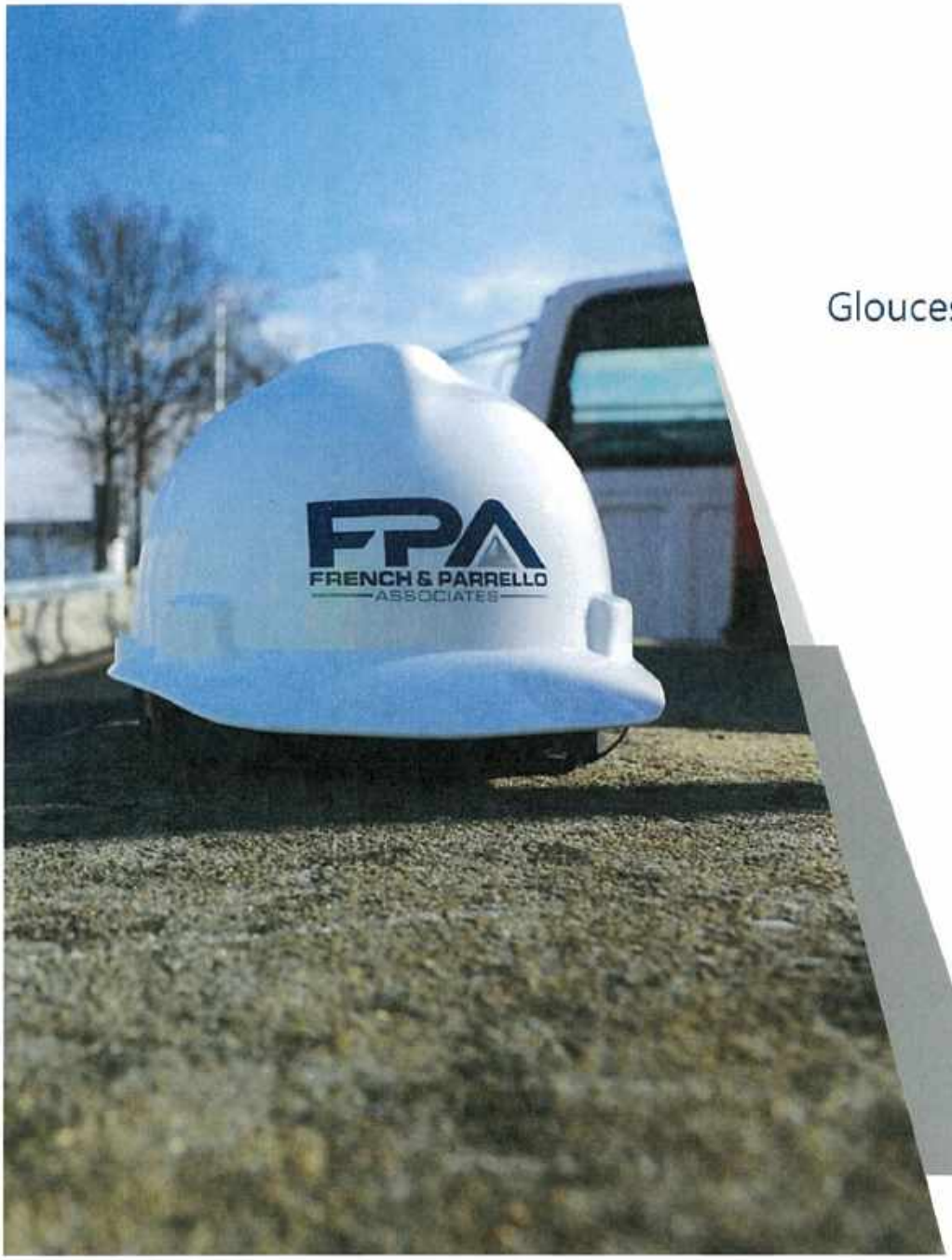
Junction From	Junction To	U/S Overland Flow (ft^3/S)	Contrib. Flow (ft^3/S)	Q Rate of Discharge (ft^3/S)	n Manning's Coeff.	U/S Ground Elev. (ft.)	D/S Ground Elev. (ft.)	Flow Length (ft.)	S_L Long. Slope (ft./ft.)	S_x Cross Slope (ft./ft.)	T Actual Spread (ft.)	T_{all} Allowable Spread (ft.)	Spread Check	y Gutter Flow Depth (ft.)	Cw Weir Coeff.	P Inlet Perimeter	Q_i Intercept. Flow Rate (ft^3/S)	Q_b Bypass Flow (ft^3/S)	E Inlet Efficiency (%)	Efficiency Check (≥75%)
-	F-INLET-7	0.690	0.000	0.690	0.013	49.90	46.60	100	0.033	0.020	4.639	7.6670	OK	0.093			0.577	0.114	0.835	OK
F-INLET-7	F-INLET-6	0.539	0.114	0.652	0.013	46.60	43.60	95	0.032	0.020	4.579	7.6670	OK	0.092			0.560	0.093	0.858	OK
F-INLET-6	F-INLET-5	1.189	0.093	1.282	0.013	43.60	39.90	150	0.025	0.020	6.179	7.6670	OK	0.124			1.676	-0.394	1.308	OK
F-INLET-5	P-INLET-5	1.222	0.000	1.222	0.013	39.90	33.72	150	0.041	0.020	5.514	7.6670	OK	0.110			1.585	-0.362	1.296	OK
P-INLET-5	P-INLET-4	0.596	0.000	0.596	0.013	33.72	31.92	150	0.012	0.020	5.308	7.6670	OK	0.106	3.000	6.960	0.722	-0.126	1.211	OK
-	F-INLET-13	0.500	0.000	0.500	0.013	58.00	52.80	215	0.024	0.020	4.358	7.6670	OK	0.087			0.487	0.013	0.974	OK
F-INLET-13	F-INLET-12	1.096	0.013	1.109	0.013	52.80	47.80	185	0.027	0.020	5.753	7.6670	OK	0.115			1.534	-0.425	1.383	OK
F-INLET-12	F-INLET-11	1.218	0.000	1.218	0.013	47.80	43.90	115	0.034	0.020	5.710	7.6670	OK	0.114			1.599	-0.381	1.313	OK
F-INLET-11	F-INLET-10	1.049	0.000	1.049	0.013	43.90	39.80	150	0.027	0.020	5.623	7.6670	OK	0.112			1.485	-0.435	1.415	OK
F-INLET-10	P-INLET-9	0.436	0.000	0.436	0.013	39.80	33.72	150	0.041	0.020	3.756	7.6670	OK	0.075			0.437	-0.001	1.003	OK
P-INLET-9	P-INLET-8	0.401	0.000	0.401	0.013	33.72	31.92	150	0.012	0.020	4.575	7.6670	OK	0.092	3.000	6.960	0.578	-0.177	1.441	OK

NOTES:

1 See storm sewer drainage areas plan for location of future and proposed inlets.
2 "F-INLET-#" denotes a future inlet not proposed as part of the LCD study concepts; "P-INLET-#" denotes a proposed inlet included in the LCD conceptual plans.

FRENCH & PARRELLO ASSOCIATES

Advancing our client's vision
IMPROVING OUR WORLD



HAZARDOUS WASTE SCREENING STUDY

Cooper Street Bridge
Bridge 3K-3, CR 706
Township of Deptford
Gloucester County, New Jersey

Submitted to:

Mr. Vincent Voltaggio, P.E.
Director of Engineering
County of Gloucester
1200 North Delsea Drive
Clayton, NJ 08312

February 8, 2019
FPA No. 13633.001

1800 Route 34, Suite 101 • Wall, NJ • 07719 • T 732.312.9800 • F 732.312.9801
Camden, NJ • Hackettstown, NJ • New York, NY
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FRENCH & PARRELLO ASSOCIATES

Corporate Office
1800 Route 34, Suite 101
Wall, NJ 07719

Regional Offices
Hackettstown, NJ
New York, NY

February 8, 2019

Mr. Vincent Voltaggio, P.E.
Director of Engineering
County of Gloucester
1200 North Delsea Drive
Clayton, NJ 08312

Re: **HAZARDOUS WASTE SCREENING STUDY**
Gloucester County Bridge 3K-3, Cooper Street Bridge
County Route 706, Cooper Street
Township of Deptford, Gloucester County, New Jersey
FPA Project No. 13,633.001

Dear Mr. Voltaggio:

French and Parrello Associates performed a Hazardous Waste Screening Study on the Study Corridor associated with the widening or replacement of Bridge 3K-3, Cooper Street Bridge, County Route 706 in the Township of Deptford, Gloucester County, New Jersey. Based upon the results of the Screening Study, the following conclusions and recommendations are provided:

- A review of Federal and State databases was conducted to assess environmental conditions within the Study Corridor and to identify sites that may pose an environmental concern to the area surrounding Gloucester County Bridge 3K-3. No sites within the Study Corridor were identified in the databases searched relating to the presence of hazardous wastes, site contamination or previous site remediation activity.

- Based on documentary research and site reconnaissance, no sites of questionable environmental integrity and no areas of concern were identified. No further investigation is recommended.

Respectfully submitted,

FRENCH & PARRELLO ASSOCIATES

Lawrence Schmidt

Lawrence Schmidt
Senior Environmental Specialist

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1.0 INTRODUCTION

French & Parrello Associates (FPA) has performed this Hazardous Waste Screening Study (HWSS) in accordance with the guidelines set forth in the New Jersey Department of Transportation (NJDOT) Hazardous Waste Screening Requirements (CED Input, May 2008) and the New Jersey Department of Environmental Protection's (NJDEP) *Technical Requirements for Site Remediation*, N.J.A.C. (New Jersey Administrative Code) 7:26E - 3.1 through 3.2 (TRSR), the NJDEP Preliminary Assessment Technical Guidance Document (March 2018).

The purpose of this Report is to evaluate potential areas of concern in the immediate vicinity of Cooper Street Bridge (Bridge 3K-3) located on County Route 706 in the Township of Deptford, Gloucester County, New Jersey. The project limits are approximately 300 feet in each direction from the Cooper Street Bridge. Please refer to Drawing Number 1, Regional Location Map, Drawing Number 2, USGS Quad Map and Drawing No. 3 Study Corridor Aerial Photograph found in Appendix A.

The information presented within this Report is based upon FPA's scope of work which included review of historical sources, interviews with persons familiar with the uses and physical characteristics of the properties, letter requests for relevant data from local government agencies, a site reconnaissance visit and review of reasonably ascertainable environmental records from environmental databases. The observations and conclusions presented in this Report are based on the conditions observed at the time of our site inspection and review of all information obtained through our investigative practices. This work did not include field testing (e.g. suspected asbestos containing materials, lead based paint, radon, air, soil, soil gas, groundwater, etc.).

2.0 PROJECT DESCRIPTION

2.1 Location and Project Goals

The Study Corridor is a linear corridor extending approximately 300 feet in each direction from the center of Bridge 3K-3 (Cooper Street Bridge) in the Township of Deptford. The proposed project consists of widening or replacement of the bridge and its approaches. The bridge spans Almonesson

Creek in which the upstream portion of the structure also has an attached spillway which forms Almonesson Lake.

2.2 Physical Setting Characteristics

The Study Corridor consists of the bridge and approximately 300 feet in each direction on County Route 706 which is also identified as Cooper Street. The properties on either side of the Bridge are Almonesson Lake (upstream) and Almonesson Creek Park (downstream). Both properties are owned by the Township of Deptford. The study corridor consists of several commercial properties and three single-family dwellings. The physical setting is provided by Drawing Number 2, the United States Geological Survey (USGS) topographic map which depicts the approximate location of the Study Corridor, along with topography and local drainage patterns. The elevation of the area is approximately 21 feet above mean sea level.

According to information from the United States Department of Agriculture's Soil Conservation Service SSURGO data, the dominant soils within the Study Corridor are Freehold sand loams and Fluvaquents. Fluvaquents occur downstream of the bridge along Almonesson Creek. Both soil types consist of silt-clay materials of a granular composition that are moderately drained. The area on the upstream side of the bridge is classified as water (Almonesson Lake) with sandy loams and moderate infiltration rates.

2.3 Current Development and Usage

The Study Corridor is located in the eastern portion of the Township of Deptford along County Route 706. The property on either side of the Cooper Street Bridge (Bridge 3K-3) is undeveloped publicly owned parkland and Almonesson Lake. Properties along the Study Corridor include a restaurant, a caterer, a convenience market, two parking lots, a child care center and three single-family dwellings. Photographic images of the Study Corridor are presented in Appendix A.

3.0 METHODOLOGY

This HWSS was performed in accordance with the guidelines set forth by the NJDOT for a Hazardous Waste Screening Study, and the NJDEP's Technical Requirements for Site Remediation

(7:26E-3.2, Preliminary Assessment). The information presented within this report is based upon FPA's review of available historical documents and environmental databases, inquiries to local government agencies and a site reconnaissance visit. Information pertaining to the history of the Study Corridor is based primarily upon review of historical databases and communications with municipal agencies. The environmental conditions noted in this HWSS report are limited to those observed by FPA during the site reconnaissance on January 22, 2019. The site reconnaissance was limited to the public right of ways along County Route 706 and publicly owned municipal parkland.

3.1 Industrial Site Recovery Act (ISRA)

Current Federal and State environmental databases were reviewed to determine if former businesses within the Study Corridor were subject to ISRA. In addition the site reconnaissance was utilized to identify business properties as potentially being subject to the NJDEP's ISRA provisions.

3.2 Study Corridor Investigation

The purpose of this HWSS was to identify areas of concern (AOCs) that may impact activities associated with corridor improvements. AOCs are defined as the presence, or likely presence, of any hazardous substance or petroleum product on the property that indicates an existing, past, or a material threat of any hazardous substance or petroleum product release into the structures on the property, or into the ground, groundwater, or surface water on the property. AOCs also include hazardous substances and petroleum products handled and stored in, or out of, compliance with existing laws. An area of concern is equivalent to the NJDOT's definition of a site of "questionable environmental integrity". In addition, the Study Corridor was assessed for signs of potential environmental impacts including signs of dumping, stressed vegetation, stained soils, polychlorinated biphenyls (PCBs), and above ground or underground storage tanks. Adjoining properties were also visually inspected for indications of AOCs that may potentially impact the proposed transportation project improvements.

3.3 Agency Coordination - Records Review

Select Federal and State standard environmental record sources were acquired from Environmental Data Resources Corporation of, Shelton Connecticut and reviewed to evaluate the potential likelihood of AOCs within the Study Corridor.

In addition, historical aerial photography mapping was reviewed to evaluate and characterize past or current activity within the Study Corridor. The activity could include the presence of tanks or storage containers, vehicle storage areas, discolored or disturbed soils, presence of industrial structures and railroad facilities, and historical agricultural usage in the area, potentially resulting in pesticide contamination.

4.0 SITE RECONNAISSANCE

A site reconnaissance of the Study Corridor was conducted on January 22, 2019 to visibly inspect and identify AOCs. Please refer to photos in Appendix A. The Study Corridor consists of municipal parkland, commercial properties with parking lots and three single-family dwellings. From street view, no areas of concern were observed within the right of way or on the adjacent land.

4.1 Storage Tanks

No evidence of petroleum storage tanks was observed based on the properties adjacent to the Study Corridor.

4.2 Identified Hazardous Substances

Hazardous substances were not observed.

4.3 Polychlorinated Biphenyls

Six pole-mounted electrical transformers were noted along the roadway. There were no indications of PCB-containing transformers or spillage/surface staining within the immediate vicinity of the pole mounted transformers.

4.4 Indications of Solid Waste Disposal

There was no evidence of illegal disposal of solid waste in undeveloped areas of the Study Corridor. Solid waste and cardboard dumpsters were noted in the rear of the restaurant.

4.5 Other Notable Conditions

At the time of the site visit, no properties of questionable environmental integrity were observed. Based on NJDOT screening guidelines these types of sites would exhibit signs such as soil staining, stressed vegetation, chemical containment drums or the presence of hazardous substances.

4.6 Historical Use Information on Study Corridor

This section describes FPA's review of available historical information (historic aerial photo maps) included in Appendix B. FPA is able to historically interpret land use throughout the Study Corridor and draw conclusions based on key indicators of former land uses relative to the potential generation of hazardous waste. Examples of former suspect land uses include landfills, major industrial activity, mining, and auto service stations.

4.6.1 Historic Aerial Photographs

In order to obtain a history of property use, FPA reviewed aerial photographs obtained from Environmental Data Resources. Aerial photographs from 1930, 1944, 1951, 1962 1974, 1981, 1995, 2006 and 2017 were examined to determine prior usage, development and construction within this Study Corridor.

FPA's review of available aerial photographs revealed the following:

1930 – The Study Corridor and surrounding area are located in a sparsely populated section of the Township of Deptford. Cooper Street Bridge and the spillway creating Almonesson Lake are shown. County Route 706, Route 41 and Almonesson Road are also shown. The entire area surrounding the Study Corridor is shown as agricultural with no significant development. (Scale 1"= 500')

1944 - The Study Corridor is shown with a structure to the northwest of the bridge (present day restaurant) and southeast of the bridge (present day caterer). A round structure is also shown on the northeast side of the bridge. The surrounding areas are shown with development on the north side of Almonesson Road while the remaining area continues to be agricultural. (Scale 1"= 500')

1951 - The Study Corridor is shown similar to the 1944 aerial photograph. The surrounding area is now shown with residential development on either side of Almonesson Lake. An additional building is shown to the northeast side of the bridge. Historic research has determined that the area to the northeast of the bridge is Sunset Park, a commercial recreational area which eventually included a dance hall, picnic areas, carousel, bowling alley, ballfield and swimming pool. (Scale 1"= 500')

1962 - The Study Corridor now shows expansion of Sunset Park with a second-round structure. The surrounding areas are shown with additional residential development. (Scale 1"= 500')

1974 – The Study Corridor is now shown with paved parking lots adjacent to the restaurant and the caterer. Three residential dwellings are shown to the west of the bridge. The surrounding area is shown similar to the 1962 aerial photograph. (Scale 1"= 500')

1981 - The Study Corridor is now shown with the removal of the structures associated with Sunset Park. The area downstream of the bridge has reverted to become a wooded area. The surrounding areas are shown similar to the 1974 aerial photograph. (Scale 1"= 500')

1995 – – The Study Corridor is now shown with a structure on the west side adjacent to Almonesson Road (present day convenience store). The surrounding areas are shown similar to the 1981 aerial photograph with the exception of the start of commercial development to the northeast of the bridge. (Scale 1"= 500')

2006 - The Study Corridor is now shown with a structure immediately west of the bridge (present day child-care center). The surrounding area is shown with full build out of the commercial area to the northeast of the bridge including Home Depot and large parking area. (Scale 1"= 500')

2017– The Study Corridor and the surrounding area are shown similar to the current day configuration. (Scale 1"= 500')

4.6.2 Sanborn Insurance Maps

In order to obtain information regarding historical property ownership, operations, and potential AOCs, FPA requested Sanborn Fire Insurance Maps from EDR for the Host Property, as Sanborn Maps often contain information regarding building construction and site features such as production wells, underground or aboveground storage tanks, production areas, or storage areas which can assist in the identification of AOCs. EDR determined that there was no Sanborn Map coverage in the area of the Study Corridor.

5.0 RECORDS REVIEW

5.1 Standard Environmental Record Sources, Federal & State

Select Federal and State standard environmental record sources were acquired from Environmental Data Resources Corporation (EDR) and reviewed by FPA to evaluate the potential applicability and significance of database listings within the Study Corridor. A list of the standard environmental record sources that were reviewed, and findings, are found in the Envirosite report and summarized below. The EDR Report is found in Appendix B. The following subsections summarize the pertinent findings of the Envirosite governmental records database search.

5.2 The Study Corridor

The bridge and roadway were not identified in the databases searched.

5.3 Surrounding Area Database Listings

As reported by Environmental Data Resources, no surrounding properties were identified in the Federal and State government databases within a one-quarter mile radius of the Cooper Street Bridge with the exception of the Home Depot. Home Depot is listed as a RCRA Small Quantity Generator

of Hazardous Waste. Under the RCRA program, hazardous waste is manifested and transported to a facility licensed to accept regulated waste.

5.4 ISRA Applicability

No industrial establishments subject to the NJDEP's ISRA requirements were located within one - half mile of the Study Corridor.

6.0 INFORMATION REQUESTS FROM GOVERNMENT OFFICIALS

FPA submitted Open Public Records Act letters to the Clerk of Township of Deptford and the Gloucester County Department of Health requesting relevant environmental data from these government agency files. An electronic form was submitted to the NJDEP requesting the same type of information. As of the date of this report all of the above agencies have responded indicating that they do not have substantive records for properties within the Study Corridor. Governmental correspondence is included in Appendix C.

7.0 CONCLUSIONS AND RECOMMENDATIONS

FPA performed a Hazardous Waste Screening Study on the Study Corridor associated with Cooper Street Bridge (Bridge 3K-3) on Route 706 in the Township of Deptford, Gloucester County, New Jersey. Based upon the results of the Screening Study, the following conclusions and recommendations are provided:

- A review of Federal and State databases was conducted to assess environmental conditions within the Study Corridor and to identify sites that may pose an environmental concern to the area surrounding Gloucester County Bridge 3K-3. No sites within the Study Corridor were identified in the databases searched relating to the presence of hazardous wastes, site contamination or previous site remediation activity.

- Based on documentary research and site reconnaissance, no sites of questionable environmental integrity and no areas of concern were identified. No further investigation is recommended.

8.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

Lawrence Schmidt, Senior Environmental Specialist conducted the research, site reconnaissance and preparation of this report for this Hazardous Waste Screening Study. This report has been prepared using available information through government agencies and private contacts at the time of the investigation. Should FPA receive additional information which may alter the characteristics enumerated within this report, FPA reserves the right to revise this report or issue an addendum statement.

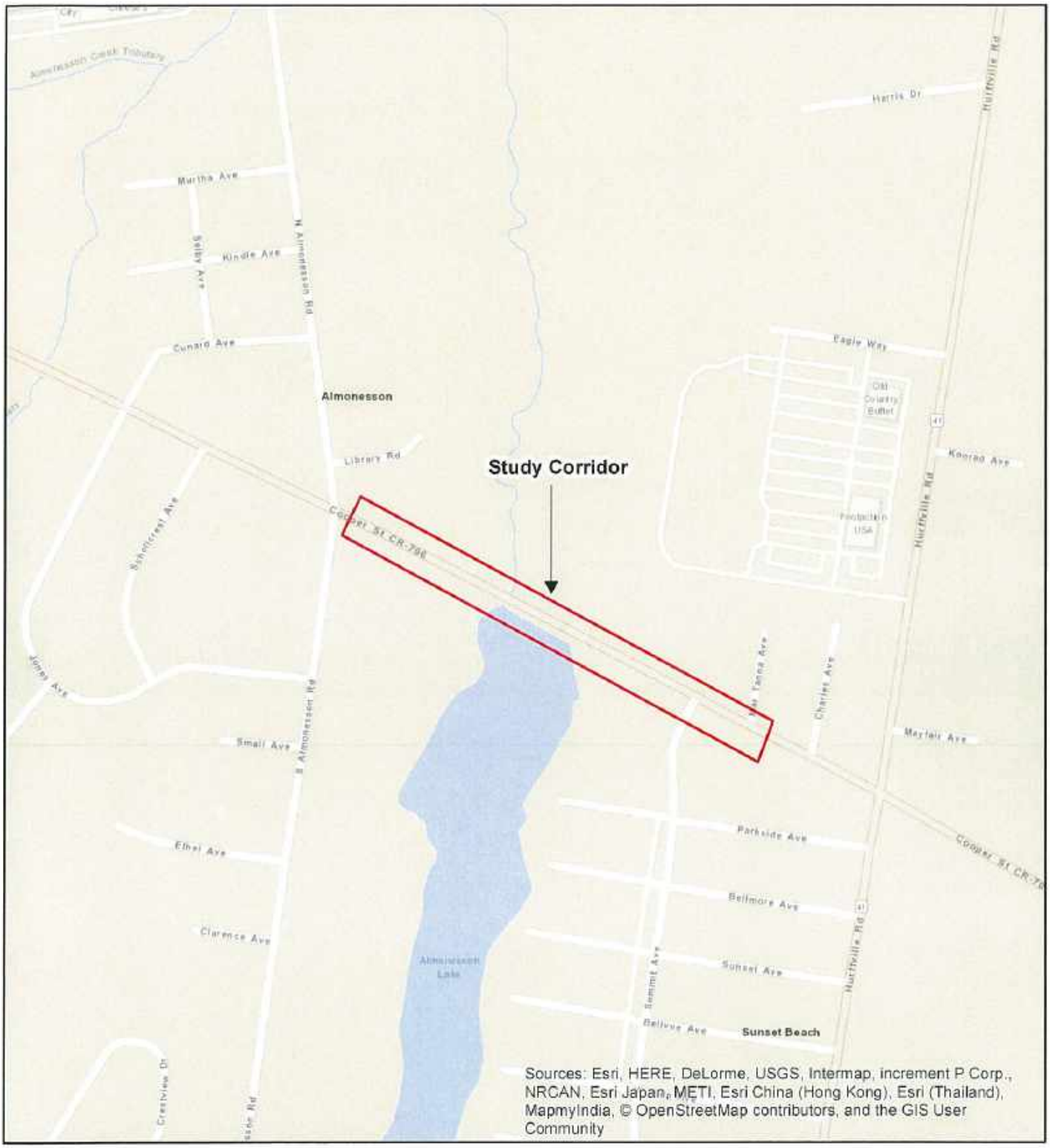
CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, including all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Lawrence Schmidt
Senior Environmental Specialist

APPENDIX A

DRAWINGS AND PHOTO LOG



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GLOUCESTER COUNTY BRIDGE 3K-3
COOPER STREET BRIDGE
COUNTY ROUTE 706, TOWNSHIP OF DEPTFORD
GLOUCESTER COUNTY, NEW JERSEY

SITE LOCATION MAP

SCALE:	BLOCK:	LOT:	DRAWING #
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02/01/2019	T.M.	13633.001	

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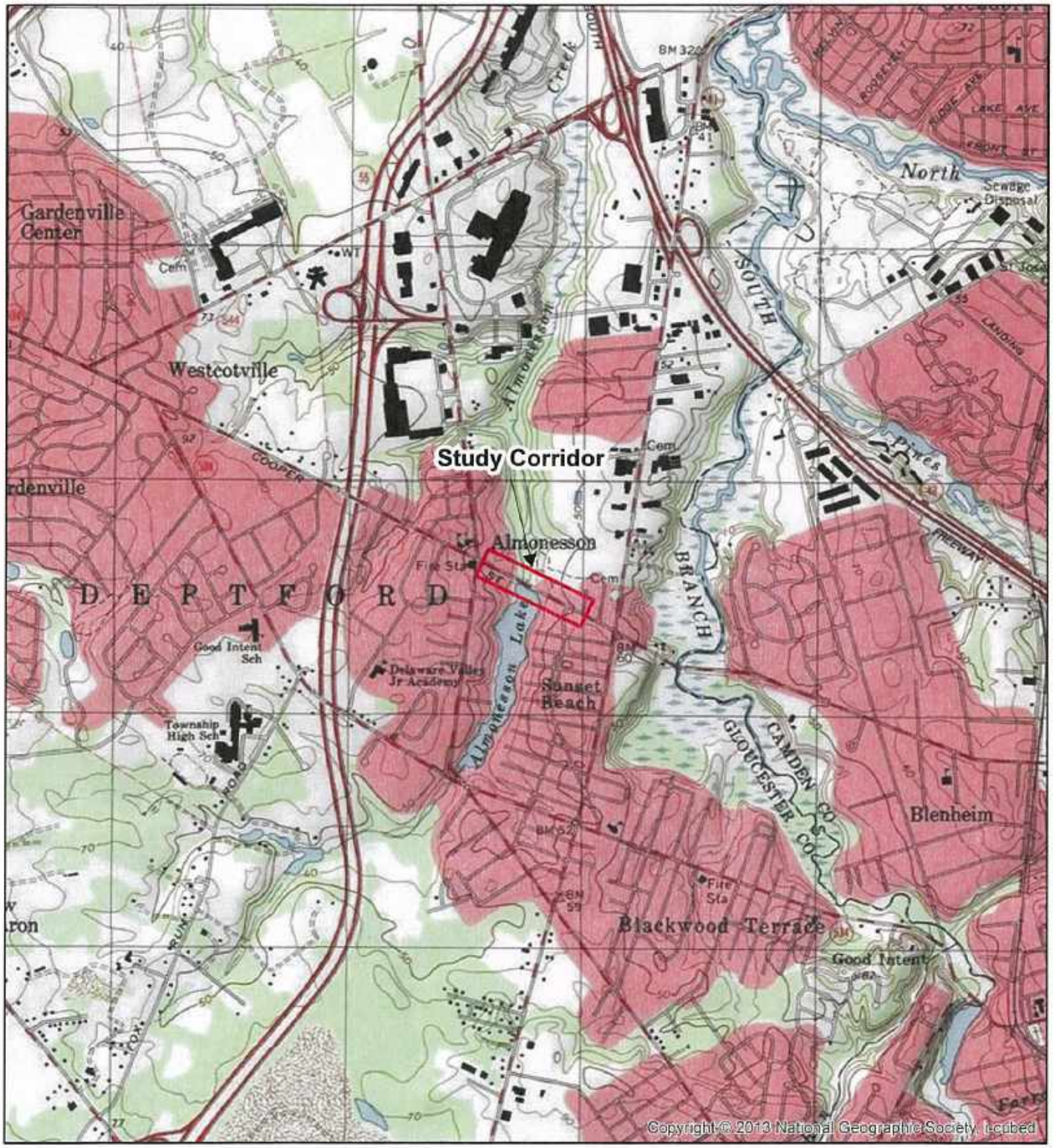

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GLOUCESTER COUNTY BRIDGE 3K-3
COOPER STREET BRIDGE
COUNTY ROUTE 706, TOWNSHIP OF DEPTFORD
GLOUCESTER COUNTY, NEW JERSEY

TOPOGRAPHIC MAP
RUNNEMEDE QUADRANGLE

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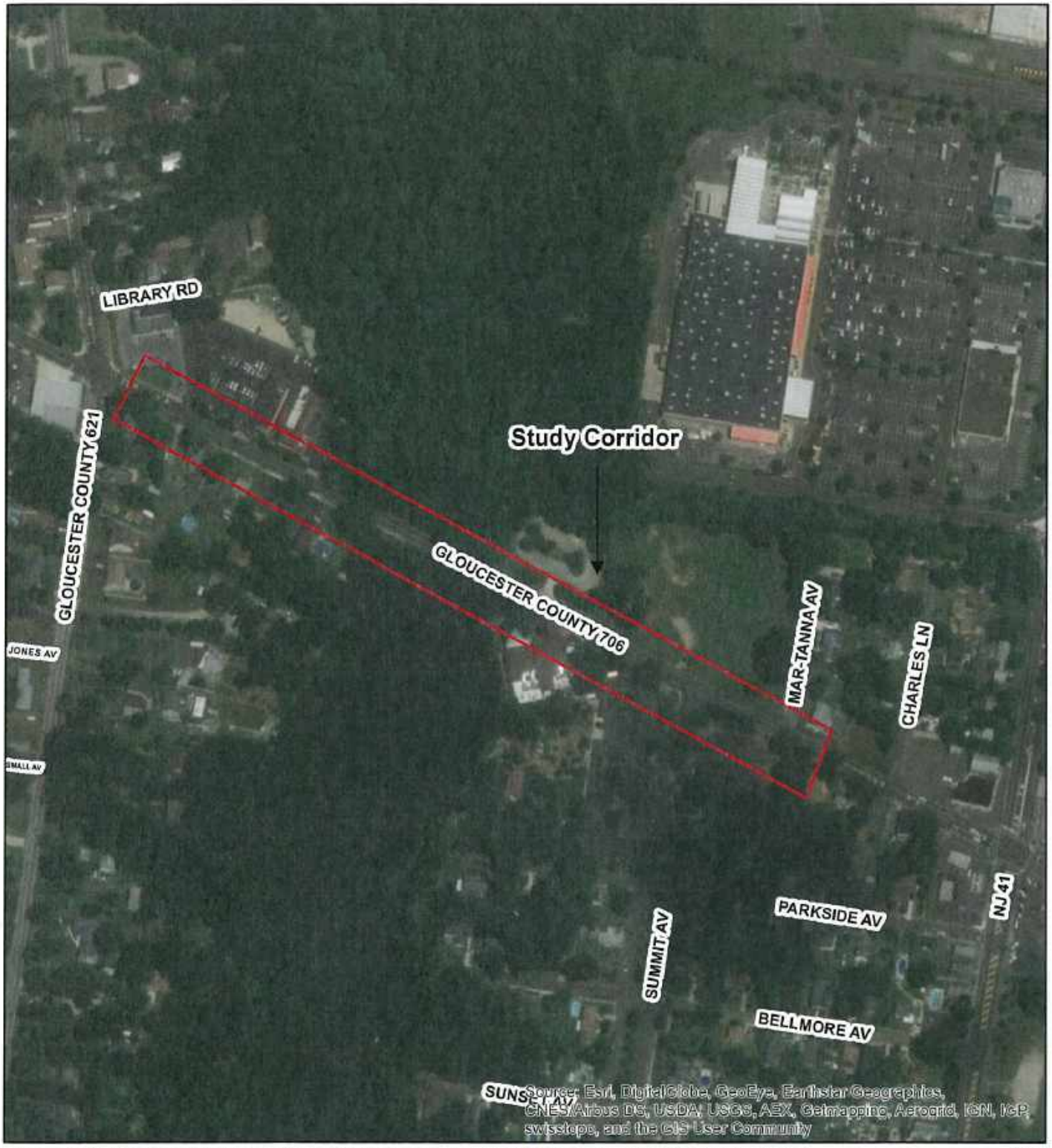

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GLOUCESTER COUNTY BRIDGE 3K-3
COOPER STREET BRIDGE
COUNTY ROUTE 706, TOWNSHIP OF DEPTFORD
GLOUCESTER COUNTY, NEW JERSEY

STUDY CORRIDOR MAP

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Study Corridor Cooper St. County Route 706 looking west

Study Corridor Cooper St. County Route 706 looking east

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Gloucester County Bridge 3K-3
Cooper Street Bridge
County Route 706, Cooper Street
Township of Deptford, Gloucester County

SCALE:	DATE:	JOB No.	PHOTO No.
N.T.S.	1-22-19	13,633.001	1 and 2

Cooper Street Bridge - downstream looking north

Cooper Street Bridge structure - upstream looking southwest

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Gloucester County Bridge 3K-3
Cooper Street Bridge
County Route 706, Cooper Street
Township of Deptford, Gloucester County

SCALE:	DATE:	JOB No.	PHOTO No.
N.T.S.	**6-12--15**	**9147.001**	**3 and 4**

Cooper Street Bridge looking northwest

Almonesson Lake from the bridge looking south

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Gloucester County Bridge 3K-3
Cooper Street Bridge
County Route 706, Cooper Street
Township of Deptford, Gloucester County

SCALE:	DATE:	JOB No.	PHOTO No.
N.T.S.	1-22-19	13,633.001	5 and 6

Child Care Center looking southeast from Cooper St.

Residences looking west from Cooper Street

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Gloucester County Bridge 3K-3
Cooper Street Bridge
County Route 706, Cooper Street
Township of Deptford, Gloucester County

SCALE:	DATE:	JOB No.	PHOTO No.
N.T.S.	1-22-19	13,633.001	7 and 8

Restaurant looking northwest from Cooper Street

Convenience store looking north from Cooper Street

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Gloucester County Bridge 3K-3
Cooper Street Bridge
County Route 706, Cooper Street
Township of Deptford, Gloucester County

SCALE:	DATE:	JOB No.	PHOTO No.
N.T.S.	**6-12--15**	**9147.001**	**9 and 10**

Almonesson Creek and park looking northeast from Cooper Street

Embankment next to Almonesson Lake looking southwest from Cooper St.

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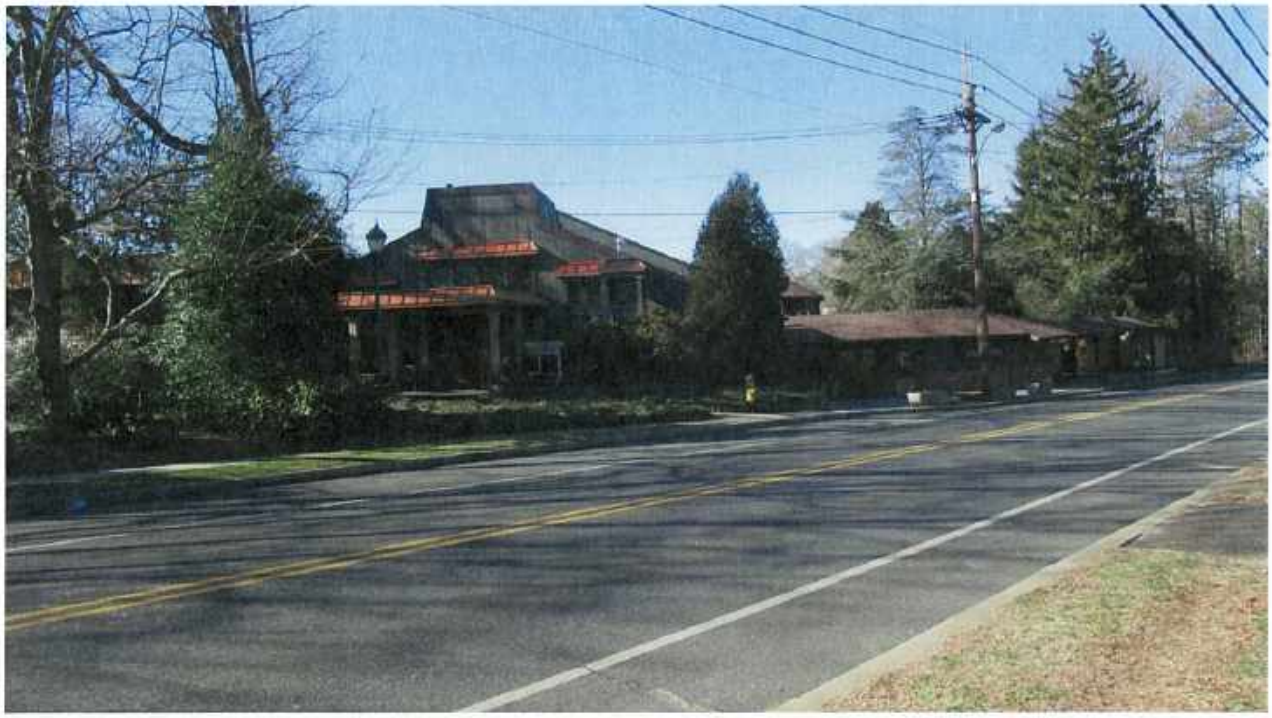
Gloucester County Bridge 3K-3
Cooper Street Bridge
County Route 706, Cooper Street
Township of Deptford, Gloucester County

SCALE:	DATE:	JOB No.	PHOTO No.
N.T.S.	1-22-19	13,633.001	11 and 12

Municipal park looking west



Catering facility looking southwest from Cooper Street

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Gloucester County Bridge 3K-3
Cooper Street Bridge
County Route 706, Cooper Street
Township of Deptford, Gloucester County

SCALE:	DATE:	JOB No.	PHOTO No.
N.T.S.	1-22-19	13,633.001	13 and 14

Playground at Almonesson Creek Park looking west

Marker at municipal park describing location of former Sunset Park

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Gloucester County Bridge 3K-3
Cooper Street Bridge
County Route 706, Cooper Street
Township of Deptford, Gloucester County

SCALE:	DATE:	JOB No.	PHOTO No.
N.T.S.	**6-12--15**	**9147.001**	**15 and 16**

APPENDIX B

HISTORICAL RESEARCH DOCUMENTATION

Cooper Street Bridge County Route 706

Cooper Street

Woodbury, NJ 08096

Inquiry Number: 5537740.5

January 17, 2019

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

01/17/19

Site Name:	Client Name:
Cooper Street Bridge County R	French & Parrello Assoc., P.A.
Cooper Street	1800 Route 34
Woodbury, NJ 08096	Wall, NJ 07719
EDR Inquiry # 5537740.5	Contact: Lawrence Schmidt

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2017	1"=500'	Flight Year: 2017	USDA/NAIP
2013	1"=500'	Flight Year: 2013	USDA/NAIP
2010	1"=500'	Flight Year: 2010	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1995	1"=500'	Acquisition Date: March 25, 1995	USGS/DOQQ
1981	1"=500'	Flight Date: April 10, 1981	NHAP
1974	1"=500'	Flight Date: March 14, 1974	EDR Proprietary Aerial Viewpoint
1971	1"=500'	Flight Date: May 18, 1971	USDA
1965	1"=500'	Flight Date: April 04, 1965	EDR Proprietary Aerial Viewpoint
1962	1"=500'	Flight Date: March 01, 1962	EDR Proprietary Aerial Viewpoint
1954	1"=500'	Flight Date: April 01, 1954	Jack
1951	1"=500'	Flight Date: March 27, 1951	EDR Proprietary Aerial Viewpoint
1944	1"=500'	Flight Date: December 17, 1944	EDR Proprietary Aerial Viewpoint
1940	1"=500'	Flight Date: April 07, 1940	EDR Proprietary Aerial Viewpoint
1931	1"=500'	Flight Date: January 01, 1931	EDR/EdrAerials

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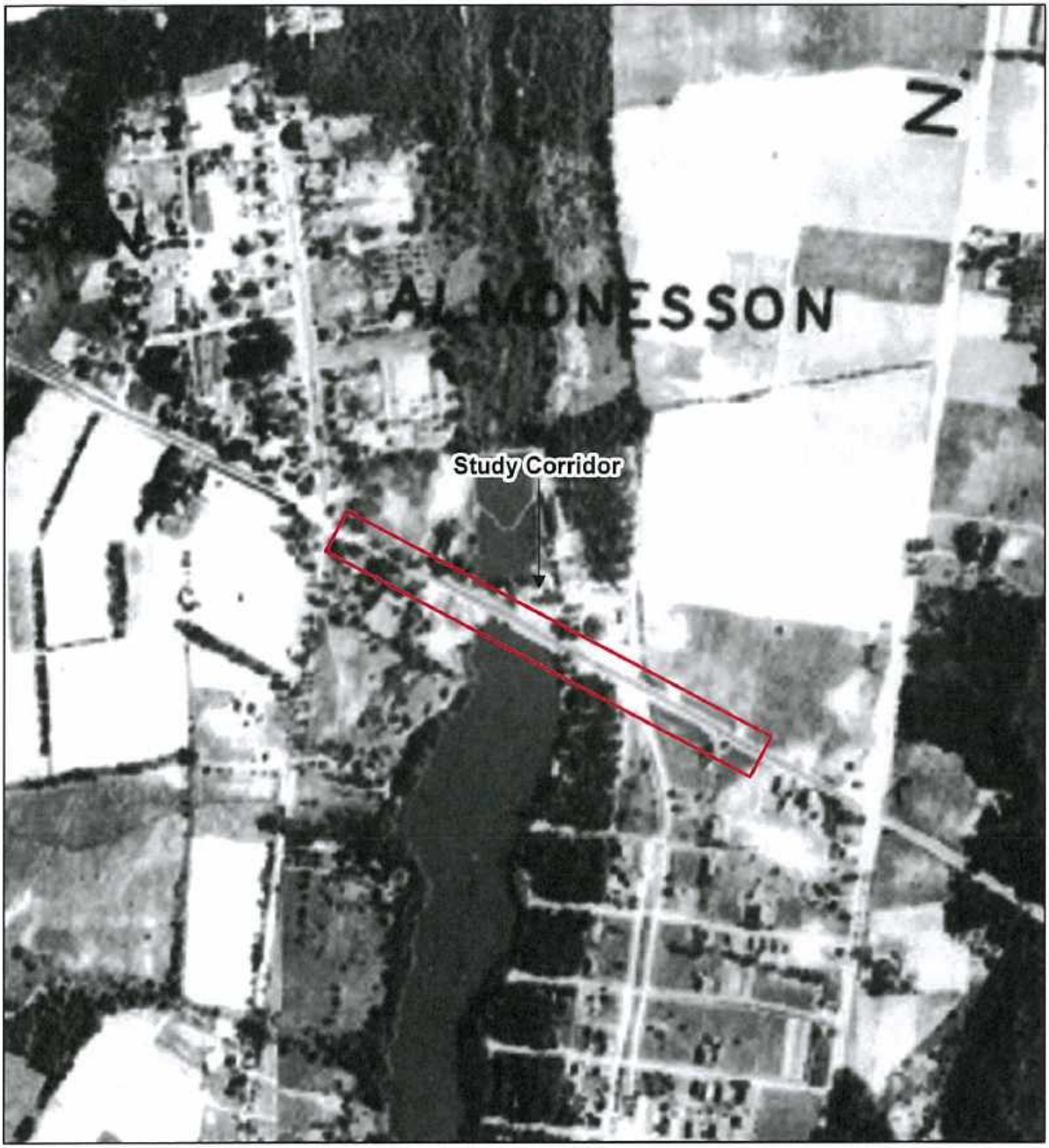

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GLOUCESTER COUNTY BRIDGE 3K-3
COOPER STREET BRIDGE
COUNTY ROUTE 706, TOWNSHIP OF DEPTFORD
GLOUCESTER COUNTY, NEW JERSEY

HISTORIC AERIAL IMAGES

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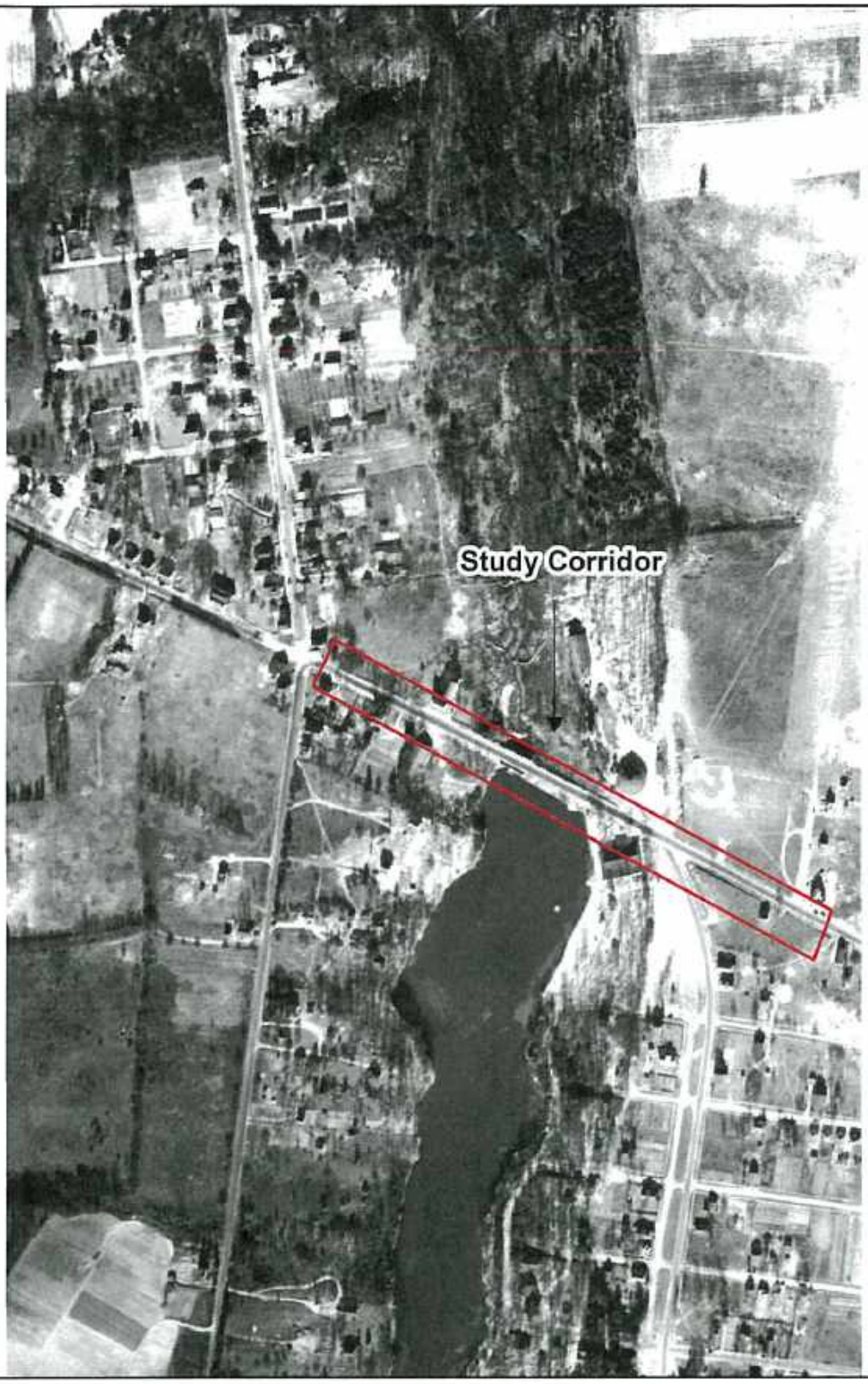

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GLOUCESTER COUNTY, NEW JERSEY

HISTORIC AERIAL IMAGES

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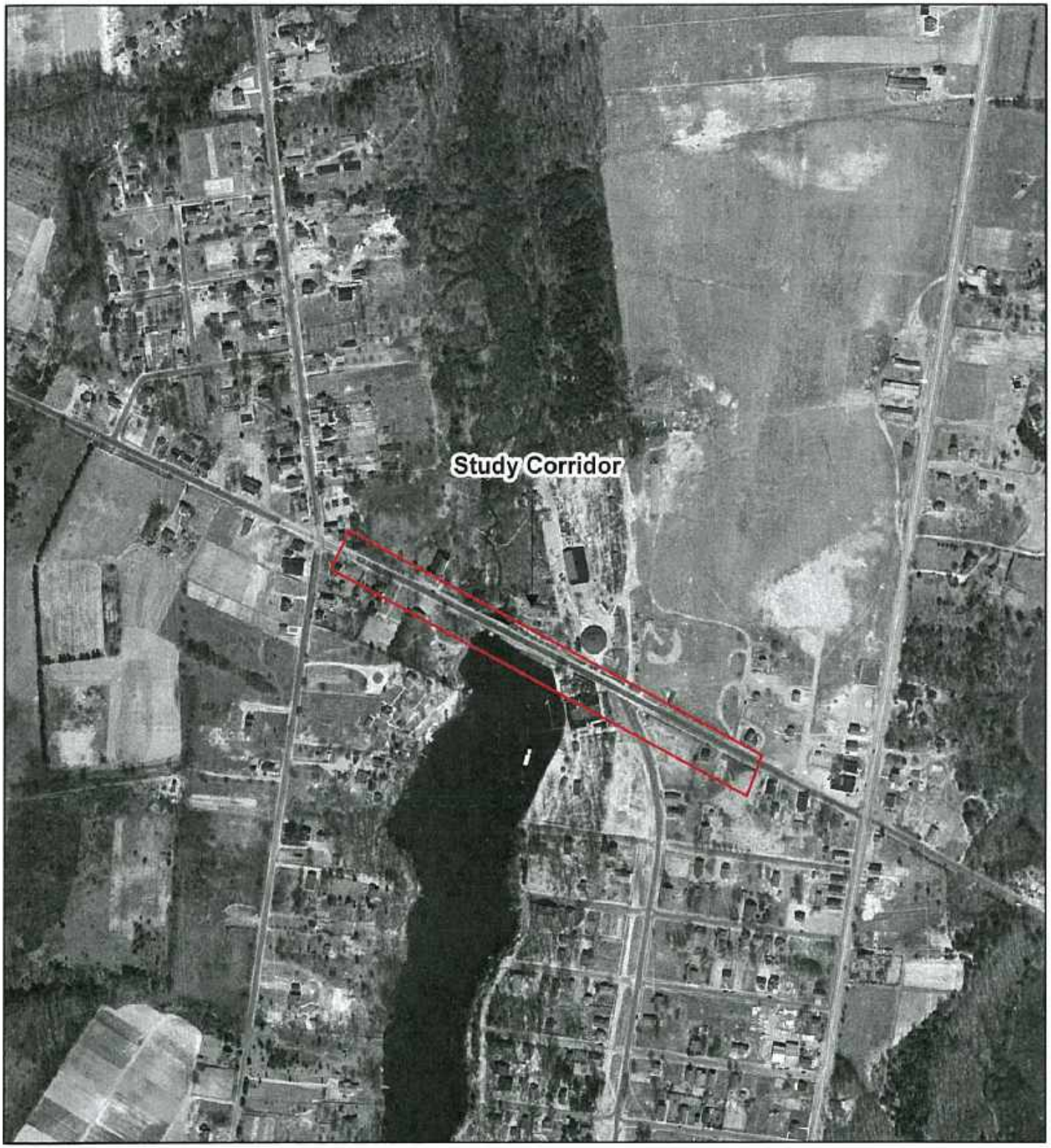

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COOPER STREET BRIDGE
COUNTY ROUTE 706, TOWNSHIP OF DEPTFORD
GLOUCESTER COUNTY, NEW JERSEY

HISTORIC AERIAL IMAGES

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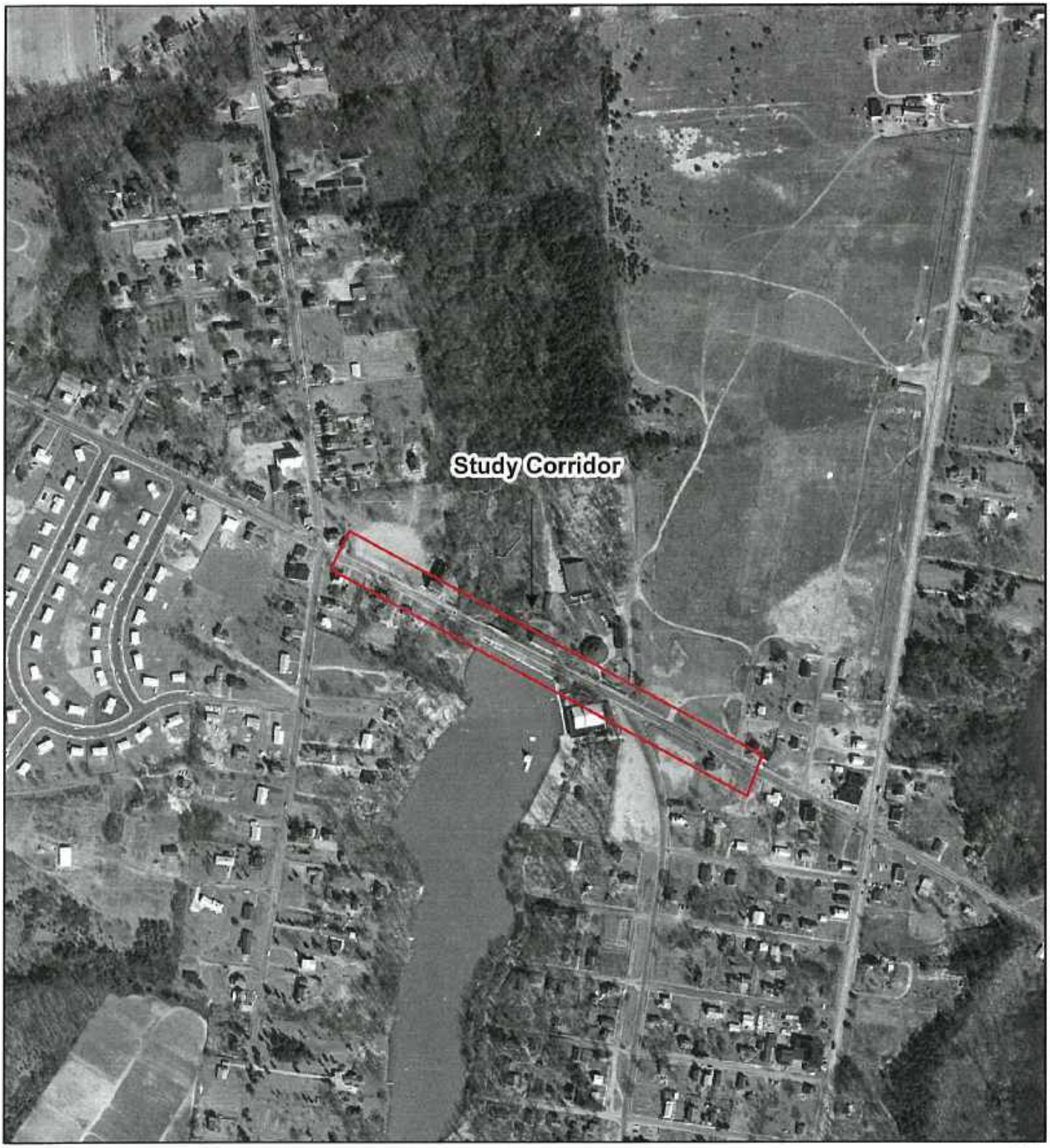

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GLOUCESTER COUNTY BRIDGE 3K-3
COOPER STREET BRIDGE
COUNTY ROUTE 706, TOWNSHIP OF DEPTFORD
GLOUCESTER COUNTY, NEW JERSEY

HISTORIC AERIAL IMAGES

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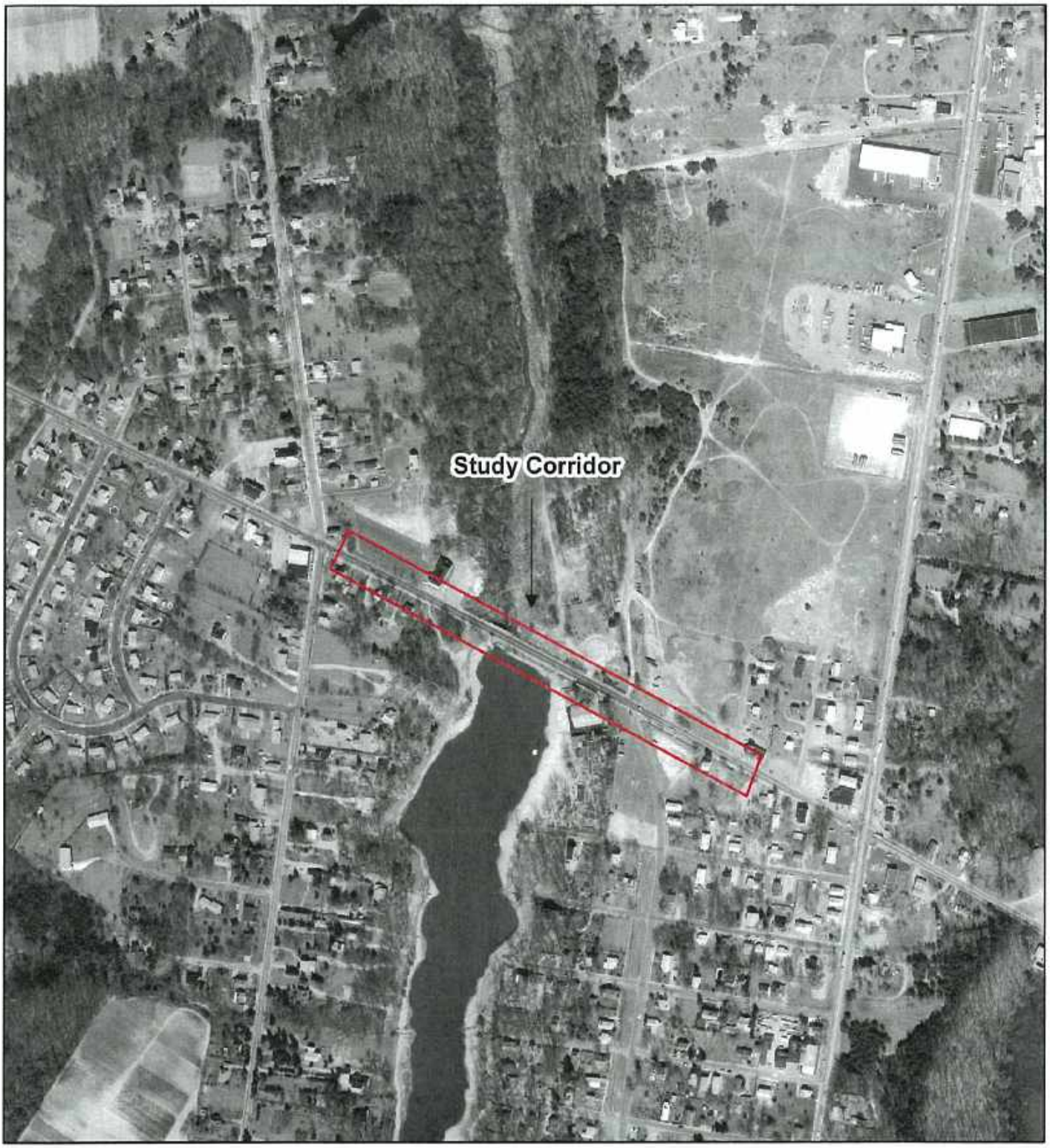

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Feet

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GLOUCESTER COUNTY BRIDGE 3K-3
COOPER STREET BRIDGE
COUNTY ROUTE 706, TOWNSHIP OF DEPTFORD
GLOUCESTER COUNTY, NEW JERSEY

HISTORIC AERIAL IMAGES

SCALE:	BLOCK:	LOT:	DRAWING #
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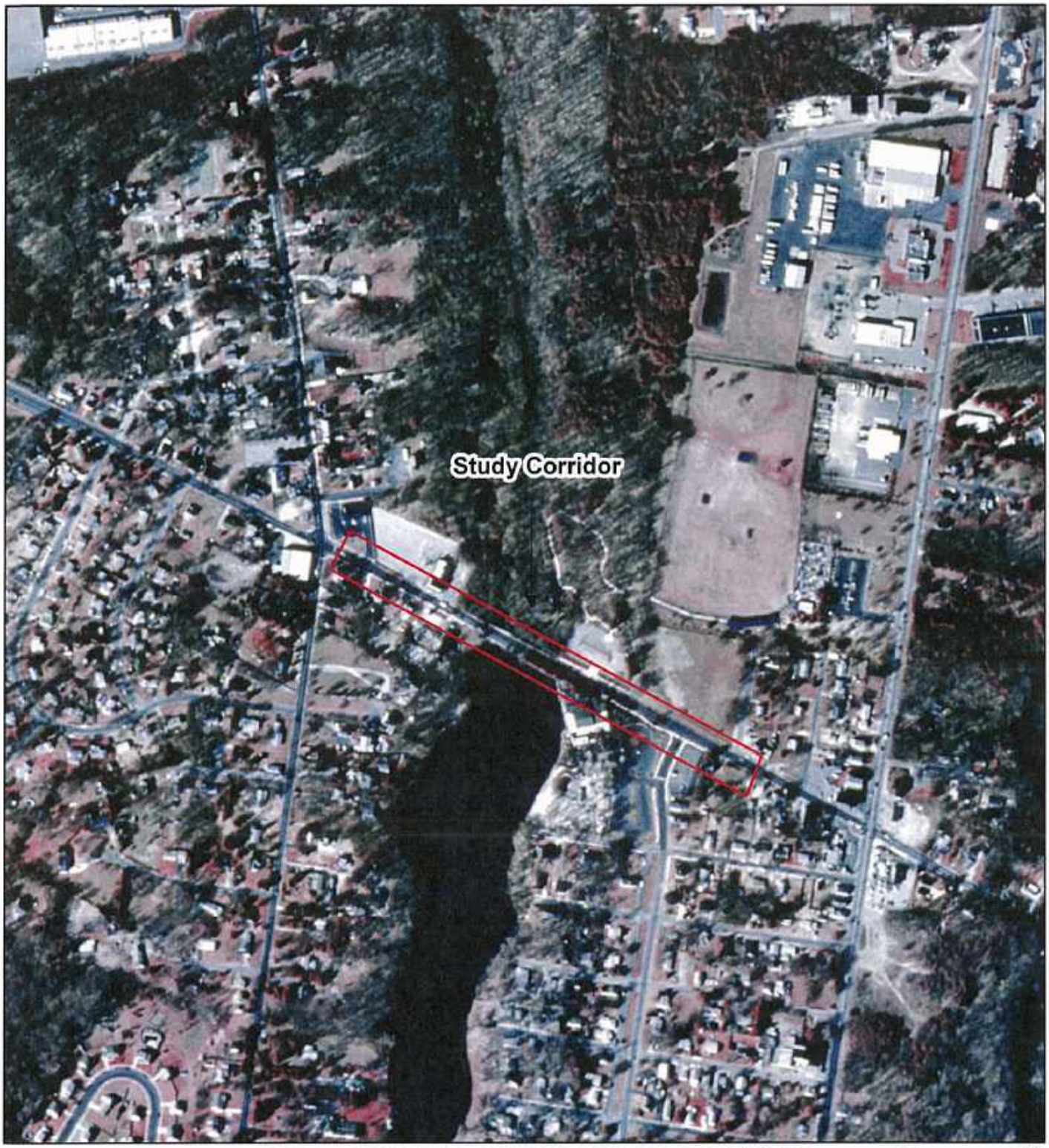

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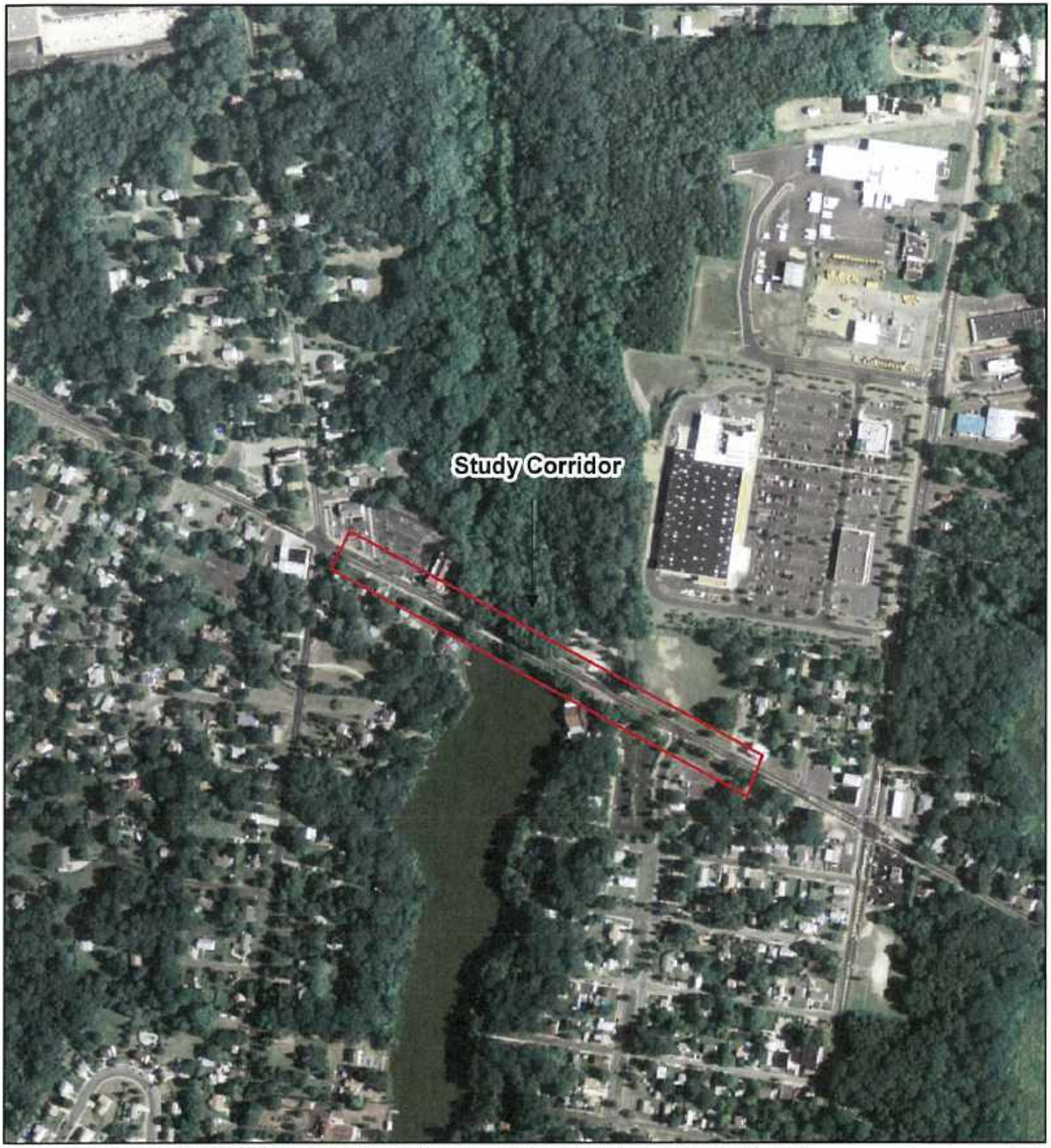

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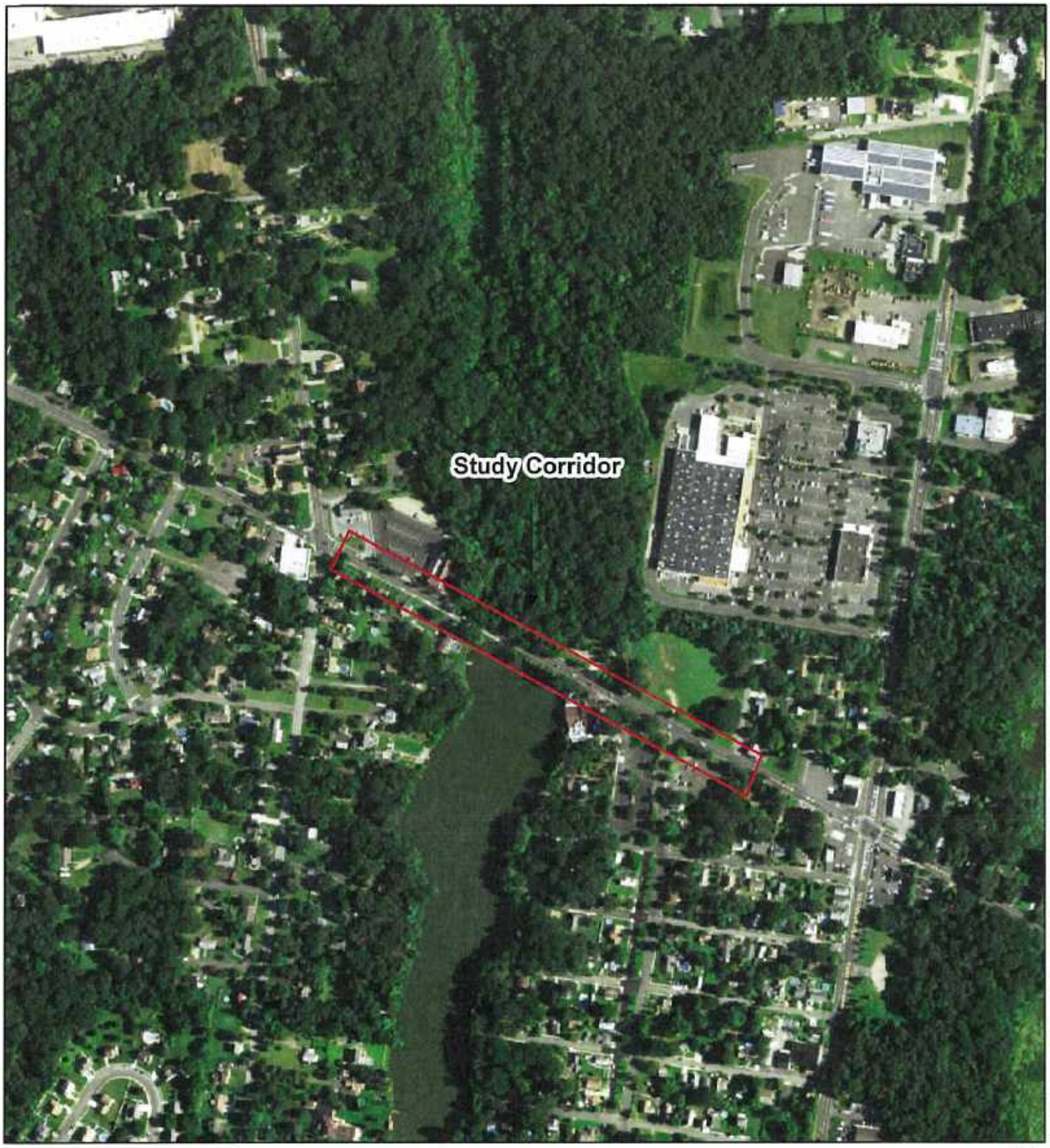

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COOPER STREET BRIDGE
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HISTORIC AERIAL IMAGES

SCALE:	BLOCK:	LOT:	DRAWING #
1 " = 500 '	R.O.W	R.O.W.	2017
DATE:	DRAWN BY:	PROJECT NUMBER:	
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Cooper Street Bridge County Route 706

Cooper Street

Woodbury, NJ 08096

Inquiry Number: 5537740.3

January 17, 2019

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

01/17/19

Site Name:	Client Name:
Cooper Street Bridge County R	French & Parrello Assoc., P.A.
Cooper Street	1800 Route 34
Woodbury, NJ 08096	Wall, NJ 07719
EDR Inquiry # 5537740.3	Contact: Lawrence Schmidt

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The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 06BB-4914-B307

PO # 13633.001

Project Cooper Street Bridge

UNMAPPED PROPERTY

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Sanborn® Library search results

Certification #: 06BB-4914-B307

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Cooper Street Bridge County Route 706
Cooper Street
Woodbury, NJ 08096

Inquiry Number: 05537740.2r
January 17, 2019

The EDR Radius Map™ Report with GeoCheck®

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Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

COOPER STREET
WOODBURY, NJ 08096

COORDINATES

Latitude (North):	39.8180650 - 39' 49' 5.03"
Longitude (West):	75.0964230 - 75' 5' 47.12"
Universal Tranverse Mercator:	Zone 18
UTM X (Meters):	491747.3
UTM Y (Meters):	4407359.5
State Plane X (Feet):	324602.9
State Plane Y (Feet):	359204.8
Elevation:	21 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	6035327 RUNNEMEDE, NJ
Version Date:	2014

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20150725
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
COOPER STREET
WOODBURY, NJ 08096

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	HOME DEPOT STORE NO	1370 HUFFVILLE ROAD	PA MANIFEST	Higher	1021, 0.193, ENE
A2	HOME DEPOT USA HD092	1370 HURFFVILLE RD	RCRA-CESQG, NJ AIRS, NY MANIFEST, NJ MANIFEST	Higher	1021, 0.193, ENE
3	BESTWAY GAS & AUTO	11 HURFFVILLE RD S	NJ HIST LUST	Higher	1423, 0.270, ESE
B4	1805 ALMONESSON ROAD	1805 ALMONESSON RD	NJ SHWS, NJ NJEMS, NJ Release	Higher	1497, 0.284, SSV
B5	1805 ALMONESSON ROAD	1805 ALMONESSON RD	NJ VCP	Higher	1497, 0.284, SSV
C6	NEW PETROLEUM LLC	1395 HURFFVILLE RD	NJ SHWS, NJ HIST HWS, NJ UST	Higher	1503, 0.285, ESE
C7		1395 HURFFVILLE RD	NJ SHWS, NJ Release	Higher	1503, 0.285, ESE
8	WOODLAND LATHE & MAC	1345 HURFFVILLE DRIV	NJ ISRA	Higher	1749, 0.331, ENE
9	JOHN O MURTHA INC	1614 PINE ST	NJ HIST LUST, NJ UST, NJ NJEMS	Higher	1947, 0.369, NW
D10	PRICKETTS INDUSTRIAL	RTE 41 & HARRIS DR	SEMS-ARCHIVE, CORRACTS, RCRA NonGen / NLR	Higher	2093, 0.396, NNE
D11	PITCCO	1940 HARRIS DR	NJ HIST LUST, NJ Release	Higher	2093, 0.396, NNE
D12	PRICKETT IND. TANK C	1940 HARRIS DRIVE	NJ HIST LF	Higher	2093, 0.396, NNE
D13	PRICKETTS IND TANK C	1940 HARRIS DR	NJ SHWS, NJ HIST LUST, NJ UST	Higher	2186, 0.414, NNE
14	RJ GRAPHICS	1960 HARRIS DR	NJ NJEMS, NJ ISRA	Higher	2331, 0.441, NE
E15	8 MOSTOVLYAN COURT	8 MOSTOVALYN CT	NJ SHWS, NJ BROWNFIELDS	Higher	2475, 0.469, NW
E16	MOSTOVLYAN COURT GAS	8 MOSTOVLYAN CT	NJ VCP	Higher	2475, 0.469, NW
17	COOPER STREET	COOPER ST	NJ SHWS, NJ NJEMS, FINDS	Higher	2635, 0.499, WN
18	145 CRESTVIEW DRIVE	145 CRESTVIEW DR	NJ SHWS, NJ VCP, NJ NJEMS, NJ Release	Higher	2665, 0.505, SW
19	SPEEDWAY SERVICE STA	1295 HURFFVILLE RD	NJ SHWS, NJ NJEMS, NJ AIRS	Higher	2667, 0.505, NE
20	144 CRESTVIEW DRIVE	144 CRESTVIEW DR	NJ SHWS, NJ NJEMS, FINDS	Higher	2787, 0.528, SW
21	DEPTFORD PLATING COM	DEIN AVE & RTE 41	NJ HWS RE-EVAL	Higher	3223, 0.610, NNE
22	1846 COUNTY HOUSE RO	1846 COUNTY HOUSE RD	NJ SHWS, NJ NJEMS, NJ Release	Higher	3538, 0.670, Sou
23	2015 WYNNWOOD AVENUE	2015 WYNNWOOD AVE	NJ SHWS, NJ NJEMS, NJ Release	Higher	4029, 0.763, SSE
24	250 HAMPSHIRE DRIVE	250 HAMPSHIRE DR	NJ SHWS, NJ NJEMS, NJ Release	Higher	4063, 0.770, Wes
25	134 WEXFORD COURT	134 WEXFORD CT	NJ SHWS, NJ NJEMS, NJ Release	Higher	4066, 0.770, Wes
26	245 HAMPSHIRE DRIVE	245 HAMPSHIRE DR	NJ SHWS, NJ VCP, NJ NJEMS	Higher	4181, 0.792, Wes
27	108 CRANFORD COURT	108 CRANFORD CT	NJ SHWS, NJ NJEMS, NJ Release	Higher	4280, 0.811, Wes
28	947 LOWER LANDING RO	947 LOWER LANDING RD	NJ SHWS, NJ HIST HWS, NJ VCP, NJ NJEMS, NJ Release	Higher	4384, 0.830, Eas
29	FREEWAY DINER	1215 1221 HURFFVILLE	NJ SHWS, NJ NJEMS	Higher	4430, 0.839, NNE
30	GETTY 56086	1545 HURFFVILLE RD	NJ SHWS, NJ Release	Higher	4464, 0.845, Sou
31	1000 LOWER LANDING R	1000 LOWER LANDING R	NJ SHWS, NJ NJEMS	Higher	4504, 0.853, Eas
32	108 WILSHIRE AVENUE	108 WILSHIRE AVE	NJ SHWS, NJ NJEMS	Higher	4570, 0.866, Wes
33	SEARS ROEBUCK & CO	300 ALMONESSON AVE	NJ SHWS, NJ ENG CONTROLS, NJ BROWNFIELDS, NJ NJEMS	Higher	4626, 0.876, Nor
F34	9 RYGATE DRIVE	9 RYGATE DR	NJ SHWS, NJ NJEMS	Higher	4647, 0.880, Wes
35	8 RYGATE AVENUE	8 RYGATE AVE	NJ SHWS, NJ VCP, NJ NJEMS, NJ Release	Higher	4652, 0.881, Wes
36	105 HAMPSHIRE DRIVE	105 HAMPSHIRE DR	NJ SHWS, NJ NJEMS, NJ Release	Higher	4664, 0.883, Wes
37	233 HAMPSHIRE DRIVE	233 HAMPSHIRE DR	NJ SHWS, NJ VCP, NJ NJEMS	Higher	4690, 0.888, WS
38		102 WILSHIRE AVE	NJ SHWS, NJ SPILLS	Higher	4707, 0.891, Wes
F39	100 WILSHIRE AVENUE	100 WILSHIRE AVE	NJ HWS RE-EVAL	Higher	4751, 0.900, Wes

MAPPED SITES SUMMARY

Target Property Address:
COOPER STREET
WOODBURY, NJ 08096

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
F40	100 WILSHIRE AVENUE	100 WILSHIRE AVE	NJ SHWS, NJ NJEMS, FINDS	Higher	4751, 0.900, Wes
G41	229 HAMPSHIRE DRIVE	229 HAMPSHIRE DR	NJ SHWS, NJ NJEMS, FINDS	Higher	4821, 0.913, WS'
42	116 HAMPSHIRE DRIVE	116 HAMPSHIRE DR	NJ SHWS, NJ VCP, NJ NJEMS	Higher	4822, 0.913, Wes
43	230 HAMPSHIRE DRIVE	230 HAMPSHIRE DR	NJ SHWS, NJ NJEMS, NJ Release	Higher	4849, 0.918, Wes
44	104 SAINT ALBANS AVE	104 ST ALBANS AVE	NJ SHWS, NJ VCP, NJ Release	Higher	4851, 0.919, Wes
G45	227 HAMPSHIRE DRIVE	227 HAMPSHIRE DR	NJ SHWS, NJ NJEMS	Higher	4917, 0.931, WS'
46	228 HAMPSHIRE DRIVE	228 HAMPSHIRE DR	NJ SHWS, NJ HIST HWS, NJ NJEMS, FINDS	Higher	4969, 0.941, WS'
47	120 HAMPSHIRE DRIVE	120 HAMPSHIRE DR	NJ SHWS, NJ NJEMS, NJ Release	Higher	4998, 0.947, Wes
48	124 HAMPSHIRE DRIVE	124 HAMPSHIRE DR	NJ SHWS, NJ HIST HWS, NJ NJEMS, FINDS	Higher	5042, 0.955, Wes
49	107 HAMPSHIRE COURT	107 HAMPSHIRE CT	NJ SHWS, NJ NJEMS, NJ Release	Higher	5131, 0.972, Wes
50	221 HAMPSHIRE DRIVE	221 HAMPSHIRE DR	NJ SHWS, NJ NJEMS	Higher	5148, 0.975, WS'
51	102 WYCOMBE COURT	102 WYCOMBE CT	NJ SHWS, NJ NJEMS, FINDS	Higher	5154, 0.976, Wes
52	1080 CUMMINGS AVENUE	1080 CUMMINGS AVE	NJ SHWS, NJ NJEMS, FINDS	Higher	5167, 0.979, Eas
53	222 HAMPSHIRE DRIVE	222 HAMPSHIRE DR	NJ SHWS, NJ NJEMS, NJ Release	Higher	5172, 0.980, WS'
54	104 ADROSSAN COURT	104 ADROSSAN CT	NJ SHWS, NJ HIST HWS, NJ VCP, NJ NJEMS, NJ Release	Higher	5239, 0.992, WS'
55	22 STURBRIDGE AVENUE	22 STURBRIDGE AVE	NJ SHWS, NJ VCP, NJ NJEMS	Higher	5260, 0.996, Wes

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL..... National Priority List
Proposed NPL..... Proposed National Priority List Sites
NPL LIENS..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL..... National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY..... Federal Facility Site Information listing
SEMS..... Superfund Enterprise Management System

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG..... RCRA - Large Quantity Generators
RCRA-SQG..... RCRA - Small Quantity Generators

Federal institutional controls / engineering controls registries

LUCIS..... Land Use Control Information System
US ENG CONTROLS..... Engineering Controls Sites List
US INST CONTROL..... Sites with Institutional Controls

Federal ERNS list

ERNS..... Emergency Response Notification System

State and tribal landfill and/or solid waste disposal site lists

NJ SWF/LF..... Solid Waste Facility Directory

State and tribal leaking storage tank lists

NJ LUST..... UST Active Remediation Sites Listing
INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST..... Underground Storage Tank Listing
NJ MAJOR FACILITIES..... List of Major Facilities
INDIAN UST..... Underground Storage Tanks on Indian Land

State and tribal institutional control / engineering control registries

NJ INST CONTROL..... Classification Exception Area Sites

State and tribal voluntary cleanup sites

INDIAN VCP..... Voluntary Cleanup Priority Listing
NJ PF..... Publicly Funded Cleanups Site Status Report

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

NJ SWRCY..... Approved Class B Recycling Facilities
INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands
ODI..... Open Dump Inventory
DEBRIS REGION 9..... Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL..... Delisted National Clandestine Laboratory Register
US CDL..... National Clandestine Laboratory Register

Local Land Records

NJ LIENS..... Environmental LIENS
LIENS 2..... CERCLA Lien Information

Records of Emergency Release Reports

HMIRS..... Hazardous Materials Information Reporting System
NJ SPILLS 90..... SPILLS 90 data from FirstSearch
NJ SPILLS 80..... SPILLS 80 data from FirstSearch

Other Ascertainable Records

FUDS..... Formerly Used Defense Sites

EXECUTIVE SUMMARY

DOD..... Department of Defense Sites
SCRD DRYCLEANERS..... State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR..... Financial Assurance Information
EPA WATCH LIST..... EPA WATCH LIST
2020 COR ACTION..... 2020 Corrective Action Program List
TSCA..... Toxic Substances Control Act
TRIS..... Toxic Chemical Release Inventory System
SSTS..... Section 7 Tracking Systems
ROD..... Records Of Decision
RMP..... Risk Management Plans
RAATS..... RCRA Administrative Action Tracking System
PRP..... Potentially Responsible Parties
PADS..... PCB Activity Database System
ICIS..... Integrated Compliance Information System
FTTS..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substences Control Act)
MLTS..... Material Licensing Tracking System
COAL ASH DOE..... Steam-Electric Plant Operation Data
COAL ASH EPA..... Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER..... PCB Transformer Registration Database
RADINFO..... Radiation Information Database
HIST FTTS..... FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS..... Incident and Accident Data
CONSENT..... Superfund (CERCLA) Consent Decrees
INDIAN RESERV..... Indian Reservations
FUSRAP..... Formerly Utilized Sites Remedial Action Program
UMTRA..... Uranium Mill Tailings Sites
LEAD SMELTERS..... Lead Smelter Sites
US AIRS..... Aerometric Information Retrieval System Facility Subsystem
US MINES..... Mines Master Index File
ABANDONED MINES..... Abandoned Mines
ECHO..... Enforcement & Compliance History Information
UXO..... Unexploded Ordnance Sites
DOCKET HWC..... Hazardous Waste Compliance Docket Listing
FUELS PROGRAM..... EPA Fuels Program Registered Listing
NJ CHROME..... Chromate Chemical Production Waste Sites
NJ COAL ASH..... Coal Ash Listing
NJ DRYCLEANERS..... Drycleaner List
NJ Financial Assurance..... Financial Assurance Information Listing
NJ GW CONTAM AREAS..... Groundwater Contamination Areas
NJ HIST MAJOR FACILITIES. List of Major Facilities
NJ NPDES..... New Jersey Pollutant Discharge Elimination System Dischargers
NJ UIC..... Underground Injection Wells Database

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP..... EDR Proprietary Manufactured Gas Plants
EDR Hist Auto..... EDR Exclusive Historical Auto Stations
EDR Hist Cleaner..... EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

NJ RGA HWS..... Recovered Government Archive State Hazardous Waste Facilities List

EXECUTIVE SUMMARY

NJ RGA LF..... Recovered Government Archive Solid Waste Facilities List
NJ RGA LUST..... Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be potential NPL site.

A review of the SEMS-ARCHIVE list, as provided by EDR, and dated 12/13/2018 has revealed that there is 1 SEMS-ARCHIVE site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PRICKETTS INDUSTRIAL Site ID: 0200435 EPA Id: NJD071454276	***RTE 41 & HARRIS DR***	***NNE 1/4 - 1/2 (0.396 mi.)***	***D10***	***49***

Federal RCRA CORRACTS facilities list

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 03/01/2018 has revealed that there is 1 CORRACTS site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PRICKETTS INDUSTRIAL	***RTE 41 & HARRIS DR***	***NNE 1/4 - 1/2 (0.396 mi.)***	***D10***	***49***

EXECUTIVE SUMMARY

EPA ID:: NJD071454276

Federal RCRA generators list

RCRA-CESQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

A review of the RCRA-CESQG list, as provided by EDR, and dated 03/01/2018 has revealed that there is 1 RCRA-CESQG site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HOME DEPOT USA HD092 EPA ID:: NJR000030817	*1370 HURFFVILLE RD*	*ENE 1/8 - 1/4 (0.193 mi.)*	*A2*	*13*

State- and tribal - equivalent CERCLIS

NJ SHWS: Known contaminated sites in New Jersey except those associated with Bureau of Underground Storage Sites (BUST)

A review of the NJ SHWS list, as provided by EDR, and dated 10/23/2018 has revealed that there are 42 NJ SHWS sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
1805 ALMONESSON ROAD Site ID: 259049 Status: Closed	*1805 ALMONESSON RD*	*SSW 1/4 - 1/2 (0.284 mi.)*	*B4*	*39*
NEW PETROLEUM LLC Site ID: 18077 Status: Closed	*1395 HURFFVILLE RD*	*ESE 1/4 - 1/2 (0.285 mi.)*	*C6*	*42*
Not reported Site ID: 18077 Status: Closed	*1395 HURFFVILLE RD*	*ESE 1/4 - 1/2 (0.285 mi.)*	*C7*	*44*
PRICKETTS IND TANK C Site ID: 8052 Status: Closed	*1940 HARRIS DR*	*NNE 1/4 - 1/2 (0.414 mi.)*	*D13*	*73*
8 MOSTOVLYAN COURT Site ID: 123427 Status: Closed	*8 MOSTOVALYN CT*	*NW 1/4 - 1/2 (0.469 mi.)*	*E15*	*78*
COOPER STREET Site ID: 64812 Status: Closed	*COOPER ST*	*WNW 1/4 - 1/2 (0.499 mi.)*	*17*	*81*
145 CRESTVIEW DRIVE Site ID: 174258	*145 CRESTVIEW DR*	*SW 1/2 - 1 (0.505 mi.)*	*18*	*82*

State and tribal voluntary cleanup sites

NJ VCP: Through the VCP, responsible parties, developers, local officials, or individuals may work with the department to remediate non-priority contaminated sites that pose no immediate threat to human health or the environment.

A review of the NJ VCP list, as provided by EDR, and dated 01/12/2018 has revealed that there are 2 NJ VCP sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
1805 ALMONESSON ROAD Incident Number: 06-07-18-0758-35	1805 ALMONESSON RD	SSW 1/4 - 1/2 (0.284 mi.)	B5	41
MOSTOVLYAN COURT GAS Incident Number: 97-05-09-0150-47	8 MOSTOVLYAN CT	NW 1/4 - 1/2 (0.469 mi.)	E16	81

State and tribal Brownfields sites

NJ BROWNFIELDS: Brownfields are identified as formter or current commmercial or industrial use sites that are presently vacant or underutilized, on which there is suspected to have been a discharge of a contamination to the soil or groundwater at concentra tions greater than applicable cleanup criteria.

A review of the NJ BROWNFIELDS list, as provided by EDR, and dated 11/16/2018 has revealed that there is 1 NJ BROWNFIELDS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
8 MOSTOVLYAN COURT PStatus: DEP Case	*8 MOSTOVALYN CT*	*NW 1/4 - 1/2 (0.469 mi.)*	*E15*	*78*

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Landfill / Solid Waste Disposal Sites

NJ HIST LF: Old or non-permitted solid waste facilities/landfills that are not included in the current solid waste facilities/landfills database.

A review of the NJ HIST LF list, as provided by EDR, has revealed that there is 1 NJ HIST LF site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PRICKETT IND. TANK C Database: HIST LF, Date of Government Version: 06/10/2003 Facility Status: CLOSED Facility Id: 0802001444	1940 HARRIS DRIVE	NNE 1/4 - 1/2 (0.396 mi.)	D12	73

EXECUTIVE SUMMARY

Other Ascertainable Records

NJ ISRA: The ISRA process begins with determining if the Act applies to your type of business and transaction. The provisions of ISRA only apply to industrial establishments. What is an industrial establishment? The term "industrial establishment" refers to the type of business operations and transactions that would subject a facility to review under ISRA. An industrial establishment must meet each of the following three criteria: The place of business or real property at which such business is conducted, having a North American Industry Classification System (NAICS) code listed in N.J.A.C. 7:26 B - Appendix C subject to the specified exceptions and limitations. The place of business must have been engaged in operations on or after December 31, 1983; and The place of business must involve the generation, manufacture, refining, transportation, treatment, storage, handling, or disposal of hazardous substances or hazardous wastes.

A review of the NJ ISRA list, as provided by EDR, and dated 01/02/2018 has revealed that there are 2 NJ ISRA sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
WOODLAND LATHE & MAC Pi Number: G000041291 Case Status: NFA-A (Unrestricted Use)	1345 HURFFVILLE DRIV	ENE 1/4 - 1/2 (0.331 mi.)	8	46
RJ GRAPHICS Pi Number: 196641 Case Status: Assigned to Program Case Status: NFA-E (Unrestricted Use)	***1960 HARRIS DR***	***NE 1/4 - 1/2 (0.441 mi.)***	***14***	***77***

NJ MANIFEST: Hazardous waste manifest information.

A review of the NJ MANIFEST list, as provided by EDR, and dated 12/31/2017 has revealed that there is 1 NJ MANIFEST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HOME DEPOT USA HD092 EPA Id: NJR000030817	***1370 HURFFVILLE RD***	***ENE 1/8 - 1/4 (0.193 mi.)***	***A2***	***13***

NY MANIFEST: Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

A review of the NY MANIFEST list, as provided by EDR, and dated 10/01/2018 has revealed that there is 1 NY MANIFEST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HOME DEPOT USA HD092 EPA ID: NJR000030817	***1370 HURFFVILLE RD***	***ENE 1/8 - 1/4 (0.193 mi.)***	***A2***	***13***

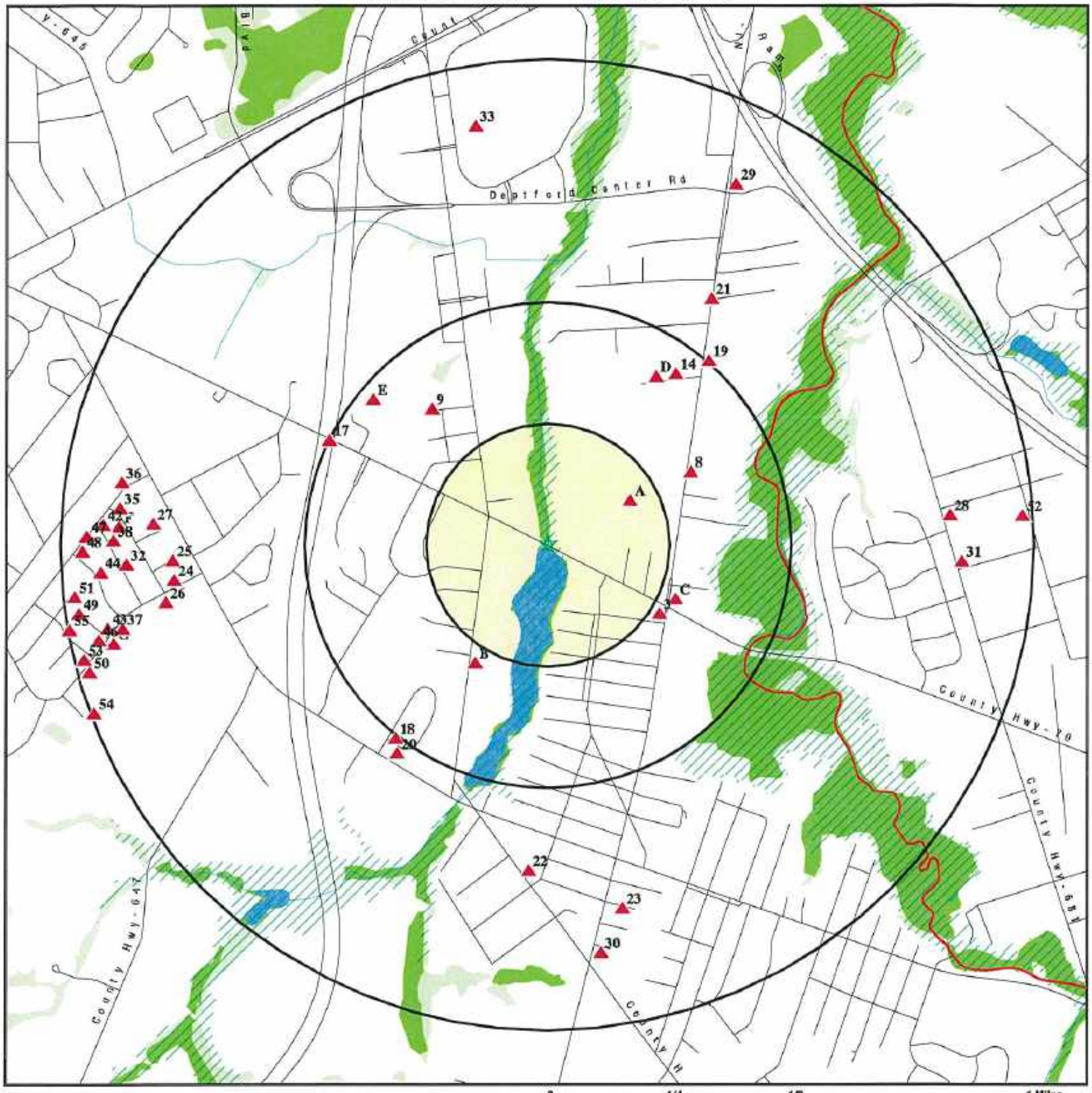
EXECUTIVE SUMMARY

PA MANIFEST: Hazardous waste manifest information.

A review of the PA MANIFEST list, as provided by EDR, and dated 12/31/2017 has revealed that there is 1 PA MANIFEST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HOME DEPOT STORE NO Generator EPA Id: NJR000030817	1370 HUFFVILLE ROAD	ENE 1/8 - 1/4 (0.193 mi.)	A1	8

OVERVIEW MAP - 05537740.2R



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- County Boundary
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Cooper Street Bridge County Route 706 ADDRESS: Cooper Street Woodbury NJ 08096 LAT/LONG: 39.818065 / 75.096423	CLIENT: French & Parrello Assoc., P.A. CONTACT: Lawrence Schmidt INQUIRY #: 05537740.2r DATE: January 17, 2019 3:49 pm

DETAIL MAP - 05537740.2R

0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Cooper Street Bridge County Route 706 ADDRESS: Cooper Street Woodbury NJ 08096 LAT/LONG: 39.818065 / 75.096423	CLIENT: French & Parrello Assoc., P.A. CONTACT: Lawrence Schmidt INQUIRY #: 05537740.2r DATE: January 17, 2019 3:49 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	1	NR	NR	1
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	1	0	NR	1
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	1	NR	NR	NR	1
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
NJ SHWS	1.000		0	0	6	36	NR	42
NJ HWS RE-EVAL	1.000		0	0	0	2	NR	2
NJ HIST HWS	TP		NR	NR	NR	NR	NR	0
State and tribal landfill and/or solid waste disposal site lists								
NJ SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
NJ LUST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
NJ HIST LUST	0.500		0	0	4	NR	NR	4
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
NJ UST	0.250		0	0	NR	NR	NR	0
NJ MAJOR FACILITIES	0.500		0	0	0	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
NJ ENG CONTROLS	0.500		0	0	0	NR	NR	0
NJ INST CONTROL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
NJ VCP	0.500		0	0	2	NR	NR	2
INDIAN VCP	0.500		0	0	0	NR	NR	0
NJ PF	1.000		0	0	0	0	NR	0
State and tribal Brownfields sites								
NJ BROWNFIELDS	0.500		0	0	1	NR	NR	1
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
NJ SWRCY	0.500		0	0	0	NR	NR	0
NJ HIST LF	0.500		0	0	1	NR	NR	1
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
NJ NJEMS	TP		NR	NR	NR	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
NJ LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
NJ SPILLS	TP		NR	NR	NR	NR	NR	0
NJ Release	TP		NR	NR	NR	NR	NR	0
NJ SPILLS 90	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
NJ SPILLS 80	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
NJ AIRS	TP		NR	NR	NR	NR	NR	0
NJ CHROME	0.500		0	0	0	NR	NR	0
NJ COAL ASH	0.500		0	0	0	NR	NR	0
NJ DRYCLEANERS	0.250		0	0	NR	NR	NR	0
NJ Financial Assurance	TP		NR	NR	NR	NR	NR	0
NJ GW CONTAM AREAS	TP		NR	NR	NR	NR	NR	0
NJ HIST MAJOR FACILITIES	0.500		0	0	0	NR	NR	0
NJ ISRA	0.500		0	0	2	NR	NR	2
NJ MANIFEST	0.250		0	1	NR	NR	NR	1
NY MANIFEST	0.250		0	1	NR	NR	NR	1
PA MANIFEST	0.250		0	1	NR	NR	NR	1

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
NJ NPDES	TP		NR	NR	NR	NR	NR	0
NJ UIC	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
NJ RGA HWS	TP		NR	NR	NR	NR	NR	0
NJ RGA LF	TP		NR	NR	NR	NR	NR	0
NJ RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	4	18	38	0	60

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 ENE 1/8-1/4 0.193 mi. 1021 ft. — **HOME DEPOT STORE NO 0929**, **1370 HUFFVILLE ROAD**, **DEPTFORD, NJ 08096** — **PA MANIFEST** — **S108850691**, **N/A**

Site 1 of 2 in cluster A

Relative: Higher
Actual: 48 ft.

Manifest Details:

Year:	2017
Manifest Number:	001518006PSC
Manifest Type:	TSD Copy
Generator EPA Id:	NJR000030817
Generator Date:	03/30/2017
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD EPA Id:	Not reported
TSD Date:	Not reported
TSD Facility Name:	Republic Environmental Systems (Pennsylvania) LLC
TSD Facility Address:	2869 Sandstone Dr
TSD Facility City:	Hatfield
TSD Facility State:	PA
Facility Telephone:	Not reported
Page Number:	1
Line Number:	2
Waste Number:	D018
Container Number:	1
Container Type:	Fiberboard or plastic drums, barrels, kegs
Waste Quantity:	59
Unit:	Pounds
Handling Code:	Not reported
TSP EPA Id:	PAD085690592
Date TSP Sig:	Not reported

Year:	2017
Manifest Number:	001518006PSC
Manifest Type:	TSD Copy
Generator EPA Id:	NJR000030817
Generator Date:	03/30/2017
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD EPA Id:	Not reported
TSD Date:	Not reported
TSD Facility Name:	Republic Environmental Systems (Pennsylvania) LLC
TSD Facility Address:	2869 Sandstone Dr
TSD Facility City:	Hatfield
TSD Facility State:	PA
Facility Telephone:	Not reported
Page Number:	1
Line Number:	2
Waste Number:	D035
Container Number:	1
Container Type:	Fiberboard or plastic drums, barrels, kegs
Waste Quantity:	59
Unit:	Pounds
Handling Code:	Not reported
TSP EPA Id:	PAD085690592

HOME DEPOT STORE NO 0929 (Continued) S108850691

Date TSP Sig:	Not reported
Year:	2017
Manifest Number:	001518006PSC
Manifest Type:	TSD Copy
Generator EPA Id:	NJR000030817
Generator Date:	03/30/2017
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD EPA Id:	Not reported
TSD Date:	Not reported
TSD Facility Name:	Republic Environmental Systems (Pennsylvania) LLC
TSD Facility Address:	2869 Sandstone Dr
TSD Facility City:	Hatfield
TSD Facility State:	PA
Facility Telephone:	Not reported
Page Number:	1
Line Number:	1
Waste Number:	D008
Container Number:	1
Container Type:	Fiberboard or plastic drums, barrels, kegs
Waste Quantity:	82
Unit:	Pounds
Handling Code:	Not reported
TSP EPA Id:	PAD085690592
Date TSP Sig:	Not reported
Year:	2017
Manifest Number:	001518006PSC
Manifest Type:	TSD Copy
Generator EPA Id:	NJR000030817
Generator Date:	03/30/2017
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD EPA Id:	Not reported
TSD Date:	Not reported
TSD Facility Name:	Republic Environmental Systems (Pennsylvania) LLC
TSD Facility Address:	2869 Sandstone Dr
TSD Facility City:	Hatfield
TSD Facility State:	PA
Facility Telephone:	Not reported
Page Number:	1
Line Number:	3
Waste Number:	D001
Container Number:	1
Container Type:	Metal drums, barrels, kegs
Waste Quantity:	49
Unit:	Pounds
Handling Code:	Not reported
TSP EPA Id:	PAD085690592
Date TSP Sig:	Not reported
Year:	2017

HOME DEPOT STORE NO 0929 (Continued) S108850691

Manifest Number:	001518006PSC
Manifest Type:	TSD Copy
Generator EPA Id:	NJR000030817
Generator Date:	03/30/2017
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD EPA Id:	Not reported
TSD Date:	Not reported
TSD Facility Name:	Republic Environmental Systems (Pennsylvania) LLC
TSD Facility Address:	2869 Sandstone Dr
TSD Facility City:	Hatfield
TSD Facility State:	PA
Facility Telephone:	Not reported
Page Number:	1
Line Number:	1
Waste Number:	D001
Container Number:	1
Container Type:	Fiberboard or plastic drums, barrels, kegs
Waste Quantity:	82
Unit:	Pounds
Handling Code:	Not reported
TSP EPA Id:	PAD085690592
Date TSP Sig:	Not reported

Year:	2017
Manifest Number:	001518006PSC
Manifest Type:	TSD Copy
Generator EPA Id:	NJR000030817
Generator Date:	03/30/2017
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD EPA Id:	Not reported
TSD Date:	Not reported
TSD Facility Name:	Republic Environmental Systems (Pennsylvania) LLC
TSD Facility Address:	2869 Sandstone Dr
TSD Facility City:	Hatfield
TSD Facility State:	PA
Facility Telephone:	Not reported
Page Number:	1
Line Number:	1
Waste Number:	D007
Container Number:	1
Container Type:	Fiberboard or plastic drums, barrels, kegs
Waste Quantity:	82
Unit:	Pounds
Handling Code:	Not reported
TSP EPA Id:	PAD085690592
Date TSP Sig:	Not reported

Year:	2017
Manifest Number:	001518006PSC
Manifest Type:	TSD Copy
Generator EPA Id:	NJR000030817

HOME DEPOT STORE NO 0929 (Continued) **S108850691**

Generator Date:	03/30/2017
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD EPA Id:	Not reported
TSD Date:	Not reported
TSD Facility Name:	Republic Environmental Systems (Pennsylvania) LLC
TSD Facility Address:	2869 Sandstone Dr
TSD Facility City:	Hatfield
TSD Facility State:	PA
Facility Telephone:	Not reported
Page Number:	1
Line Number:	4
Waste Number:	D016
Container Number:	1
Container Type:	Fiberboard or plastic drums, barrels, kegs
Waste Quantity:	173
Unit:	Pounds
Handling Code:	Not reported
TSP EPA Id:	PAD085690592
Date TSP Sig:	Not reported

Year:	2017
Manifest Number:	001518006PSC
Manifest Type:	TSD Copy
Generator EPA Id:	NJR000030817
Generator Date:	03/30/2017
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD EPA Id:	Not reported
TSD Date:	Not reported
TSD Facility Name:	Republic Environmental Systems (Pennsylvania) LLC
TSD Facility Address:	2869 Sandstone Dr
TSD Facility City:	Hatfield
TSD Facility State:	PA
Facility Telephone:	Not reported
Page Number:	1
Line Number:	2
Waste Number:	D001
Container Number:	1
Container Type:	Fiberboard or plastic drums, barrels, kegs
Waste Quantity:	59
Unit:	Pounds
Handling Code:	Not reported
TSP EPA Id:	PAD085690592
Date TSP Sig:	Not reported

Year:	2017
Manifest Number:	001518006PSC
Manifest Type:	TSD Copy
Generator EPA Id:	NJR000030817
Generator Date:	03/30/2017
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported

HOME DEPOT STORE NO 0929 (Continued) **S108850691**

Contact Name:	Not reported
Contact Phone:	Not reported
TSD EPA Id:	Not reported
TSD Date:	Not reported
TSD Facility Name:	Republic Environmental Systems (Pennsylvania) LLC
TSD Facility Address:	2869 Sandstone Dr
TSD Facility City:	Hatfield
TSD Facility State:	PA
Facility Telephone:	Not reported
Page Number:	1
Line Number:	3
Waste Number:	D018
Container Number:	1
Container Type:	Metal drums, barrels, kegs
Waste Quantity:	49
Unit:	Pounds
Handling Code:	Not reported
TSP EPA Id:	PAD085690592
Date TSP Sig:	Not reported

Year:	2017
Manifest Number:	001518006PSC
Manifest Type:	TSD Copy
Generator EPA Id:	NJR000030817
Generator Date:	03/30/2017
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD EPA Id:	Not reported
TSD Date:	Not reported
TSD Facility Name:	Republic Environmental Systems (Pennsylvania) LLC
TSD Facility Address:	2869 Sandstone Dr
TSD Facility City:	Hatfield
TSD Facility State:	PA
Facility Telephone:	Not reported
Page Number:	1
Line Number:	1
Waste Number:	D005
Container Number:	1
Container Type:	Fiberboard or plastic drums, barrels, kegs
Waste Quantity:	82
Unit:	Pounds
Handling Code:	Not reported
TSP EPA Id:	PAD085690592
Date TSP Sig:	Not reported

Click this hyperlink while viewing on your computer to access
83 additional PA_MANIFEST: record(s) in the EDR Site Report.

A2 ENE 1/8-1/4 0.193 mi. 1021 ft. — **HOME DEPOT USA HD0929**, **1370 HURFFVILLE RD**, **DEPTFORD, NJ 08096** — **RCRA-CESQG, NJ AIRS, NY MANIFEST, NJ MANIFEST** — **1001817950**, **NJR000030817**

Site 2 of 2 in cluster A

Relative: Higher
Actual: 48 ft.

RCRA-CESQG:

Date form received by agency:	11/19/2007
Facility name:	HOME DEPOT USA HD0929
Facility address:	1370 HURFFVILLE RD DEPTFORD, NJ 08096
EPA ID:	NJR000030817
Mailing address:	ASTON AVE SUITE 100 CARLSBAD, CA 92008
Contact:	BECKY WILBANKS
Contact address:	ASTON AVE SUITE 100 CARLSBAD, CA 92008
Contact country:	US
Contact telephone:	760-602-8743
Contact email:	BWILBANKS@3ECOMPANY.COM
EPA Region:	02
Land type:	Private
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	HOME DEPOT USA INC
Owner/operator address:	PACES FERRY RD ATLANTA, GA 30339
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	01/23/1997
Owner/Op end date:	Not reported

Owner/operator name:	HOME DEPOT USA INC
Owner/operator address:	Not reported Not reported
Owner/operator country:	Not reported
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported

HOME DEPOT USA HD0929 (Continued) **1001817950**

Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 01/23/1997
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

. Waste code: D002
. Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

. Waste code: D009
. Waste name: MERCURY

. Waste code: D016
. Waste name: 2,4-D

. Waste code: D018
. Waste name: BENZENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

Historical Generators:
Date form received by agency: 11/18/2007
Site name: HOME DEPOT USA HD0929

HOME DEPOT USA HD0929 (Continued) **1001817950**

Classification: Conditionally Exempt Small Quantity Generator

Date form received by agency: 12/14/2006
Site name: HOME DEPOT #HD0929
Classification: Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

. Waste code: D002
. Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

. Waste code: D009
. Waste name: MERCURY

. Waste code: D016
. Waste name: 2,4-D

. Waste code: D018
. Waste name: BENZENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

Date form received by agency: 12/13/2006
Site name: HOME DEPOT #HD0929
Classification: Conditionally Exempt Small Quantity Generator

Date form received by agency: 10/07/1999
Site name: HOME DEPOT THE 929
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

. Waste code: D002
. Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN

HOME DEPOT USA HD0929 (Continued) **1001817950**

OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

Facility Has Received Notices of Violations:
Regulation violated: Not reported
Area of violation: TSD IS-Preparedness and Prevention
Date violation determined: 11/18/2008
Date achieved compliance: 12/02/2008
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 11/18/2008
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 08/13/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/02/2008
Evaluation: NON-FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 11/18/2008
Evaluation: CASE DEVELOPMENT INSPECTION
Area of violation: TSD IS-Preparedness and Prevention
Date achieved compliance: 12/02/2008
Evaluation lead agency: State

Evaluation date: 12/20/2005
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: EPA

Evaluation date: 12/20/2005
Evaluation: CASE DEVELOPMENT INSPECTION
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

AIRS:
Emission Year: Not reported
Facility Number: 55015
NAICS Code: Not reported
Pollutant Name: Not reported
Tons/Year lbs/Year For Taps 1000 Tons/Year For CO2: Not reported

HOME DEPOT USA HD0929 (Continued) 1001817950

Tons/Season (5/1-9/30):	Not reported
Lbs/Day Peak Ozone Season (6/1-8/31):	Not reported
Lbs/Day Co-season (12/1-2/31):	Not reported
Permit of Emission:	PERMIT
X Coordinate:	325522
Y Coordinate:	359685
Coordinate Units:	NJ State Plane (NAD83) - USFEET
Coordinate Type:	GIS Parcel Centroid
Active Number:	GEN160001
Active Type Description:	(GP-005A) Emergency Generators Burning Distillate Fuels
Document Status:	Approved
Expiration Date:	01/19/2021
NAICS Description:	Not reported
Active Flag:	Not reported

Emission Year:	Not reported
Facility Number:	56015
NAICS Code:	Not reported
Pollutant Name:	Not reported
Tons/Year lbs/Year For Taps 1000 Tons/Year For CO2:	Not reported
Tons/Season (5/1-9/30):	Not reported
Lbs/Day Peak Ozone Season (6/1-8/31):	Not reported
Lbs/Day Co-season (12/1-2/31):	Not reported
Permit of Emission:	PERMIT
X Coordinate:	325522
Y Coordinate:	359685
Coordinate Units:	NJ State Plane (NAD83) - USFEET
Coordinate Type:	GIS Parcel Centroid
Active Number:	GEN080001
Active Type Description:	(GP-005) Emergency Generator
Document Status:	Superseded (Archived)
Expiration Date:	02/11/2018
NAICS Description:	Not reported
Active Flag:	Not reported

NY MANIFEST:

Country:	USA
EPA ID:	NJR000030817
Facility Status:	Not reported
Location Address 1:	1370 HURLVILLE RD
Code:	BP
Location Address 2:	Not reported
Total Tanks:	Not reported
Location City:	DEBTFORD
Location State:	NJ
Location Zip:	08096
Location Zip 4:	Not reported

NY MANIFEST:

EPAID:	NJR000030817
Mailing Name:	HOME DEPOT 0929
Mailing Contact:	N/S
Mailing Address 1:	1905 ASTON AVE STE 100
Mailing Address 2:	Not reported
Mailing City:	CARLSBAD
Mailing State:	CA
Mailing Zip:	92009

HOME DEPOT USA HD0929 (Continued) **1001817960**

Mailing Zip 4:	Not reported
Mailing Country:	USA
Mailing Phone:	8563747700

NY MANIFEST:

Document ID:	NYG1694997
Manifest Status:	Not reported
seq:	01
Year:	2000
Trans1 State ID:	ME0438601
Trans2 State ID:	Not reported
Generator Ship Date:	11/12/2000
Trans1 Recv Date:	11/21/2000
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	11/22/2000
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NJR000030817
Trans1 EPA ID:	NJD054126164
Trans2 EPA ID:	Not reported
TSDF ID 1:	NYD057770109
TSDF ID 2:	Not reported
Manifest Tracking Number:	Not reported
Import Indicator:	Not reported
Export Indicator:	Not reported
Discr Quantity Indicator:	Not reported
Discr Type Indicator:	Not reported
Discr Residue Indicator:	Not reported
Discr Partial Reject Indicator:	Not reported
Discr Full Reject Indicator:	Not reported
Manifest Ref Number:	Not reported
Alt Facility RCRA ID:	Not reported
Alt Facility Sign Date:	Not reported
MGMT Method Type Code:	Not reported
Waste Code:	D001 - NON-LISTED IGNITABLE WASTES
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Quantity:	02800
Units:	P - Pounds
Number of Containers:	001
Container Type:	CF - Fiber or plastic boxes, cartons
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	01.00

Click this hyperlink while viewing on your computer to access
-1 additional NY MANIFEST: record(s) in the EDR Site Report.

NJ MANIFEST:

EPA Id:	NJR000030817
Mail Address:	1905 ASTON AVENUE
Mail City/State/Zip:	CARLSBAD 92009
Facility Phone:	7606028700

HOME DEPOT USA HD0929 (Continued) 1001817950

Emergency Phone:	Not reported
Contact:	ROBERT PERKINS
Comments:	Not reported
SIC Code:	Not reported
County:	08
Municipal:	02
Previous EPA Id:	Not reported
Gen Flag:	X
Trans Flag:	Not reported
TSDF Flag:	Not reported
Name Change:	Not reported
Date Change:	Not reported

Manifest:

Manifest Number:	NJA5217170
EPA ID:	NJR000030817
Date Shipped:	09/23/2005
TSDF EPA ID:	FLD980559728
Transporter EPA ID:	NJD003812047
Transporter 2 EPA ID:	NJD003812047
Transporter 3 EPA ID:	Not reported
Transporter 4 EPA ID:	Not reported
Transporter 5 EPA ID:	Not reported
Transporter 6 EPA ID:	Not reported
Transporter 7 EPA ID:	Not reported
Transporter 8 EPA ID:	Not reported
Transporter 9 EPA ID:	Not reported
Transporter 10 EPA ID:	Not reported
Date Trans1 Transported Waste:	09/23/2005
Date Trans2 Transported Waste:	09/27/2005
Date Trans3 Transported Waste:	Not reported
Date Trans4 Transported Waste:	Not reported
Date Trans5 Transported Waste:	Not reported
Date Trans6 Transported Waste:	Not reported
Date Trans7 Transported Waste:	Not reported
Date Trans8 Transported Waste:	Not reported
Date Trans9 Transported Waste:	Not reported
Date Trans10 Transported Waste:	Not reported
Date TSDF Received Waste:	10/04/2005
TSDF EPA Facility Name:	Not reported
QTY Units:	Not reported
Transporter SEQ ID:	Not reported
Transporter-1 Date:	Not reported
Waste SEQ ID:	Not reported
Waste Type Code 2:	Not reported
Waste Type Code 3:	Not reported
Waste Type Code 4:	Not reported
Waste Type Code 5:	Not reported
Waste Type Code 6:	Not reported
Date Accepted:	Not reported
Manifest Discrepancy Type:	Not reported
Data Entry Number:	12150525
Was Load Rejected:	CARLSBAD 92009
Reason Load Was Rejected:	Not reported

Manifest Number:	002452094FLE
EPA ID:	NJR000030817
Date Shipped:	10/10/2008

HOME DEPOT USA HD0929 (Continued) 1001817950

Transporter 9 EPA ID:	Not reported
Transporter 10 EPA ID:	Not reported
Date Trans1 Transported Waste:	Not reported
Date Trans2 Transported Waste:	Not reported
Date Trans3 Transported Waste:	Not reported
Date Trans4 Transported Waste:	Not reported
Date Trans5 Transported Waste:	Not reported
Date Trans6 Transported Waste:	Not reported
Date Trans7 Transported Waste:	Not reported
Date Trans8 Transported Waste:	Not reported
Date Trans9 Transported Waste:	Not reported
Date Trans10 Transported Waste:	Not reported
Date TSDF Received Waste:	Not reported
Generator EPA Facility Name:	HOME DEPOT USA #0929
Transporter-1 EPA Facility Name:	REPUBLIC ENVIRONMENTAL SYSTEM
TSDF EPA Facility Name:	REPUBLIC ENVIRONMENTAL SYSTEMS INC
QTY Units:	Pounds
Transporter SEQ ID:	Not reported
Transporter-1 Date:	3/30/2017
Waste SEQ ID:	4
Waste Type Code 2:	Not reported
Waste Type Code 3:	Not reported
Waste Type Code 4:	Not reported
Waste Type Code 5:	Not reported
Waste Type Code 6:	Not reported
Date Accepted:	4/3/2017
Manifest Discrepancy Type:	Not reported
Data Entry Number:	Not reported
Was Load Rejected:	CARLSBAD 92009
Reason Load Was Rejected:	Not reported

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3 ESE 1/4-1/2 0.270 mi. 1423 ft. **BESTWAY GAS & AUTO**
11 HURFFVILLE RD S
DEPTFORD, NJ

NJ HIST LUST **S104393372**
N/A

Relative: Higher
Actual: 57 ft.

LUST HIST:

Case ID:	98-01-22-0911-33
Lead Program Assigned:	Bureau of Underground Storage Tanks
Facility Status:	Assigned to a Program
UST ID:	0117100
TMS Number:	Not reported
Remedial Level:	Site has confirmed soil and ground water contamination.
Case Manager:	Michael Flite
Facility Phone:	(609) 633-2424
No Further Action:	Not reported
RAW Approved:	N
CEA:	Not reported
Date CEA Lifted:	Not reported
Dead Notice:	Not reported

B4 **1805 ALMONESSON ROAD** **NJ SHWS** **S108260096**
SSW **1805 ALMONESSON RD** **NJ NJEMS** **N/A**
1/4-1/2 **DEPTFORD TWP, NJ 08096** **NJ Release**
0.284 mi.
1497 ft. **Site 1 of 2 in cluster B**

Relative:
Higher
Actual:
58 ft.

SHWS:

Site ID:	259049
Status:	Closed
Home Owner:	Yes
PI Number:	331833

Detail As Of April 2012:

X Coord Site:	Not reported
X Coord PI:	Not reported
Y Coord Site:	Not reported
Y Coord PI:	Not reported

NJEMS:

Site Id:	259049
Municipality:	DEPTFORD TWP
Municipality Name From Spatial Overlay:	DEPTFORD TWP
GNIS Civil Code For Municipality:	882149
Municipal Code (NJ-1040):	0802
X Coord:	324002
Y Coord:	357906
Coord System:	NJ STATE PLANE (NAD83) - USFEET
Coord Type:	GIS Parcel Centroid
Coord Orign:	DEP-GIS
State Standard Numeric Code From Spatial Overlay:	0802
Unique Feature Number For Municipality From Spatial Overlay:	3401517710
Eleven Digit Hydrologic Unit Code From Spatial Overlay):	02040202120
Fourteen Digit Hydrologic Unit Code From Spatial Overlay:	02040202120060
Watershed Management Area Number From Spatial Overlay:	18
Watershed Management Area Name From Spatial Overlay:	Lower Delaware
Water Region Code From Spatial Overlay:	5
Water Region Name From Spatial Overlay:	Lower Delaware
Sub Watershed Name From Overlay:	Almonesson Creek
Watershed Name From Spatial Overlay:	Woodbury / Big Timber / Newton Creeks

NJ Release:

Facility Type:	Residential
Facility Phone:	Not reported
Incident Date:	07/13/2006
Incident Time:	Not reported
Trenton Dispatch Log Number:	196246
Case Number:	06-07-18-0758-35
Date Received:	07/18/2006
Nature of Incident:	Not reported
Operator:	Not reported
Incident Type:	Underground Storage Tank
Incident Location:	RESIDENCE
Location:	Not reported
Other Location:	Not reported
Contact Name:	ALLEN WILLOUGHBY
Caller Name:	Not reported
Caller Title:	Not reported
Caller Address:	Not reported
Caller City,St,Zip:	Not reported

1805 ALMONESSON ROAD (Continued) S108260098

Caller Telephone:	Not reported
Substance(s):	Not reported
Substance Type:	Not reported
Substance Identity:	Not reported
CAS Number:	Not reported
A310 Letter:	Not reported
TCPA Chemical:	Not reported
Hazrds Material:	Not reported
COMU:	Not reported
Ref. Code:	Not reported
Amt Released:	Not reported
Contained:	Not reported
Release Type:	Not reported
Release VE:	Not reported
Injuries:	No
Public Exposure:	No
Facility Evacuation:	No
Police at Scene:	No
Firemen at Scene:	No
Contamination of:	Not reported
Receiving Water:	Not reported
Status at Spill:	Not reported
NJ Spill Date:	Not reported
NJ Spill Time:	Not reported
NJ Spill Name:	Not reported
NJ Spill Title:	Not reported
NJ Spill Phone:	Not reported
Other Date:	Not reported
Other Time:	Not reported
Other Name:	Not reported
Other Title:	Not reported
Other Telephone:	Not reported
Public Evacuation:	No
Assistance Requested:	Not reported
Wind Direction/Speed:	Not reported
Local Municipality Notified:	Not reported
Local Municipality Name:	Not reported
Local Municipality Title:	Not reported
Local Municipality Telephone:	Not reported
Local Municipality Date:	Not reported
Local Municipality Time:	Not reported
Incident Description:	Not reported
Incident Name:	Not reported
Incident Referred To:	Not reported
Incident Region:	Not reported
Incident Telephone:	Not reported
Incident Date:	Not reported
Incident time:	Not reported
Incident ITM:	Not reported
Comments: Not reported	
Date A310 Letter Printed:	Not reported
Date Local Authority Was Notified:	Not reported
Date Updated:	Not reported
Date Report Faxed to Local Authority:	Not reported
Local Authority Notification Date:	Not reported
Rep Receive Date:	07/18/2006
Reporter Type:	Other

1805 ALMONESSON ROAD (Continued) S108260096

Reporter Name:	REDACTED
Reporter Title:	REDACTED
Reporter Org:	REDATED
Reporter Address:	Not reported
Reporter City,St,Zip:	Not reported
Reporter County:	Not reported
Incident Status:	Terminated
Incident Category:	Other
Incident Source:	ALLEN WILLOUGHBY
Incident Address:	1805 ALMONESSON
Incident Address 2:	Not reported
Incident City,St,Zip:	Deptford Twp, NJ 08096
Incident County:	Gloucester
DEP Requested:	No
Confidential:	Not reported
Notify Type:	Not reported
Road Closed:	No
Direction:	Not reported
Responsible Party:	Not reported
Responsible Party Name:	Not reported
Responsible Party Contact:	Not reported
Responsible Party Title:	Not reported
Responsible Party Phone:	Not reported
Responsible Party Street:	Not reported
Responsible Party County:	Not reported
Responsible Party City,St,Zip:	Not reported
Memo. Of Understanding:	Not reported
Drill/trng Exercise:	Not reported
Hazardous:	Not reported

B5 **1805 ALMONESSON ROAD** NJ VCP S108398329
SSW **1805 ALMONESSON RD** N/A
1/4-1/2 **DEPTFORD TWP, NJ 08096**
0.284 mi.
1497 ft. **Site 2 of 2 in cluster B**

Relative: **Higher**
Actual: **58 ft.**

VCP:

Incident Number:	06-07-18-0758-35
MOA Execution Date:	01/18/2007
Type Of Vcp File:	CURRENT
PI Number:	331833
Case Type(Case Type):	MOA
Case Contact: Department	Not reported
Case Contact Name:	ALAN WILLOUGHBY
Case Contact: Organization	Not reported
Case Contact: Address: Line1	1805 ALMONESSON RD
Case Contact: Address: Line2	Not reported
Case Contact: Address: Line3	Not reported
Case Contact City,St,Zip:	Deptford Twp, NJ 08096

C6 ESE 1/4-1/2 0.285 mi. 1503 ft. — **NEW PETROLEUM LLC**, **1396 HURFFVILLE RD**, **DEPTFORD TWP, NJ 08096** — **NJ SHWS**, **NJ HIST HWS**, **NJ UST** — **U003295152**, **N/A**

Site 1 of 2 in cluster C

Relative: Higher
Actual: 51 ft.

SHWS:

Site ID:	18077
Status:	Closed
Home Owner:	No
PI Number:	031947

Detail As Of April 2012:

X Coord Site:	Not reported
X Coord PI:	Not reported
Y Coord Site:	Not reported
Y Coord PI:	Not reported

HIST SHWS:

Case Status:	Active
Status Date:	11/9/2004
Case ID:	032297
Contact:	BSCM
Sub Section Label:	A: Sites with On-Site Sources of Contamination
Site Municipality:	0802
Remedial Level Code:	C2
Classification exception area dt:	None
Classification exception area dt:	Not reported
Deed Notice Status:	None
Deed Notice Date:	Not reported
Engineering Control Status:	None
Engineering Control Date:	Not reported
National Priorities List Status:	Not reported
National Priorities List Date:	Not reported
X Coordinate:	325925
Y Coordinate:	358616
Coordinate System:	NJ State Plane (NAD83) - USFEET

UST:

Facility ID:	032297

Contact:

Owner Name:	SATWINDER MULTANI
Organization:	SNRAS PETROLEUM INC
Contact Type(UST Reg):	Facility Operator
Contact Address (UST Reg):	1395 HURFVILLE RD & COOPER ST
Contact Address 2 (UST Reg):	Not reported
Conact City,St,Zip (UST Reg):	Deptford Twp, NJ 08096

Owner Name:	SATWINDER MULTANI
Organization:	NEW PETROLEUM LLC
Contact Type(UST Reg):	Tank Owner
Contact Address (UST Reg):	1395 HURFVILLE RD & COOPER ST
Contact Address 2 (UST Reg):	Not reported
Conact City,St,Zip (UST Reg):	Deptford Twp, NJ 08096

NEW PETROLEUM LLC (Continued) U003295152

Tanks:

Tank Id:	TANK-2
Tank Number:	002
Tank Status:	In-use
Tank Status Date:	11/01/1997
Install Date:	11/01/1997
Tank Contents:	Unleaded Gasoline
Tank Size:	10000
Tank Compliance:	Yes
Overfill:	Yes
Compliance Monitoring?:	Yes
Overfill Protection:	Yes
Spill Containment:	Yes
Tank Wellhead Protection:	Not reported
Tank/Pipe Construction Type:	Tank Fiberglass-reinforced plastic
Tank/Pipe Construction Type:	Pipe Fiberglass-reinforced plastic
Tank/Pipe Monitor:	Pipe Automatic line leak detector
Tank/Pipe Monitor:	Pipe Interstitial
Tank/Pipe Monitor:	Pipe Tightness Test
Tank/Pipe Monitor:	Tank In-tank(automatic)monitoring
Tank/Pipe Monitor:	Tank Inventory Control
Tank/Pipe Monitor:	Tank Tightness Test

Tank Id:	TANK-25986
Tank Number:	001
Tank Status:	In-use
Tank Status Date:	11/01/1997
Install Date:	11/01/1997
Tank Contents:	Unleaded Gasoline
Tank Size:	10000
Tank Compliance:	Yes
Overfill:	Yes
Compliance Monitoring?:	Yes
Overfill Protection:	Yes
Spill Containment:	Yes
Tank Wellhead Protection:	Not reported
Tank/Pipe Construction Type:	Tank Fiberglass-reinforced plastic
Tank/Pipe Construction Type:	Pipe Fiberglass-reinforced plastic
Tank/Pipe Monitor:	Pipe Automatic line leak detector
Tank/Pipe Monitor:	Pipe Interstitial
Tank/Pipe Monitor:	Pipe Tightness Test
Tank/Pipe Monitor:	Tank In-tank(automatic)monitoring
Tank/Pipe Monitor:	Tank Inventory Control
Tank/Pipe Monitor:	Tank Tightness Test

Tank Id:	TANK-3
Tank Number:	003
Tank Status:	In-use
Tank Status Date:	11/01/1997
Install Date:	11/01/1997
Tank Contents:	Unleaded Gasoline
Tank Size:	10000
Tank Compliance:	Yes
Overfill:	Yes
Compliance Monitoring?:	Yes

NEW PETROLEUM LLC (Continued) U003295152

Overfill Protection:	Yes
Spill Containment:	Yes
Tank Wellhead Protection:	Not reported
Tank/Pipe Construction Type:	Pipe Fiberglass-reinforced plastic
Tank/Pipe Construction Type:	Tank Fiberglass-reinforced plastic
Tank/Pipe Monitor:	Pipe Automatic line leak detector
Tank/Pipe Monitor:	Pipe Interstitial
Tank/Pipe Monitor:	Pipe Tightness Test
Tank/Pipe Monitor:	Tank In-tank(automatic)monitoring
Tank/Pipe Monitor:	Tank Inventory Control
Tank/Pipe Monitor:	Tank Tightness Test

Tank Id:	TANK-4
Tank Number:	004
Tank Status:	In-use
Tank Status Date:	11/01/1997
Install Date:	11/01/1997
Tank Contents:	Light Diesel Fuel (No. 1-D)
Tank Size:	10000
Tank Compliance:	Yes
Overfill:	Yes
Compliance Monitoring?:	Yes
Overfill Protection:	Yes
Spill Containment:	Yes
Tank Wellhead Protection:	Not reported
Tank/Pipe Construction Type:	Tank Fiberglass-reinforced plastic
Tank/Pipe Construction Type:	Pipe Fiberglass-reinforced plastic
Tank/Pipe Monitor:	Pipe Automatic line leak detector
Tank/Pipe Monitor:	Pipe Interstitial
Tank/Pipe Monitor:	Pipe Tightness Test
Tank/Pipe Monitor:	Tank In-tank(automatic)monitoring
Tank/Pipe Monitor:	Tank Inventory Control
Tank/Pipe Monitor:	Tank Tightness Test

C7
ESE
1/4-1/2
0.285 mi.
1503 ft.

1395 HURFFVILLE RD
DEPTFORD TWP, NJ 08096

NJ SHWS S106218473
NJ Release N/A

Site 2 of 2 in cluster C

Relative:
Higher

Actual:
51 ft.

SHWS:

Site ID:	18077
Status:	Closed
Home Owner:	No
PI Number:	032297

Detail As Of April 2012:

X Coord Site:	Not reported
X Coord PI:	Not reported
Y Coord Site:	Not reported
Y Coord PI:	Not reported

NJ Release:

Facility Type:	Commercial
Facility Phone:	Not reported
Incident Date:	03/10/2004
Incident Time:	Not reported

(Continued) S106218473

Trenton Dispatch Log Number:	90021
Case Number:	04-03-10-1745-47
Date Received:	03/10/2004
Nature of Incident:	Not reported
Operator:	Not reported
Incident Type:	Soil Contamination
Incident Location:	CONOCO PHILLIPS STATION #2705896
Location:	Not reported
Other Location:	Not reported
Contact Name:	JIM GALLAGHER
Caller Name:	Not reported
Caller Title:	Not reported
Caller Address:	Not reported
Caller City,St,Zip:	Not reported
Caller Telephone:	Not reported
Substance(s):	Not reported
Substance Type:	Not reported
Substance Identity:	Not reported
CAS Number:	Not reported
A310 Letter:	Not reported
TCPA Chemical:	Not reported
Hazrds Material:	Not reported
COMU:	Not reported
Ref. Code:	Not reported
Amt Released:	Not reported
Contained:	Not reported
Release Type:	Not reported
Release VE:	Not reported
Injuries:	No
Public Exposure:	No
Facility Evacuation:	No
Police at Scene:	No
Firemen at Scene:	No
Contamination of:	Not reported
Receiving Water:	Not reported
Status at Spill:	Not reported
NJ Spill Date:	Not reported
NJ Spill Time:	Not reported
NJ Spill Name:	Not reported
NJ Spill Title:	Not reported
NJ Spill Phone:	Not reported
Other Date:	Not reported
Other Time:	Not reported
Other Name:	Not reported
Other Title:	Not reported
Other Telephone:	Not reported
Public Evacuation:	No
Assistance Requested:	Not reported
Wind Direction/Speed:	Not reported
Local Municipality Notified:	Not reported
Local Municipality Name:	Not reported
Local Municipality Title:	Not reported
Local Municipality Telephone:	Not reported
Local Municipality Date:	Not reported
Local Municipality Time:	Not reported
Incident Description:	Not reported
Incident Name:	Not reported

(Continued) S106218473

Incident Referred To:	Not reported
Incident Region:	Not reported
Incident Telephone:	Not reported
Incident Date:	Not reported
Incident time:	Not reported
Incident ITM:	Not reported
Comments: Not reported	
Date A310 Letter Printed:	Not reported
Date Local Authority Was Notified:	Not reported
Date Updated:	Not reported
Date Report Faxed to Local Authority:	Not reported
Local Authority Notification Date:	Not reported
Rep Receive Date:	03/10/2004
Reporter Type:	Other
Reporter Name:	REDACTED
Reporter Title:	REDACTED
Reporter Org:	REDATED
Reporter Address:	Not reported
Reporter City,St,Zip:	Not reported
Reporter County:	Not reported
Incident Status:	Terminated
Incident Category:	Other
Incident Source:	CONOCO PHILLIPS
Incident Address:	BAYWAY BLDG
Incident Address 2:	1400 PARK AVE
Incident City,St,Zip:	Linden City, NJ
Incident County:	Union
DEP Requested:	No
Confidential:	Not reported
Notify Type:	Not reported
Road Closed:	No
Direction:	Not reported
Responsible Party:	Not reported
Responsible Party Name:	Not reported
Responsible Party Contact:	Not reported
Responsible Party Title:	Not reported
Responsible Party Phone:	Not reported
Responsible Party Street:	Not reported
Responsible Party County:	Not reported
Responsible Party City,St,Zip:	Not reported
Memo. Of Understanding:	Not reported
Drill/trng Exercise:	Not reported
Hazardous:	Not reported

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8 WOODLAND LATHE & MACHINE COMPANY NJ ISRA S107591389
ENE 1345 HURFFVILLE DRIVE N/A
1/4-1/2 DEPTFORD TWP, NJ 08096
0.331 mi.
1749 ft.

Relative: Higher
Actual: 59 ft.

NJ ISRA:

Pi Number:	G000041291
Action Number:	ISR000001
Title:	E99675 Woodland Lathe & Machin
Isra Trg: Finalized Date	Not reported
Start Date:	03/28/2000
Case Status:	NFA-A (Unrestricted Use)
Case No:	E99675

WOODLAND LATHE & MACHINE COMPANY (Continued) **S107591389**

Case Name:	Woodland Lathe & Machine Company
Trigger Type:	Not reported
Trigger Date:	Not reported

9
NW
1/4-1/2
0.369 mi.
1947 ft.

JOHN O MURTHA INC
1614 PINE ST
DEPTFORD TWP, NJ 08096

NJ HIST LUST **U000360637**
NJ UST **N/A**
NJ NJEMS

Relative:
Higher

Actual:
53 ft.

LUST HIST:

Case ID:	Not reported
Lead Program Assigned:	Bureau of Field Operations - Initial Notice Section
Facility Status:	Site Issued Letter of No Further Action for Area(s) Of Concern
UST ID:	0109514
TMS Number:	C92-4746
Remedial Level:	Site has 1 area of concern with 1 media of concern.
Case Manager:	Sergio Honl
Facility Phone:	(609) 984-7861
No Further Action:	6/24/1993 0:00:00
RAW Approved:	Not reported
CEA:	Not reported
Date CEA Lifted:	Not reported
Dead Notice:	Not reported

UST:

Facility ID:	010951

Contact:

Owner Name:	Not Identified Not Identified
Organization:	Not Identified
Contact Type(UST Reg):	Facility Operator
Contact Address (UST Reg):	Not reported
Contact Address 2 (UST Reg):	Not reported
Conact City,St,Zip (UST Reg):	Not reported

Owner Name:	JOHN O MURTHA
Organization:	JOHN O MURTHA
Contact Type(UST Reg):	Tank Owner
Contact Address (UST Reg):	1614 PINE ST
Contact Address 2 (UST Reg):	Not reported
Conact City,St,Zip (UST Reg):	Deptford Twp, NJ 08096

Tanks:

Tank Id:	TANK-1
Tank Number:	E1
Tank Status:	Removed
Tank Status Date:	02/22/1993
Install Date:	01/01/1977
Tank Contents:	Unleaded Gasoline
Tank Size:	500
Tank Compliance:	No
Overfill:	No
Compliance Monitoring?:	No
Overfill Protection:	No

JOHN O MURTHA INC (Continued) U000360637

Spill Containment:	No
Tank Wellhead Protection:	Not reported
Tank/Pipe Construction Type:	Pipe Cathodically protected steel
Tank/Pipe Construction Type:	Tank Cathodically protected steel
Tank/Pipe Monitor:	Pipe None
Tank/Pipe Monitor:	Tank None

Tank Id:	TANK-2
Tank Number:	E2
Tank Status:	Removed
Tank Status Date:	02/22/1993
Install Date:	01/01/1982
Tank Contents:	Unleaded Gasoline
Tank Size:	500
Tank Compliance:	No
Overfill:	No
Compliance Monitoring?:	No
Overfill Protection:	No
Spill Containment:	No
Tank Wellhead Protection:	Not reported
Tank/Pipe Construction Type:	Tank Cathodically protected steel
Tank/Pipe Construction Type:	Pipe Cathodically protected steel
Tank/Pipe Monitor:	Pipe None
Tank/Pipe Monitor:	Tank None

NJEMS:

Site Id:	44702
Municipality:	DEPTFORD TWP
Municipality Name From Spatial Overlay:	DEPTFORD TWP
GNIS Civil Code For Municipality:	882149
Municipal Code (NJ-1040):	0802
X Coord:	323316
Y Coord:	360682
Coord System:	NJ STATE PLANE (NAD83) - USFEET
Coord Type:	GPS
Coord Orign:	DEP-GIS
State Standard Numeric Code From Spatial Overlay:	0802
Unique Feature Number For Municipality From Spatial Overlay:	3401517710
Eleven Digit Hydrologic Unit Code From Spatial Overlay):	02040202120
Fourteen Digit Hydrologic Unit Code From Spatial Overlay:	02040202120060
Watershed Management Area Number From Spatial Overlay:	18
Watershed Management Area Name From Spatial Overlay:	Lower Delaware
Water Region Code From Spatial Overlay:	5
Water Region Name From Spatial Overlay:	Lower Delaware
Sub Watershed Name From Overlay:	Almonesson Creek
Watershed Name From Spatial Overlay:	Woodbury / Big Timber / Newton Creeks

D10 NNE 1/4-1/2 0.396 mi. 2093 ft. — **PRICKETTS INDUSTRIAL TANK CLEANING CORP**
RTE 41 & HARRIS DR
DEPTFORD, NJ 08096

SEMS-ARCHIVE **1000168197**
CORRACTS **NJD071454276**
RCRA NonGen / NLR

Site 1 of 4 in cluster D

Relative: **Higher**
Actual: **58 ft.**

SEMS Archive:

Site ID:	0200435
EPA ID:	NJD071454276
Cong District:	01
FIPS Code:	34015
FF:	N
NPL:	Not on the NPL
Non NPL Status:	NFRAP-Site does not qualify for the NPL based on existing information
Latitude:	+39.823035
Longitude:	-075.091809

SEMS Archive Detail:

Region:	02
Site ID:	0200435
EPA ID:	NJD071454276
Site Name:	PITCCO - PRICKETTS' INDUSTRIAL TANK CLNG
NPL:	N
FF:	N
OU:	00
Action Code:	VS
Action Name:	ARCH SITE
SEQ:	1
Start Date:	Not reported
Finish Date:	1994-09-28 04:00:00
Qual:	Not reported
Current Action Lead:	EPA Perf In-Hse

Region:	02
Site ID:	0200435
EPA ID:	NJD071454276
Site Name:	PITCCO - PRICKETTS' INDUSTRIAL TANK CLNG
NPL:	N
FF:	N
OU:	00
Action Code:	FP
Action Name:	FPA
SEQ:	1
Start Date:	1986-05-31 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Perf

Region:	02
Site ID:	0200435
EPA ID:	NJD071454276
Site Name:	PITCCO - PRICKETTS' INDUSTRIAL TANK CLNG
NPL:	N
FF:	N
OU:	00
Action Code:	SI
Action Name:	SI
SEQ:	1
Start Date:	1986-09-16 04:00:00
Finish Date:	1986-09-29 04:00:00

PRICKETTS INDUSTRIAL TANK CLEANING CORP (Continued) 1000168197

Qual:	N
Current Action Lead:	EPA Perf
Region:	02
Site ID:	0200435
EPA ID:	NJD071454276
Site Name:	PITCCO - PRICKETTS' INDUSTRIAL TANK CLNG
NPL:	N
FF:	N
OU:	00
Action Code:	DS
Action Name:	DISCVRY
SEQ:	1
Start Date:	1985-10-01 05:00:00
Finish Date:	1985-10-01 05:00:00
Qual:	Not reported
Current Action Lead:	St Perf
Region:	02
Site ID:	0200435
EPA ID:	NJD071454276
Site Name:	PITCCO - PRICKETTS' INDUSTRIAL TANK CLNG
NPL:	N
FF:	N
OU:	00
Action Code:	PA
Action Name:	PA
SEQ:	1
Start Date:	Not reported
Finish Date:	1985-11-01 06:00:00
Qual:	L
Current Action Lead:	St Perf

CORRACTS:

EPA ID:	NJD071454276
EPA Region:	2
Area Name:	SITEWIDE
Actual Date:	19960424
Action:	CA050 - RFA Completed
NAICS Code(s):	81149 Other Personal and Household Goods Repair and Maintenance
Original schedule date:	Not reported
Schedule end date:	Not reported
EPA ID:	NJD071454276
EPA Region:	2
Area Name:	SITEWIDE
Actual Date:	19960315
Action:	CA075LO - CA Prioritization, Facility or area was assigned a low corrective action priority
NAICS Code(s):	81149 Other Personal and Household Goods Repair and Maintenance
Original schedule date:	Not reported
Schedule end date:	Not reported

PRICKETTS INDUSTRIAL TANK CLEANING CORP (Continued) **1000168197**

RCRA NonGen / NLR:

Date form received by agency:	01/01/2007
Facility name:	PRICKETTS INDUSTRIAL TANK CLEANING CORP
Facility address:	RTE 41 & HARRIS DR DEPTFORD, NJ 08096
EPA ID:	NJD071454276
Mailing address:	HARRIS DR DEPTFORD, NJ 08096
Contact:	EARL PRICKETT
Contact address:	HARRIS DR DEPTFORD, NJ 08096
Contact country:	US
Contact telephone:	609-228-1071
Contact email:	Not reported
EPA Region:	02
Land type:	Facility is not located on Indian land. Additional information is not known.
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	EARL L PRICKETT
Owner/operator address:	735 N HURFFVILLE RD OPERCITY, NJ 99999
Owner/operator country:	US
Owner/operator telephone:	609-848-0664
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	EARL L PRICKETT
Owner/operator address:	735 N HURFFVILLE RD DEPTFORD, NJ 08096
Owner/operator country:	US
Owner/operator telephone:	609-848-0664
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	Yes
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No

PRICKETTS INDUSTRIAL TANK CLEANING CORP (Continued) **1000168197**

Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Site name: PRICKETTS INDUSTRIAL TANK CLEANING CORP
Classification: Not a generator, verified

Date form received by agency: 11/19/1980
Site name: PRICKETTS INDUSTRIAL TANK CLEANING CORP
Classification: Not a generator, verified

. Waste code: K049
. Waste name: SLOP OIL EMULSION SOLIDS FROM THE PETROLEUM REFINING INDUSTRY

Date form received by agency: 08/11/1980
Site name: PRICKETTS INDUSTRIAL TANK CLEANING CORP
Classification: Unverified

. Waste code: K049
. Waste name: SLOP OIL EMULSION SOLIDS FROM THE PETROLEUM REFINING INDUSTRY

. Waste code: K078
. Waste name: K078

Corrective Action Summary:
Event date: 03/15/1996
Event: CA PRIORITIZATION-LOW CA PRIORITY

Event date: 04/24/1996
Event: RFA COMPLETED

Facility Has Received Notices of Violations:
Regulation violated: Not reported
Area of violation: TSD - General
Date violation determined: 03/31/1993
Date achieved compliance: 05/11/1993
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 03/31/1993
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Manifest/Records/Reporting
Date violation determined: 05/26/1992
Date achieved compliance: 09/21/1992
Violation lead agency: State

PRICKETTS INDUSTRIAL TANK CLEANING CORP (Continued) **1000168197**

Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/26/1992
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 02/15/1991
Date achieved compliance: 03/01/1991
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 02/15/1991
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 11/30/1989
Date achieved compliance: 12/01/1989
Violation lead agency: State
Enforcement action: INITIAL 3008(A) COMPLIANCE
Enforcement action date: 11/30/1989
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 11/03/1989
Date achieved compliance: 11/04/1989
Violation lead agency: State
Enforcement action: INITIAL 3008(A) COMPLIANCE
Enforcement action date: 11/03/1989
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 08/07/1984
Date achieved compliance: 06/12/1985
Violation lead agency: State
Enforcement action: FINAL 3008(A) COMPLIANCE ORDER

PRICKETTS INDUSTRIAL TANK CLEANING CORP (Continued) 1000168197

Enforcement action date: 05/13/1985
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: 875
Final penalty amount: 875
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 08/07/1984
Date achieved compliance: 02/03/1986
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 03/01/1983
Date achieved compliance: 12/15/1983
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 12/05/1983
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 10/12/2001
Evaluation: FOCUSED COMPLIANCE INSPECTION
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 07/29/1999
Evaluation: FOCUSED COMPLIANCE INSPECTION
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 06/10/1999
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 06/01/1999
Evaluation: FOCUSED COMPLIANCE INSPECTION

PRICKETTS INDUSTRIAL TANK CLEANING CORP (Continued) **1000168197**

Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 02/28/1984
Evaluation: NON-FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 03/01/1983
Evaluation: NON-FINANCIAL RECORD REVIEW
Area of violation: Generators - General
Date achieved compliance: 12/15/1983
Evaluation lead agency: State

D11 **PITCCO** **NJ HIST LUST** **S104438039**
NNE **1940 HARRIS DR** **NJ Release** **N/A**
1/4-1/2 **DEPTFORD, NJ**
0.396 mi.
2093 ft. **Site 2 of 4 in cluster D**

Relative:
Higher

Actual:
58 ft.

LUST HIST:
Case ID: 92-07-27-1313
Lead Program Assigned: Bureau of Underground Storage Tanks
Facility Status: Site Issued Letter of No Further Action for Area(s) Of Concern
UST ID: 0132833
TMS Number: Not reported
Remedial Level: Site has more than 1 area of concern or more than 1 media of concern.
Case Manager: Stephen Tater
Facility Phone: (609) 633-0580
No Further Action: 3/23/1993 0:00:00
RAW Approved: Not reported
CEA: Not reported
Date CEA Lifted: Not reported
Dead Notice: Not reported

NJ Release:
Facility Type: Commercial
Facility Phone: Not reported
Incident Date: 07/27/1992
Incident Time: UNK
Trenton Dispatch Log Number: 12166
Case Number: 92-7-27-1313-48
Date Received: 07/27/1992
Nature of Incident: Other
Operator: JOYCE
Incident Type: Not reported
Incident Location: Not reported
Location: Facility
Other Location: Not reported
Contact Name: Not reported
Caller Name: REDACTED
Caller Title: Not reported
Caller Address: Not reported
Caller City,St,Zip: Not reported
Caller Telephone: Not reported
Substance(s): OIL WASTE
Substance Type: Liquid

PITCCO (Continued) **S104438039**

Substance Identity:	Known
CAS Number:	Not reported
A310 Letter:	Yes
TCPA Chemical:	No
Hazrds Material:	Yes
COMU:	0802
Ref. Code:	013
Amt Released:	UNK
Contained:	Yes
Release Type:	Terminated
Release VE:	Not reported
Injuries:	No
Public Exposure:	No
Facility Evacuation:	No
Police at Scene:	No
Firemen at Scene:	No
Contamination of:	Land
Receiving Water:	Not reported
Status at Spill:	UNK SIZE LUST REMOVED, SOIL CONTAMINATION SUSPECTED.
NJ Spill Date:	Not reported
NJ Spill Time:	Not reported
NJ Spill Name:	Not reported
NJ Spill Title:	Not reported
NJ Spill Phone:	Not reported
Other Date:	Not reported
Other Time:	Not reported
Other Name:	Not reported
Other Title:	Not reported
Other Telephone:	Not reported
Public Evacuation:	No
Assistance Requested:	Yes
Wind Direction/Speed:	Not reported
Local Municipality Notified:	Not reported
Local Municipality Name:	DEPTFORD TWP
Local Municipality Title:	DISP #5
Local Municipality Telephone:	609-845-2220
Local Municipality Date:	07/27/1992
Local Municipality Time:	1314
Incident Description:	L.U.S.T.
Incident Name:	Not reported
Incident Referred To:	DRPSR
Incident Region:	Bust
Incident Telephone:	Faxed,Mailed
Incident Date:	07/27/1992
Incident time:	Not reported
Incident ITM:	B
Comments: Not reported	
Date A310 Letter Printed:	Not reported
Date Local Authority Was Notified:	Not reported
Date Updated:	Not reported
Date Report Faxed to Local Authority:	Not reported
Local Authority Notification Date:	Not reported
Rep Receive Date:	Not reported
Reporter Type:	Not reported
Reporter Name:	Not reported
Reporter Title:	Not reported
Reporter Org:	Not reported

PITCCO (Continued) **S104438039**

Reporter Address:	Not reported
Reporter City,St,Zip:	Not reported
Reporter County:	Not reported
Incident Status:	Not reported
Incident Category:	Not reported
Incident Source:	Not reported
Incident Address:	Not reported
Incident Address 2:	Not reported
Incident City,St,Zip:	Not reported
Incident County:	Not reported
DEP Requested:	Not reported
Confidential:	Not reported
Notify Type:	Not reported
Road Closed:	Not reported
Direction:	Not reported
Responsible Party:	Known
Responsible Party Name:	PITCCO
Responsible Party Contact:	Not reported
Responsible Party Title:	Not reported
Responsible Party Phone:	Not reported
Responsible Party Street:	1940 HARRIS DR
Responsible Party County:	GLOUCESTER
Responsible Party City,St,Zip:	DEPTFORD, NJ
Memo. Of Understanding:	Not reported
Drill/trng Exercise:	Not reported
Hazardous:	Not reported

D12 **PRICKETT IND. TANK CLEANING** **NJ HIST LF** **S104005656**
NNE **1940 HARRIS DRIVE** **N/A**
1/4-1/2 **DEPTFORD, NJ**
0.396 mi.
2093 ft. **Site 3 of 4 in cluster D**

Relative: **Higher**
Actual: **58 ft.**

HIST LF:

Facility ID:	0802001444
Facility Type:	RECYCLING CENT
Authorized Waste:	Not reported
Facility Status:	CLOSED
Contact Name:	KENNETH PRICKETT
Contact Address:	1940 HARRIS DRIVE
Contact City,St,Zip:	DEPTFORD, NJ 08096
Contact Phone:	6092281071

D13 **PRICKETTS IND TANK CLEANING CORP** **NJ SHWS** **U003564267**
NNE **1940 HARRIS DR** **NJ HIST LUST** **N/A**
1/4-1/2 **DEPTFORD TWP, NJ 08096** **NJ UST**
0.414 mi.
2186 ft. **Site 4 of 4 in cluster D**

Relative: **Higher**
Actual: **59 ft.**

SHWS:

Site ID:	8052
Status:	Closed
Home Owner:	No
PI Number:	013283

Detail As Of April 2012:

X Coord Site:	Not reported

PRICKETTS IND TANK CLEANING CORP (Continued) U003564267

X Coord Pl:	Not reported
Y Coord Site:	Not reported
Y Coord Pl:	Not reported

LUST HIST:

Case ID:	Not reported
Lead Program Assigned:	Bureau of Field Operations - Initial Notice Section
Facility Status:	Site Issued Letter of No Further Action for Area(s) Of Concern
UST ID:	0132833
TMS Number:	N98-1735;N99-1740
Remedial Level:	Site has 1 area of concern with 1 media of concern.
Case Manager:	Corbin Weck
Facility Phone:	(609) 292-9519
No Further Action:	3/28/2001 0:00:00
RAW Approved:	Not reported
CEA:	Not reported
Date CEA Lifted:	Not reported
Dead Notice:	Not reported

UST:

Facility ID:	013283

Contact:

Owner Name:	KENNETH E PRICKETT
Organization:	PRICKETTS INDUSTRIAL TANK CLEANING C
Contact Type(UST Reg):	Facility Operator
Contact Address (UST Reg):	1940 HARRIS DR
Contact Address 2 (UST Reg):	Not reported
Conact City,St,Zip (UST Reg):	Deptford Twp, NJ 08096
Owner Name:	KENNETH PRICKETT
Organization:	KENNETH E. PRICKETT
Contact Type(UST Reg):	Tank Owner
Contact Address (UST Reg):	1940 HARRIS DR
Contact Address 2 (UST Reg):	Not reported
Conact City,St,Zip (UST Reg):	Deptford Twp, NJ 08096

Tanks:

Tank Id:	TANK-1
Tank Number:	00E1
Tank Status:	Removed
Tank Status Date:	05/01/1991
Install Date:	01/01/1972
Tank Contents:	Waste Oil
Tank Size:	10500
Tank Compliance:	No
Overfill:	No
Compliance Monitoring?:	No
Overfill Protection:	No
Spill Containment:	No
Tank Wellhead Protection:	Not reported
Tank/Pipe Construction Type:	Tank Bare steel
Tank/Pipe Construction Type:	Pipe Bare steel
Tank/Pipe Monitor:	Pipe None

PRICKETTS IND TANK CLEANING CORP (Continued) U003564267

Tank/Pipe Monitor:	Tank None

Tank Id:	TANK-2
Tank Number:	00E2
Tank Status:	Removed
Tank Status Date:	05/01/1991
Install Date:	01/01/1972
Tank Contents:	Waste Oil
Tank Size:	3550
Tank Compliance:	No
Overfill:	No
Compliance Monitoring?:	No
Overfill Protection:	No
Spill Containment:	No
Tank Wellhead Protection:	Not reported
Tank/Pipe Construction Type:	Pipe Bare steel
Tank/Pipe Construction Type:	Tank Bare steel
Tank/Pipe Monitor:	Pipe None
Tank/Pipe Monitor:	Tank None

Tank Id:	TANK-3
Tank Number:	00E3
Tank Status:	Removed
Tank Status Date:	05/01/1991
Install Date:	01/01/1972
Tank Contents:	Waste Oil
Tank Size:	12000
Tank Compliance:	No
Overfill:	No
Compliance Monitoring?:	No
Overfill Protection:	No
Spill Containment:	No
Tank Wellhead Protection:	Not reported
Tank/Pipe Construction Type:	Pipe Bare steel
Tank/Pipe Construction Type:	Tank Bare steel
Tank/Pipe Monitor:	Pipe None
Tank/Pipe Monitor:	Tank None

Tank Id:	TANK-4
Tank Number:	00E4
Tank Status:	Removed
Tank Status Date:	05/01/1991
Install Date:	01/01/1973
Tank Contents:	Waste Oil
Tank Size:	7000
Tank Compliance:	No
Overfill:	No
Compliance Monitoring?:	No
Overfill Protection:	No
Spill Containment:	No
Tank Wellhead Protection:	Not reported
Tank/Pipe Construction Type:	Pipe Bare steel
Tank/Pipe Construction Type:	Tank Bare steel
Tank/Pipe Monitor:	Pipe None

PRICKETTS IND TANK CLEANING CORP (Continued) U003664267

Tank/Pipe Monitor:	Tank None

Tank Id:	TANK-5
Tank Number:	00E5
Tank Status:	Removed
Tank Status Date:	05/01/1991
Install Date:	01/01/1973
Tank Contents:	Waste Oil
Tank Size:	7000
Tank Compliance:	No
Overfill:	No
Compliance Monitoring?:	No
Overfill Protection:	No
Spill Containment:	No
Tank Wellhead Protection:	Not reported
Tank/Pipe Construction Type:	Pipe Bare steel
Tank/Pipe Construction Type:	Tank Bare steel
Tank/Pipe Monitor:	Pipe None
Tank/Pipe Monitor:	Tank None

Tank Id:	TANK-6
Tank Number:	00E6
Tank Status:	Removed
Tank Status Date:	06/21/1990
Install Date:	01/01/1973
Tank Contents:	Waste Oil
Tank Size:	30000
Tank Compliance:	No
Overfill:	No
Compliance Monitoring?:	No
Overfill Protection:	No
Spill Containment:	No
Tank Wellhead Protection:	Not reported
Tank/Pipe Construction Type:	Pipe Bare steel
Tank/Pipe Construction Type:	Tank Bare steel
Tank/Pipe Monitor:	Pipe None
Tank/Pipe Monitor:	Tank None

Tank Id:	TANK-7
Tank Number:	00E7
Tank Status:	Removed
Tank Status Date:	01/11/2000
Install Date:	01/01/1970
Tank Contents:	Heating Oil (No. 2)
Tank Size:	4000
Tank Compliance:	No
Overfill:	No
Compliance Monitoring?:	No
Overfill Protection:	No
Spill Containment:	No
Tank Wellhead Protection:	No
Tank/Pipe Construction Type:	Tank Bare steel
Tank/Pipe Construction Type:	Pipe Bare steel
Tank/Pipe Monitor:	Tank Inventory Control

PRICKETTS IND TANK CLEANING CORP (Continued) U003564267

Tank/Pipe Monitor:	Tank Manual Tank Gauging
Tank/Pipe Monitor:	Tank Tightness Test

Tank Id:	TANK-8
Tank Number:	00E8
Tank Status:	Removed
Tank Status Date:	01/11/2000
Install Date:	03/16/1970
Tank Contents:	Heating Oil (No. 2)
Tank Size:	4000
Tank Compliance:	No
Overfill:	No
Compliance Monitoring?:	No
Overfill Protection:	No
Spill Containment:	No
Tank Wellhead Protection:	No
Tank/Pipe Construction Type:	Pipe Bare steel
Tank/Pipe Construction Type:	Tank Bare steel
Tank/Pipe Monitor:	Pipe None
Tank/Pipe Monitor:	Tank Inventory Control
Tank/Pipe Monitor:	Tank Manual Tank Gauging
Tank/Pipe Monitor:	Tank Tightness Test

Tank Id:	TANK-9
Tank Number:	00E9
Tank Status:	Removed
Tank Status Date:	05/01/1991
Install Date:	01/01/1973
Tank Contents:	Waste Oil
Tank Size:	1500
Tank Compliance:	No
Overfill:	No
Compliance Monitoring?:	No
Overfill Protection:	No
Spill Containment:	No
Tank Wellhead Protection:	Not reported
Tank/Pipe Construction Type:	Pipe Bare steel
Tank/Pipe Construction Type:	Tank Bare steel
Tank/Pipe Monitor:	Pipe None
Tank/Pipe Monitor:	Tank None

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14 **RJ GRAPHICS** NJ NJEMS S107589879
NE **1960 HARRIS DR** NJ ISRA N/A
1/4-1/2 **DEPTFORD TWP, NJ 08096**
0.441 mi.
2331 ft.

Relative: NJEMS:
Higher
Actual: Site Id: 30505
60 ft. Municipality: DEPTFORD TWP
Municipality Name From Spatial Overlay: DEPTFORD TWP
GNIS Civil Code For Municipality: 882149
Municipal Code (NJ-1040): 0802
X Coord: 326108
Y Coord: 361027
Coord System: NJ STATE PLANE (NAD83) - USFEET

RJ GRAPHICS (Continued) **S107589879**

Coord Type:	GPS
Coord Orign:	DEP-GIS
State Standard Numeric Code From Spatial Overlay:	0802
Unique Feature Number For Municipality From Spatial Overlay:	3401517710
Eleven Digit Hydrologic Unit Code From Spatial Overlay):	02040202120
Fourteen Digit Hydrologic Unit Code From Spatial Overlay:	02040202120050
Watershed Management Area Number From Spatial Overlay:	18
Watershed Management Area Name From Spatial Overlay:	Lower Delaware
Water Region Code From Spatial Overlay:	5
Water Region Name From Spatial Overlay:	Lower Delaware
Sub Watershed Name From Overlay:	Big Timber Creek SB (below Bull Run)
Watershed Name From Spatial Overlay:	Woodbury / Big Timber / Newton Creeks

NJ ISRA:

PI Number:	196641
Action Number:	ISR030003
Title:	E20030239 RJ Graphics Inc.
Isra Trg: Finalized Date	9/1/2003
Start Date:	06/19/2003
Case Status:	Assigned to Program
Case No:	E20030239
Case Name:	R J Graphics Inc
Trigger Type:	Property Sale
Trigger Date:	06/11/2003

Pi Number:	196641
Action Number:	ISR030003
Title:	E20030239 RJ Graphics Inc.
Isra Trg: Finalized Date	9/1/2003
Start Date:	12/01/2004
Case Status:	NFA-E (Unrestricted Use)
Case No:	E20030239
Case Name:	R J Graphics Inc
Trigger Type:	Property Sale
Trigger Date:	06/11/2003

E15 **8 MOSTOVLYAN COURT** **NJ SHWS** **S108973317**
NW **8 MOSTOVALYN CT** **NJ BROWNFIELDS** **N/A**
1/4-1/2 **DEPTFORD TOWNSHIP, NJ 08096**
0.469 mi.
2475 ft. **Site 1 of 2 in cluster E**

Relative:
Higher

Actual:
51 ft.

SHWS:

Site ID:	123427
Status:	Closed
Home Owner:	No
PI Number:	162345

Detail As Of April 2012:

X Coord Site:	322676
X Coord PI:	322676
Y Coord Site:	360470
Y Coord PI:	360470

BROWNFIELDS:

Price:	Not reported
Assessed Value:	Not reported

8 MOSTOVLYAN COURT (Continued) **S108973317**

Property Size:	Unknown
Annual Taxes:	Not reported
Representative Address:	Not reported
Representative City/State/Zip:	Not reported
Submitter Name:	Not reported
Submitter Address1:	Not reported
Submitter Address2:	Not reported
Submitter City:	Not reported
Submitter State:	Not reported
Submitter Zip:	Not reported
Submitter Email:	Not reported
Submitter Phone:	Not reported
Transaction Type:	Not reported
Transfer Type:	Not reported
Site Number:	6464
X Coordinate:	322676
Y Coordinate:	360470
Coord:	322676;360470
AutoID:	Not reported
Ownership Type:	unknown
Ownership:	DEP Case
PStatus:	DEP Case
PI Number:	162345
Owner Name:	Not reported
Owner Address + Owner Street:	Not reported
Owner City:	Not reported
Owner State:	Not reported
Owner Zip Code:	Not reported
Owner County:	Not reported
Owner Phone:	9999999999
Owner Fax:	9999999999
Owner Email:	Not reported
Owner Organization:	Not reported
Authorized Representative:	Not reported
Auth Rep Relation to Owner:	Not reported
Municipal Contact Name:	Not reported
Municipal Contact Street:	Not reported
Municipal Contact City:	Not reported
Municipal Contact State:	Not reported
Municipal Contact Zip Code:	Not reported
Municipal Contact Phone:	9999999999
Municipal Contact Fax:	9999999999
Municipal Contact Email:	Not reported
Department:	Not reported
Municipal Contact Title:	Not reported
Contact Relation to Owner:	Not reported
Current Zoning:	Not reported
Proposed Zoning:	Not reported
Copy of Title Insurance:	Not reported
Block:	Not reported
Lot:	Not reported
Development Plan Completed:	Unknown
Market Study Completed:	Unknown
Current Activity:	Not reported
Current Operations:	Not reported
Prior Operations:	Not reported
Deed Restrictions:	Unknown

8 MOSTOVLYAN COURT (Continued) S108973317

Easements:	Unknown
Buildings:	Not reported
Condition of Buildings:	Not reported
Square Footage:	Not reported
Total Buildable Space:	Not reported
Lease Price:	Not reported
Tax Certificate:	Unknown
Tax Lien:	Unknown
Other Liens/Judgements:	No
Traffic Study:	Unknown
Road Access:	Not reported
Waterfront Access:	Unknown
Airport Access:	Unknown
Public Transportation Access:	Unknown
Major Highway Name:	Not reported
Major Highway Interchange:	Not reported
Major Highway Miles Away:	Not reported
Local Highway Name:	Not reported
Local Highway Interchange:	Not reported
Local Highway Miles Away:	Not reported
Rail Type:	Not reported
Rail Name:	Not reported
Rail Station:	Not reported
Rail Miles Away:	Not reported
Public Water:	Unknown
Electric:	Unknown
Gas:	Unknown
Public Sewer:	Unknown
Telephone:	Unknown
Cable:	Unknown
Fiber Optics:	Unknown
Wetlands:	No
Sensitive Ecosystems/Habitats:	No
Endangered Species:	No
Historic/Archeological Site:	No
100 Year Flood Plain:	No
500 Year Flood Plain:	No
Environmental Report Copies:	Yes
List Containing Site:	Not reported
Preliminary Assessment:	No
Site Investigation:	No
Remedial Investigation:	No
Remedial Action Workplan:	No
Voluntary Cleanup Program:	No
Environmental Litigation:	No
Remediation In Progress:	Yes
Remediation Estimated Complete Date:	Not reported
Regulatory sign-off:	No
Regulatory Sign-Off Description:	Not reported
Other Incentives:	No
Low Interest Rates:	No
HDSRF Grants:	No
TIF:	No
HDSRF Loans:	No
USA Loans:	No
USA Grants:	No
Designated Redevelopment Area:	No

8 MOSTOVLYAN COURT (Continued) — **S108973317**

Environmental Opportunity Zone:	No
Tax Rebate or Abatement:	No
Empowerment Zone (Federal):	No
Urban Coordinating Council Neighborhood:	No
Enterprise Community (Federal):	No
Urban Enterprise Zone:	No
Additional Comments:	1) Assigned to Program,9/8/1997 2) C1: No Formal Design - Source Known or Identified-Potential GW Contamination established 9/15/1997
County_int_FK:	8
Municipality_int_FK:	224
Planning Area Designation:	Planning Area 1
Authorized Representative Email:	Not reported
Authorized Representative Phone:	9999999999
General Comments:	Not reported

E16
NW
1/4-1/2
0.469 mi.
2475 ft.

MOSTOVLYAN COURT GAS STATION
8 MOSTOVLYAN CT
DEPTFORD, NJ 08096

NJ VCP — **S106589875** / **N/A**

Site 2 of 2 in cluster E

Relative:
Higher
Actual:
51 ft.

VCP:

Incident Number:	97-05-09-0150-47
MOA Execution Date:	09/04/1997
Type Of Vcp File:	HISTORICAL
PI Number:	Not reported
Case Type(Case Type):	Not reported
Case Contact: Department	Not reported
Case Contact Name:	Not reported
Case Contact: Organization	Deptford Twp
Case Contact: Address: Line1	Not reported
Case Contact: Address: Line2	Not reported
Case Contact: Address: Line3	Not reported
Case Contact City,St,Zip:	Not reported

17
WNW
1/4-1/2
0.499 mi.
2635 ft.

COOPER STREET
COOPER ST
DEPTFORD TWP, NJ 08096

NJ SHWS — **1010518352**
NJ NJEMS — **N/A**
FINDS

Relative:
Higher
Actual:
66 ft.

SHWS:

Site ID:	64612
Status:	Closed
Home Owner:	No
PI Number:	G000022097

Detail As Of April 2012:

X Coord Site:	322238
X Coord PI:	Not reported
Y Coord Site:	360368
Y Coord PI:	Not reported

NJEMS:

Site Id:	64612
Municipality:	DEPTFORD TWP

COOPER STREET (Continued) **1010518352**

Municipality Name From Spatial Overlay:	DEPTFORD TWP
GNIS Civil Code For Municipality:	882149
Municipal Code (NJ-1040):	0802
X Coord:	322238
Y Coord:	360368
Coord System:	NJ STATE PLANE (NAD83) - USFEET
Coord Type:	Approx. Addr. Match
Coord Orign:	DEP-GIS
State Standard Numeric Code From Spatial Overlay:	0802
Unique Feature Number For Municipality From Spatial Overlay:	3401517710
Eleven Digit Hydrologic Unit Code From Spatial Overlay):	02040202120
Fourteen Digit Hydrologic Unit Code From Spatial Overlay:	02040202120060
Watershed Management Area Number From Spatial Overlay:	18
Watershed Management Area Name From Spatial Overlay:	Lower Delaware
Water Region Code From Spatial Overlay:	5
Water Region Name From Spatial Overlay:	Lower Delaware
Sub Watershed Name From Overlay:	Almonesson Creek
Watershed Name From Spatial Overlay:	Woodbury / Big Timber / Newton Creeks

FINDS:

Registry ID: 110032194284

Environmental Interest/Information System
NJ-NJEMS (New Jersey - New Jersey Environmental Management System).
The Department of Environmental Protection (NJDEP) manages large databases of environmental information in this integrated system.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

18
SW
1/2-1
0.505 mi.
2665 ft.

145 CRESTVIEW DRIVE
145 CRESTVIEW DR
DEPTFORD TWP, NJ 08096

NJ SHWS S106465184
NJ VCP N/A
NJ NJEMS
NJ Release

Relative:
Higher
Actual:
65 ft.

SHWS:

Site ID:	174258
Status:	Closed
Home Owner:	Yes
PI Number:	228540

Detail As Of April 2012:

X Coord Site:	Not reported
X Coord PI:	Not reported
Y Coord Site:	Not reported
Y Coord PI:	Not reported

VCP:

Incident Number:	04-03-25-0932-21
MOA Execution Date:	05/10/2004
Type Of Vcp File:	HISTORICAL
Pi Number:	Not reported
Case Type(Case Type):	Not reported
Case Contact: Department	Not reported

APPENDIX C

GOVERNMENTAL CORRESPONDENCE

FRENCH & PARRELLO
ASSOCIATES

Corporate Office
1800 Route 34, Suite 101
Wall, NJ 07719

Regional Offices
Hackettstown, NJ
New York, NY

January 21, 2019

Ms. Dina Zawadski, Municipal Clerk
TOWNSHIP OF DEPTFORD
1011 Cooper Street
Deptford, New Jersey 08096

Re: Open Public Records Act (OPRA) – Environmental Search
Site: Gloucester County Bridge 3K03
Copper Street Bridge
Township of Deptford, Gloucester County, New Jersey
FPA No. 13633.001

Dear Ms. Zadwadski:

On behalf of DVRPC, French & Parrello Associates, P.A. is performing an Environmental Site Assessment of the above referenced property. Please note that the property surrounding the bridge is adjacent to Almonsesson Lake (Block 245, Lot 2 and Almonesson Park (Block 238, Lot 1) As part of our assessment, we ask that your office perform a records search to identify permits for the installation/removal of petroleum storage tanks and any information regarding potable wells, septic systems, site contamination, spills of hazardous substances, land use restrictions or development plans in the vicinity of our site.

If files are located for this property, please provide me with same or contact me so that I can schedule an appointment for a file review or make arrangements for copying. If no records are found, kindly advise me in writing.

A Township of Deptford records request form is attached.

Yours truly,

FRENCH & PARRELLO ASSOCIATES

Lawrence Schmidt, Senior Environmental Specialist
Environmental Services Department

OPEN PUBLIC RECORDS ACT REQUEST FORM

Deptford Township
1011 Cooper Street Deptford, NJ 08096
Telephone: 856-686-2203 Fax: 856-845-8804
twpclerk@deptford-nj.org
Dina L. Zawadski, Township Clerk, RMC, CMC

Important Notice

The last page of this form contains important information related to your rights concerning government records. Please read it carefully.

Requestor Information – Please Print

First Name Lawrence MI ____ Last Name Schmidt

Company French and Parrello Assoc

Mailing Address 1800 Route 34

City Wall State NJ Zip 07719 Email lawrence.schmidt@fpaengineers.com

Business Hours Telephone Area Code 732 Number 312-9815 Extension ____

Preferred Delivery ___ Pick Up ___ US Mail ___ On Site Inspect ___ Email

Circle One: Under penalty of N.J.S.A. 2C:28-3, I certify that I ***HAVE / HAVE NOT*** been convicted of any indictable offense under the laws of New Jersey, any other state, or the United States.

Signature Lawrence Schmidt Date 1/21/2019

Payment Information

Maximum Authorization Cost $

Select Payment Method

Cash___ Check ___Money Order __

Fees: Letter size pages - $0.05 per page
Legal size pages - $0.07 per page
Other materials (CD, DVD, etc) – actual cost of material

Delivery: Delivery / postage fees additional depending upon delivery type.

Extras: Special service charge dependent upon request.

Record Request Information: Please be as specific as possible in describing the records being requested. Also, please note that your preferred method of delivery will only be accommodated if the custodian has the technological means and the integrity of the records will not be jeopardized by such method of delivery. Please include the type of access requested (copying or inspection), and if data, the medium requested.

Seeking records relating to known contamination, spills of hazardous materials, permits and registrations, USTs, VCP, and site remediation actions on Block 245 Lot 2 (Almonsesson Lake) and Block 238 Lot 1 (Almonsesson Park). This request is in conjunction with a hazardous waste screening study regarding improvements to County Bridge 3K-3 (Cooper Street Bridge).

AGENCY USE ONLY

Est. Document Cost ____
Est. Delivery Cost ____
Est. Extras Cost ____
Total Est. Cost ____
Deposit Amount ____
Estimated Balance ____

Deposit Date ____

AGENCY USE ONLY

Disposition Notes
Custodian: If any part of request cannot be delivered in seven business days, detail reasons here.

In Progress - Open ____
Denied - Closed ____
Filled - Closed ____
Partial - Closed ____

AGENCY USE ONLY

Tracking Information

Tracking # ____
Rec'd Date ____
Ready Date ____
Total Pages ____

Final Cost

Total ____
Deposit ____
Balance Due ____
Balance Paid ____

Records Provided

Custodian Signature ____ Date ____

DEPOSITS

The custodian may require a deposit against costs for reproducing documents sought through an anonymous request whenever the custodian anticipates that the documents requested will cost in excess of $5 to reproduce.

Where a special service charge is warranted under OPRA, that amount will be communicated to you as required under the statute. You have the opportunity to review and object to the charge prior to it being incurred. If, however, you approve of the fact and amount of the special service charge, you may be required to pay a deposit or pay in full prior to reproduction of the documents.

YOUR REQUEST FOR RECORDS IS DENIED FOR THE FOLLOWING REASON(S):

(To be completed by the Custodian of Records – check the box of the numbered exemption(s) as they apply to the records requested. If multiple records are requested, be specific as to which exemption(s) apply to each record. **Response is due to requestor as soon as possible, but no later than seven business days.**)

N.J.S.A. 47:1A-1.1

- ☐ Inter-agency or intra-agency advisory, consultative or deliberative material
- ☐ Legislative records
- ☐ Law enforcement records:
  - ☐ Medical examiner photos
  - ☐ Criminal investigatory records (however, N.J.S.A. 47:1A-3.b. lists specific criminal investigatory information which must be disclosed)
  - ☐ Victims' records
- ☐ Trade secrets and proprietary commercial or financial information
- ☐ Any record within the attorney-client privilege
- ☐ Administrative or technical information regarding computer hardware, software and networks which, if disclosed would jeopardize computer security
- ☐ Emergency or security information or procedures for any buildings or facility which, if disclosed, would jeopardize security of the building or facility or persons therein
- ☐ Security measures and surveillance techniques which, if disclosed, would create a risk to the safety or persons, property, electronic data or software
- ☐ Information which, if disclosed, would give an advantage to competitors or bidders
- ☐ Information generated by or on behalf of public employers or public employees in connection with:
  - ☐ Any sexual harassment complaint filed with a public employer
  - ☐ Any grievance filed by or against an employee
  - ☐ Collective negotiations documents and statements of strategy or negotiating
- ☐ Information that is a communication between a public agency and its insurance carrier, administrative service organization or risk management office
- ☐ Information that is to be kept confidential pursuant to court order
- ☐ Certificate of honorable discharge issued by the United States government (Form DD-214) filed with a public agency
- ☐ Social security numbers
- ☐ Credit card numbers
- ☐ Unlisted telephone numbers
- ☐ Drivers' license numbers
- ☐ Certain records of higher education institutions:
  - ☐ Research records
  - ☐ Questions or scores for exam for employment or academics
  - ☐ Charitable contribution information
  - ☐ Rare book collections gifted for limited access
  - ☐ Admission applications
  - ☐ Student records, grievances or disciplinary proceedings revealing a students' identification
- ☐ Biotechnology trade secrets N.J.S.A. 47:1A-1.2
- ☐ Convicts requesting their victims' records N.J.S.A. 47:1A-2.2
- ☐ Ongoing investigations of non-law enforcement agencies (must prove disclosure is inimical to the public interest) N.J.S.A. 47:1A-3.a.
- ☐ Public defender records N.J.S.A. 47:1A-5.k.
- ☐ Upholds exemptions contained in other State or federal statutes and regulations, Executive Orders, Rules of Court, and privileges created by State Constitution, statute, court rule or judicial case law N.J.S.A. 47:1A-9
- ☐ Personnel and pension records (however, the following information must be disclosed:
  - An individual's name, title, position, salary, payroll record, length of service, date of separation and the reason for such separation, and the amount and type of any pension received
  - When required to be disclosed by another law, when disclosure is essential to the performance of official duties of a person duly authorized by this State or the US, or when authorized by an individual in interest
  - Data contained in information which disclose conformity with specific experiential, educational or medical qualifications required for government employment or for receipt of a public pension, but not including any detailed medical or psychological information N.J.S.A. 47:1A-10

N.J.S.A. 47:1A-1

- ☐ "a public agency has a responsibility and an obligation to safeguard from public access a citizen's personal information with which it has been entrusted when disclosure thereof would violate the citizen's reasonable expectation of privacy."

Lawrence Schmidt

From: Deborah Gerbrick <dgerbrick@deptford-nj.org>
Sent: Friday, January 25, 2019 2:59 PM
To: Lawrence Schmidt
Cc: Tina Helder; Donald L. Banks
Subject: OPRA Request Dated 1/21/19
Attachments: 20190125150022590.pdf

Mr. Schmidt,

Please see attached letter in response to your OPRA request dated 1/21/19 (also attached).

Thank You,

Deborah A. Gerbrick
Confidential Clerk
Deptford Township Clerk's Office
1011 Cooper Street
Deptford, NJ 08096
(856)686-2203

TOWNSHIP OF DEPTFORD

Gloucester County, New Jersey

Municipal Building
1011 Cooper Street
Deptford, New Jersey 08096
(856) 686-2203 phone
(856) 845-8804 fax
dzawadski@deptford-nj.org

Dina L. Zawadski
Registered Municipal Clerk
Certified Municipal Clerk

January 25, 2019

Dear Mr. Schmidt,

We are in receipt of your OPRA Request dated 1/21/19, requesting access to records related to Block 245 Lot 2, Block 238 Lot 1. Since you are not specifically asking for copies of documents with specific dates, your request is not considered an OPRA but instead is an inquiry for information. To set up an appointment to view this file, please contact Dim Banks – Director of Community Development 856-686-2218.

Your request is now satisfied and closed.

If you have any additional questions and/or concerns, or if we can be of further assistance, please do not hesitate to contact our office at 856-686-2203.

Sincerely,

Dina L. Zawadski

Dina L. Zawadski, RMC, CMC
DLZ/dg

cc: D Banks

FRENCH & PARRELLO
ASSOCIATES

Corporate Office
1800 Route 34, Suite 101
Wall, NJ 07719

Regional Offices
Hackettstown, NJ
New York, NY

January 21, 2019

Ms. Dina Zawadski, Municipal Clerk
TOWNSHIP OF DEPTFORD
1011 Cooper Street
Deptford, New Jersey 08096

Re: Open Public Records Act (OPRA) – Environmental Search
Site: Gloucester County Bridge 3K03
Copper Street Bridge
Township of Deptford, Gloucester County, New Jersey
FPA No. 13633.001

Dear Ms. Zadwadski:

On behalf of DVRPC, French & Parrello Associates, P.A. is performing an Environmental Site Assessment of the above referenced property. Please note that the property surrounding the bridge is adjacent to Almonsesson Lake (Block 245, Lot 2 and Almonesson Park (Block 238, Lot 1) As part of our assessment, we ask that your office perform a records search to identify permits for the installation/removal of petroleum storage tanks and any information regarding potable wells, septic systems, site contamination, spills of hazardous substances, land use restrictions or development plans in the vicinity of our site.

If files are located for this property, please provide me with same or contact me so that I can schedule an appointment for a file review or make arrangements for copying. If no records are found, kindly advise me in writing.

A Township of Deptford records request form is attached.

Yours truly,

FRENCH & PARRELLO ASSOCIATES

Lawrence Schmidt, Senior Environmental Specialist
Environmental Services Department

RECEIVED

JAN 24 2019

TOWNSHIP OF DEPTFORD
TOWNSHIP CLERK'S OFFICE

OPEN PUBLIC RECORDS ACT REQUEST FORM

Deptford Township
1011 Cooper Street Deptford, NJ 08096
Telephone: 856-686-2203 Fax: 856-845-8804
twpclerk@deptford-nj.org
Dina L. Zawadski, Township Clerk, RMC, CMC

Box the Banks

Important Notice

The last page of this form contains important information related to your rights concerning government records. Please read it carefully.

Requestor Information – Please Print

First Name Lawrence MI ____ Last Name Schmidt

Company French and Parrello Assoc

Mailing Address 1800 Route 34

City Wall State NJ Zip 07719 Email lawrence.schmidt@fpaengineers.com

Business Hours Telephone Area Code 732 Number 312-9815 Extension ____

Preferred Delivery ___ Pick Up ___ US Mail ___ On Site Inspect ___ Email

Circle One: Under penalty of N.J.S.A. 2C:28-3, I certify that I ***HAVE / HAVE NOT*** been convicted of any indictable offense under the laws of New Jersey, any other state, or the United States.

Signature Lawrence Schmidt Date 1/21/2019

Payment Information

Maximum Authorization Cost $

Select Payment Method

Cash___ Check ___Money Order __

Fees: Letter size pages - $0.05 per page
Legal size pages - $0.07 per page
Other materials (CD, DVD, etc) – actual cost of material

Delivery: Delivery / postage fees additional depending upon delivery type.

Extras: Special service charge dependent upon request.

Record Request Information: Please be as specific as possible in describing the records being requested. Also, please note that your preferred method of delivery will only be accommodated if the custodian has the technological means and the integrity of the records will not be jeopardized by such method of delivery. Please include the type of access requested (copying or inspection), and if data, the medium requested.

Seeking records relating to known contamination, spills of hazardous materials, permits and registrations, USTs, VCP, and site remediation actions on Block 245 Lot 2 (Almonsesson Lake) and Block 238 Lot 1 (Almonsesson Park). This request is in conjunction with a hazardous waste screening study regarding improvements to County Bridge 3K-3 (Cooper Street Bridge).

RECEIVED

JAN 24 2019

TOWNSHIP OF DEPTFORD
TOWNSHIP CLERK'S OFFICE

AGENCY USE ONLY

Est. Document Cost ____
Est. Delivery Cost ____
Est. Extras Cost ____
Total Est. Cost ____
Deposit Amount ____
Estimated Balance ____

Deposit Date ____

AGENCY USE ONLY

Disposition Notes
Custodian: If any part of request cannot be delivered in seven business days, detail reasons here.

In Progress - Open ____
Denied - Closed ____
Filled - Closed ____
Partial - Closed ____

AGENCY USE ONLY

Tracking Information

Tracking # ____
Rec'd Date ____
Ready Date ____
Total Pages ____

Final Cost

Total ____
Deposit ____
Balance Due ____
Balance Paid ____

Records Provided

Custodian Signature ____ Date ____

Lawrence Schmidt

From: Lawrence Schmidt
Sent: Monday, January 28, 2019 10:54 AM
To: 'Deborah Gerbrick'
Cc: Tina Helder; Donald L. Banks
Subject: RE: OPRA Request Dated 1/21/19

Ms. Gerbrick: Please consider an update of my OPRA request for the dates of January 1, 2000 to the present. In this case, I am request information on possible site contamination, site remediation, presence of hazardous waste on two properties owned by the Township. One is Almonsesson Lake and the other is a public park on the downstream side of Cooper Street. It is highly unlikely that there are any records regarding hazardous waste on these properties but I must ask you to check as part of my due diligence. Thank you in advance. Larry Schmidt

-----Original Message-----
From: Deborah Gerbrick <dgerbrick@deptford-nj.org>
Sent: Friday, January 25, 2019 2:59 PM
To: Lawrence Schmidt <Lawrence.Schmidt@FPAengineers.com>
Cc: Tina Helder <THelder@deptford-nj.org>; Donald L. Banks <dbanks@deptford-nj.org>
Subject: OPRA Request Dated 1/21/19

Mr. Schmidt,

Please see attached letter in response to your OPRA request dated 1/21/19 (also attached).

Thank You,

Deborah A. Gerbrick
Confidential Clerk
Deptford Township Clerk's Office
1011 Cooper Street
Deptford, NJ 08096
(856)686-2203

FRENCH & PARRELLO
ASSOCIATES

Corporate Office
1800 Route 34, Suite 101
Wall, NJ 07719

Regional Offices
Hackettstown, NJ
New York, NY

January 21, 2019

Ms. Tamarisk Jones, Director
GLOUCESTER COUNTY DEPARTMENT OF HEALTH
204 East Holly Street
Sewell, NJ 08080

Re: Open Public Records Act (OPRA) – Environmental Search
Site: Gloucester County Bridge 3K-3
Copper Street Bridge
Township of Deptford, Gloucester County, New Jersey
FPA No. 13633.001

Dear Ms. Jones:

On behalf of DVRPC, French & Parrello Associates, P.A. is performing an Environmental Site Assessment of the above referenced property. Please note that the property surrounding the bridge is adjacent to Almonsesson Lake (Block 245, Lot 2 and Almonesson Park (Block 238, Lot 1) As part of our assessment, we ask that your office perform a records search to identify permits for the installation/removal of petroleum storage tanks and any information regarding potable wells, septic systems, site contamination, spills of hazardous substances, land use restrictions or development plans in the vicinity of our site.

If files are located for this property, please provide me with same or contact me so that I can schedule an appointment for a file review or make arrangements for copying. If no records are found, kindly advise me in writing.

A Gloucester County records request form is attached.

Yours truly,

FRENCH & PARRELLO ASSOCIATES

Lawrence Schmidt, Senior Environmental Specialist
Environmental Services Department

2019 Freeholder Department Assignments
Audit Report
Bid Contract Opportunities
Bid Summaries
Bill List Reports
Board of Freeholder Rules
Budgets
Contracts
Financial Disclosures
Freeholder Agenda
Freeholder Meeting Schedule
Freeholder Minutes
Insurance Commission
Open Public Meeting Act Seminar (OPMA)
Open Public Records Act (OPRA)
Professional Contract Opportunities
Property Tax Search
Request For Proposal (RFP) Score Summaries
Salary Information
Shared Service Agreements
Sheriff Sales New

OPEN PUBLIC RECORDS ACT (OPRA)

Printable Version: Open Public Records Form

Public Records Request Form

COUNTY OF GLOUCESTER
PUBLIC RECORDS REQUEST FORM
Electronic Submission

*****To request access to public records, complete this form and click "submit" to file with Laurie J. Burns, County Custodian of Records. Her office is located at Two South Broad Street, 3rd Floor, Woodbury, NJ 08096, and her phone number is (856) 853-3271. The Custodian is generally required (subject to certain exceptions) to fill a records request within seven business days after receiving the request.*****

If you do not wish to submit your request by electronic submission, please select the "Printable Version: Open Public Records Form" located above and fax to (856) 384-6894 or mail to the Custodian of Records.

******Upon successful completion of form you will recieve an email confirmation.******

First Name: Lawrence

MI:

Last Name: Schmidt

Street Address: Fench and Parrello 1800 Rt 34

City: Wall

State: NJ

Zip Code: 07719

*** Email Address:** lawrence.schmidt@fpaengineers.c

Daytime Telephone Number

Area Code: 732

Number: 312-9815

Extension:

*** Preferred Delivery** ○ Pick Up ○ US Mail ○ On-Site Inspection ◉ Email if possible

Fee Information

- ***Letter size pages - $0.05 per page***
- ***Legal size pages - $0.07 per page***
- ***Other materials (CD, DVD, Etc.) - actual cost of material***

Delivery: ***Delivery/postage fees additional depending upon delivery type.***

Extras: ***Special service charge dependent upon request.***

Fee Information: ----------

Record Request Information: To expedite the request, be specific as possible in describing the records being requested. Also, please include the type of access requested (copying or inspection), and if data, the medium requested. Also, please note that your preferred method of delivery will only be accommodated if the custodian has the technological means and the integrity of the records will not be jeopardized by such method of delivery.
Specific property information must include, the street address (including city), lot, and block numbers.

*** RECORDS REQUESTED (please be as specific as possible):**

Seeking environmental records on Bridge 3K-3 (Cooper Street Bridge) in the Township of Deptford. This is being done in conjunction with a hazardous waste screening study for proposed improvements to the bridge.

Please see attached cover letter for specific request items.

Under penality of N.J.S.A. 2C:28-3, I certify that I HAVE/HAVE NOT (click one) been convicted of any indictable offense under the laws of New Jersey, of any other state, of the United States, and I am not seeking government records containing personal information pertaining to the victim of a crime or the victim's family.

*** Click one to certify:** ○ Yes, I have ◉ I have not

If you would like an email confirmation enter your email address. lawrence.schmidt@fpaengine

*** Captcha**

t h u r s d a y

Please enter the word above in the space below

thursday

Click here to complete application | Reset

The County of Gloucester complies with all state and federal rules and regulations and does not discriminate on the basis of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality, sex, veteran status or military service in admission to, access to, or operations of its programs, services, activities or in its employment practices. In addition, Gloucester County encourages the participation of people with disabilities in its programs and activities and offers special services to all County residents 60 years of age and older. Inquiries regarding compliance may be directed to the EEO office at (856) 384-6903 or through the County's ADA Coordinator at (856) 384-6842 New Jersey Relay Service 711

Click here for the full ADA Compliance Statement

Lawrence Schmidt

From: Burns, Laurie J. <lburns@co.gloucester.nj.us>
Sent: Wednesday, January 30, 2019 12:07 PM
To: Lawrence Schmidt
Subject: OPRA Response

Dear Mr. Schmidt:

In response to your OPRA request below, please be advised that the County of Gloucester has **no records** in its possession regarding environmental health, well, septic, storage tanks, spills or hazardous materials for the above mentioned property.

The Gloucester County Planning Division has informed me of the following:

The following maps can be viewed at the office and produced for a fee. They cannot be sent via email, as they are oversized copies. If you wish to obtain the records below, the cost per page is $0.40. Please contact the Planning Department at (856) 307-6651 and requested copies will be produced.

- Aerials – 1980, 1985, 1990, 1995
- 1962, 1971 & 1975 Aerials are Office View Only
- Wetlands
- Topographical Maps
- FEMA Maps
- Land Use Maps 1970-1990

However, please understand that the term "Phase I" does not describe any specific documents, and therefore it is not possible for Gloucester County to identify every document you may be seeking in connection with that term. OPRA requires a party requesting access to a public record to specifically describe the document sought. Livecchia v. Borough of Mount Arlington, 421 N.J.Super. 24, (App. Div. 2011); Gannett New Jersey Partners Versus County of Middlesex, 379 N.J.Super. 205 (App. Div. 2005) It allows only requests for records, not requests for information, and does not require records custodians to conduct research among its records and correlate data from various government records in the custodian's possession. Bent v. Stafford Police Department, 381 N.J. Super. 30 (App. Div. 2005); MAG Entertainment, LLC v. Division of Alcoholic Beverage Control, 375 N.J. Super. 534 (App. Div. 2005).

This concludes the County's response to your request.

Laurie J. Burns
Clerk of the Board
Gloucester County Custodian of Records
2 South Broad Street
Woodbury, NJ 08096
Phone: (856) 853-3274
Email: lburns@co.gloucester.nj.us

Go Green! Please do not print this e-mail unless it is completely necessary. Please consider the environment before printing this email.

Notice of Confidentiality: This message is intended only for the use of the individual or entity to which it is addressed and may contain information that is privileged, confidential, and exempt from disclosure under applicable law. If the

reader of this message is not the intended recipient, we apologize for the inconvenience. However, you are hereby notified that any dissemination, distribution, or copying of this communication is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone at (856) 853-3274, and destroy all copies of the original message. Thank you.

From: DoNotReply@co.gloucester.nj.us [mailto:DoNotReply@co.gloucester.nj.us]
Sent: Monday, January 21, 2019 12:52 PM
To: Burns, Laurie J. <lburns@co.gloucester.nj.us>
Subject: PublicRecordsRequestForm Form Submission

You have a new Public Records Request Form

First Name : Lawrence
MI :
Last Name : Schmidt
Street Address : Fench and Parrello 1800 Rt 34
City : Wall
State : NJ
Zip Code : 07719
Email Address:: lawrence.schmidt@fpaengineers.com
Area Code : 732
Number : 312-9815
Extension :
Preferred Delivery : Email if possible
Fee Information :
RECORDS REQUESTED (please be as specific as possible): : Seeking environmental records on Bridge 3K-3 (Cooper Street Bridge) in the Township of Deptford. This is being done in conjunction with a hazardous waste screening study for proposed improvements to the bridge. Please see attached cover letter for specific request items.
Click one to certify: : I have not

If you would like an email confirmation enter your email address.

: lawrence.schmidt@fpaengineers.com

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
RECORD ACCESS PROGRAM | OPRA

OPRA | Open Public RecordsAct

In accordance with the Open Public Records Act, NJDEP makes available its public records through formal requests to the Department's Office of Record Access. Requests may be submitted in writing by submitting a paper "records request form" or by completing the online form below.

Online OPRA Record Request Form

Pursuant to N.J.A.C. 7:1D-3.2, the items below that are marked by a * are required for requesting Department records. By completing as many of the other form fields as possible, you will expedite your request and enable the Department to more precisely satisfy the request.

Requester Information:

To increase the Department's ability to correspond and respond to your record request, please complete as much applicable information as possible.

First Name*: Lawrence

Middle Initial:

Last Name*: Schmidt

Affiliation/Company*: French and Parrello Assoc

Street Address 1*: 1800 Route 34

Street Address 2:

RESIDENTS

City*: Wall (Wall Twp)

NON-NJ RESIDENTS

City*:

State* (or country if not U.S.)

Select State (other than NJ)

Zip Code*: 07719 -

Daytime Phone Number*: 732 - 312 - 9815 Ext:

check if number is unlisted

Fax Number: (Important) 732 - 312 - 9801

E-mail Address: (Important) lawrence.schmidt@fpaengineers.c

Requested Records Information

Please provide as much information as possible to all applicable questions in order for the NJDEP to match and identify all records that respond to your request. **Submit one request per Facility/Site interest.** Do Not submit multiple requests for different Facility/Site Name AKAs for the same address. Simply include the AKAs in the Request Details field.

Name of the facility, name of the **operator**, and name of the **owner** of the facility or parcel of land:

Facility Name: Almonesson Lake and Park
Operator Name:
Owner Name: Township of Deptford

Street address, **block** and **lot** of the parcel of land:

(**Note:** if the single Facility/Site interest in question is over multiple blocks and lots, please list all in the **request details** field below)

Street Address 1:
1850 Cooper Street
Street Address 2:

Block & Lot information is important to certain NJDEP Program Areas such as Land Use Regulation.

Block: 238 and 245 Lot: 238/Lot 1 & 245/Lot 2

County and **Municipality** where the facility, site or parcel of land is located:

Municipality - County:
Deptford Twp - Gloucester County

Describe the parcel of land where the facility, site, or

Property Description: Undeveloped

concern is located:

If the request is in reference to a particular permit issued by NJDEP, please provide the **type of permit** and any **identifying numbers** such as permit, incident or case numbers.

Type of Permit: Select One

ID Numbers:

Or look up OPRA data for a particular site by Program and ID on-line:

Search by Program and ID

Request Details:

Please **describe** the records sought in a way that will permit the Department to identify and locate them. To expedite your request, please be as specific as possible*:

seeking records relating to known contamination, spills of hazardous materials, permits and registrations, USTs, VCP, and site remediation actions.

Please select how you want to **access** your record request information:

Access Method: On-Site Access, Visit Copy

Submittal Certification:

Have you been convicted of any indictable offense under the laws of New Jersey or any other state of the United States? (response under penalty of N.J.S.A. 2C:28-3)*

- Yes
- No

Ceritfy this form by entering your **initials** in the field on the right:*

Initials: LS

Privacy Disclaimer: An OPRA request for access to a government record is itself public information. Therefore, the person requesting access to the government record should be aware that the information provided on the form may be disclosed.

Submit

Copyright © State of New Jersey, 1996-2019

Last Updated: January 10, 2019

The New Jersey Department of Environmental Protection (NJDEP), acknowledges the receipt of your Open Public Records Act (OPRA) record request. The NJDEP will respond to your request within seven (7) business days.

If you have any questions, please contact the Office of Record Access at (609) 341-3121, or e-mail our office at: records.custodian@dep.nj.gov. The assigned OPRA Record Request Tracking #, identified in the Subject Line of this email, will facilitate future communications with our office.

Thank you,

NJDEP - Office of Record Access

OPRA Request Tracking Number: 243058

Date Received:	01/22/2019
Date Submitted:	01/21/2019
Access Method:	On-site access, visit, copy

Requesting Party Information

Name:	Lawrence Schmidt
Affiliations:	French and Parrello Assoc
Mailing Address:	1800 Route 34 Wall, NJ 07719
Phone:	(732) 312-9815
Email:	lawrence.schmidt@fpaengineers.com

Request Information

Facility Name:	Almonesson Lake and Park
Block\Lot:	238 and 245 238_Lot 1 & 245_Lot
Address:	1850 Cooper Street Deptford Twp - Gloucester
Owner:	Township of Deptford
Operator:	
Permit Type:	
License Type:	
Related IDs:	
Individual:	
Individual Type:	

Request Details:

seeking records relating to known contamination, spills of hazardous materials, permits and registrations, USTs, VCP, and site remediation actions.

State of New Jersey
Department of Environmental Protection
GOVERNMENT RECORDS REQUEST FORM

IMPORTANT NOTICE

Please read this entire form carefully as it contains important information concerning the response to your record request, accessing records, disputing denials, and your rights concerning government records. For further information, access WWW.NJ.GOV/DEP/OPRA.

Requestor Information

First Name: LAWRENCE	MI / Last Name: SCHMIDT
Company: FRENCH AND PARRELLO ASSOC	
Mailing Address: 1800 ROUTE 34	
City: Wall	State: NJ / Zip: 07719 / Email: lawrence.schmidt@fpaengineers.com
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Tracking #	243058
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All matters relating to the response and access of any records identified for this request should be directed to:

NJDEP – Office of Record Access
401 East State Street
PO Box 420 Mail Code 401-06Q
Trenton, New Jersey 08625-0420
Tele #: (609) 341-3121
Fax #: (609) 292-1177

Record Request Details:

seeking records relating to known contamination, spills of hazardous materials, permits and registrations, USTs, VCP, and site remediation actions.

Disposition Notes

Based on the record request, no responsive records have been identified. Requester should contact the Office of Record Access at 609-341-3121 with any questions.

Addendum Disposition Notes: NONE

Record Request Response

In Progress	–	Open	
Filled	–	Closed	X
Denied	–	Closed	
Partial	–	Closed	

Matthew J Cooper — 01/29/2019

Custodian Signature — Date

Access to Government Records Under the New Jersey Open Public Records Act (N.J.S.A. 47:1A-1 et seq.)

Information Regarding the Requested Records		
If your request is in reference to a single facility, please provide the name of the facility, and the name of the operator name of the facility:	Facility Name: Almonesson Lake and Park Operator Name:	
Please provide the owner name the facility or parcel of land:	Owner Name: Township of Deptford	
If your request is in reference to a specific parcel of land, please provide the street address, block, lot and property owner of the parcel of land: (Note: if the property in question is over multiple blocks and lots, please list all in the description field below)	Street Address 1: 1850 Cooper Street Street Address 2: Block: 238 and 245 Lot: 238_Lot 1 & 245_Lot	
If your request is in reference to a facility, site or parcel of land, please provide the Municipality and County where the facility, site or parcel of land is located:	County: Gloucester Municipality: Deptford Twp	
If the request is in reference to a particular permit issued by NJDEP, please provide the type of permit and any identifying numbers such as permit, incident or case numbers. (i.e. Fishing, Hunting, Hazardous Waste, Solid Waste, Land Use, NJPDES, Pesticides, Stream Encroachment, TWA, UST, Water Allocation)	List Permit Type:	List ID Numbers:
If your request is in reference to an individual, please provide the individual's name and type, and if the individual is a DEP employee, your relationship with the individual:	Individual's name: Type of Individual: Relationship:	
If the an individual was specified above, the individual was DEP Licensed, please specify the license type the individual holds:	License Type:	

The New Jersey Department of Environmental Protection has responded to your submitted Open Public Records Act (OPRA) record request. The following information will help you understand the response and your next available actions.

Tracking #: This is the Department's assigned Tracking # to your OPRA record request, which should be used in all corresponding matters.

Record Request Response:

- **In Progress** – Based on the nature of the request, the records sought, and/or the manner to which the records may exists, the Department requires additional time to investigate and respond to the request.
- **Filled** – Based on the information provided in your request, the Department was able to investigate and respond to your record request.
- **Denied** – Based on the nature of the request and/or the records sought, the Department has denied your request pursuant to a specific exemption(s) cited in N.J.S.A. 47:1A-1 seq.
- **Partial** – The Department has identified both responsive government records and records being denied based on the nature of the request and/or the records sought, that do not meet the definition of a government record pursuant to a specific exemption(s) cited in N.J.S.A. 47:1A-1 seq.

Disposition Notes: Provides detailed information concerning the Department's response to your request.

Accessing Records: Dependent on the volume of records and your interest, there are five (5) methods available to access the responsive government records:

- **File Review** – Schedule a file review with the Department to directly access the records and take notes or tag records of interest for copying. Copying can be performed by either the Department's onsite Copying Unit at State duplication fee costs or by the requester employing a Copy Vendor Service. If there are records stored in archives, a five-day processing period will be included prior to scheduling a review.
- **Copy Request** – All records of interest will be copied by the Department's onsite Copying Unit at State duplication fee costs unless a Copy Vendor Service is employed.
- **Electronic Records Request** – Dependent on the size & nature of the e-records, the Department will email the records or provide a CD or DVD.
- **Fax Request** – Based on the number of pages, the Department faxes the responsive records.
- **Web Access** – The responsive records can be access directly through the Department's web site. Web address will be provided.

Access to Government Records Under the New Jersey Open Public Records Act (N.J.S.A. 47:1A-1 et seq.)

1. The fees for duplication of a government record are specified below. We will notify you of any special charges, special service charges or other additional charges authorized by State law or regulation before processing your request. Payment shall be made by check or money order payable to the State of New Jersey and mailed to the address specified below.

Hard Copies:	Letter & Legal size	= $0.05 per page	**Electronic Records:**	CDs = $0.55 per CD
	Oversized Maps (Color)	= $5.00 per map		DVDs = $0.55 per DVD
	Oversized Maps (B&W)	= $3.00 per map		

2. Pursuant to OPRA (C.47:1A-5c & C47:1A-5d), the Department will apply special service charge for any extraordinary expenditure of time and effort to accommodate a request. The special service charge will be based on the actual direct cost of providing the records. The requester shall have the opportunity to review and object to the charge prior to it being incurred; however, in the event the requester objects to the special service charge, the request will be closed and access to the records will not be granted.

3. By law, the Department must notify you that it grants or denies a request for access to government records within seven business days after the custodian of the record requested receives the request, provided that the record is currently available and not in storage. If the record requested is not currently available or is in storage, the custodian will advise you within seven business days when the record can be made available and the estimated cost. You may agree with the custodian to extend the time for making records available, or granting or denying your request.

4. You may be denied access to a government record if your request would substantially disrupt agency operations and the custodian is unable to reach a reasonable solution with you.

5. If the Department was unable to comply with your request for access to a government record, the custodian will indicate the reasons for denial on the request form.

6. Except as otherwise provided by law or by agreement with the requester, if the custodian of the record requested fails to respond to you within seven business days of receiving a request form, the failure to respond will be considered a denial of your request.

7. **Resolution of Disputed Findings:**

   In the event that a requester does not agree with the Department's record response, the requester should:

   No Records - Reexamined the request details to evaluate if all of the information was provided that could aid the Department in locating records. The Department's ability to identify records of interest is in direct correlation to matching the Department information with the information provided on the request. Such important identifiers are Facility/Site Name, Address, Case #, Permit #, Block/Lot.

   Denial - If your request for access to a government record has been denied or unfilled within the time permitted by law, you have a right to challenge the decision by the Department to deny access. The Department denies access to records only when those records do not meet the definition of a government record and/or public access is not allowed pursuant to the law. At your option, you may either:

   a. Contact the Office of Record Access to re-visit the matter or provide further explanation.

   b. Institute a proceeding in the Superior Court of New Jersey

   c. File a complaint in writing with the Government Records Council (GRC). You may contact the GRC by toll-free telephone at 866-850-0511, by mail at PO Box 819, Trenton, NJ, 08625, by e-mail at *grc@dca.state.nj.us*, or at their web site at *www.state.nj.us/grc*. The Council can also respond to other questions about the law.

8. Information provided on this form may be subject to disclosure under the Open Public Records Act.

Revised Addendum Disposition Notes: NONE

FRENCH & PARRELLO ASSOCIATES

Advancing Our Client's Vision
IMPROVING OUR WORLD

HYDROLOGIC & HYDRAULIC ANALYSIS REPORT

LOCAL CONCEPT DEVELOPMENT STUDY
GLOUCESTER CO. BRIDGE 3-K-3 AND
ALMONESSON LAKE DAM, NJ File No. 31-033

Township of Deptford, Gloucester County, New Jersey

PREPARED FOR:

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
1200 N. Delsea Drive
Office of the County Engineer
Clayton, New Jersey 08312

GLOUCESTER COUNTY DEPARTMENT OF PUBLIC WORKS
1200 N. Delsea Drive
Office of the County Engineer
Clayton, New Jersey 08312

SUBMITTED TO:

NJDEP BUREAU OF DAM SAFETY
501 East State Street, PO Box 420
Trenton, NJ 08625-0420
Mail Code 501-01A

October 2019
FPA No. 13633.001

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HYDROLOGIC & HYDRAULIC ANALYSIS REPORT

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1200 N. Delsea Drive
Office of the County Engineer
Clayton, New Jersey 08312

AND

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1200 N. Delsea Drive
Office of the County Engineer
Clayton, New Jersey 08312

SUBMITTED TO:

NJDEP BUREAU OF DAM SAFETY AND FLOOD CONTROL
501 East State Street, PO Box 420
Trenton, NJ 08625-0420
Mail Code 501-01A

PREPARED BY:

FRENCH & PARRELLO ASSOCIATES
1800 Route 34, Suite 101
Wall, New Jersey 07719

FPA No. 13633.001

September 2019

Christopher W. Marx, PE
NJ Professional Engineer No. 47776

10/24/2019
Date

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EXECUTIVE SUMMARY

French and Parrello Associates ("FPA") has been retained by the Delaware Valley Regional Planning Commission and the Gloucester County Department of Public Works to prepare a Local Concept Development ("LCD") study of Gloucester County Bridge 3-K-3 and Almonesson Lake Dam, NJ File No. 31-33. As part of this project FPA has performed a hydrologic and hydraulic ("H&H") analyses for the watershed, dam embankment, bridge, spillway, and downstream corridor.

Bridge 3-K-3 and Almonesson Lake Dam are located in the Township of Deptford, Gloucester County, New Jersey. Almonesson Lake Dam and spillway impound the waters of Almonesson Creek to create Almonesson Lake. The dam embankment is coincident with Cooper Street. The primary spillway for the dam is a concrete drop inlet box with concrete arch culvert outlet that conveys flow beneath Bridge 3-K-3, which carries Cooper Street over Almonesson Creek.

As part of the LCD study, alternatives were developed to consider the rehabilitation of replacement of the bridge, dam, and spillway. The preliminary proposed alternative consists of the replacement of Bridge 3-K-3 and the drop inlet box spillway, and rehabilitation of the Almonesson Lake Dam. According to the NJDEP Bureau of Dam Safety records, the dam is currently classified as a Class II, Significant Hazard Dam, required to pass the 50% Probable Maximum Precipitation ("PMP") event. The existing dam passes 30% of the PMP event and overtops during all larger events.

The existing bridge, constructed in 1926, is a 20-foot long, single span, reinforced concrete arch bridge with a 30-foot wide roadway. The existing bridge consists of a reinforced concrete arch superstructure supported by cast-in-place concrete piles caps and timber piles. Almonesson Lake Dam is an earthen embankment dam, with a three-sided concrete drop inlet box spillway structure (about 12, 19 and 12 feet long on each side). The normal pool elevation at the spillway is at approximately +25.4 feet. The earthen embankment is approximately 300-feet long with an impervious core of timber sheet piling running the entire length.

FPA's scope of services includes performing an H&H Analysis to confirm the Hazard Classification and determine the appropriate SDF for the proposed dam replacement. Based on the recently completed engineering analysis by FPA, it appears that the current Hazard Classification for Almonesson Lake Dam is appropriate. The downstream floodplain is generally uninhabited with a few buildings and homes located along the fringe of the floodplain. Two roadway crossings – Deptford Center Road (structure no. 0803-K12) and Clements Bridge Road (C.R. 544) (structure no. 0803-K02) are located downstream of the dam.

Our H&H analyses indicate the existing spillway is undersized and can only pass the 30% PMP storm event, [approximately 1,117 cubic feet per second ("cfs")], before overtopping the earthen embankment. The results indicate an overtopping depth of 1.45 feet during the 50% PMP event. Based on these results, the existing spillway will need to be modified or replaced to accommodate the NJ Dam Standards.

Based on the results of the downstream routing for storm events, Deptford Center Road does not overtop during the 50% PMP event, while CR 544 is flooded by 1.29'. During the PMP event Deptford Center Road and CR 544 are flooded by 0.26' and 2.41', respectively.

FPA prepared a dam breach analysis to investigate the impact of a failure of the dam on downstream homes and structures. It was determined that the failure of the dam resulted in no additional flooding that would warrant an increase in hazard classification. Therefore, it is recommended that classification of Almonesson Lake should remain as a **Class II, Significant Hazard** Potential Dam with a SDF of ½ PMP.

The existing spillway structure has inadequate spillway capacity and cannot safely pass the recommended SDF. In addition, the current spillway and bridge are in poor overall condition. The proposed Almonesson Lake Dam must meet the NJ Dam Standards, and will require earthen dam embankment restoration, and the construction of an enlarged spillway structure. The proposed bridge and dam will be along a similar alignment as the existing bridge; however, the structure and approach roadways will be widened. The replacement of the spillway is an integral part of both the bridge replacement and dam rehabilitation. To safely pass the SDF, FPA has considered several options.

We have optimized our design of the proposed primary spillway to be a two-stage structure having the following weir lengths and elevations: 15-feet at elevation 25.25, and 47-feet at elevation 25.58-feet. The proposed spillway passes the 50% PMP storm event, and the proposed 24-foot wide by 11.5-foot high bridge opening is sufficient to convey the primary spillway discharge safely through the dam embankment, assuming a rectangular channel, concrete slab on grade, and a 0.5% slope.

The crest of the proposed dam embankment will be a 34-foot wide asphalt paved roadway with a 5-foot wide sidewalk in the both directions. Vertical steel sheeting is proposed on the upstream slope of the proposed dam embankment. The upstream sheeting will serve two purposes: 1) wave action protection, and 2) mitigate environmental impacts resulting from widening the embankment. The slope of the lakebed upstream of the sheeting would not be re-graded in order to minimize environmental impacts and impacts to Right-of-Way.

A low-level outlet valve or sluice gate will be installed to allow for the complete lowering of the lake. We estimate a 24-inch diameter opening in the spillway wall will be adequate to drawdown the impoundment during baseflow condition.

Upon acceptance by the County and Township, this report should be submitted to the Bureau of Dam Safety to obtain approval of the hydrology and hydraulic calculations and proposed design recommendations, prior to development of final plans and specifications.

1.0 INTRODUCTION

1.1 Authorization and Purpose

French and Parrello Associates ("FPA") has been retained by the Delaware Valley Regional Planning Commission ("DVRPC") and the Gloucester County Department of Public Works Office of the County Engineer (the "County") to prepare a Local Concept Development ("LCD") study to investigate the rehabilitation or replacement of Gloucester County Bridge 3-K-3 and Almonesson Lake Dam, NJ File No. 31-33. As part of this study, FPA has performed a hydrologic and hydraulic ("H&H") analyses for the watershed, dam embankment, bridge, spillway, and downstream corridor. The purpose of our H&H Analyses is to confirm the Hazard Classification and assign the appropriate Spillway Design Flood ("SDF") for Almonesson Lake Dam, and make recommendations for bridge, spillway and dam embankment/roadway modifications to rehabilitate the structure to meet the New Jersey Dam Safety Standards ("NJ Dam Standards"). Our services are being performed in accordance with our proposal dated May 10, 2018.

1.2 Project Description

Bridge 3-K-3 and Almonesson Lake Dam are located in the Township of Deptford, Gloucester County, New Jersey. Almonesson Lake Dam and spillway impound the waters of Almonesson Creek to create Almonesson Lake. The dam embankment is coincident with Cooper Street. The primary spillway for the dam is a concrete drop-box spillway that conveys flow beneath Bridge 3-K-3, which carries Cooper Street over Almonesson Creek.

As part of the LCD study, alternatives were developed to consider the rehabilitation of replacement of the bridge, dam, and spillway. The preliminary proposed alternative consists of the replacement of Bridge 3-K-3 and the drop inlet box spillway, and rehabilitation of the Almonesson Lake Dam. According to the NJDEP Bureau of Dam Safety ("Bureau")'s records, the dam is currently classified as a Class II, Significant Hazard Dam, required to pass the 50% Probable Maximum Precipitation ("PMP") event. However, the existing dam passes 30% of the PMP event and overtops during all larger events.

Jon Moren, PE, and members of the FPA project team met with representatives of the DVRPC and the County on December 12, 2018 to discuss project objectives.

A project location map is presented as Drawing No. 1 showing the project location. Similarly, a USGS Quad map is presented as Drawing No. 2; an aerial image map is presented as Drawing No. 3; and a Tax Map is presented as Drawing No. 4. All elevations referenced in this report are in the North American Vertical Datum of 1988. All references to "left" and "right" in this report assume one is looking downstream from the dam embankment.

1.3 Existing Bridge, Dam, and Spillway

According to the 2018 Bridge Re-Evaluation Survey, the existing bridge is a 20.0-foot long, single span, bridge with a 30.0-foot wide roadway. The existing bridge consists of a reinforced concrete arch superstructure supported by cast-in-place concrete piles caps and timber piles. The bridge was

constructed in 1926, replacing a pre-existing highway embankment that was overtopped and washed out during the spring of 1926. Due to an inadequate deck geometry, the structure is classified as functionally obsolete.

Almonesson Lake Dam is an earthen embankment dam, with a three-sided concrete drop inlet box spillway structure (about 12, 19 and 12 feet long on each side). The earthen embankment is approximately 300-feet long with an impervious core of timber sheet piling running the entire length. The normal pool elevation at the spillway is at approximately +25.4 feet. Two sections of 4-foot-wide timber sluice boards on the south side of spillway regulate the lake level from El. +25.4 to El. +16 feet.

Almonesson Lake Dam was previously inspected on October 4, 2001 and April 12, 2019 in accordance with the NJ Dam Standards. The inspections found the dam in poor condition and in need of maintenance, repairs, long term improvements, and recommended an H&H analysis be performed to verify the hazard classification, and determine the appropriate SDF.

2.0 DATA COLLECTION AND RECONNAISSANCE

2.1 Information Review

The following information was reviewed and referenced in conjunction with the preparation of this report:

1. *Agriculture Handbook No. 301, Hydraulic Design of the Box-Inlet Drop Spillway.* USDA. April 1966.
2. *Bridge Evaluation Survey Report, Structure No. 0803K03, CR 706 (Cooper Street) over Almonesson Creek at Almonesson Lake, Deptford Township, Gloucester County, New Jersey, Cycle No. 21*, Johnson, Miriam, & Thompson, April 11, 2018.
3. *Delmarva Unity Hydrograph Bulletin for New Jersey*. NRCS. July 12, 2004.
4. *Phase I Dam Inspection Report, Almonesson Lake Dam (NJ 00401)*, Department of the Army, February 1979
5. *Dam Safety Inspection Report, Almonesson Lake Dam, Almonesson, Deptford Township, Gloucester County, New Jersey,* Schoor DePalma, October 31, 2001.
6. *New Jersey Dam Safety Standards*, NJAC 7:20, last amended December 15, 2017.
7. *Guidelines For: Inspection of Dams/Emergency Action Plans*, NJDEP, January 2008.
8. *Downstream Hazard Classification Guidelines-ACER Technical Memo No. 11*, US Department of the Interior-Bureau of Reclamation, 1988.
9. *Flood Insurance Rate Map, Map No. 34015C0103F*, Federal Emergency Management Agency, Effective Date August 17, 2016

2.2 Existing Site Conditions

Christopher W. Marx, PE and John Ritchey, PE (DE) observed the dam and bridge on April 12, 2019. The embankment was found to be in poor overall condition. The crest of the roadway contained minor cracking in the asphalt but did not appear to be a dam issue. Heavy brush and tree growth were prevalent on the downstream slope of the embankment and do not allow for the establishment of suitable ground cover. Less than 1 gal/min of seepage was observed on the east side behind the downstream steel sheet pile wing wall.

Heavy brush and tree growth also were present on the upstream slope of the embankment. At various locations road drainage had exceeded storm drain capacity and flowed over the low point and down the face of the dam. One area located directly behind the eastern edge of the bridge structure particularly was in poor condition. Previous repairs to these areas have been made with riprap, asphalt and broken asphalt.

Trees, brush, and woody vegetation were prevalent on the downstream slope of the embankment. Minor erosion, depressions, rills, and gullies were observed along the downstream slope. No concentrated seepage was noted on the downstream embankment; however, a few low-lying areas appeared to be wet. A heavily deteriorated concrete wall was observed along the upstream waterline, not seen on the original construction plans. This wall forms a bulkhead with exposed heights ranging from 1 to 3 feet. Overgrown brush and woody vegetation was observed near the waterline. Grass cover visible on the upstream and downstream slopes was in poor condition. The spillway and bridge were found to be in fair condition, however deterioration and movement of east culvert wing wall (downstream side), which leans toward the downstream direction, was observed. Selected photographs of the existing bridge and dam site are presented in Appendix A.

2.3 Topographic Field Survey

Remington and Vernick Engineers ("RVE") performed a topographic survey of the Almonesson Lake Dam site on January 18, 2019 to January 25, 2019 to facilitate design efforts. Unless noted otherwise, all elevations in this report refer to the North American Vertical Datum of 1988 ("NAVD88") based on the RVE survey. The topography and site features obtained during the field survey are shown on the sheet entitled "Existing Topographic Conditions" provided in appendix D.

3.0 HYDROLOGY AND HYDRAULICS

3.1 Overview

FPA's scope of services includes performing a H&H Analysis to confirm the Hazard Classification and determine the appropriate SDF for the proposed dam replacement. Based on the recently completed engineering analysis by FPA, it appears that the current Hazard Classification for Almonesson Lake Dam is appropriate. The primary hazard downstream of the dam is Deptford Center Road and County Bridge 0803-K12 and CR 544 (Clements Bridge Road) and County

Bridge 0803-K02. A potential hazard exists at two homes located at the end of Little Drive on the right side of the creek, downstream from the dam.

To clarify the Hazard Classification, the existing dam embankment was breached during the PMP, the greatest rainfall rate for the specified duration that is theoretically possible. The storm models and breach models were used to assess flooding conditions downstream of the dam to assign an appropriate hazard classification. The SDF was assigned based on the Hazard Classifications per the NJ Dam Standards; refer to the Table 1 for SDF for each Hazard Class.

TABLE 1 - Minimum Spillway Design Flood	
Hazard Class	**Spillway Design Flood**
Class I	Probable Maximum Precipitation
Class II	One-half PMP
Class III	24-hour 100-year frequency, Type III Storm

To confirm the Hazard Classification, we performed a thorough review and analysis of the inflow to the dam, and routing through the downstream area.

3.2 Spillway Design Flood Development

The 1.91 square mile drainage area contributing to the Almonesson Lake Dam was delineated by FPA, using the USGS StreamStats website. The total watershed consists of water that is conveyed into Almonesson Creek and into Almonesson Lake. Drainage area data is included in Appendix B.

The Natural Resources Conservation Service ("NCRS") runoff Curve Number ("CN") was used to estimate the volume of runoff based on the watershed's soils and land use conditions. The CNs were computed by FPA using the procedures outlined in the USDA Soil Conservation Service (SCS) "TR-55 – Urban Hydrology for Small Watersheds". The soil data within the drainage area was obtained using a NRCS Web Soil Survey of Gloucester County. A composite CN of 68.3 was calculated for the contributing drainage area. Curve Number data and calculations are included in Appendix B.

The hydrograph officially used by NRCS in New Jersey is the "Standard" unit hydrograph, which represents "average" conditions throughout the state. For the Almonesson Lake Dam H&H analysis, runoff hydrographs were developed using the Delmarva Unit Hydrograph ("DUH") to more accurately reflect the watershed's response to rainfall events. The DUH is applicable at the project site, based on the DUH Bulletin for New Jersey, adopted July 12, 2004, issued by the NRCS. The DUH Bulletin is included in Appendix B. DUH usage is primarily intended for areas that have slopes less than 5%, permeable soils, and are characterized by "ponded" topography capable of capturing and holding some degree of precipitation prior to runoff occurring.

The NRCS method consists of a single parameter lag time, T_L (hours) between the center of mass of rainfall excess and the peak of the unit hydrograph. The lag time was computed as $T_L=0.60T_C$, where T_C is the time of concentration. Time of concentration is equal to the sum of travel times of

overland flow, shallow concentrated flow and channel flow from the most remote point of the basin. Lag time computations are included in Appendix B. Table 2 summarizes the parameters used for the drainage areas modeled for the Almonesson Lake Dam:

TABLE 2 – Almonesson Lake Watershed Parameter Summary						
Watershed ID	Watershed Description	Drainage Area		Curve Number	Time of Conc.	Lag Time
		Acres	SQMI.	CN	Hours	Hours
DA	Almonesson Lake Dam	1222.4	1.91	68.3	2.111	1.27
Total Almonesson Lake Dam Watershed Area		***1222.4***	***1.91***			

Inflows were developed for the 100-year storms based on the 24-hour point precipitation values from the National Oceanic and Atmospheric Administration ("NOAA") website for Gloucester County and an NRCS Type III distribution. A total rainfall of 8.31-inches for the 100-year storm was obtained from the NOAA Atlas 14, Volume 2, Version 3 Point Precipitation Frequency Estimates for Deptford Township, New Jersey. The PMP for a 24-hour period, for a 10 mi^2 area, was determined to be 35-inches based on Hydrometeorological Report No. 51 ("HMR-51"). The Army Corps of Engineer HEC-1 computer program was used to develop inflows for the incremental precipitation for the PMP storm. Rainfall data is included in Appendix B.

Rainfall-runoff conversion, reservoir and stream routings were performed using the HEC-1 computer program. Stage-storage information for the Almonesson Lake Dam was obtained from the 1979 Phase I Dam Inspection Report and the 2001 Dam Safety Inspection Report prepared by Schoor DePalma. Stage-storage data is included in Appendix C.

A spillway rating curve was developed for the existing Almonesson Lake spillway using a combination of weir and orifice flows. The weirs were considered up to the point where the spillway box lid would create an orifice condition. Flows were then computed with the orifice flow equation. The weir and orifice coefficients were estimated in accordance with King and Brater's Handbook of Hydraulics. Rating Curve calculations for the existing dam are included in Appendix C. For flow over the top of dam embankment/roadway, the non-level top of dam option in HEC-1 was utilized based on measurements from the RVE topographic survey. The minimum top of dam/road elevation is +31.28 feet based on the RVE survey.

Table 3 summarizes the HEC-1 results of the routings for the 2 through 100-year storm events, as well as fractions of the PMP event for the existing conditions at Almonesson Lake Dam.

Table 3 – Summary of Existing Conditions at Almonesson Lake Dam			
Event	Outflow	Max. WSEL	Dam Overtop
	CFS	FT	FT
2-year Storm	91	26.58	-
5-year Storm	183	27.10	-
10-year Storm	277	27.48	-
25-year Storm	445	28.06	-
50-year Storm	597	28.56	-
100-year Storm	766	29.18	-
30% PMP Storm	1,117	30.37	-
40% PMP Storm	1,765	32.07	0.79
50% PMP Storm	2,628	32.73	1.45
Full PMP Storm	6,411	34.18	2.90

Our H&H analyses indicate the spillway can pass up to a 30% PMP event, [approximately 1117 cfs], without overtopping the earthen embankment. The results indicate an overtopping depth of 1.45 feet during the 50% PMP event. Based on these results, the existing spillway will need to be modified or replaced to accommodate the NJ Dam Standards. HEC-1 models for routing of the existing dam are included in Appendix C.

3.3 Dam Breach

Due to the existing county roadway across the crest of the Almonesson Lake Dam, the NJDEP has assigned the hazard classification as a significant hazard dam. A significant hazard dam is defined as a dam, the failure of which may cause significant damage to property and project operation, but loss of human life is not envisioned. This classification applies to predominantly rural, agricultural areas, where dam failure may damage isolated homes, major highways or railroads or cause interruption of service of relatively important public utilities. Our review of the available lidar information revealed a few residential homes along the right creek embankment downstream of the dam. Due to the existence of these homes, it was necessary to undertake a Dam Breach Analyses of the proposed Almonesson Lake Dam. For hazard classification determination we started the analysis at the full PMP event and included breach and non-breach routings.

Dam failure was modeled using the Army Corps HEC-1 program “SB” card. The breach parameters used were selected based on New Jersey’s “Guidelines for Developing an Emergency Action Plan”, last revised April 2008. An average breach width of 45.75 feet was selected, which is approximately 3 times the maximum height of the dam, time to failure of 0.3 hours, and 0.5 horizontal to 1.0 vertical side slopes. The breach was initiated at the maximum water surface elevation for the proposed PMP event (33.91 feet) with the bottom breach elevation based on the bottom of reservoir elevation of 13.2 feet. Table 4 summarizes the parameters used for a breach of each of the storm events.

Table 4 – Dam Breach Parameters			
Bottom Breach	Bottom Breach Width	Side Slope	Time to Full Breach
EL.	FT.	H:V	HRS.
13.2	45.75	0.5	0.3

The results of the HEC-1 breach models are presented in Table 5 below:

Table 5 – Almonesson Lake Dam Breach Model Summary				
Event	Peak Outflow	Diff.	Peak Storage	Max. WSEL
	CFS	CFS	ACFT	FT
Full PMP Storm	6,359	-	279	33.9
Full PMP Breach	**12,050**	**5,691**	**279**	**33.9**

3.4 Downstream Routings

The resulting outflow hydrographs from the HEC-1 models were input into the HEC-RAS computer program. Topographic data for the hydrologic and hydraulic analyses were gathered from the sources outlined herein. On January 25, 2019, RVE performed a topographic survey of the site on which includes the Almonesson Lake Dam, Bridge 3-K-3, and Cooper Street (CR 706) to facilitate design efforts. Unless noted otherwise, all elevations in this report refer to the North American Vertical Datum of 1988 (NAVD88) based on the RVE survey. For watershed hydrologic assessments and downstream impact modeling purposes, survey data was supplemented with additional topographic data. These data originate from United States Geological Survey (USGS) LiDAR data collected in 2015 and published on March 28, 2017. Additionally, the hydraulic openings of downstream bridge structures at Clements Bridge Road (CR 544) and Deptford Center Road are approximate and were measured in the field by representatives from FPA on June 25, 2019. Downstream channel routings were modeled using an unsteady HEC-RAS computer model for approximately 9,150-feet along Almonesson Creek. The following Tables 6.1 and 6.2 summarize the results for each failure scenario routed.

TABLE 6.1 - Downstream Routing Results Full PMP Breach			
Cross Description	Max. WSEL	Critical Flooding Depth (FT)	Overbank Velocity (FPS)
Deptford Center Road	26.38	2.2	
Little Ave (Section 16400)	27.2	3.2	0.43

TABLE 6.2 - Downstream Routing Results Full PMP Event			
Cross Description	**Max. WSEL**	**Critical Flooding Depth (FT)**	**Overbank Velocity (FPS)**
Deptford Center Road	24.44	0.26	
Little Ave (Section 16400)	26.3	2.3	0.36

The results of the downstream routing of the breach flow are included in Appendix C and are discussed below, as well as recommendations for the Hazard Class and SDF.

3.4.1 Hazard Classification Recommendation

A review of the downstream floodplain as a result of the PMP event revealed limited flooding at two residential structures at Section 16400 on the right bank of the creek (looking downstream). Based upon this finding, FPA undertook a breach analysis of the dam to determine if the breach flows would impact the hazard classification. The dam was breached concurrent with the PMP event. Tailwater from Deptford Center Road is the controlling factor in the flooding of these homes. Existing flood elevation at the homes from the PMP event is approximate elevation 26.3 feet. Both homes have walk-out basements. From lidar data for Gloucester County we were able to determine that the home at 1854 Little Drive is at approximate elevation 24 at the back of the home, resulting in the potential for 2.3 feet of flooding in the basement with an overbank velocity of .36 ft/s. The home located at 239 Olive Avenue is about one foot higher. The breach model produced a peak water surface elevation for the breach concurrent with the PMP of 27.2, or a depth of flooding of 3.2 feet in the basement of 1854 Little Drive. The overbank velocity was computed at 0.43 ft/s. The US Bureau of Reclamation Technical Memo No. 11 was then used to identify the appropriate hazard classification for Almonesson Lake Dam based upon the increase in flooding as a result of the failure. Based on Figure No. 2 of that publication, reproduced below, the downstream homes are within the “Low Danger Zone” under the non-failure condition. The breach of the dam elevates the lower of the two homes, 1854 Little Drive, into the judgment zone, just slightly above the “low danger zone”. Given that the increased flooding as a result of dam breach concurrent with the PMP event does not place the structure near the “high danger zone”, we would conclude that the increase does not raise the hazard classification to high hazard. Since this is the condition for the PMP scenario, no further breach modeling for smaller storm events was developed as the hazard at the homes would be no worse under lower flood conditions. Based on this assessment, it is recommended that classification of Almonesson Lake should remain as a **Class II, Significant Hazard** Potential Dam.

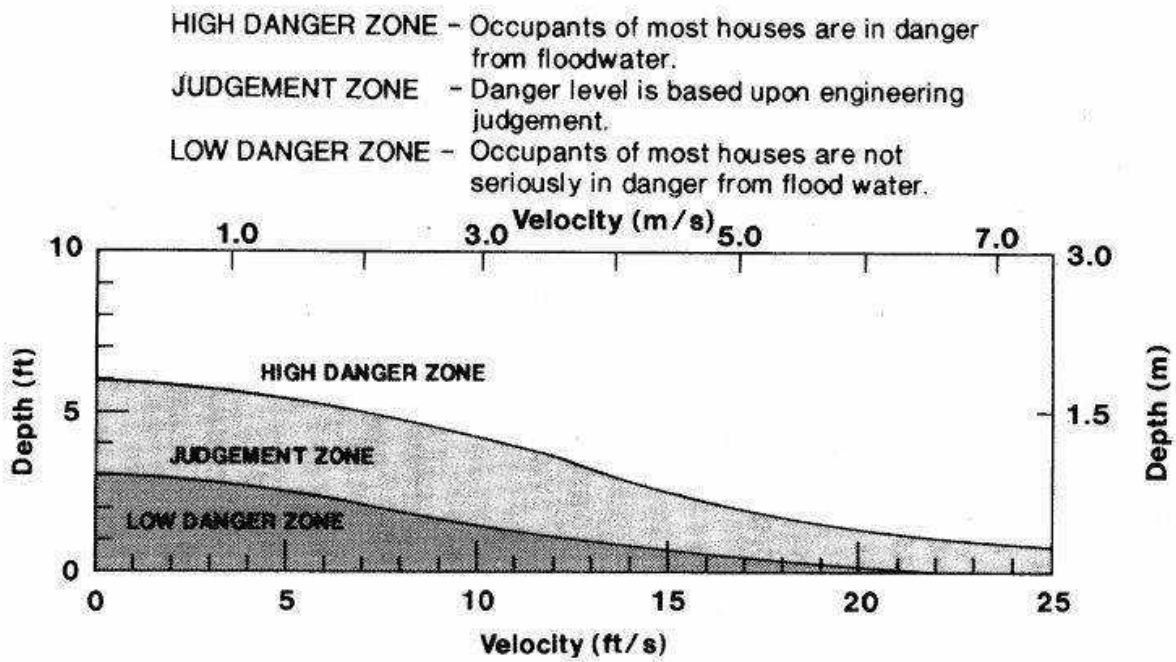


Figure 2. – Depth–velocity flood danger level relationship for houses built on foundations.

3.4.2 Spillway Design Flood Recommendation

The State of New Jersey Dam Safety Standards require that significant hazard dam safely pass the ½ Probably Maximum Precipitation storm (1/2 PMP). Regulatory requirements of Significant Hazard dams require Emergency Action Plans, Inundation Mapping, and Regular Inspections every 2 years. Formal Inspections for Significant Hazard Dams are required every 10 years.

4.0 DAM AND SPILLWAY RECOMMENDATIONS

The existing spillway structure has an inadequate spillway capacity and cannot safely pass the recommended SDF. In addition, the current spillway and bridge are in poor overall condition. The proposed Almonesson Lake Dam must meet the NJ Dam Standards, and will require earthen dam embankment restoration, and the construction of an enlarged spillway structure. The proposed bridge and dam will be along a similar alignment as the existing bridge; however, the structure and approach roadways will be widened. The replacement of the spillway is an integral part of both the bridge replacement and dam rehabilitation. To safely pass the SDF, FPA has considered several options.

Based on site topography, it does not appear feasible to raise the dam substantially to provide additional storage. The east abutment is the low point for overtopping, and based on available topography, the dam would have to be extended several thousand feet through private property to tie out to higher ground. Raising the dam substantially above existing grades was not considered practical for this site.

Next, we considered developing a spillway with capacity sufficient to pass the entire SDF. Based on available head we approximate that a weir of 62-feet would be required to pass the peak discharge with a low flow notch to maintain current low flow discharges.

We also have considered rehabilitation of the dam by providing overtopping protection to safely pass the SDF. The favorable overtopping protection scenario is steel sheet piling that would be provided along the crest of the dam at the transition between the crest and the downstream slope. The sheeting would be designed to provide a cutoff against head-cutting due to erosion of the downstream face of the dam during an overtopping event. The bridge and spillway would still be replaced due to the condition of the existing structures but would be maintained at their current sizes to mimic existing flows. We also considered other overtopping protection options such as articulated concrete blocks (ACB's), roller compacted concrete (RCC) and gabion overlays. All overtopping options would create current and future difficulties in dealing with existing utilities within the embankment. It was determined that a hydraulically adequate spillway and bridge structure are more practical and minimizes the potential for overtopping of the roadway.

4.1 Primary Spillway

We have optimized our design of the proposed primary spillway to be a two-stage structure having the following weir lengths and elevations: 15-feet at elevation 25.25, and 47-feet at elevation 25.58-feet. The proposed spillway passes the 50% PMP storm event, and the proposed 24-foot wide by 11.5-foot high bridge opening is sufficient to convey the primary spillway discharge safely through the dam embankment, assuming a rectangular channel, concrete slab on grade, and a 0.5% slope.

The 15-foot notch at elevation 25.25 is designed to mimic the low flow notches of the existing weir. This notch was sized based on the base flow (approximately 1 cfs/sq. mi.) of the watershed so as to maintain normal pool elevation in the impoundment. Spillway rating curve computations for the proposed structure are included in Appendix C.

The HEC-1 model was utilized to route the various storm events through the proposed spillway structure. The routing results in a peak water surface elevation of 30.95 for the ½ PMP event. The low point of the roadway has been set at elevation 32.13 and provides for one foot of freeboard as required by the NJ Dam Safety Standards. The increased spillway size results in slightly larger downstream flows. The difference in peak discharges downstream of Almonesson Lake due to the increased spillway size are insignificant given he floodplain characteristics. The Deptford Center Road can pass approximately 4,500 cfs before overtopping and the Clements Bridge Road can pass approximately 850 cfs before overtopping. Therefore, both downstream bridges are capable of passing the proposed 100-year flood flows and therefore would not be impacted by the slightly increased flowrates. No other land within the 100-year floodplain is developed and likely cannot

be developed due to environmental constraints. The flow results of the routing for the 2-year through 100-year storms as well as the ½ PMP storm are contained in Appendix C and summarized in Table 7 below with a comparison to existing outflow conditions:

Table 7 – Flow Increases Due to Larger Spillway and Bridge Structures		
Event	Existing Outflow	Proposed Outflow
	CFS	CFS
2-year Storm	91	99
5-year Storm	183	202
10-year Storm	277	304
25-year Storm	445	480
50-year Storm	597	644
100-year Storm	766	839
50% PMP Storm	2628	2586

4.2 Downstream Outlet Protection

We have computed the outlet velocities at the bridge structure and have determined that due to the high tailwaters created by the downstream structures that transition riprap can be utilized for erosion protection. Downstream channel velocities (existing and proposed) were calculated for the outlet protection analysis using the Hydrologic Engineering Center River Analysis System (HEC-RAS) software produced by the US Army Corps of Engineers, and were corroborated using HY-8 software produced by the Federal Highway Administration.

4.3 Low Level Outlet

Almonesson Lake can currently be lowered by incrementally removing timber stop logs from the spillway headwall. One log is removed at a time over a period of several days until the desired lake level is achieved. We are proposing a low-level outlet valve or sluice gate at the base of the structure to drain the impoundment per the NJ Dam Standards The valve will allow for the complete lowering of the lake. We estimate a 24-inch diameter opening in the spillway wall will be adequate to drawdown the impoundment during baseflow condition. Drawdown calculations and outlet sizing will be provided as part of the Final Design Report.

5.0 PERMITTING REQUIREMENTS

Upon acceptance by the County and Township, this report should be submitted to the Bureau of Dam Safety to obtain approval of the hydrology and hydraulic calculations and proposed design recommendations, prior to development of final plans and specifications.

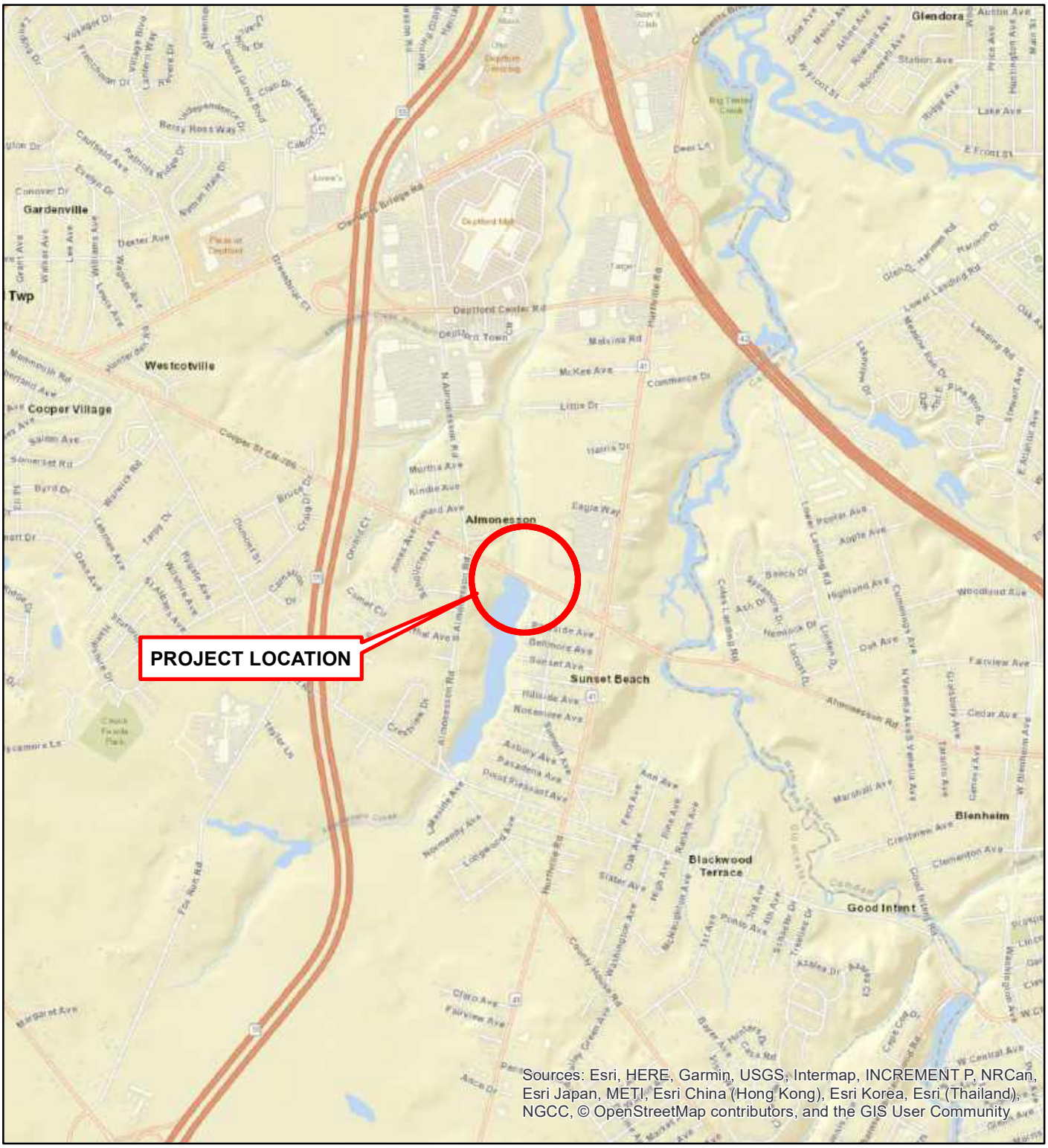
6.0 CLOSING & LIMITATIONS

This H&H Analysis Report describes the project, results of our assessments and evaluations including hydrologic, and hydraulic analyses performed for conceptual design of the Almonesson Lake Dam embankment and required spillway. The proposed dam and spillway configuration will minimize environmental impacts and impacts to the surrounding public to the maximum extent practicable and will comply with the requirements of the NJDEP Bureau of Dam Safety and Flood Control.

The scope of our services did not include any environmental assessment or investigation for the presence of hazardous or toxic materials in the soil, surface water, groundwater, or air on or below or around this site.

Services performed by FPA during this project have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. No other representation expressed or implied, and no warranty or guarantee is included or intended in the service provided.

DRAWINGS



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COOPER STREET LCD STUDY

TOWNSHIP OF DEPTFORD
GLOUCESTER COUNTY, NEW JERSEY

PROJECT LOCATION MAP

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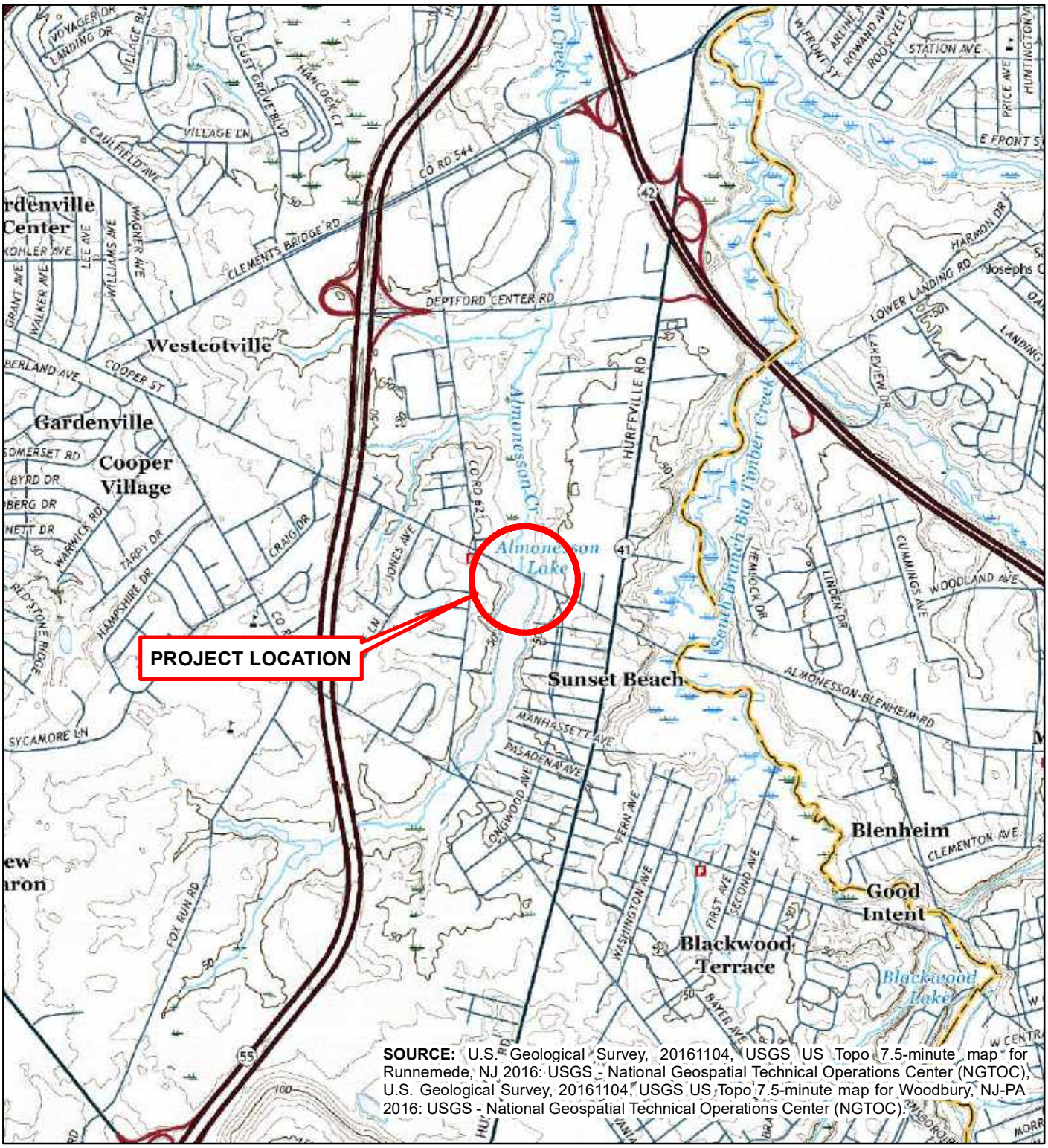

SOURCE: U.S. Geological Survey, 20161104, USGS US Topo 7.5-minute map for Runnemede, NJ 2016: USGS - National Geospatial Technical Operations Center (NGTOC), U.S. Geological Survey, 20161104, USGS US Topo 7.5-minute map for Woodbury, NJ-PA 2016: USGS - National Geospatial Technical Operations Center (NGTOC).

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GLOUCESTER COUNTY, NEW JERSEY

TOPOGRAPHIC MAP

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GLOUCESTER COUNTY, NEW JERSEY

AERIAL LOCATION MAP

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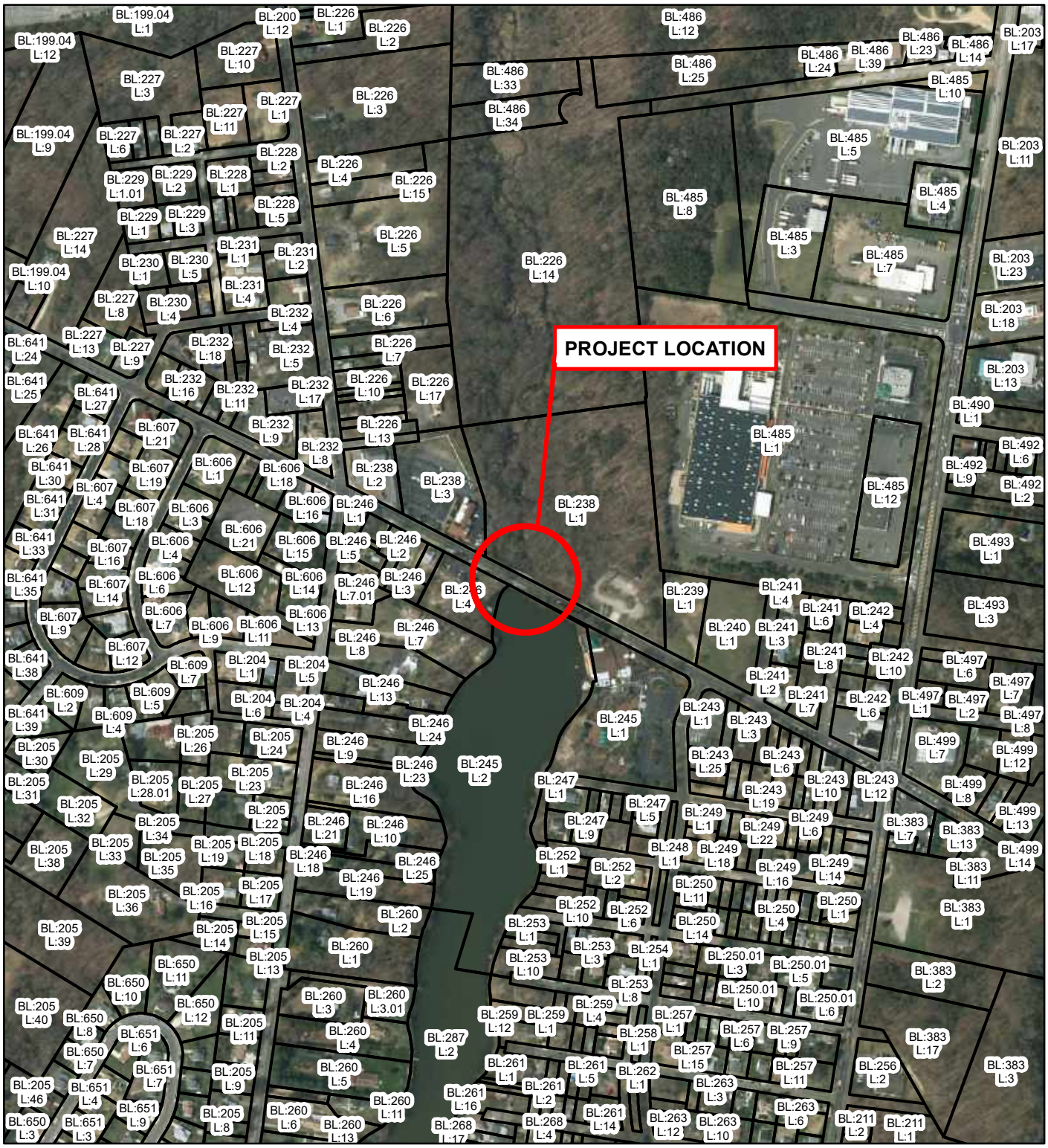

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TOWNSHIP OF DEPTFORD
GLOUCESTER COUNTY, NEW JERSEY

TAX MAP

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APPENDIX A

SELECTED PHOTOGRAPHS

Photo 1: Overview of Almonesson Dam from left abutment, looking east. Note: Cooper Street (County Road 706) traverses the crest of the dam.

Photo 2: View of downstream crest wall looking east, from left abutment.

Photo 3: View of upstream slope to the left of the spillway, from the left abutment. Note: Heavy bush and tree growth observed.

Photo 4: Upstream slope to the right of the spillway looking west, from the right abutment. Note: Heavy bush and tree growth observed.

Photo 5: Vertical concrete wall on downstream slope.
Notes: Cracks and spalls observed the left of the exit channel.

Photo 6: Vertical concrete wall on downstream slope.
Notes: Large spall observed to the left of the exit channel.

Photo 7: Downstream slope of the embankment, to the left of the spillway. Note: Corrugated metal drainage pipe.

Photo 8: Corrugated metal drainage pipe discharging at the toe of the slope. Note: Significant erosion/scour observed downstream of the pipe.

Photo 9: Overview of downstream slope to the left of the spillway exit channel with sheet pile wing wall.

Photo 10: Toe of the down stream slope to the right of the spillway.
Note: Seepage observed (iron oxide) adjacent to sheet pile.

Photo 11: Sheet pile wing wall to the right of the exit channel.

Photo 12: Sheet pile wing wall to the left of the exit channel.

Photo 13: Seepage at the toe of the right embankment.

Photo 14: Seepage at the toe of the left embankment.

Photo 15: View of primary spillway from the crest of the dam, looking west towards the left abutment.

Photo 16: Primary spillway; debris observed.
Note: Opening in concrete for the flashboards; one board appears to be removed. Chains attached to flashboard for operation.

Photo 17: Concrete slab on top of the primary spillway.
Note: Chain connects to the flashboards in the spillway.

Photo 18: Concrete drop box at primary spillway.

Photo 19: Overview of concrete apron, downstream of primary spillway, looking upstream.

Photo 20: Inside concrete bridge culvert.
Note: Spalling, cracking, and exposed rebar observed.

Photo 21: Exit channel downstream of main culvert.
Note: Debris observed in channel.

Photo 22: Downstream exit channel.

Photo 23: Flat floodplain observed downstream of Almonesson Dam.

Photo 24: Structure downstream of Almonesson Lake Dam.
Note: Approximately 300 feet downstream of bridge.

Photo 25: View of Almonesson Lake from the dam crest looking upstream (south).

Photo 26: Deptford Center Road Bridge, looking upstream.

Photo 27: Clements Bridge Road (CR 544) looking upstream.

Photo 28: Downstream of Clements Bridge Road (CR 544), looking downstream.

APPENDIX B

H&H FOR EXISTING CONDITIONS

NOAA Atlas 14, Volume 2, Version 3
Location name: Deptford, New Jersey, USA*
Latitude: 39.8181°, Longitude: -75.0965°
Elevation: 31.32 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.349 (0.319-0.381)	0.416 (0.380-0.454)	0.490 (0.447-0.535)	0.545 (0.496-0.596)	0.612 (0.554-0.669)	0.659 (0.595-0.722)	0.706 (0.634-0.777)	0.749 (0.668-0.827)	0.801 (0.705-0.891)	0.841 (0.734-0.942)
10-min	0.557 (0.510-0.609)	0.665 (0.608-0.727)	0.785 (0.717-0.858)	0.871 (0.794-0.953)	0.975 (0.884-1.07)	1.05 (0.947-1.15)	1.12 (1.01-1.23)	1.19 (1.06-1.31)	1.27 (1.12-1.41)	1.33 (1.16-1.48)
15-min	0.697 (0.638-0.761)	0.835 (0.764-0.913)	0.993 (0.906-1.09)	1.10 (1.00-1.21)	1.24 (1.12-1.35)	1.33 (1.20-1.46)	1.42 (1.27-1.56)	1.50 (1.34-1.65)	1.59 (1.40-1.77)	1.66 (1.45-1.86)
30-min	0.955 (0.874-1.04)	1.15 (1.06-1.26)	1.41 (1.29-1.54)	1.60 (1.46-1.75)	1.83 (1.66-2.00)	2.00 (1.81-2.19)	2.17 (1.95-2.39)	2.33 (2.08-2.58)	2.54 (2.24-2.82)	2.69 (2.35-3.02)
60-min	1.19 (1.09-1.30)	1.45 (1.32-1.58)	1.81 (1.65-1.98)	2.08 (1.89-2.28)	2.44 (2.21-2.67)	2.71 (2.45-2.97)	2.99 (2.69-3.29)	3.27 (2.92-3.61)	3.64 (3.21-4.05)	3.93 (3.43-4.40)
2-hr	1.43 (1.30-1.58)	1.74 (1.59-1.92)	2.19 (1.99-2.41)	2.54 (2.30-2.79)	3.00 (2.70-3.31)	3.37 (3.01-3.72)	3.74 (3.33-4.14)	4.12 (3.63-4.59)	4.64 (4.03-5.19)	5.04 (4.34-5.69)
3-hr	1.57 (1.43-1.73)	1.90 (1.73-2.09)	2.40 (2.18-2.64)	2.79 (2.52-3.07)	3.31 (2.98-3.65)	3.74 (3.34-4.13)	4.18 (3.71-4.63)	4.64 (4.06-5.15)	5.26 (4.54-5.89)	5.76 (4.91-6.48)
6-hr	1.95 (1.77-2.15)	2.35 (2.15-2.60)	2.95 (2.69-3.26)	3.45 (3.12-3.81)	4.14 (3.72-4.58)	4.72 (4.21-5.23)	5.34 (4.71-5.92)	5.99 (5.21-6.67)	6.92 (5.91-7.77)	7.69 (6.47-8.70)
12-hr	2.36 (2.15-2.61)	2.85 (2.60-3.16)	3.59 (3.27-3.98)	4.23 (3.83-4.68)	5.18 (4.63-5.72)	5.99 (5.30-6.63)	6.87 (6.00-7.63)	7.84 (6.74-8.75)	9.26 (7.78-10.4)	10.5 (8.63-11.9)
24-hr	2.71 (2.49-2.96)	3.28 (3.02-3.58)	4.21 (3.87-4.59)	4.99 (4.57-5.44)	6.17 (5.61-6.70)	7.18 (6.49-7.79)	8.31 (7.46-8.99)	9.56 (8.51-10.3)	11.4 (10.0-12.3)	13.1 (11.3-14.1)
2-day	3.10 (2.84-3.39)	3.76 (3.45-4.11)	4.82 (4.41-5.27)	5.71 (5.21-6.24)	7.02 (6.38-7.66)	8.15 (7.36-8.88)	9.39 (8.42-10.2)	10.8 (9.57-11.7)	12.8 (11.2-13.9)	14.5 (12.6-15.8)
3-day	3.27 (3.01-3.58)	3.97 (3.64-4.33)	5.06 (4.64-5.52)	5.98 (5.47-6.52)	7.33 (6.67-7.97)	8.49 (7.68-9.21)	9.74 (8.76-10.6)	11.1 (9.93-12.1)	13.2 (11.6-14.3)	14.9 (13.0-16.2)
4-day	3.45 (3.17-3.76)	4.17 (3.84-4.55)	5.31 (4.88-5.78)	6.25 (5.73-6.80)	7.64 (6.96-8.28)	8.82 (8.00-9.54)	10.1 (9.11-10.9)	11.5 (10.3-12.4)	13.6 (12.0-14.7)	15.3 (13.4-16.6)
7-day	4.02 (3.72-4.37)	4.83 (4.47-5.25)	6.06 (5.60-6.59)	7.09 (6.54-7.69)	8.58 (7.88-9.31)	9.85 (9.00-10.7)	11.2 (10.2-12.1)	12.7 (11.5-13.7)	14.9 (13.3-16.1)	16.7 (14.8-18.1)
10-day	4.54 (4.22-4.90)	5.44 (5.06-5.88)	6.71 (6.23-7.25)	7.76 (7.19-8.37)	9.25 (8.54-9.97)	10.5 (9.63-11.3)	11.8 (10.8-12.7)	13.2 (12.0-14.2)	15.2 (13.7-16.4)	16.9 (15.2-18.3)
20-day	6.13 (5.77-6.55)	7.29 (6.86-7.78)	8.77 (8.24-9.35)	9.95 (9.34-10.6)	11.6 (10.8-12.3)	12.9 (12.0-13.7)	14.2 (13.2-15.1)	15.6 (14.4-16.6)	17.5 (16.0-18.6)	18.9 (17.3-20.2)
30-day	7.62 (7.20-8.08)	9.01 (8.50-9.55)	10.6 (10.0-11.3)	11.9 (11.2-12.6)	13.7 (12.8-14.5)	15.0 (14.1-15.9)	16.3 (15.3-17.3)	17.7 (16.5-18.7)	19.5 (18.1-20.7)	20.9 (19.2-22.2)
45-day	9.70 (9.18-10.3)	11.4 (10.8-12.1)	13.3 (12.6-14.0)	14.7 (13.9-15.5)	16.5 (15.6-17.4)	17.9 (16.8-18.9)	19.2 (18.0-20.3)	20.5 (19.2-21.7)	22.1 (20.7-23.4)	23.3 (21.7-24.7)
60-day	11.6 (11.0-12.2)	13.6 (12.9-14.4)	15.7 (14.9-16.6)	17.2 (16.3-18.2)	19.1 (18.1-20.2)	20.5 (19.4-21.7)	21.9 (20.6-23.1)	23.1 (21.8-24.4)	24.7 (23.2-26.1)	25.8 (24.2-27.4)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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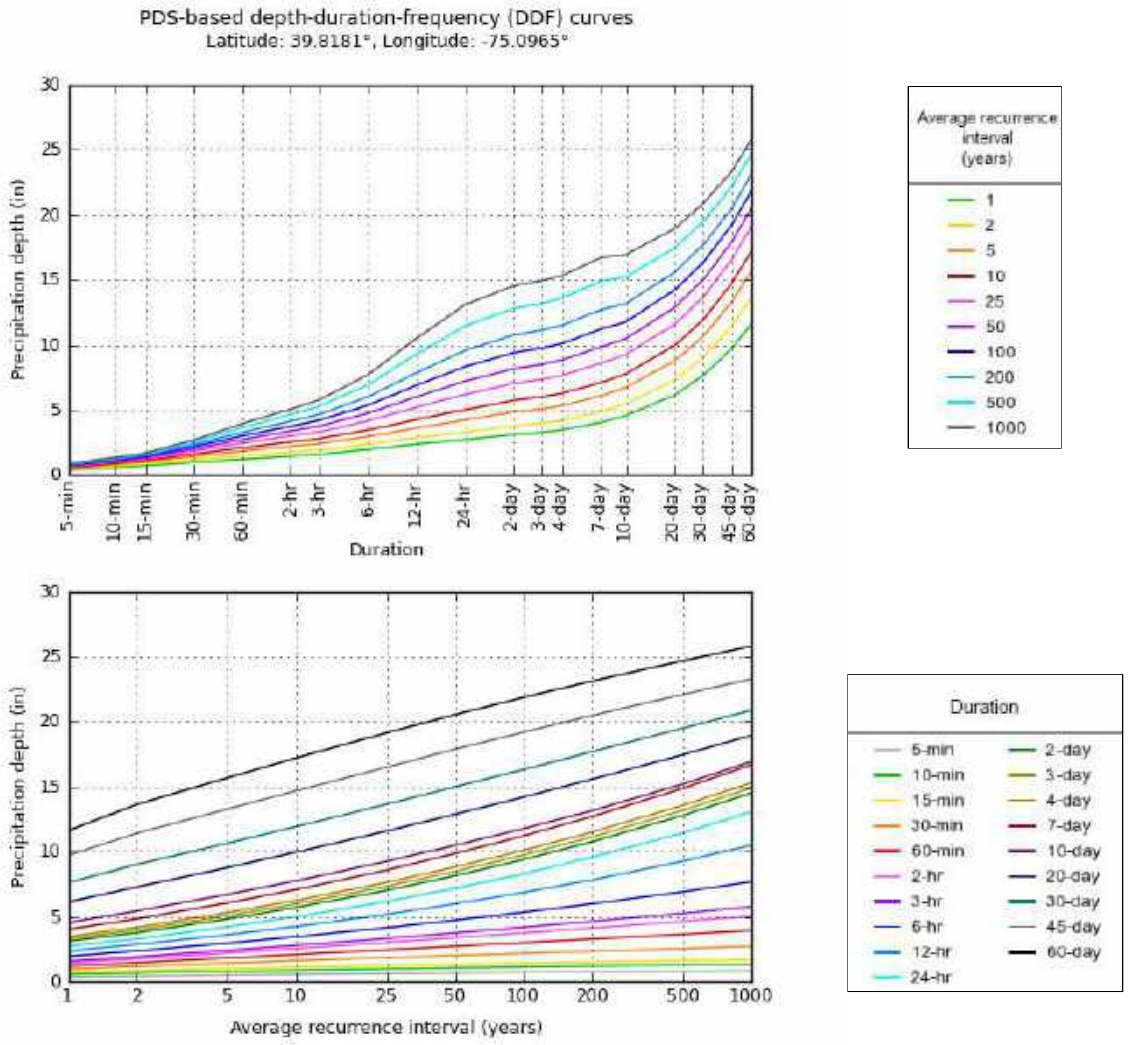
PF graphical



NOAA Atlas 14, Volume 2, Version 3 Created (GMT): Thu Mar 7 14:36:04 2019

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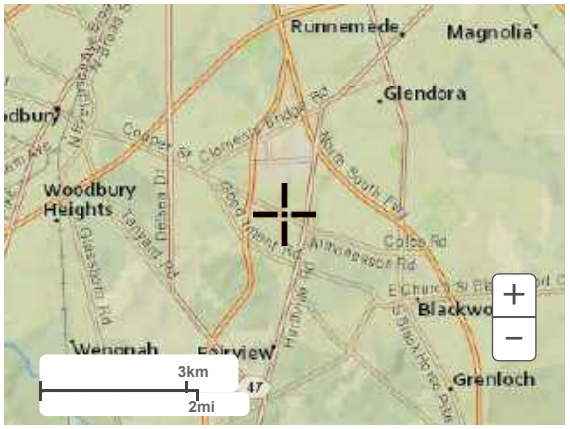
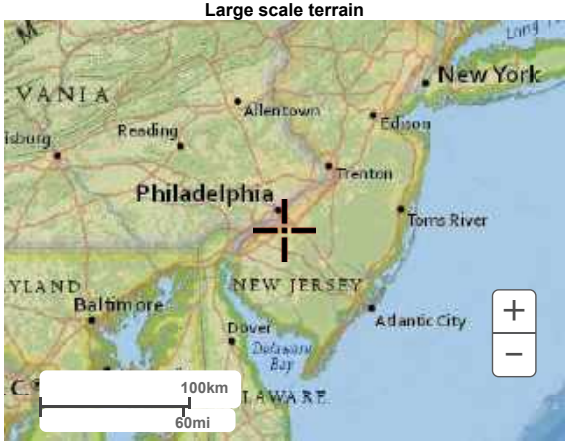
Maps & aerials

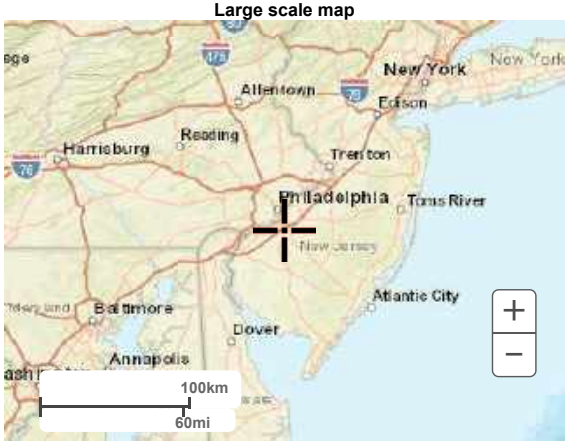
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Cooper Street (County Route 706) Bridge over Almonesson Creek at Almonesson Lake (Bridge 3-K-3)
Concept Development Study
FPA Project No. 13633.001
Point Precipitation Data

Storm Event	*Rainfall Depth (in.)*	*Rainfall Ratios*
2-Year	3.28	0.395
5-Year	4.21	0.507
10-Year	4.99	0.600
25-Year	6.17	0.742
50-Year	7.18	0.864
100-Year	8.31	1
30% PMP	10.5	0.300
40% PMP	14	0.400
50% PMP	17.5	0.500
100% PMP	35	1

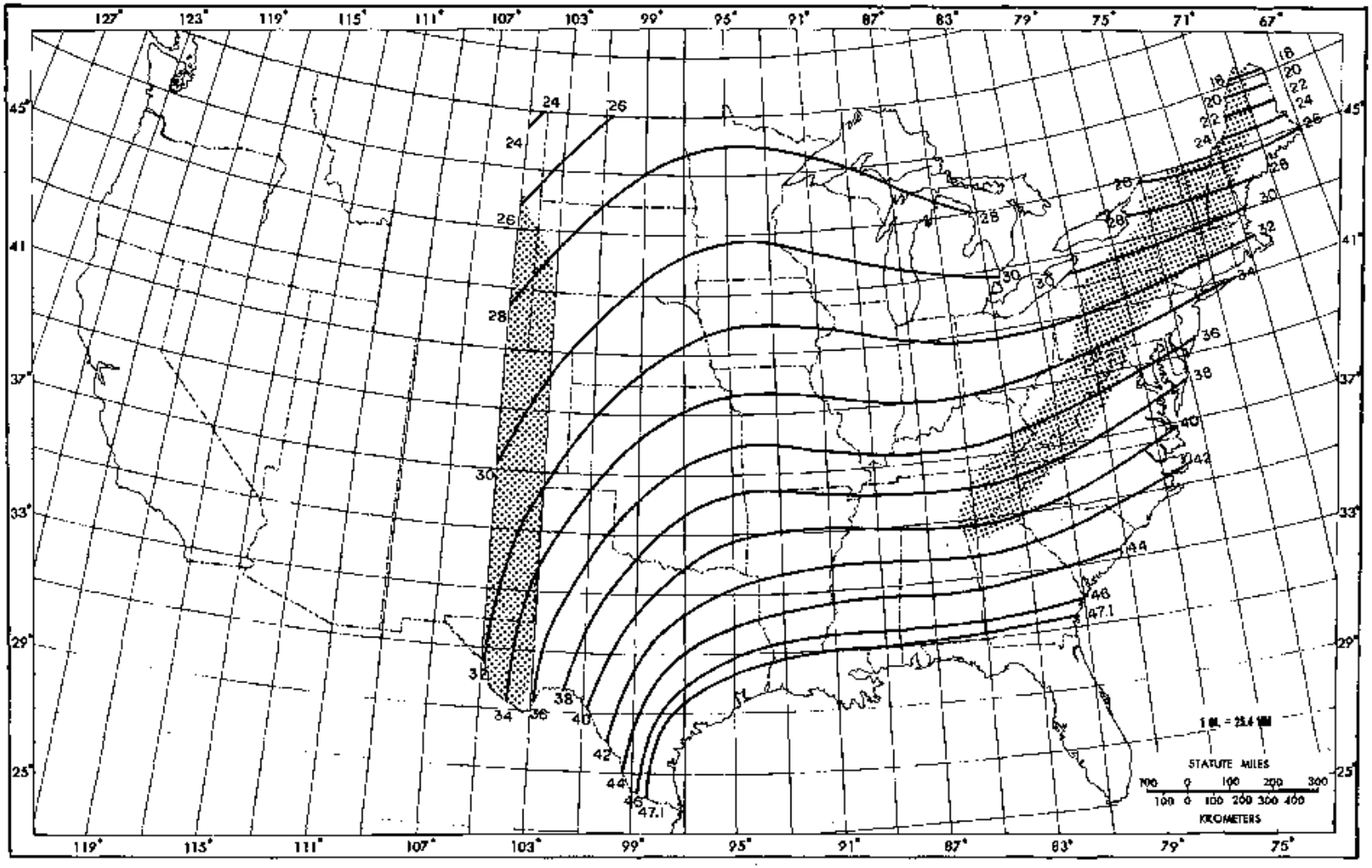

Figure 20.--All-season PMP (in.) for 24 hr 10 mi^2 (26 km^2).

NEW JERSEY DEPARTMENT OF AGRICULTURE
STATE SOIL CONSERVATION COMMITTEE
Chapter 251, PL 1975 as amended,
Engineering Policies- Technical Bulletin

Technical Bulletin: 2004-2.0	**Adoption Date:** July 12, 2004
Subject: NRCS change in stormwater modeling for the NJ Coastal Plain	**From:** Hunter Birckhead, P.E., Section Chief

1.01 PURPOSE

To distribute revisions to the NRCS stormwater modeling runoff procedures utilizing the the DelMarVa unit hydrograph.

1.02 SUMMARY

NRCS runoff modeling procedures utilize a dimensionless unit hydrograph in the computation of runoff rate and volume. Until recently, the hydrograph officially used by NRCS in New Jersey was the "Standard" unit hydrograph, which represents "average" conditions. This hydrograph is characterized by a unit peak discharge factor of 484, which is more representative of the Piedmont areas of the State.

Due to recent studies by NJDA as well as an accumulation of other data, NRCS-NJ has instructed its field staff to utilize the DelMarVa unit hydrograph for runoff estimation on agricultural lands which are located within the coastal zones identified on the attached map and NRCS bulletin. This hydrograph is characterized by a peak rate factor of 285, and will predict a substantially lower peak discharge than that of the Standard hydrograph. Volume of runoff will not be affected by this change.

DelMarVa hydrograph usage is primarily restricted to areas that have slopes less than 5%, permeable soils and are characterized by "ponded" topography capable of capturing and holding some degree of precipitation prior to runoff occurring. It should not be utilized for design in areas where the predeveloped conditions are heavily urbanized and the drainage area is characterized by significant areas of impervious cover. The Standard hydrograph should continue to be used in these areas.

Districts located within the specified zones are to use and require usage of the DelMarVa unit hydrograph in the preparation of Chpt. 251 applications where it is necessary to compute runoff rate and volume with NRCS modeling methods.

This requirement is effective 60 days from the date of this bulletin.

State of New Jersey
DEPARTMENT OF AGRICULTURE
HEALTH / AGRICULTURE BUILDING
JOHN FITCH PLAZA
PO BOX 330
TRENTON NJ 08625-0330

JAMES E. MCGREEVEY
Governor

CHARLES M. KUPERUS
Secretary

To: Distribution List

From: Hunter Birckhead, P.E., Section Chief
State Soil Conservation Committee

Re: USDA-NRCS, Technical Bulletin NJ210-3-1

Date: July 12, 2004

The SSCC is transmitting this bulletin to advise you of the changes outlined in NRCS-NJ Technical Bulletin NJ210-3-1, issued September 8, 2003 regarding the Dimensionless Unit Hydrograph (copy enclosed).

Bulletin NJ210-3-1 describes the application of the DELMARVA unit hydrograph for use in modeling surface runoff in certain areas of the South Central flat inland and New Jersey Coastal Plain.

This change in modeling procedures is important to the State Soil Erosion and Sediment Control Act program. The use of the DELMARVA hydrograph should be applied to stormwater management runoff design for pre and post developed conditions in the applicable portions of the state identified in the attached documents. In general, flatter terrain, ponded areas and swales, wooded conditions and highly pervious soils characterize these areas. The DELMARVA unit hydrograph should not be utilized for design in areas where the predeveloped conditions area heavily urbanized and the drainage area is characterized by significant areas of impervious cover. The Standard NRCS hydrograph should continue to be used in those areas where the Delmarva unit hydrograph does not apply.

In order to implement this change consistently in the affected areas of the state, soil conservation districts will anticipate the use of the DELMARVA hydrograph in soil erosion and sediment control site plan designs, within sixty days of this letter. The SSCC is requesting your cooperation by advising your clientele of this bulletin.

This office is facilitating the distribution of the NRCS bulletin to Soil Conservation Districts, municipal, county and state government agencies and groups. Please feel free to contact this office if you have questions regarding this change.

Thank you for your cooperation and assistance.

Enclosure

Distribution:

Anthony Castillo, P.E., NJ Society of Professional Engineers
Richard Moralle, P.E., NJ Association of Municipal Engineers
Denis Sedaille, P.E., NJ Association of County Engineers
Anthony Di Lodovico, NJ Builders Association
Robert Kirkpatrick, Jr., P.E., NJ DCA - RSIS
Steven Jacobus, NJDEP
Larry Baier, NJDEP
Kiong Chan, NJDOT
Charles Horner, NJ Pinelands Commission

c: David Lamm, P.E., USDA-NRCS
Members, State Soil Conservation Committee
Charles M. Kuperus, Secretary of Agriculture
Monique Purcell, Director, Division of Agricultural & Natural Resources
Jim Sadley, Executive Secretary, SSCC
John Showler, SSCC
Frank Minch, SSCC
Chairmen and Managers of Mercer, Burlington, Ocean, Camden, Gloucester, Freehold, Cumberland, Salem and Cape-Atlantic Districts

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
220 Davidson Ave, 4th Floor
Somerset, NJ 08873

Telephone: 732-537-6040
Fax: 732-537-6095
Web site: http://www.nj.nrcs.usda.gov

September 8, 2003

NEW JERSEY BULLETIN NO. NJ210-3-1

SUBJECT: ENG – Engineering Field Handbook Supplement
Dimensionless Unit Hydrograph

Purpose: To distribute a supplement to Chapter 2 of the Engineering Field Handbook regarding use of dimensionless unit hydrographs for modeling agricultural watersheds.

Effective Date: Effective upon receipt.

With the enhancement of NRCS modeling tools commonly used in the hydrologic design of conservation practices including EFH2 and WinTR55, it is now easier to vary the dimensionless unit hydrograph as a model input. Historically, the Standard Unit Hydrograph has been applied throughout New Jersey. Now, the Delamrva Unit Hydrograph may be used in modeling agricultural watersheds in the Coastal Plain that are characterized by flat topography (average watershed slope less than 5 percent), low relief, and significant surface storage in swales and depressions. Use of the Delamrva Unit Hydrograph will not affect the determination of runoff volume, but should result in lower peak discharges when compared to the Standard Unit Hydrograph.

Filing Instructions: Insert the attached supplement at the end of Chapter 2 in the Engineering Field Handbook.

DAVID LAMM, PE
State Conservation Engineer

Enclosure

Dist: O

The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.

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Dimensionless Unit Hydrograph

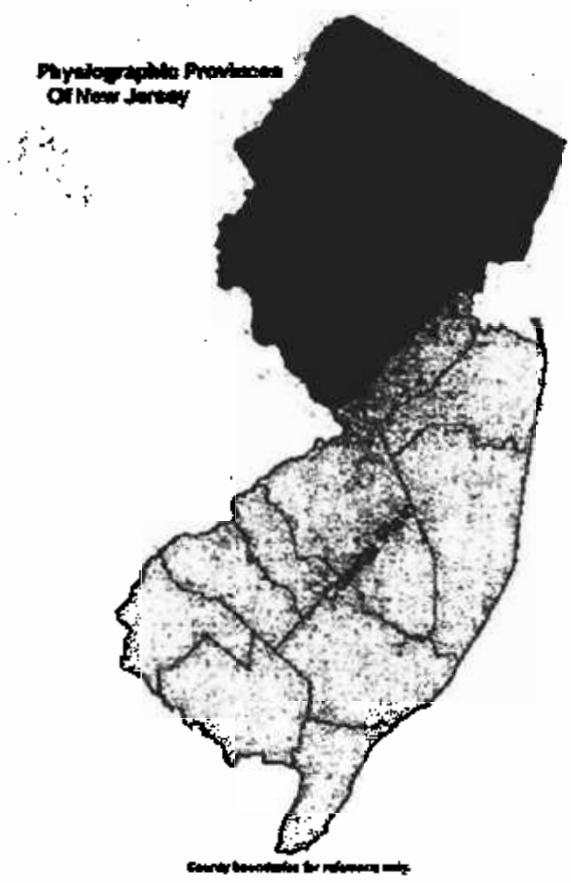
The dimensionless unit hydrograph is one of several watershed related parameters incorporated into NRCS hydrologic modeling procedures. The unit hydrograph influences the shape of the runoff hydrograph generated by the model, particularly the peak rate of discharge. It does not affect the volume of runoff, which is determined by curve number. Unit hydrographs vary by watershed based on many factors including watershed size, slope and length; geomorphic and geologic characteristics; amount of storage; and degree of urbanization. A standard unit hydrograph has typically been used that represents an average condition for much of the country. It has been felt to be sufficiently accurate for the hydrologic design of conservation practices. Detailed studies, however, have been conducted in some watersheds or regions to develop more representative dimensionless unit hydrographs. With the enhancement of NRCS modeling tools, it is now easier to incorporate these unique unit hydrographs into more routine hydrologic analyses.

The following dimensionless unit hydrographs are applicable to New Jersey:

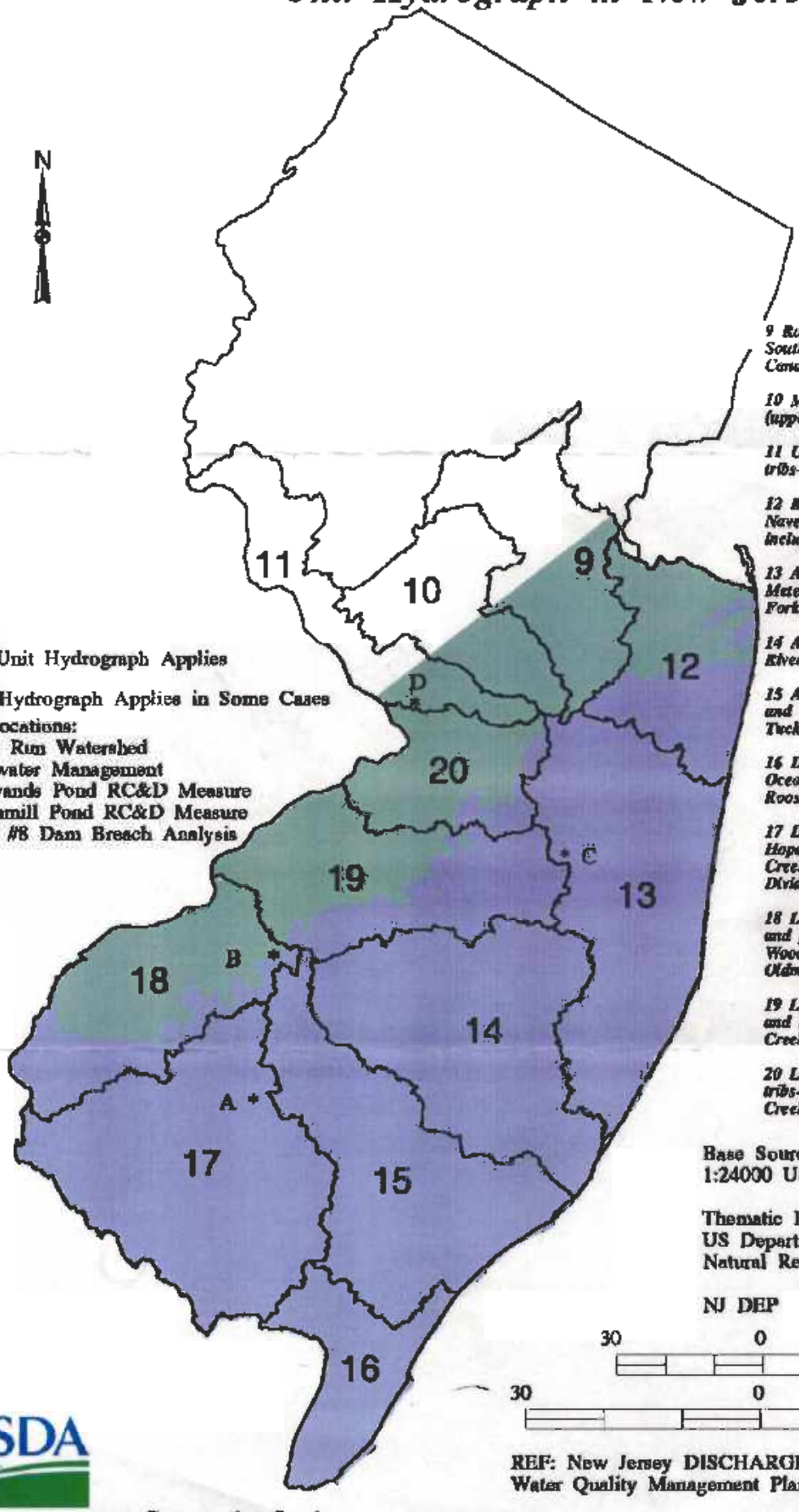
Delmarva Unit Hydrograph: Applies to watersheds in the Coastal Plain physiographic region that are characterized by flat topography (average watershed slope less than 5 percent), low relief, and significant surface storage in swales and depressions.

Standard Unit Hydrograph: Applies to watersheds in all other physiographic regions and to watersheds in the Coastal Plain that are not characterized by the Delmarva Unit Hydrograph.

When supported by detailed watershed studies, other unit hydrographs may be used. Study procedures are discussed in Chapter 16 of National Engineering Handbook Part 630, Hydrology.



Guide on Where to Use Delmarva Penninsula Unit Hydrograph in New Jersey



Unit Hydrograph Applies

Hydrograph Applies in Some Cases

Site Locations:
A-Still Run Watershed Stormwater Management
B-Rowands Pond RC&D Measure
C-Tummill Pond RC&D Measure
D-Site #8 Dam Breach Analysis

9 Raritan River Mainstem, Matchaponix Brook, South River, Green Brook, Middle Brook, D & R Canal (lower part)

10 Millstone River, Stony Brook, D & R Canal (upper part)

11 Upper Delaware (lower part of Zone 1E) and tribs-Lockatong, Alexauken Creek, Assunpink Creek

12 Raritan Bay and tribs-Shrewsbury River, Navesink River & Atlantic Ocean & tribs including Shark River

13 Atlantic Ocean and tribs-Manasquan River, Metedeconk River, Toms River, Barnegat Bay, Forked River, Little Egg Harbor, Tuckerton Creek

14 Atlantic Ocean and tribs-Mullica River, Wading River, Great Bay, Little Bay, Doughty Creek

15 Atlantic Ocean and tribs-Great Egg Harbor River and Bay, Peck Bay, Reeds Bay, Absecon Bay, Tuckahoe River

16 Delaware Bay (part of Zone 6) and Atlantic Ocean and tribs-Cape May County (south of Roosevelt Blvd, Ocean City) , East and West Creeks

17 Delaware Bay (part of Zones 5 & 6) and tribs-Hope Creek, Stow Creek, Cohansey River, Back Creek, Cedar Creek, Natuxent Creek, Dividing Creek, Maurice River

18 Lower Delaware (lower part of Zone 3, Zone 4, and part of Zone 5) and tribs-Big Timber Creek, Woodbury Creek, Mantua Creek, Raccoon Creek, Oldman's Creek, Salem River, Alloways Creek

19 Lower Delaware River (lower part of Zone 2 and upper part of Zone 3) and tribs-Rancocas Creek, Pennsauken Creek, Cooper River

20 Lower Delaware (upper part of Zone 2) and tribs-Crosswicks Creek, Doctors Creek, Blacks Creek, Crafts Creek, Assiscunk Creek

Base Source:
1:24000 USGS orthophoto quads, 1986

Thematic Data:
US Department of Agriculture
Natural Resources Conservation Service

NJ DEP

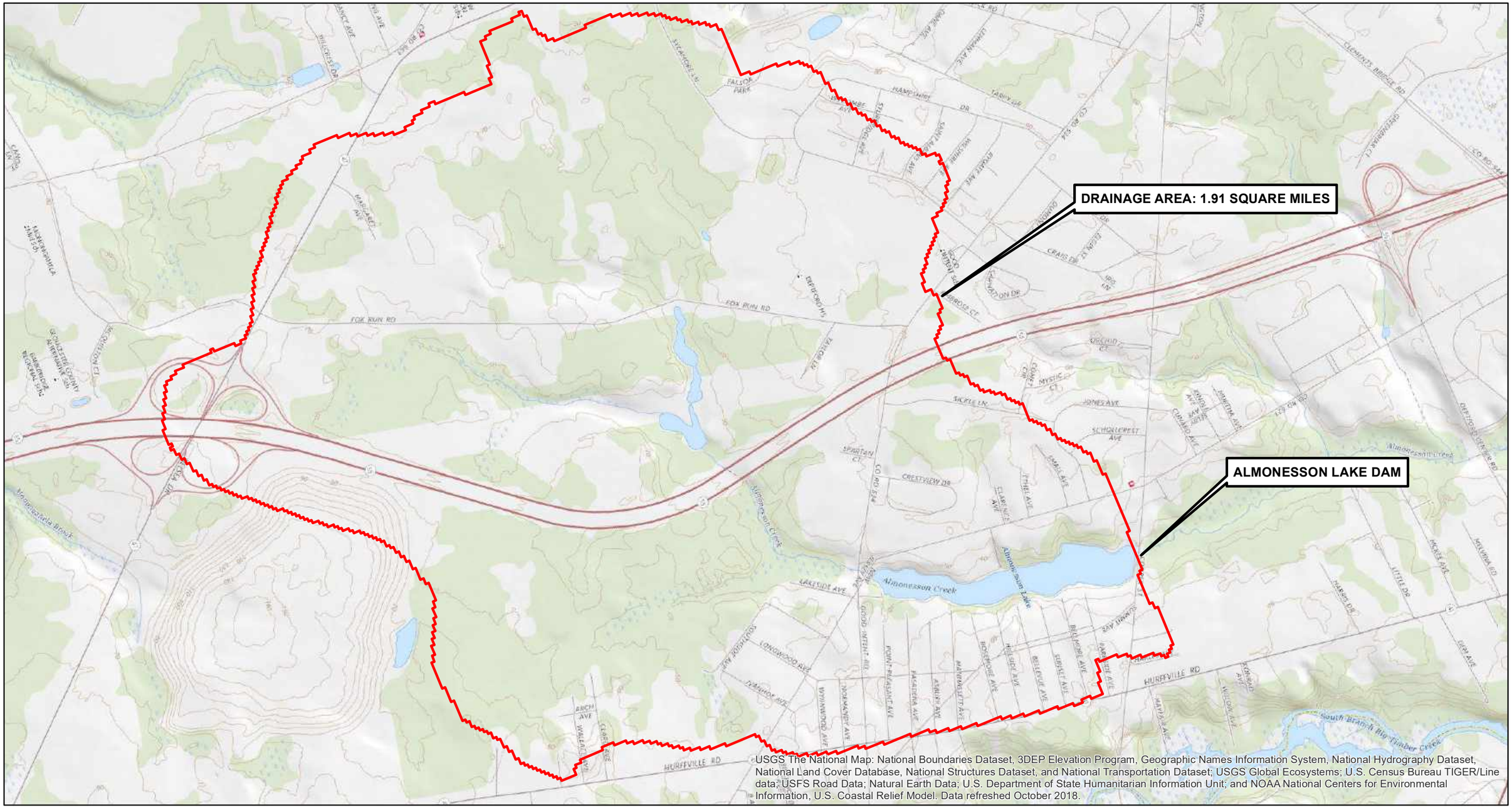
30 0 30 Kilometers

30 0 30 Miles

REF: New Jersey DISCHARGER Vol 4. No 4. Spring 1997
Water Quality Management Planning Basins

USDA
Natural Resources Conservation Service

March 1997



Legend

Drainage Area

N

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ALMONESSON LAKE DAM

DEPTFORD TOWNSHIP
GLOUCESTER COUNTY, NEW JERSEY

DRAINAGE AREA MAP

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Drainage Area

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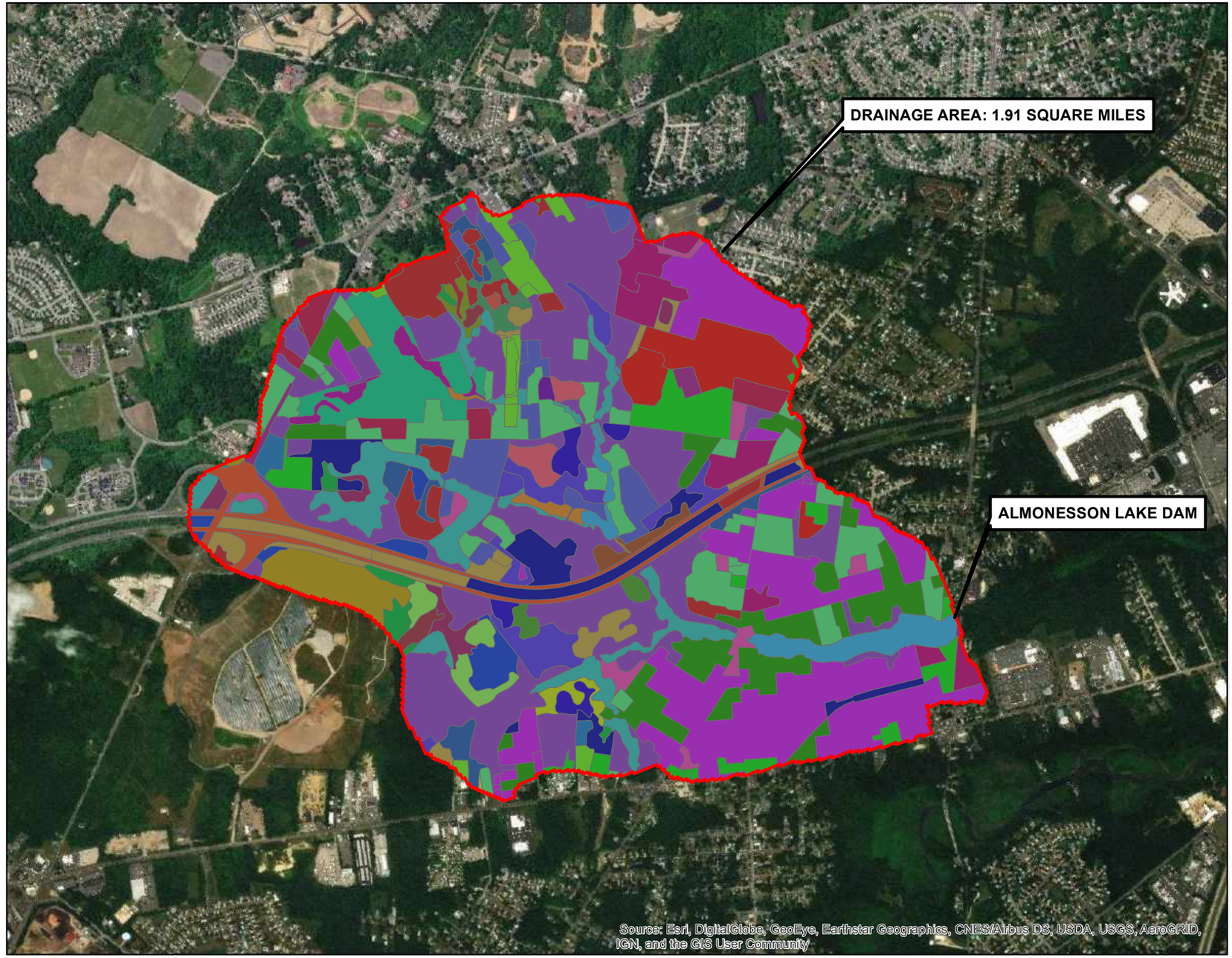
Legend

Drainage Area

LABEL12

- AGRICULTURAL WETLANDS (MODIFIED)
- ALTERED LANDS
- ARTIFICIAL LAKES
- ATHLETIC FIELDS (SCHOOLS)
- COMMERCIAL/SERVICES
- CONFINED FEEDING OPERATIONS
- CONIFEROUS BRUSH/SHRUBLAND
- CONIFEROUS FOREST (10-50% CROWN CLOSURE)
- CONIFEROUS FOREST (>50% CROWN CLOSURE)
- CONIFEROUS SCRUB/SHRUB WETLANDS
- CROPLAND AND PASTURELAND
- DECIDUOUS BRUSH/SHRUBLAND
- DECIDUOUS FOREST (10-50% CROWN CLOSURE)
- DECIDUOUS FOREST (>50% CROWN CLOSURE)
- DECIDUOUS SCRUB/SHRUB WETLANDS
- DECIDUOUS WOODED WETLANDS
- DISTURBED WETLANDS (MODIFIED)
- FORMER AGRICULTURAL WETLAND (BECOMING SHRUBBY, NOT BUILT-UP)
- INDUSTRIAL
- MAJOR ROADWAY
- MIXED DECIDUOUS/CONIFEROUS BRUSH/SHRUBLAND
- MIXED FOREST (>50% CONIFEROUS WITH 10-50% CROWN CLOSURE)
- MIXED FOREST (>50% CONIFEROUS WITH >50% CROWN CLOSURE)
- MIXED FOREST (>50% DECIDUOUS WITH 10-50% CROWN CLOSURE)
- MIXED FOREST (>50% DECIDUOUS WITH >50% CROWN CLOSURE)
- MIXED SCRUB/SHRUB WETLANDS (DECIDUOUS DOM.)
- MIXED URBAN OR BUILT-UP LAND
- OLD FIELD (< 25% BRUSH COVERED)
- ORCHARDS/VINEYARDS/NURSERIES/HORTICULTURAL AREAS
- OTHER AGRICULTURE
- OTHER URBAN OR BUILT-UP LAND
- PHRAGMITES DOMINATE INTERIOR WETLANDS
- PHRAGMITES DOMINATE OLD FIELD
- RECREATIONAL LAND
- RESIDENTIAL, RURAL, SINGLE UNIT
- RESIDENTIAL, SINGLE UNIT, LOW DENSITY
- RESIDENTIAL, SINGLE UNIT, MEDIUM DENSITY
- STORMWATER BASIN
- TRANSITIONAL AREAS
- TRANSPORTATION/COMMUNICATION/UTILITIES



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ALMONESSON LAKE DAM

DEPTFORD TOWNSHIP
GLOUCESTER COUNTY, NEW JERSEY

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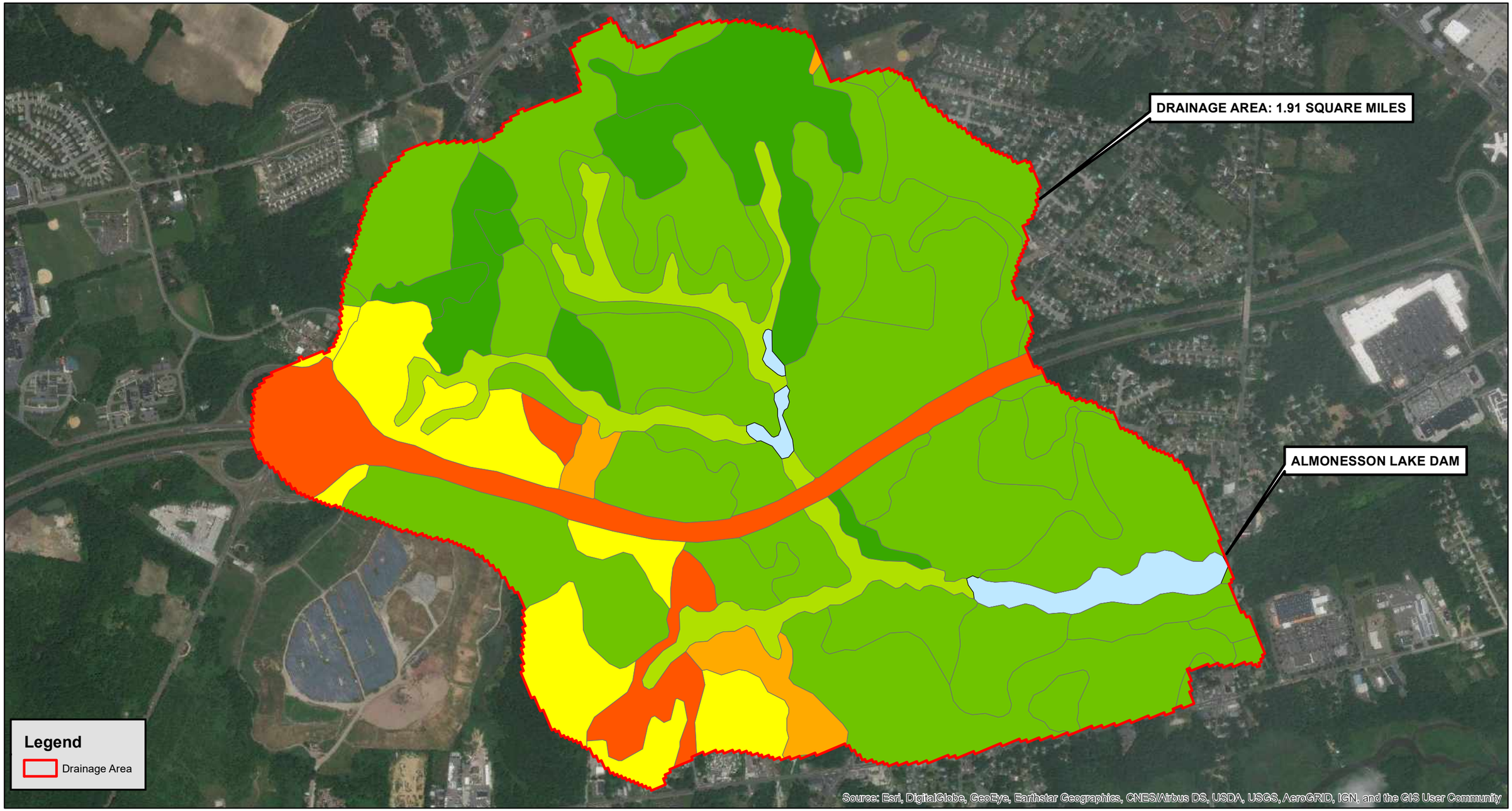

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ALMONESSON LAKE DAM

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HYDROLOGIC SOIL GROUP

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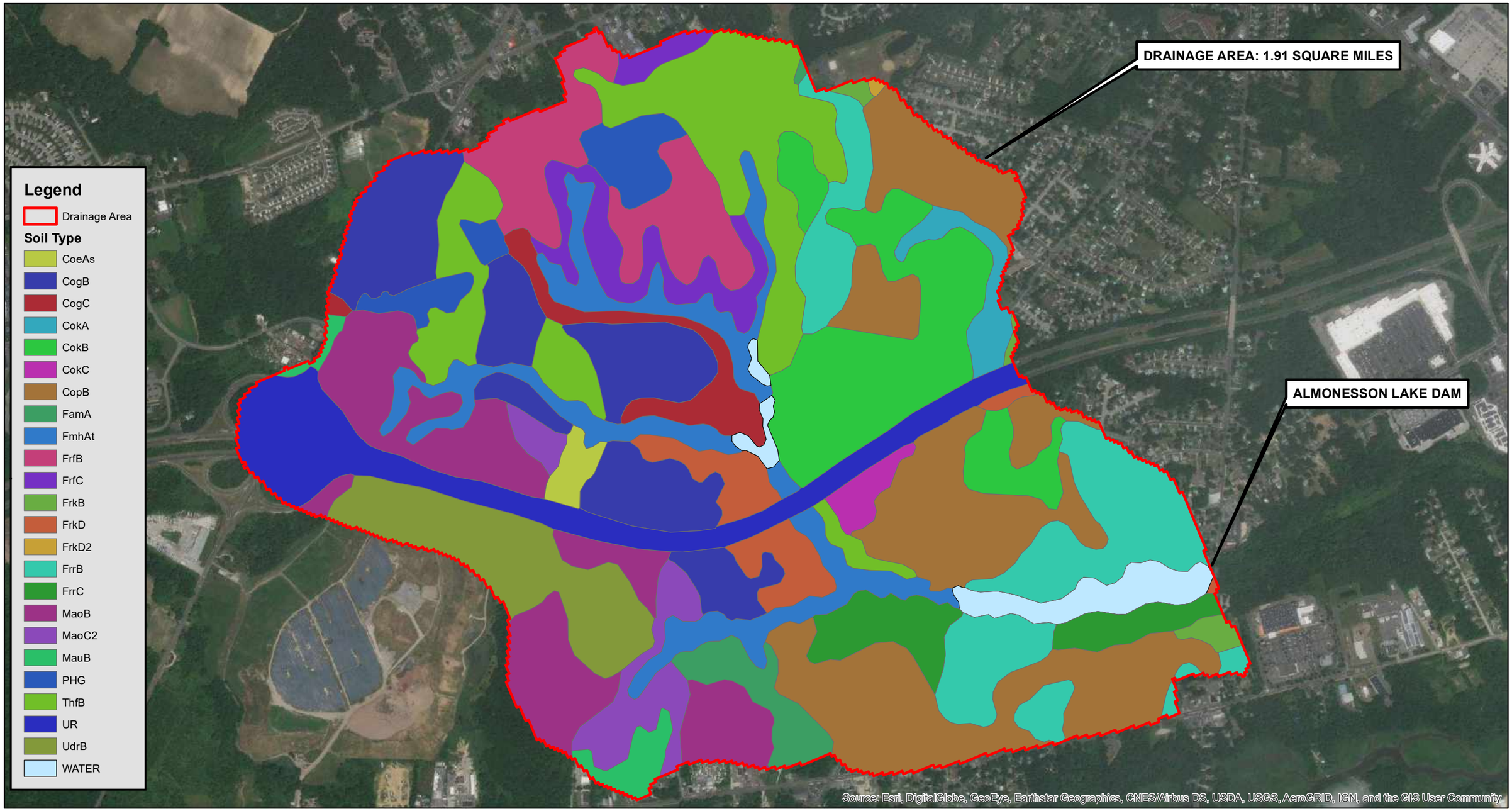

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http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

N

FRENCH & PARRELLO ASSOCIATES

1800 Route 34, Suite 101 ▪ Wall, NJ ▪ 07719 ▪ 732-312-9800

ALMONESSON LAKE DAM

DEPTFORD TOWNSHIP
GLOUCESTER COUNTY, NEW JERSEY

SOILS TYPE MAP

DATE:	SCALE:	DRAWING #
12/13/2018	1 " = 1,000 '	CN-5
DRAWN BY: C.N.	PROJECT NUMBER: 136331.001	

Document Path: O:\13K\136001\13633 - Cooper Street Bridge CR 706\13633.001 Design\CADD\GIS\13633.001 - DWG. 5 - SOIL TYPE MAP.mxd
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Legend

CN

- 30
- 32
- 39
- 48
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- 91
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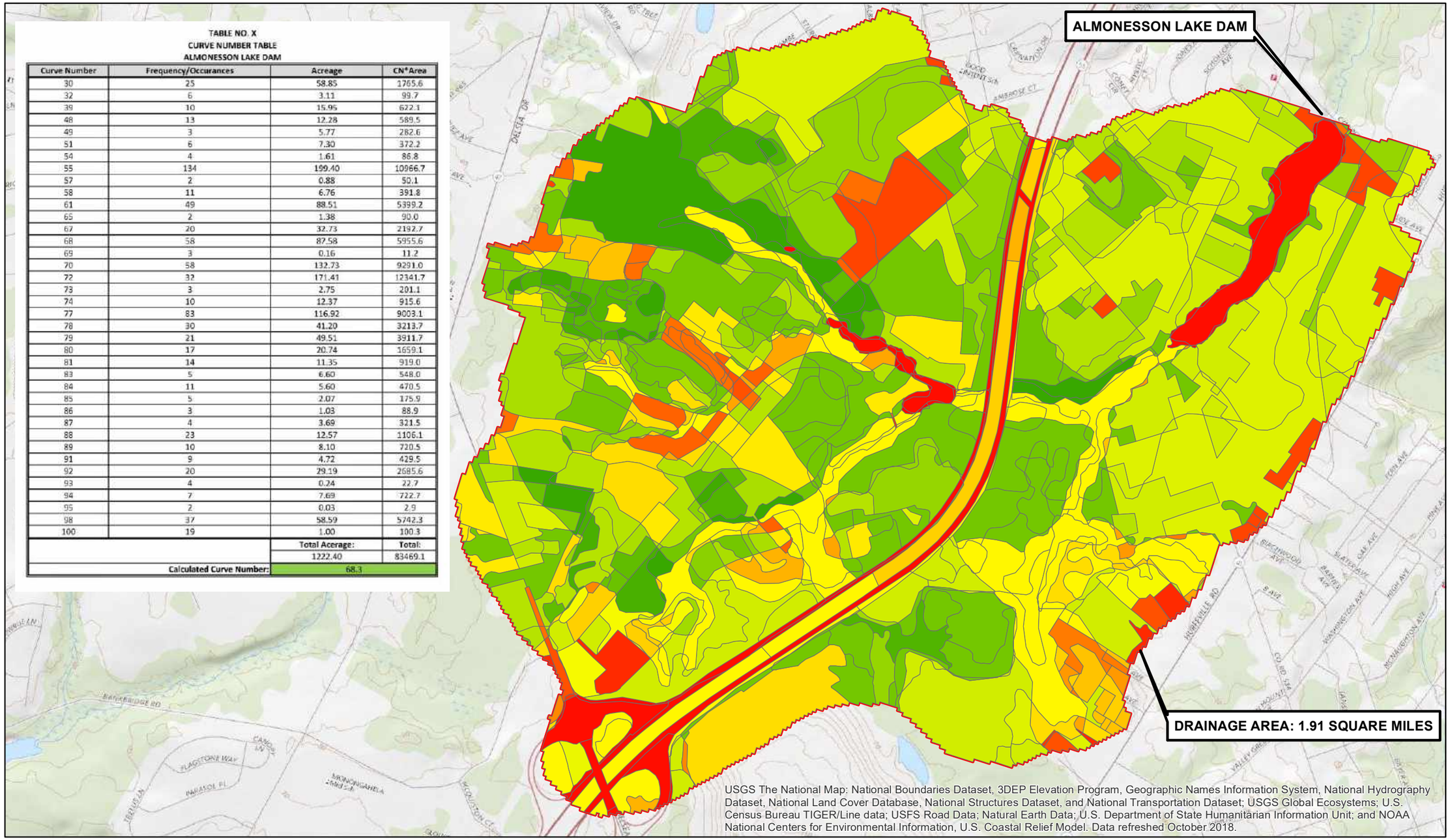
- 93
- 94
- 95
- 98
- 100
- Drainage Area

TABLE NO. X
CURVE NUMBER TABLE
ALMONESSON LAKE DAM

Curve Number	Frequency/Occurances	Acreage	CN*Area
30	25	58.85	1765.6
32	6	3.11	99.7
39	10	15.95	622.1
48	13	12.28	589.5
49	3	5.77	282.6
51	6	7.30	372.2
54	4	1.61	86.8
55	134	199.40	10966.7
57	2	0.88	50.1
58	11	6.76	391.8
61	49	88.51	5399.2
65	2	1.38	90.0
67	20	32.73	2192.7
68	58	87.58	5955.6
69	3	0.16	11.2
70	58	132.73	9291.0
72	32	171.41	12341.7
73	3	2.75	201.1
74	10	12.37	915.6
77	83	116.92	9003.1
78	30	41.20	3213.7
79	21	49.51	3911.7
80	17	20.74	1659.1
81	14	11.35	919.0
83	5	6.60	548.0
84	11	5.60	470.5
85	5	2.07	175.9
86	3	1.03	88.9
87	4	3.69	321.5
88	23	12.57	1106.1
89	10	8.10	720.5
91	9	4.72	429.5
92	20	29.19	2685.6
93	4	0.24	22.7
94	7	7.69	722.7
95	2	0.03	2.9
98	37	58.59	5742.3
100	19	1.00	100.3
		Total Acerage:	Total:
		1222.40	83469.1
	Calculated Curve Number:	68.3	



SOILS SHAPEFILE USED WAS CREATED AND DOWNLOADED VIA THE USGS WEB SOIL SRUVEY WEBSITE LOCATED AT:
http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

LAND USE SHAPEFILES OBTAINED FROM THE NJDEP GIS WEBSITE AT: http://www.nj.gov/dep/gis/lulc07cshp.html

N

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ALMONESSON LAKE DAM

DEPTFORD TOWNSHIP
GLOUCESTER COUNTY, NEW JERSEY

CURVE NUMBER MAP

DATE:	SCALE:	DRAWING #
12/19/2018	1 " = 1,000 '	CN-6
DRAWN BY:	PROJECT NUMBER:	
C.N.	136331.001	

Document Path: O:\13K\136001\13633 - Cooper Street Bridge CR 706\13633.001 Design\CADD\GIS\13633.001 - DWG 6 - CURVE NUMBER MAP.mxd
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Job:	*13633.001*	
Sheet #:	*1 of 1*	
Calculated by:	*Aisha Khadbai*	
Checked by:	*Emily Hennessy*	
SHEET FLOW		
Surface Description	Woods (dense underbrush)	
Mannings Roughness Coefficient	0.8	
Flow Length, L	100	
Two year 24 hour rainfall, P_2	3.28	*NOAA Atlas 14 (Lat: 39.818095 Long: -75.096504)*
Land Slope, s	0.005	
T_{t1} (hr)	**1.089**	Eq. 3-3
SHALLOW CONCENTRATED FLOW		
Surface Description	Woods (dense) (unpaved)	
Flow Length, L (ft)	4379.50	
Watercourse Slope	0.007	
Average velocity, V (ft/s)	1.8	*Graph 3-1 (Unpaved)*
T_{t2} (hr)	**0.676**	
CHANNEL FLOW		
Surface Description		
Cross sectional flow area, a (ft^2)	24	*Assumed 10' stream width with 1:1 sloped banks, and 2' water depth.*
Wetted perimeter, pw (ft)	15.6	
Hydraulic radius, r=a/pw	1.538	
Channel slope, s	0.004	
Mannings coefficient, n	0.035	
V	3.72	
Flow Length, L	4634.04	
T_{t3}	**0.346**	
T_c (hrs)	**2.111**	

Lag Time (hrs)	1.27

APPENDIX C

H&H FOR PROPOSED CONDITIONS

Cooper Street (County Route 706) Bridge over Almonesson Creek at Almonesson Lake (Bridge 3-K-3)
Concept Development Study
FPA Project No. 13633.001
Existing Primary Spillway Rating Curve

Existing Primary Spillway Rating Curve																										
	Weir 1 - Orifice A Flow 4'-0" Weir, EL. 23.17'				Weir 2 - Orifice B Flow 4'-0" Weir, EL. 23.39'				Weir 3 Flow 5'-6" Weir, EL. 26.03				Weir 4 Flow 5'-6" Weir, EL. 26.05				Weir 5 (Sides) - Orifice C Flow 25'-0" Weir, EL. 26.20				Total Weir Flow	Bridge Orifice Flow		Outflow Rating Curve Summary	
	L (feet)=	4	EL.	25.2	L (feet)=	4	EL.	25.2	L (feet)=	5.5	EL.	26.0	L (feet)=	5.5	EL.	26.0	L (feet)=	25	EL.	26.2					Flow
WSEL.	H (ft)	C	L (ft)	Q	H (ft)	C	L (ft)	Q	H (ft)	C	L (ft)	Q	H (ft)	C	L (ft)	Q	H (ft)	C	L (ft)	Q	Q	H (ft)	Q	WSEL.	CFS
25.2	0.00	3.3	4	0.0	0.00	3.3	4	0.0													0.0			25.2	0.0
25.5	0.30	3.3	4	2.2	0.30	3.3	4	2.2													4.3			25.5	4.3
26	0.80	3.3	4	9.4	0.80	3.3	4	9.4	0.00	3.3	5.5	0.0	0.00	3.3	5.5	0.0					18.9			26	18.9
26.2	1.00	3.3	4	13.2	1.00	3.3	4	13.2	0.20	3.3	5.5	1.6	0.20	3.3	5.5	1.6	0.00	3.3	25	0.0	29.6			26.2	29.6
26.5	1.30	3.3	4	19.6	1.30	3.3	4	19.6	0.50	3.3	5.5	6.4	0.50	3.3	5.5	6.4	0.30	3.3	25	13.6	65.5			*26.5*	*65.5*
27	1.80	3.3	4	31.9	1.80	3.3	4	31.9	1.00	3.3	5.5	18.2	1.00	3.3	5.5	18.2	0.80	3.3	25	59.0	159.1			27	159.1
27.5	2.30	3.3	4	46.0	2.30	3.3	4	46.0	1.50	3.3	5.5	33.3	1.50	3.3	5.5	33.3	1.30	3.3	25	122.3	281.1			27.5	281.1
27.72	2.52	3.3	4	52.8	2.52	3.3	4	52.8	1.72	3.3	5.5	40.9	1.72	3.3	5.5	40.9	1.52	3.3	25	154.6	342.1	4.606	1488.0	27.72	342.1
28	2.80	3.3	4	61.8	2.80	3.3	4	61.8	2.00	3.3	5.5	51.3	2.00	3.3	5.5	51.3	1.80	3.3	25	199.2	425.6	4.886	1532.5	28	425.6
28.5	1.88	3.3	4	146.6	1.88	3.3	4	146.6									2.30	3.3	25	287.8	580.9	5.386	1609.0	28.5	580.9
29	2.38	3.3	4	164.9	2.38	3.3	4	164.9									2.80	3.3	25	386.5	716.3	5.886	1682.0	29	716.3
29.5	2.88	3.3	4	181.4	2.88	3.3	4	181.4									3.30	3.3	25	494.6	857.4	6.386	1752.0	29.5	857.4
30	3.38	3.3	4	196.5	3.38	3.3	4	196.5									3.80	3.3	25	611.1	1004.2	6.886	1819.3	30	1004.2
30.5	3.88	3.3	4	210.6	3.88	3.3	4	210.6									4.30	3.3	25	735.6	1156.7	7.386	1884.2	30.5	1156.7
31	4.38	3.3	4	223.7	4.38	3.3	4	223.7									4.80	3.3	25	867.6	1315.0	7.886	1947.0	31	1315.0
31.28	4.66	3.3	4	230.7	4.66	3.3	4	230.7									3.96	3.3	25	957.0	1418.5	8.166	1981.2	31.28	1418.5
31.5	4.88	3.3	4	236.1	4.88	3.3	4	236.1									4.18	3.3	25	983.2	1455.5	8.386	2007.7	31.5	1455.5
32	5.38	3.3	4	247.9	5.38	3.3	4	247.9									4.68	3.3	25	1,040.3	1536.2	8.886	2066.7	32	1536.2
32.5	5.88	3.3	4	259.2	5.88	3.3	4	259.2									5.18	3.3	25	1,094.5	1612.9	9.386	2124.1	32.5	1612.9
33	6.38	3.3	4	270.0	6.38	3.3	4	270.0									5.68	3.3	25	1,146.1	1686.1	9.886	2179.9	33	1686.1
33.5	6.88	3.3	4	280.4	6.88	3.3	4	280.4									6.18	3.3	25	1,195.5	1756.3	10.386	2234.3	*33.5*	*1756.3*
34	7.38	3.3	4	290.4	7.38	3.3	4	290.4									6.68	3.3	25	1,242.9	1823.7	10.886	2287.5	34	1823.7

Low Point of Dam = 31.28'

```
1****************************************                                                    ****************************************
 *                                      *                                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                *                                                    *          609 SECOND STREET           *
 *                                      *                                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   17JUN19  TIME  13:20:09  *                                                    *           (916) 756-1104             *
 *                                      *                                                    *                                      *
 ****************************************                                                    ****************************************

                                                X     X  XXXXXXX   XXXXX           X
                                                X     X  X        X     X         XX
                                                X     X  X        X                X
                                                XXXXXXX  XXXX     X        XXXXX   X
                                                X     X  X        X                X
                                                X     X  X        X     X          X
                                                X     X  XXXXXXX   XXXXX          XXX


          THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

          THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
          THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
          NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
          DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
          KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1                                                   HEC-1 INPUT                                                   PAGE  1

          LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

            1           ID    PREPARED BY FRENCH & PARRELLO ASSOCIATES
            2           ID    ALMONESSON LAKE DAM
            3           ID    FPA PROJECT NO. 13633.001
            4           ID    DEPTFORD TOWNSHIP, GLOUCESTER COUNTY, NEW JERSEY
            5           ID
            6           ID    DATE PREPARED: JUNE 2019
            7           ID    HYDROLOGIC AND HYDRAULIC REPORT
            8           ID
            9           ID    VERTICAL DATUM IS NAVD88
           10           ID    2, 5, 10, 25, 50, AND 100 YEAR STORM, TYPE III DISTRIBUTION
           11           ID    NOAA ATLAS 14, VOL. 2, VER. 3 POINT PRECIPITATION FREQUENCY ESTIMATES
           12           ID    NCRS 24-HOUR RAINFALL DISTRIBUTION
           13           ID
           14           ID    ALMONESSON LAKE DAM
           15           ID    STORAGE INFORMATION AND RATING CURVE FROM DAM EVALUATION REPORT - PHASE I
           16           ID    FOR ALMONESSON LAKE DAM BY SCHOOR DEPALMA DATED OCTOBER 2001
           17           ID    DRAINAGE AREA DERIVED FROM USGS TOPOGRAPHIC QUADRANGLES
           18           ID
           19           ID    2, 5, 10, 25, 50, AND 100 YEAR STORM EVENTS
           20           ID    EXISTING CONDITIONS
```

```
          21          ID
                      *DIAGRAM
          22          IT       6       0       0     300
          23          IO       5       0
          24          JR    PREC   0.395   0.507     0.6   0.742   0.864       1

          25          KK     A-1SUB-AREA 1 TO COOPER STREET
          26          KM  *** COMPUTE HYDROGRAPH-RUNOFF TO COOPER STREET  ***
          27          IN       6
          28          PB    8.31
          29          PC  0.0000 0.00100 0.00200 0.00300 0.00400 0.00500 0.00600 0.00700 0.00800 0.00900
          30          PC  0.0100 0.01100 0.01200 0.01300 0.01400 0.01500 0.01600 0.01700 0.01800 0.01900
          31          PC  0.0200 0.02101 0.02203 0.02307 0.02412 0.02519 0.02627 0.02737 0.02848 0.02961
          32          PC  0.0308 0.03191 0.03308 0.03427 0.03547 0.03669 0.03792 0.03917 0.04043 0.04171
          33          PC  0.0430 0.04431 0.04563 0.04697 0.04832 0.04969 0.05107 0.05247 0.05388 0.05531
          34          PC  0.0567 0.05821 0.05968 0.06117 0.06267 0.06419 0.06572 0.06727 0.06883 0.07041
          35          PC  0.0720 0.07363 0.07530 0.07703 0.07880 0.08063 0.08250 0.08443 0.08640 0.08843
          36          PC  0.0905 0.09263 0.09480 0.09703 0.09930 0.10163 0.10400 0.10643 0.10890 0.11143
          37          PC  0.1140 0.11666 0.11943 0.12232 0.12532 0.12844 0.13167 0.13502 0.13848 0.14206
          38          PC  0.1458 0.14956 0.15348 0.15752 0.16167 0.16594 0.17032 0.17482 0.17943 0.18416
          39          PC  0.1890 0.19402 0.19928 0.20478 0.21052 0.21650 0.22272 0.22918 0.23588 0.24282
          40          PC  0.2500 0.25776 0.26644 0.27604 0.28656 0.29800 0.31430 0.33940 0.37330 0.41600
          41          PC  0.5000 0.58400 0.62670 0.66060 0.68570 0.70200 0.71344 0.72396 0.73356 0.74224
          42          PC  0.7500 0.75718 0.76412 0.77082 0.77728 0.78350 0.78948 0.79522 0.80072 0.80598
          43          PC  0.8110 0.81584 0.82057 0.82518 0.82968 0.83406 0.83833 0.84248 0.84652 0.85044
          44          PC  0.8543 0.85794 0.86152 0.86498 0.86833 0.87156 0.87468 0.87768 0.88057 0.88334
          45          PC  0.8860 0.88858 0.89110 0.89358 0.89600 0.89838 0.90070 0.90298 0.90520 0.90738
          46          PC  0.9095 0.91158 0.91360 0.91558 0.91750 0.91938 0.92120 0.92298 0.92470 0.92638
          47          PC  0.9280 0.92959 0.93117 0.93273 0.93428 0.93581 0.93733 0.93883 0.94032 0.94179
          48          PC  0.9433 0.94469 0.94612 0.94753 0.94893 0.95031 0.95168 0.95303 0.95437 0.95569
          49          PC  0.9570 0.95829 0.95958 0.96085 0.96211 0.96336 0.96460 0.96582 0.96704 0.96824
          50          PC  0.9694 0.97062 0.97179 0.97295 0.97410 0.97523 0.97636 0.97747 0.97858 0.97967
          51          PC  0.9808 0.98182 0.98288 0.98392 0.98496 0.98598 0.98700 0.98800 0.98899 0.98997
          52          PC  0.9909 0.99189 0.99284 0.99377 0.99470 0.99561 0.99651 0.99740 0.99828 0.99914
          53          PC  1.0000 1.00000 1.00000 1.00000 1.00000
1                                                HEC-1 INPUT                                          PAGE  2

        LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          54          BA    1.91
          55          LS       0      68
          56          US    1.27     0.4

          57          KK   DAM-1COOPER STREET DAM
          58          KM  *** ROUTE FLOW ***
          59          KM  *** STAGE-STORAGE-DISCHARGE FROM USGS QUADS ***
          60          RS       1    ELEV   25.38
          61          SA  0.0023  19.139  23.366  30.516
          62          SE    13.2   25.38      30      35
          63          SQ       0     4.3    18.9    29.6   159.1   281.1   342.1   425.6   580.9   716.3
          64          SQ   857.4  1004.2  1156.7    1315  1418.5  1455.5  1536.2  1612.9  1686.1  1823.7
          65          SE    25.2    25.5      26    26.2      27    27.5   27.72      28    28.5      29
          66          SE    29.5      30    30.5      31   31.28    31.5      32    32.5      33      34
          67          ST   31.28       0     3.1     1.5
          68          SW       0    64.8   258.3     350   430.4   529.7   616.1   691.4   760.8     800
          69          SE   31.28    31.5      32    32.5      33      34      35      36      37      38
          70          ZZ
1
```

```
                 SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    25         A-1
                 V
                 V
    57       DAM-1

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************                                    ****************************************
 *                                       *                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998              *                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1                *                                    *           609 SECOND STREET          *
 *                                       *                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   17JUN19  TIME  13:20:09   *                                    *           (916) 756-1104             *
 *                                       *                                    *                                      *
 *****************************************                                    ****************************************
```

PREPARED BY FRENCH & PARRELLO ASSOCIATES
ALMONESSON LAKE DAM
FPA PROJECT NO. 13633.001
DEPTFORD TOWNSHIP, GLOUCESTER COUNTY, NEW JERSEY

DATE PREPARED: JUNE 2019
HYDROLOGIC AND HYDRAULIC REPORT

VERTICAL DATUM IS NAVD88
2, 5, 10, 25, 50, AND 100 YEAR STORM, TYPE III DISTRIBUTION
NOAA ATLAS 14, VOL. 2, VER. 3 POINT PRECIPITATION FREQUENCY ESTIMATES
NCRS 24-HOUR RAINFALL DISTRIBUTION

ALMONESSON LAKE DAM
STORAGE INFORMATION AND RATING CURVE FROM DAM EVALUATION REPORT - PHASE I
FOR ALMONESSON LAKE DAM BY SCHOOR DEPALMA DATED OCTOBER 2001
DRAINAGE AREA DERIVED FROM USGS TOPOGRAPHIC QUADRANGLES

2, 5, 10, 25, 50, AND 100 YEAR STORM EVENTS
EXISTING CONDITIONS

```
  23 IO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN           6  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1    0  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         300  NUMBER OF HYDROGRAPH ORDINATES
```

```
                    NDDATE      2    0  ENDING DATE
                    NDTIME        0554  ENDING TIME
                    ICENT           19  CENTURY MARK

                 COMPUTATION INTERVAL     .10 HOURS
                      TOTAL TIME BASE   29.90 HOURS

          ENGLISH UNITS
               DRAINAGE AREA         SQUARE MILES
               PRECIPITATION DEPTH   INCHES
               LENGTH, ELEVATION     FEET
               FLOW                  CUBIC FEET PER SECOND
               STORAGE VOLUME        ACRE-FEET
               SURFACE AREA          ACRES
               TEMPERATURE           DEGREES FAHRENHEIT

     JP          MULTI-PLAN OPTION
                       NPLAN           1  NUMBER OF PLANS

     JR          MULTI-RATIO OPTION
                     RATIOS OF PRECIPITATION
                     .40       .51       .60       .74       .86      1.00
1

               PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                  FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                                 TIME TO PEAK IN HOURS


                                                          RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN            RATIO 1  RATIO 2  RATIO 3  RATIO 4  RATIO 5  RATIO 6
                                                        .40      .51      .60      .74      .86     1.00

 HYDROGRAPH AT
+                   A-1      1.91     1   FLOW         137.     257.     372.     567.     746.     957.
                                          TIME        13.70    13.60    13.50    13.50    13.50    13.40

 ROUTED TO
+                 DAM-1      1.91     1   FLOW          91.     183.     277.     445.     597.     766.
                                          TIME        16.90    16.00    15.60    15.10    14.90    14.80

                                       ** PEAK STAGES IN FEET **
                                       1   STAGE       26.58    27.10    27.48    28.06    28.56    29.18
                                           TIME        16.90    16.00    15.60    15.10    14.90    14.80
1                                  SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION    DAM-1
                              (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)


     PLAN  1 ...............                  INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                                ELEVATION          25.38              31.28            31.28
                                STORAGE              79.               208.             208.
                                OUTFLOW               3.              1419.            1419.


                       RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
                         OF     RESERVOIR      DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW   FAILURE
                        PMF      W.S.ELEV    OVER DAM     AC-FT       CFS       HOURS        HOURS       HOURS
```

.40	26.58	.00	102.	91.	.00	16.90	.00
.51	27.10	.00	113.	183.	.00	16.00	.00
.60	27.48	.00	121.	277.	.00	15.60	.00
.74	28.06	.00	133.	445.	.00	15.10	.00
.86	28.56	.00	144.	597.	.00	14.90	.00
1.00	29.18	.00	158.	766.	.00	14.80	.00

*** NORMAL END OF HEC-1 ***

```
1****************************************                                                    ****************************************
 *                                      *                                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                                                    *          609 SECOND STREET           *
 *                                      *                                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   23JUL19  TIME  16:06:42  *                                                    *           (916) 756-1104             *
 *                                      *                                                    *                                      *
 ****************************************                                                    ****************************************

                                                X     X  XXXXXXX   XXXXX           X
                                                X     X  X        X     X         XX
                                                X     X  X        X                X
                                                XXXXXXX  XXXX     X        XXXXX   X
                                                X     X  X        X                X
                                                X     X  X        X     X          X
                                                X     X  XXXXXXX   XXXXX          XXX


            THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

            THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
            THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
            NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
            DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
            KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1                                                   HEC-1 INPUT                                                PAGE  1

           LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              1          ID    PREPARED BY FRENCH & PARRELLO ASSOCIATES
              2          ID    ALMONESSON LAKE DAM
              3          ID    FPA PROJECT NO. 13633.001
              4          ID    DEPTFORD TOWNSHIP, GLOUCESTER COUNTY, NEW JERSEY
              5          ID
              6          ID    DATE PREPARED: JUNE 2019
              7          ID    HYDROLOGIC AND HYDRAULIC REPORT
              8          ID
              9          ID    VERTICAL DATUM IS NAVD88
             10          ID    30%, 40%, 50% AND 100% PMP STORM EVENTS
             11          ID    HMR-51 - ALL SEASON PMP FOR 24-HOUR 10 SQMI
             12          ID
             13          ID  ALMONESSON LAKE DAM
             14          ID  STORAGE INFORMATION AND RATING CURVE DEVELOPED BY FPA
             15          ID  DRAINAGE AREA DERIVED FROM USGS TOPOGRAPHIC QUADRANGLES USING STREAMSTATS
             16          ID
             17          ID  30%, 40%, 50% AND 100% PMP STORM EVENTS
             18          ID  EXISTING CONDITIONS
             19          ID
                         *DIAGRAM
```

```
            20          IT       6       0       0     300
            21          IO       0       0
            22          JR    PREC     0.3     0.4     0.5       1

            23          KK     A-1SUB-AREA 1 TO COOPER STREET
            24          KM  *** COMPUTE HYDROGRAPH-RUNOFF TO COOPER STREET  ***
            25          IN       6
            26          PB      35
            27          PC  0.0000 0.00100 0.00200 0.00300 0.00400 0.00500 0.00600 0.00700 0.00800 0.00900
            28          PC  0.0100 0.01100 0.01200 0.01300 0.01400 0.01500 0.01600 0.01700 0.01800 0.01900
            29          PC  0.0200 0.02101 0.02203 0.02307 0.02412 0.02519 0.02627 0.02737 0.02848 0.02961
            30          PC  0.0308 0.03191 0.03308 0.03427 0.03547 0.03669 0.03792 0.03917 0.04043 0.04171
            31          PC  0.0430 0.04431 0.04563 0.04697 0.04832 0.04969 0.05107 0.05247 0.05388 0.05531
            32          PC  0.0567 0.05821 0.05968 0.06117 0.06267 0.06419 0.06572 0.06727 0.06883 0.07041
            33          PC  0.0720 0.07363 0.07530 0.07703 0.07880 0.08063 0.08250 0.08443 0.08640 0.08843
            34          PC  0.0905 0.09263 0.09480 0.09703 0.09930 0.10163 0.10400 0.10643 0.10890 0.11143
            35          PC  0.1140 0.11666 0.11943 0.12232 0.12532 0.12844 0.13167 0.13502 0.13848 0.14206
            36          PC  0.1458 0.14956 0.15348 0.15752 0.16167 0.16594 0.17032 0.17482 0.17943 0.18416
            37          PC  0.1890 0.19402 0.19928 0.20478 0.21052 0.21650 0.22272 0.22918 0.23588 0.24282
            38          PC  0.2500 0.25776 0.26644 0.27604 0.28656 0.29800 0.31430 0.33940 0.37330 0.41600
            39          PC  0.5000 0.58400 0.62670 0.66060 0.68570 0.70200 0.71344 0.72396 0.73356 0.74224
            40          PC  0.7500 0.75718 0.76412 0.77082 0.77728 0.78350 0.78948 0.79522 0.80072 0.80598
            41          PC  0.8110 0.81584 0.82057 0.82518 0.82968 0.83406 0.83833 0.84248 0.84652 0.85044
            42          PC  0.8543 0.85794 0.86152 0.86498 0.86833 0.87156 0.87468 0.87768 0.88057 0.88334
            43          PC  0.8860 0.88858 0.89110 0.89358 0.89600 0.89838 0.90070 0.90298 0.90520 0.90738
            44          PC  0.9095 0.91158 0.91360 0.91558 0.91750 0.91938 0.92120 0.92298 0.92470 0.92638
            45          PC  0.9280 0.92959 0.93117 0.93273 0.93428 0.93581 0.93733 0.93883 0.94032 0.94179
            46          PC  0.9433 0.94469 0.94612 0.94753 0.94893 0.95031 0.95168 0.95303 0.95437 0.95569
            47          PC  0.9570 0.95829 0.95958 0.96085 0.96211 0.96336 0.96460 0.96582 0.96704 0.96824
            48          PC  0.9694 0.97062 0.97179 0.97295 0.97410 0.97523 0.97636 0.97747 0.97858 0.97967
            49          PC  0.9808 0.98182 0.98288 0.98392 0.98496 0.98598 0.98700 0.98800 0.98899 0.98997
            50          PC  0.9909 0.99189 0.99284 0.99377 0.99470 0.99561 0.99651 0.99740 0.99828 0.99914
            51          PC  1.0000 1.00000 1.00000 1.00000 1.00000
            52          BA    1.91
            53          LS       0      68
1                                                HEC-1 INPUT                                                PAGE  2

          LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

            54          US    1.27     0.4

            55          KK   DAM-1COOPER STREET DAM
            56          KM  *** ROUTE FLOW ***
            57          KM  *** STAGE-STORAGE-DISCHARGE FROM USGS QUADS ***
            58          RS       1    ELEV   25.38
            59          SA  0.0023  19.139  23.366  30.516
            60          SE    13.2   25.38      30      35
            61          SQ       0     4.3    18.9    29.6   159.1   281.1   342.1   425.6   580.9   716.3
            62          SQ   857.4  1004.2  1156.7    1315  1418.5  1455.5  1536.2  1612.9  1686.1  1823.7
            63          SE    25.2    25.5      26    26.2      27    27.5   27.72      28    28.5      29
            64          SE    29.5      30    30.5      31   31.28    31.5      32    32.5      33      34
            65          ST   31.28       0     2.6     1.5
            66          SW       0    64.8   258.3     350   430.4   529.7   616.1   691.4   760.8     800
            67          SE   31.28    31.5      32    32.5      33      34      35      36      37      38
            68          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
```

```
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    23         A-1
                 V
                 V
    55       DAM-1

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                                    ****************************************
 *                                      *                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                                    *          609 SECOND STREET           *
 *                                      *                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   23JUL19  TIME  16:06:42  *                                    *           (916) 756-1104             *
 *                                      *                                    *                                      *
 ****************************************                                    ****************************************


                            PREPARED BY FRENCH & PARRELLO ASSOCIATES
                            ALMONESSON LAKE DAM
                            FPA PROJECT NO. 13633.001
                            DEPTFORD TOWNSHIP, GLOUCESTER COUNTY, NEW JERSEY

                            DATE PREPARED: JUNE 2019
                            HYDROLOGIC AND HYDRAULIC REPORT

                            VERTICAL DATUM IS NAVD88
                            30%, 40%, 50% AND 100% PMP STORM EVENTS
                            HMR-51 - ALL SEASON PMP FOR 24-HOUR 10 SQMI

                          ALMONESSON LAKE DAM
                          STORAGE INFORMATION AND RATING CURVE DEVELOPED BY FPA
                          DRAINAGE AREA DERIVED FROM USGS TOPOGRAPHIC QUADRANGLES USING STREAMSTATS

                          30%, 40%, 50% AND 100% PMP STORM EVENTS
                          EXISTING CONDITIONS


   21 IO          OUTPUT CONTROL VARIABLES
                        IPRNT           0  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

      IT          HYDROGRAPH TIME DATA
                         NMIN           6  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1    0  STARTING DATE
                        ITIME        0000  STARTING TIME
                           NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2    0  ENDING DATE
                       NDTIME        0554  ENDING TIME
                       ICENT          19  CENTURY MARK
```

```
                  COMPUTATION INTERVAL     .10 HOURS
                       TOTAL TIME BASE   29.90 HOURS

          ENGLISH UNITS
               DRAINAGE AREA         SQUARE MILES
               PRECIPITATION DEPTH   INCHES
               LENGTH, ELEVATION     FEET
               FLOW                  CUBIC FEET PER SECOND
               STORAGE VOLUME        ACRE-FEET
               SURFACE AREA          ACRES
               TEMPERATURE           DEGREES FAHRENHEIT

     JP          MULTI-PLAN OPTION
                       NPLAN           1  NUMBER OF PLANS

     JR          MULTI-RATIO OPTION
                     RATIOS OF PRECIPITATION
                     .30       .40       .50      1.00


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  23 KK     *       A-1  *     SUB-AREA 1 TO COOPER STREET
            *            *
            **************
                          *** COMPUTE HYDROGRAPH-RUNOFF TO COOPER STREET  ***

  25 IN          TIME DATA FOR INPUT TIME SERIES
                       JXMIN           6  TIME INTERVAL IN MINUTES
                      JXDATE      1    0  STARTING DATE
                      JXTIME           0  STARTING TIME

               SUBBASIN RUNOFF DATA

  52 BA          SUBBASIN CHARACTERISTICS
                       TAREA        1.91  SUBBASIN AREA

                 PRECIPITATION DATA

  26 PB                STORM       35.00  BASIN TOTAL PRECIPITATION

  27 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .02       .03       .03       .04       .08
```

```
                    .08      .04      .03      .03      .02      .01      .01      .01      .01      .01
                    .01      .01      .01      .01      .01      .01      .01      .01      .01      .01
                    .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                    .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                    .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                    .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                    .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                    .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                    .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                    .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                    .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                    .00      .00      .00      .00      .00      .00      .00      .00      .00      .00

  53 LS          SCS LOSS RATE
                      STRTL         .94  INITIAL ABSTRACTION
                     CRVNBR       68.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  54 US          SNYDER UNITGRAPH
                         TP        1.27  LAG
                         CP         .40  PEAKING COEFFICIENT

                 SYNTHETIC ACCUMULATED-AREA VS. TIME CURVE WILL BE USED

                                                                  ***
APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

                                                   UNIT HYDROGRAPH PARAMETERS
                                             CLARK   TC=  1.30 HR,       R=  2.38 HR
                                            SNYDER   TP=  1.27 HR,      CP=   .40

                                                        UNIT HYDROGRAPH
                                                   133 END-OF-PERIOD ORDINATES
                 8.       29.       60.       97.      138.      184.      231.      277.      317.      350.
               375.      392.      398.      389.      373.      358.      343.      329.      316.      303.
               290.      278.      267.      256.      245.      235.      226.      216.      207.      199.
               191.      183.      175.      168.      161.      155.      148.      142.      136.      131.
               125.      120.      115.      111.      106.      102.       97.       93.       90.       86.
                82.       79.       76.       73.       70.       67.       64.       61.       59.       56.
                54.       52.       50.       48.       46.       44.       42.       40.       39.       37.
                36.       34.       33.       31.       30.       29.       28.       27.       25.       24.
                23.       22.       22.       21.       20.       19.       18.       17.       17.       16.
                15.       15.       14.       14.       13.       12.       12.       11.       11.       11.
                10.       10.        9.        9.        9.        8.        8.        8.        7.        7.
                 7.        6.        6.        6.        6.        5.        5.        5.        5.        5.
                 4.        4.        4.        4.        4.        4.        3.        3.        3.        3.
                 3.        3.        3.

*****************************************************************************************************************************

                                                   HYDROGRAPH AT STATION      A-1

*****************************************************************************************************************************
                                                                          *
       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q               *       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q
                                                                          *
        1     0000    1     .00     .00     .00         0.               *        1     1500  151     .14     .00     .13      4594.
        1     0006    2     .04     .04     .00         0.               *        1     1506  152     .13     .00     .12      4483.
```

1	0012	3	.04	.04	.00	0.	*	1	1512	153	.13	.00	.12	4374.
1	0018	4	.03	.03	.00	0.	*	1	1518	154	.12	.00	.12	4267.
1	0024	5	.04	.04	.00	0.	*	1	1524	155	.12	.00	.12	4163.
1	0030	6	.03	.03	.00	0.	*	1	1530	156	.11	.00	.11	4061.
1	0036	7	.04	.04	.00	0.	*	1	1536	157	.11	.00	.11	3961.
1	0042	8	.04	.04	.00	0.	*	1	1542	158	.11	.00	.10	3864.
1	0048	9	.04	.04	.00	0.	*	1	1548	159	.10	.00	.10	3768.
1	0054	10	.03	.03	.00	0.	*	1	1554	160	.10	.00	.10	3674.
1	0100	11	.04	.04	.00	0.	*	1	1600	161	.09	.00	.09	3583.
1	0106	12	.04	.04	.00	0.	*	1	1606	162	.09	.00	.09	3493.
1	0112	13	.04	.04	.00	0.	*	1	1612	163	.09	.00	.09	3404.
1	0118	14	.04	.04	.00	0.	*	1	1618	164	.09	.00	.09	3318.
1	0124	15	.04	.04	.00	0.	*	1	1624	165	.08	.00	.08	3233.
1	0130	16	.03	.03	.00	0.	*	1	1630	166	.08	.00	.08	3150.
1	0136	17	.04	.04	.00	0.	*	1	1636	167	.08	.00	.08	3069.
1	0142	18	.04	.04	.00	0.	*	1	1642	168	.08	.00	.08	2989.
1	0148	19	.03	.03	.00	0.	*	1	1648	169	.08	.00	.08	2912.
1	0154	20	.04	.04	.00	0.	*	1	1654	170	.08	.00	.07	2836.
1	0200	21	.04	.04	.00	0.	*	1	1700	171	.07	.00	.07	2763.
1	0206	22	.04	.04	.00	0.	*	1	1706	172	.07	.00	.07	2691.
1	0212	23	.04	.04	.00	0.	*	1	1712	173	.07	.00	.07	2622.
1	0218	24	.04	.04	.00	0.	*	1	1718	174	.07	.00	.07	2554.
1	0224	25	.04	.04	.00	0.	*	1	1724	175	.07	.00	.07	2488.
1	0230	26	.04	.04	.00	0.	*	1	1730	176	.07	.00	.06	2424.
1	0236	27	.04	.04	.00	0.	*	1	1736	177	.06	.00	.06	2362.
1	0242	28	.04	.04	.00	0.	*	1	1742	178	.06	.00	.06	2301.
1	0248	29	.04	.04	.00	0.	*	1	1748	179	.06	.00	.06	2243.
1	0254	30	.04	.04	.00	0.	*	1	1754	180	.06	.00	.06	2185.
1	0300	31	.04	.04	.00	0.	*	1	1800	181	.06	.00	.06	2129.
1	0306	32	.04	.04	.00	0.	*	1	1806	182	.06	.00	.05	2075.
1	0312	33	.04	.04	.00	0.	*	1	1812	183	.06	.00	.05	2022.
1	0318	34	.04	.04	.00	1.	*	1	1818	184	.05	.00	.05	1970.
1	0324	35	.04	.04	.00	1.	*	1	1824	185	.05	.00	.05	1920.
1	0330	36	.04	.04	.01	2.	*	1	1830	186	.05	.00	.05	1871.
1	0336	37	.04	.04	.01	3.	*	1	1836	187	.05	.00	.05	1823.
1	0342	38	.04	.04	.01	4.	*	1	1842	188	.05	.00	.05	1777.
1	0348	39	.04	.04	.01	5.	*	1	1848	189	.05	.00	.05	1732.
1	0354	40	.04	.04	.01	7.	*	1	1854	190	.05	.00	.05	1688.
1	0400	41	.05	.04	.01	9.	*	1	1900	191	.05	.00	.05	1646.
1	0406	42	.05	.04	.01	11.	*	1	1906	192	.05	.00	.05	1606.
1	0412	43	.05	.04	.01	13.	*	1	1912	193	.05	.00	.05	1566.
1	0418	44	.05	.04	.01	16.	*	1	1918	194	.05	.00	.05	1528.
1	0424	45	.05	.04	.01	19.	*	1	1924	195	.05	.00	.05	1491.
1	0430	46	.05	.04	.01	22.	*	1	1930	196	.05	.00	.05	1456.
1	0436	47	.05	.04	.01	25.	*	1	1936	197	.05	.00	.05	1421.
1	0442	48	.05	.03	.01	29.	*	1	1942	198	.05	.00	.05	1388.
1	0448	49	.05	.03	.01	33.	*	1	1948	199	.05	.00	.05	1356.
1	0454	50	.05	.03	.02	37.	*	1	1954	200	.05	.00	.05	1325.
1	0500	51	.05	.03	.02	41.	*	1	2000	201	.05	.00	.05	1295.
1	0506	52	.05	.04	.02	46.	*	1	2006	202	.05	.00	.04	1266.
1	0512	53	.05	.03	.02	50.	*	1	2012	203	.05	.00	.04	1238.
1	0518	54	.05	.03	.02	55.	*	1	2018	204	.04	.00	.04	1210.
1	0524	55	.05	.03	.02	60.	*	1	2024	205	.04	.00	.04	1184.
1	0530	56	.05	.03	.02	66.	*	1	2030	206	.04	.00	.04	1159.
1	0536	57	.05	.03	.02	71.	*	1	2036	207	.04	.00	.04	1134.
1	0542	58	.05	.03	.02	77.	*	1	2042	208	.04	.00	.04	1110.
1	0548	59	.05	.03	.02	82.	*	1	2048	209	.04	.00	.04	1087.
1	0554	60	.06	.03	.02	88.	*	1	2054	210	.04	.00	.04	1064.

1	0600	61	.06	.03	.02	94.	*	1	2100	211	.04	.00	.04	1042.
1	0606	62	.06	.03	.03	100.	*	1	2106	212	.04	.00	.04	1021.
1	0612	63	.06	.03	.03	107.	*	1	2112	213	.04	.00	.04	1001.
1	0618	64	.06	.03	.03	113.	*	1	2118	214	.04	.00	.04	981.
1	0624	65	.06	.03	.03	120.	*	1	2124	215	.04	.00	.04	962.
1	0630	66	.06	.03	.03	127.	*	1	2130	216	.04	.00	.04	943.
1	0636	67	.07	.03	.03	134.	*	1	2136	217	.04	.00	.04	925.
1	0642	68	.07	.03	.03	141.	*	1	2142	218	.04	.00	.04	908.
1	0648	69	.07	.03	.04	149.	*	1	2148	219	.04	.00	.04	891.
1	0654	70	.07	.03	.04	157.	*	1	2154	220	.04	.00	.04	874.
1	0700	71	.07	.03	.04	165.	*	1	2200	221	.04	.00	.04	859.
1	0706	72	.07	.03	.04	174.	*	1	2206	222	.04	.00	.04	843.
1	0712	73	.08	.03	.04	183.	*	1	2212	223	.04	.00	.04	828.
1	0718	74	.08	.03	.04	192.	*	1	2218	224	.04	.00	.04	813.
1	0724	75	.08	.03	.05	202.	*	1	2224	225	.04	.00	.04	799.
1	0730	76	.08	.03	.05	212.	*	1	2230	226	.04	.00	.04	785.
1	0736	77	.08	.03	.05	223.	*	1	2236	227	.04	.00	.04	771.
1	0742	78	.09	.03	.05	234.	*	1	2242	228	.03	.00	.03	758.
1	0748	79	.09	.03	.05	245.	*	1	2248	229	.03	.00	.03	745.
1	0754	80	.09	.03	.05	257.	*	1	2254	230	.03	.00	.03	733.
1	0800	81	.09	.03	.06	269.	*	1	2300	231	.03	.00	.03	721.
1	0806	82	.09	.03	.06	282.	*	1	2306	232	.03	.00	.03	709.
1	0812	83	.10	.03	.06	295.	*	1	2312	233	.03	.00	.03	697.
1	0818	84	.10	.04	.07	308.	*	1	2318	234	.03	.00	.03	685.
1	0824	85	.11	.04	.07	322.	*	1	2324	235	.03	.00	.03	674.
1	0830	86	.11	.04	.07	336.	*	1	2330	236	.03	.00	.03	663.
1	0836	87	.11	.04	.08	351.	*	1	2336	237	.03	.00	.03	653.
1	0842	88	.12	.04	.08	367.	*	1	2342	238	.03	.00	.03	642.
1	0848	89	.12	.04	.08	384.	*	1	2348	239	.03	.00	.03	632.
1	0854	90	.13	.04	.09	401.	*	1	2354	240	.03	.00	.03	622.
1	0900	91	.13	.04	.09	419.	*	2	0000	241	.03	.00	.03	612.
1	0906	92	.13	.04	.10	438.	*	2	0006	242	.00	.00	.00	602.
1	0912	93	.14	.04	.10	459.	*	2	0012	243	.00	.00	.00	592.
1	0918	94	.14	.04	.10	480.	*	2	0018	244	.00	.00	.00	581.
1	0924	95	.15	.04	.11	502.	*	2	0024	245	.00	.00	.00	569.
1	0930	96	.15	.04	.11	525.	*	2	0030	246	.00	.00	.00	556.
1	0936	97	.15	.04	.12	550.	*	2	0036	247	.00	.00	.00	542.
1	0942	98	.16	.04	.12	575.	*	2	0042	248	.00	.00	.00	527.
1	0948	99	.16	.04	.13	601.	*	2	0048	249	.00	.00	.00	510.
1	0954	100	.17	.04	.13	628.	*	2	0054	250	.00	.00	.00	492.
1	1000	101	.17	.04	.13	657.	*	2	0100	251	.00	.00	.00	473.
1	1006	102	.18	.04	.14	686.	*	2	0106	252	.00	.00	.00	453.
1	1012	103	.18	.04	.15	716.	*	2	0112	253	.00	.00	.00	432.
1	1018	104	.19	.04	.16	747.	*	2	0118	254	.00	.00	.00	407.
1	1024	105	.20	.04	.16	779.	*	2	0124	255	.00	.00	.00	383.
1	1030	106	.21	.04	.17	813.	*	2	0130	256	.00	.00	.00	364.
1	1036	107	.22	.04	.18	848.	*	2	0136	257	.00	.00	.00	346.
1	1042	108	.23	.04	.19	885.	*	2	0142	258	.00	.00	.00	330.
1	1048	109	.23	.04	.20	923.	*	2	0148	259	.00	.00	.00	315.
1	1054	110	.24	.04	.21	963.	*	2	0154	260	.00	.00	.00	301.
1	1100	111	.25	.04	.22	1006.	*	2	0200	261	.00	.00	.00	287.
1	1106	112	.27	.04	.23	1050.	*	2	0206	262	.00	.00	.00	275.
1	1112	113	.30	.04	.26	1097.	*	2	0212	263	.00	.00	.00	263.
1	1118	114	.34	.04	.29	1147.	*	2	0218	264	.00	.00	.00	251.
1	1124	115	.37	.04	.32	1202.	*	2	0224	265	.00	.00	.00	240.
1	1130	116	.40	.05	.36	1260.	*	2	0230	266	.00	.00	.00	230.
1	1136	117	.57	.06	.51	1326.	*	2	0236	267	.00	.00	.00	220.
1	1142	118	.88	.08	.79	1402.	*	2	0242	268	.00	.00	.00	210.

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        1     1148  119    1.19     .10    1.09      1497.       *        2     0248  269     .00     .00     .00       201.
        1     1154  120    1.49     .11    1.39      1621.       *        2     0254  270     .00     .00     .00       192.
        1     1200  121    2.94     .17    2.77      1792.       *        2     0300  271     .00     .00     .00       184.
        1     1206  122    2.94     .13    2.81      2036.       *        2     0306  272     .00     .00     .00       176.
        1     1212  123    1.49     .05    1.44      2360.       *        2     0312  273     .00     .00     .00       168.
        1     1218  124    1.19     .04    1.15      2753.       *        2     0318  274     .00     .00     .00       161.
        1     1224  125     .88     .03     .85      3202.       *        2     0324  275     .00     .00     .00       154.
        1     1230  126     .57     .02     .55      3690.       *        2     0330  276     .00     .00     .00       147.
        1     1236  127     .40     .01     .39      4199.       *        2     0336  277     .00     .00     .00       141.
        1     1242  128     .37     .01     .36      4703.       *        2     0342  278     .00     .00     .00       134.
        1     1248  129     .34     .01     .33      5175.       *        2     0348  279     .00     .00     .00       129.
        1     1254  130     .30     .01     .30      5593.       *        2     0354  280     .00     .00     .00       123.
        1     1300  131     .27     .01     .26      5940.       *        2     0400  281     .00     .00     .00       117.
        1     1306  132     .25     .01     .25      6205.       *        2     0406  282     .00     .00     .00       112.
        1     1312  133     .24     .01     .24      6378.       *        2     0412  283     .00     .00     .00       107.
        1     1318  134     .23     .01     .23      6456.       *        2     0418  284     .00     .00     .00       103.
        1     1324  135     .23     .01     .22      6450.       *        2     0424  285     .00     .00     .00        98.
        1     1330  136     .22     .00     .21      6389.       *        2     0430  286     .00     .00     .00        94.
        1     1336  137     .21     .00     .20      6297.       *        2     0436  287     .00     .00     .00        90.
        1     1342  138     .20     .00     .20      6187.       *        2     0442  288     .00     .00     .00        86.
        1     1348  139     .19     .00     .19      6066.       *        2     0448  289     .00     .00     .00        82.
        1     1354  140     .18     .00     .18      5941.       *        2     0454  290     .00     .00     .00        78.
        1     1400  141     .18     .00     .17      5814.       *        2     0500  291     .00     .00     .00        75.
        1     1406  142     .17     .00     .17      5687.       *        2     0506  292     .00     .00     .00        71.
        1     1412  143     .17     .00     .16      5559.       *        2     0512  293     .00     .00     .00        68.
        1     1418  144     .16     .00     .16      5433.       *        2     0518  294     .00     .00     .00        65.
        1     1424  145     .16     .00     .15      5308.       *        2     0524  295     .00     .00     .00        62.
        1     1430  146     .15     .00     .15      5184.       *        2     0530  296     .00     .00     .00        59.
        1     1436  147     .15     .00     .15      5062.       *        2     0536  297     .00     .00     .00        57.
        1     1442  148     .15     .00     .14      4942.       *        2     0542  298     .00     .00     .00        54.
        1     1448  149     .14     .00     .14      4824.       *        2     0548  299     .00     .00     .00        52.
        1     1454  150     .14     .00     .13      4708.       *        2     0554  300     .00     .00     .00        49.
                                                                 *
 ************************************************************************************************************************************

     TOTAL RAINFALL =   35.00, TOTAL LOSS =    5.08, TOTAL EXCESS =   29.92

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                           (CFS)
+    6456.     13.30                4142.       1522.       1224.        1224.
                         (INCHES)   20.162      29.636      29.696       29.696
                          (AC-FT)   2054.       3019.       3025.        3025.

                          CUMULATIVE AREA =    1.91 SQ MI

 APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

 ************************************************************************************************************************************

                                                HYDROGRAPH AT STATION      A-1
                                                    PLAN 1,   RATIO =   .30

 ************************************************************************************************************************************
                                                                 *
        DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q      *       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q
                                                                 *
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1	0000	1	.00	.00	.00	0.	*	1	1500	151	.04	.01	.03	1043.
1	0006	2	.01	.01	.00	0.	*	1	1506	152	.04	.01	.03	1020.
1	0012	3	.01	.01	.00	0.	*	1	1512	153	.04	.01	.03	998.
1	0018	4	.01	.01	.00	0.	*	1	1518	154	.04	.00	.03	976.
1	0024	5	.01	.01	.00	0.	*	1	1524	155	.04	.00	.03	955.
1	0030	6	.01	.01	.00	0.	*	1	1530	156	.03	.00	.03	934.
1	0036	7	.01	.01	.00	0.	*	1	1536	157	.03	.00	.03	913.
1	0042	8	.01	.01	.00	0.	*	1	1542	158	.03	.00	.03	893.
1	0048	9	.01	.01	.00	0.	*	1	1548	159	.03	.00	.03	873.
1	0054	10	.01	.01	.00	0.	*	1	1554	160	.03	.00	.03	853.
1	0100	11	.01	.01	.00	0.	*	1	1600	161	.03	.00	.02	834.
1	0106	12	.01	.01	.00	0.	*	1	1606	162	.03	.00	.02	815.
1	0112	13	.01	.01	.00	0.	*	1	1612	163	.03	.00	.02	796.
1	0118	14	.01	.01	.00	0.	*	1	1618	164	.03	.00	.02	777.
1	0124	15	.01	.01	.00	0.	*	1	1624	165	.03	.00	.02	759.
1	0130	16	.01	.01	.00	0.	*	1	1630	166	.02	.00	.02	741.
1	0136	17	.01	.01	.00	0.	*	1	1636	167	.02	.00	.02	724.
1	0142	18	.01	.01	.00	0.	*	1	1642	168	.02	.00	.02	706.
1	0148	19	.01	.01	.00	0.	*	1	1648	169	.02	.00	.02	689.
1	0154	20	.01	.01	.00	0.	*	1	1654	170	.02	.00	.02	673.
1	0200	21	.01	.01	.00	0.	*	1	1700	171	.02	.00	.02	657.
1	0206	22	.01	.01	.00	0.	*	1	1706	172	.02	.00	.02	641.
1	0212	23	.01	.01	.00	0.	*	1	1712	173	.02	.00	.02	625.
1	0218	24	.01	.01	.00	0.	*	1	1718	174	.02	.00	.02	610.
1	0224	25	.01	.01	.00	0.	*	1	1724	175	.02	.00	.02	596.
1	0230	26	.01	.01	.00	0.	*	1	1730	176	.02	.00	.02	581.
1	0236	27	.01	.01	.00	0.	*	1	1736	177	.02	.00	.02	568.
1	0242	28	.01	.01	.00	0.	*	1	1742	178	.02	.00	.02	554.
1	0248	29	.01	.01	.00	0.	*	1	1748	179	.02	.00	.02	541.
1	0254	30	.01	.01	.00	0.	*	1	1754	180	.02	.00	.02	528.
1	0300	31	.01	.01	.00	0.	*	1	1800	181	.02	.00	.01	515.
1	0306	32	.01	.01	.00	0.	*	1	1806	182	.02	.00	.01	503.
1	0312	33	.01	.01	.00	0.	*	1	1812	183	.02	.00	.01	491.
1	0318	34	.01	.01	.00	0.	*	1	1818	184	.02	.00	.01	479.
1	0324	35	.01	.01	.00	0.	*	1	1824	185	.02	.00	.01	468.
1	0330	36	.01	.01	.00	0.	*	1	1830	186	.02	.00	.01	457.
1	0336	37	.01	.01	.00	0.	*	1	1836	187	.02	.00	.01	446.
1	0342	38	.01	.01	.00	0.	*	1	1842	188	.02	.00	.01	435.
1	0348	39	.01	.01	.00	0.	*	1	1848	189	.02	.00	.01	425.
1	0354	40	.01	.01	.00	0.	*	1	1854	190	.02	.00	.01	415.
1	0400	41	.01	.01	.00	0.	*	1	1900	191	.02	.00	.01	405.
1	0406	42	.01	.01	.00	0.	*	1	1906	192	.01	.00	.01	396.
1	0412	43	.01	.01	.00	0.	*	1	1912	193	.02	.00	.01	386.
1	0418	44	.01	.01	.00	0.	*	1	1918	194	.01	.00	.01	378.
1	0424	45	.01	.01	.00	0.	*	1	1924	195	.01	.00	.01	369.
1	0430	46	.01	.01	.00	0.	*	1	1930	196	.01	.00	.01	361.
1	0436	47	.01	.01	.00	0.	*	1	1936	197	.01	.00	.01	353.
1	0442	48	.01	.01	.00	0.	*	1	1942	198	.01	.00	.01	345.
1	0448	49	.01	.01	.00	0.	*	1	1948	199	.01	.00	.01	338.
1	0454	50	.02	.02	.00	0.	*	1	1954	200	.01	.00	.01	331.
1	0500	51	.01	.01	.00	0.	*	1	2000	201	.01	.00	.01	324.
1	0506	52	.02	.02	.00	0.	*	1	2006	202	.01	.00	.01	317.
1	0512	53	.02	.02	.00	0.	*	1	2012	203	.01	.00	.01	310.
1	0518	54	.02	.02	.00	0.	*	1	2018	204	.01	.00	.01	304.
1	0524	55	.02	.02	.00	0.	*	1	2024	205	.01	.00	.01	298.
1	0530	56	.02	.02	.00	0.	*	1	2030	206	.01	.00	.01	292.
1	0536	57	.02	.02	.00	0.	*	1	2036	207	.01	.00	.01	286.
1	0542	58	.02	.02	.00	0.	*	1	2042	208	.01	.00	.01	280.

1	0548	59	.02	.02	.00	0.	*	1	2048	209	.01	.00	.01	275.
1	0554	60	.02	.02	.00	0.	*	1	2054	210	.01	.00	.01	270.
1	0600	61	.02	.02	.00	0.	*	1	2100	211	.01	.00	.01	264.
1	0606	62	.02	.02	.00	0.	*	1	2106	212	.01	.00	.01	259.
1	0612	63	.02	.02	.00	0.	*	1	2112	213	.01	.00	.01	255.
1	0618	64	.02	.02	.00	0.	*	1	2118	214	.01	.00	.01	250.
1	0624	65	.02	.02	.00	0.	*	1	2124	215	.01	.00	.01	245.
1	0630	66	.02	.02	.00	0.	*	1	2130	216	.01	.00	.01	241.
1	0636	67	.02	.02	.00	0.	*	1	2136	217	.01	.00	.01	237.
1	0642	68	.02	.02	.00	0.	*	1	2142	218	.01	.00	.01	233.
1	0648	69	.02	.02	.00	0.	*	1	2148	219	.01	.00	.01	229.
1	0654	70	.02	.02	.00	0.	*	1	2154	220	.01	.00	.01	225.
1	0700	71	.02	.02	.00	0.	*	1	2200	221	.01	.00	.01	221.
1	0706	72	.02	.02	.00	0.	*	1	2206	222	.01	.00	.01	217.
1	0712	73	.02	.02	.00	0.	*	1	2212	223	.01	.00	.01	214.
1	0718	74	.02	.02	.00	0.	*	1	2218	224	.01	.00	.01	210.
1	0724	75	.02	.02	.00	0.	*	1	2224	225	.01	.00	.01	207.
1	0730	76	.02	.02	.00	0.	*	1	2230	226	.01	.00	.01	203.
1	0736	77	.02	.02	.00	0.	*	1	2236	227	.01	.00	.01	200.
1	0742	78	.03	.02	.00	0.	*	1	2242	228	.01	.00	.01	197.
1	0748	79	.03	.02	.00	1.	*	1	2248	229	.01	.00	.01	194.
1	0754	80	.03	.02	.00	1.	*	1	2254	230	.01	.00	.01	191.
1	0800	81	.03	.02	.00	1.	*	1	2300	231	.01	.00	.01	188.
1	0806	82	.03	.02	.00	2.	*	1	2306	232	.01	.00	.01	185.
1	0812	83	.03	.03	.00	2.	*	1	2312	233	.01	.00	.01	182.
1	0818	84	.03	.03	.00	3.	*	1	2318	234	.01	.00	.01	179.
1	0824	85	.03	.03	.00	4.	*	1	2324	235	.01	.00	.01	177.
1	0830	86	.03	.03	.00	5.	*	1	2330	236	.01	.00	.01	174.
1	0836	87	.03	.03	.01	6.	*	1	2336	237	.01	.00	.01	171.
1	0842	88	.04	.03	.01	7.	*	1	2342	238	.01	.00	.01	169.
1	0848	89	.04	.03	.01	9.	*	1	2348	239	.01	.00	.01	166.
1	0854	90	.04	.03	.01	10.	*	1	2354	240	.01	.00	.01	164.
1	0900	91	.04	.03	.01	12.	*	2	0000	241	.01	.00	.01	161.
1	0906	92	.04	.03	.01	14.	*	2	0006	242	.00	.00	.00	159.
1	0912	93	.04	.03	.01	16.	*	2	0012	243	.00	.00	.00	157.
1	0918	94	.04	.03	.01	18.	*	2	0018	244	.00	.00	.00	154.
1	0924	95	.04	.03	.01	21.	*	2	0024	245	.00	.00	.00	151.
1	0930	96	.04	.03	.01	23.	*	2	0030	246	.00	.00	.00	147.
1	0936	97	.05	.03	.01	26.	*	2	0036	247	.00	.00	.00	144.
1	0942	98	.05	.03	.01	30.	*	2	0042	248	.00	.00	.00	140.
1	0948	99	.05	.03	.01	33.	*	2	0048	249	.00	.00	.00	136.
1	0954	100	.05	.03	.02	37.	*	2	0054	250	.00	.00	.00	131.
1	1000	101	.05	.03	.02	41.	*	2	0100	251	.00	.00	.00	126.
1	1006	102	.05	.03	.02	45.	*	2	0106	252	.00	.00	.00	121.
1	1012	103	.06	.04	.02	49.	*	2	0112	253	.00	.00	.00	115.
1	1018	104	.06	.04	.02	54.	*	2	0118	254	.00	.00	.00	109.
1	1024	105	.06	.04	.02	59.	*	2	0124	255	.00	.00	.00	103.
1	1030	106	.06	.04	.02	64.	*	2	0130	256	.00	.00	.00	98.
1	1036	107	.07	.04	.03	70.	*	2	0136	257	.00	.00	.00	93.
1	1042	108	.07	.04	.03	76.	*	2	0142	258	.00	.00	.00	89.
1	1048	109	.07	.04	.03	83.	*	2	0148	259	.00	.00	.00	85.
1	1054	110	.07	.04	.03	90.	*	2	0154	260	.00	.00	.00	81.
1	1100	111	.08	.04	.03	97.	*	2	0200	261	.00	.00	.00	77.
1	1106	112	.08	.04	.04	105.	*	2	0206	262	.00	.00	.00	74.
1	1112	113	.09	.05	.04	114.	*	2	0212	263	.00	.00	.00	71.
1	1118	114	.10	.05	.05	123.	*	2	0218	264	.00	.00	.00	68.
1	1124	115	.11	.05	.06	134.	*	2	0224	265	.00	.00	.00	65.
1	1130	116	.12	.06	.06	145.	*	2	0230	266	.00	.00	.00	62.

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        1     1136  117     .17     .08     .09       158.       *        2     0236  267     .00     .00     .00        59.
        1     1142  118     .26     .11     .15       173.       *        2     0242  268     .00     .00     .00        57.
        1     1148  119     .36     .14     .22       192.       *        2     0248  269     .00     .00     .00        54.
        1     1154  120     .45     .16     .29       217.       *        2     0254  270     .00     .00     .00        52.
        1     1200  121     .88     .27     .62       252.       *        2     0300  271     .00     .00     .00        50.
        1     1206  122     .88     .22     .66       304.       *        2     0306  272     .00     .00     .00        47.
        1     1212  123     .45     .10     .35       375.       *        2     0312  273     .00     .00     .00        45.
        1     1218  124     .36     .07     .28       463.       *        2     0318  274     .00     .00     .00        43.
        1     1224  125     .26     .05     .21       565.       *        2     0324  275     .00     .00     .00        41.
        1     1230  126     .17     .03     .14       678.       *        2     0330  276     .00     .00     .00        40.
        1     1236  127     .12     .02     .10       797.       *        2     0336  277     .00     .00     .00        38.
        1     1242  128     .11     .02     .09       917.       *        2     0342  278     .00     .00     .00        36.
        1     1248  129     .10     .02     .08      1032.       *        2     0348  279     .00     .00     .00        35.
        1     1254  130     .09     .02     .08      1136.       *        2     0354  280     .00     .00     .00        33.
        1     1300  131     .08     .01     .07      1225.       *        2     0400  281     .00     .00     .00        32.
        1     1306  132     .08     .01     .06      1296.       *        2     0406  282     .00     .00     .00        30.
        1     1312  133     .07     .01     .06      1346.       *        2     0412  283     .00     .00     .00        29.
        1     1318  134     .07     .01     .06      1375.       *        2     0418  284     .00     .00     .00        28.
        1     1324  135     .07     .01     .06      1383.       *        2     0424  285     .00     .00     .00        26.
        1     1330  136     .07     .01     .06      1378.       *        2     0430  286     .00     .00     .00        25.
        1     1336  137     .06     .01     .05      1365.       *        2     0436  287     .00     .00     .00        24.
        1     1342  138     .06     .01     .05      1347.       *        2     0442  288     .00     .00     .00        23.
        1     1348  139     .06     .01     .05      1326.       *        2     0448  289     .00     .00     .00        22.
        1     1354  140     .06     .01     .05      1304.       *        2     0454  290     .00     .00     .00        21.
        1     1400  141     .05     .01     .04      1280.       *        2     0500  291     .00     .00     .00        20.
        1     1406  142     .05     .01     .04      1257.       *        2     0506  292     .00     .00     .00        19.
        1     1412  143     .05     .01     .04      1232.       *        2     0512  293     .00     .00     .00        18.
        1     1418  144     .05     .01     .04      1208.       *        2     0518  294     .00     .00     .00        18.
        1     1424  145     .05     .01     .04      1184.       *        2     0524  295     .00     .00     .00        17.
        1     1430  146     .05     .01     .04      1160.       *        2     0530  296     .00     .00     .00        16.
        1     1436  147     .04     .01     .04      1136.       *        2     0536  297     .00     .00     .00        15.
        1     1442  148     .04     .01     .04      1113.       *        2     0542  298     .00     .00     .00        15.
        1     1448  149     .04     .01     .04      1089.       *        2     0548  299     .00     .00     .00        14.
        1     1454  150     .04     .01     .04      1066.       *        2     0554  300     .00     .00     .00        13.
                                                                 *
 ********************************************************************************************************************************

     TOTAL RAINFALL =   10.50, TOTAL LOSS =    4.09, TOTAL EXCESS =    6.41

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                            (CFS)
+    1383.     13.40                918.        326.        262.         262.
                         (INCHES)  4.466       6.352       6.352        6.352
                          (AC-FT)   455.        647.        647.         647.

                          CUMULATIVE AREA =    1.91 SQ MI

 APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

 ********************************************************************************************************************************

                                                HYDROGRAPH AT STATION      A-1
                                                    PLAN 1,   RATIO =   .40

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DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
								*								
1		0000	1	.00	.00	.00	0.	*	1		1500	151	.05	.00	.05	1545.
1		0006	2	.01	.01	.00	0.	*	1		1506	152	.05	.00	.05	1510.
1		0012	3	.01	.01	.00	0.	*	1		1512	153	.05	.00	.05	1476.
1		0018	4	.01	.01	.00	0.	*	1		1518	154	.05	.00	.04	1442.
1		0024	5	.01	.01	.00	0.	*	1		1524	155	.05	.00	.04	1409.
1		0030	6	.01	.01	.00	0.	*	1		1530	156	.05	.00	.04	1377.
1		0036	7	.01	.01	.00	0.	*	1		1536	157	.04	.00	.04	1346.
1		0042	8	.01	.01	.00	0.	*	1		1542	158	.04	.00	.04	1314.
1		0048	9	.01	.01	.00	0.	*	1		1548	159	.04	.00	.04	1284.
1		0054	10	.01	.01	.00	0.	*	1		1554	160	.04	.00	.04	1254.
1		0100	11	.01	.01	.00	0.	*	1		1600	161	.04	.00	.03	1224.
1		0106	12	.01	.01	.00	0.	*	1		1606	162	.04	.00	.03	1195.
1		0112	13	.01	.01	.00	0.	*	1		1612	163	.04	.00	.03	1167.
1		0118	14	.01	.01	.00	0.	*	1		1618	164	.03	.00	.03	1139.
1		0124	15	.01	.01	.00	0.	*	1		1624	165	.03	.00	.03	1111.
1		0130	16	.01	.01	.00	0.	*	1		1630	166	.03	.00	.03	1084.
1		0136	17	.01	.01	.00	0.	*	1		1636	167	.03	.00	.03	1058.
1		0142	18	.01	.01	.00	0.	*	1		1642	168	.03	.00	.03	1031.
1		0148	19	.01	.01	.00	0.	*	1		1648	169	.03	.00	.03	1006.
1		0154	20	.01	.01	.00	0.	*	1		1654	170	.03	.00	.03	981.
1		0200	21	.01	.01	.00	0.	*	1		1700	171	.03	.00	.03	957.
1		0206	22	.01	.01	.00	0.	*	1		1706	172	.03	.00	.03	933.
1		0212	23	.01	.01	.00	0.	*	1		1712	173	.03	.00	.03	910.
1		0218	24	.01	.01	.00	0.	*	1		1718	174	.03	.00	.03	888.
1		0224	25	.01	.01	.00	0.	*	1		1724	175	.03	.00	.02	866.
1		0230	26	.01	.01	.00	0.	*	1		1730	176	.03	.00	.02	845.
1		0236	27	.02	.02	.00	0.	*	1		1736	177	.03	.00	.02	824.
1		0242	28	.02	.02	.00	0.	*	1		1742	178	.02	.00	.02	804.
1		0248	29	.02	.02	.00	0.	*	1		1748	179	.02	.00	.02	784.
1		0254	30	.02	.02	.00	0.	*	1		1754	180	.02	.00	.02	765.
1		0300	31	.02	.02	.00	0.	*	1		1800	181	.02	.00	.02	746.
1		0306	32	.02	.02	.00	0.	*	1		1806	182	.02	.00	.02	728.
1		0312	33	.02	.02	.00	0.	*	1		1812	183	.02	.00	.02	710.
1		0318	34	.02	.02	.00	0.	*	1		1818	184	.02	.00	.02	693.
1		0324	35	.02	.02	.00	0.	*	1		1824	185	.02	.00	.02	676.
1		0330	36	.02	.02	.00	0.	*	1		1830	186	.02	.00	.02	659.
1		0336	37	.02	.02	.00	0.	*	1		1836	187	.02	.00	.02	643.
1		0342	38	.02	.02	.00	0.	*	1		1842	188	.02	.00	.02	627.
1		0348	39	.02	.02	.00	0.	*	1		1848	189	.02	.00	.02	612.
1		0354	40	.02	.02	.00	0.	*	1		1854	190	.02	.00	.02	597.
1		0400	41	.02	.02	.00	0.	*	1		1900	191	.02	.00	.02	583.
1		0406	42	.02	.02	.00	0.	*	1		1906	192	.02	.00	.02	569.
1		0412	43	.02	.02	.00	0.	*	1		1912	193	.02	.00	.02	556.
1		0418	44	.02	.02	.00	0.	*	1		1918	194	.02	.00	.02	543.
1		0424	45	.02	.02	.00	0.	*	1		1924	195	.02	.00	.02	530.
1		0430	46	.02	.02	.00	0.	*	1		1930	196	.02	.00	.02	518.
1		0436	47	.02	.02	.00	0.	*	1		1936	197	.02	.00	.02	506.
1		0442	48	.02	.02	.00	0.	*	1		1942	198	.02	.00	.02	495.
1		0448	49	.02	.02	.00	0.	*	1		1948	199	.02	.00	.02	484.
1		0454	50	.02	.02	.00	0.	*	1		1954	200	.02	.00	.02	474.
1		0500	51	.02	.02	.00	0.	*	1		2000	201	.02	.00	.02	463.
1		0506	52	.02	.02	.00	0.	*	1		2006	202	.02	.00	.02	453.
1		0512	53	.02	.02	.00	0.	*	1		2012	203	.02	.00	.02	444.
1		0518	54	.02	.02	.00	0.	*	1		2018	204	.02	.00	.02	434.
1		0524	55	.02	.02	.00	0.	*	1		2024	205	.02	.00	.02	425.
1		0530	56	.02	.02	.00	0.	*	1		2030	206	.02	.00	.02	417.

1	0536	57	.02	.02	.00	0.	*	1	2036	207	.02	.00	.02	408.
1	0542	58	.02	.02	.00	0.	*	1	2042	208	.02	.00	.02	400.
1	0548	59	.02	.02	.00	0.	*	1	2048	209	.02	.00	.02	392.
1	0554	60	.02	.02	.00	0.	*	1	2054	210	.02	.00	.02	384.
1	0600	61	.02	.02	.00	0.	*	1	2100	211	.02	.00	.02	377.
1	0606	62	.02	.02	.00	0.	*	1	2106	212	.02	.00	.02	369.
1	0612	63	.02	.02	.00	0.	*	1	2112	213	.02	.00	.02	362.
1	0618	64	.02	.02	.00	0.	*	1	2118	214	.02	.00	.02	356.
1	0624	65	.02	.02	.00	0.	*	1	2124	215	.02	.00	.01	349.
1	0630	66	.03	.02	.00	1.	*	1	2130	216	.02	.00	.01	343.
1	0636	67	.03	.02	.00	1.	*	1	2136	217	.02	.00	.01	336.
1	0642	68	.03	.02	.00	1.	*	1	2142	218	.02	.00	.01	330.
1	0648	69	.03	.02	.00	2.	*	1	2148	219	.02	.00	.01	324.
1	0654	70	.03	.03	.00	2.	*	1	2154	220	.02	.00	.01	319.
1	0700	71	.03	.03	.00	3.	*	1	2200	221	.02	.00	.01	313.
1	0706	72	.03	.03	.00	4.	*	1	2206	222	.01	.00	.01	308.
1	0712	73	.03	.03	.00	4.	*	1	2212	223	.01	.00	.01	302.
1	0718	74	.03	.03	.00	5.	*	1	2218	224	.01	.00	.01	297.
1	0724	75	.03	.03	.01	7.	*	1	2224	225	.01	.00	.01	292.
1	0730	76	.03	.03	.01	8.	*	1	2230	226	.01	.00	.01	288.
1	0736	77	.03	.03	.01	9.	*	1	2236	227	.01	.00	.01	283.
1	0742	78	.03	.03	.01	11.	*	1	2242	228	.01	.00	.01	278.
1	0748	79	.03	.03	.01	12.	*	1	2248	229	.01	.00	.01	274.
1	0754	80	.04	.03	.01	14.	*	1	2254	230	.01	.00	.01	269.
1	0800	81	.04	.03	.01	16.	*	1	2300	231	.01	.00	.01	265.
1	0806	82	.04	.03	.01	18.	*	1	2306	232	.01	.00	.01	261.
1	0812	83	.04	.03	.01	20.	*	1	2312	233	.01	.00	.01	257.
1	0818	84	.04	.03	.01	23.	*	1	2318	234	.01	.00	.01	253.
1	0824	85	.04	.03	.01	25.	*	1	2324	235	.01	.00	.01	249.
1	0830	86	.04	.03	.01	28.	*	1	2330	236	.01	.00	.01	245.
1	0836	87	.05	.03	.01	31.	*	1	2336	237	.01	.00	.01	241.
1	0842	88	.05	.03	.01	34.	*	1	2342	238	.01	.00	.01	238.
1	0848	89	.05	.03	.02	38.	*	1	2348	239	.01	.00	.01	234.
1	0854	90	.05	.03	.02	41.	*	1	2354	240	.01	.00	.01	230.
1	0900	91	.05	.03	.02	45.	*	2	0000	241	.01	.00	.01	227.
1	0906	92	.05	.03	.02	49.	*	2	0006	242	.00	.00	.00	223.
1	0912	93	.05	.04	.02	54.	*	2	0012	243	.00	.00	.00	220.
1	0918	94	.06	.04	.02	59.	*	2	0018	244	.00	.00	.00	216.
1	0924	95	.06	.04	.02	64.	*	2	0024	245	.00	.00	.00	212.
1	0930	96	.06	.04	.02	69.	*	2	0030	246	.00	.00	.00	207.
1	0936	97	.06	.04	.03	75.	*	2	0036	247	.00	.00	.00	202.
1	0942	98	.06	.04	.03	81.	*	2	0042	248	.00	.00	.00	196.
1	0948	99	.06	.04	.03	88.	*	2	0048	249	.00	.00	.00	190.
1	0954	100	.07	.04	.03	94.	*	2	0054	250	.00	.00	.00	184.
1	1000	101	.07	.04	.03	102.	*	2	0100	251	.00	.00	.00	177.
1	1006	102	.07	.04	.03	109.	*	2	0106	252	.00	.00	.00	169.
1	1012	103	.07	.04	.04	117.	*	2	0112	253	.00	.00	.00	161.
1	1018	104	.08	.04	.04	126.	*	2	0118	254	.00	.00	.00	152.
1	1024	105	.08	.04	.04	134.	*	2	0124	255	.00	.00	.00	144.
1	1030	106	.08	.04	.04	144.	*	2	0130	256	.00	.00	.00	137.
1	1036	107	.09	.04	.05	154.	*	2	0136	257	.00	.00	.00	130.
1	1042	108	.09	.04	.05	164.	*	2	0142	258	.00	.00	.00	124.
1	1048	109	.09	.04	.05	175.	*	2	0148	259	.00	.00	.00	118.
1	1054	110	.10	.04	.05	187.	*	2	0154	260	.00	.00	.00	113.
1	1100	111	.10	.04	.06	199.	*	2	0200	261	.00	.00	.00	108.
1	1106	112	.11	.04	.06	212.	*	2	0206	262	.00	.00	.00	103.
1	1112	113	.12	.05	.07	226.	*	2	0212	263	.00	.00	.00	99.
1	1118	114	.13	.05	.08	242.	*	2	0218	264	.00	.00	.00	94.

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        1     1124  115     .15     .05     .09       258.       *        2     0224  265     .00     .00     .00        90.
        1     1130  116     .16     .06     .10       276.       *        2     0230  266     .00     .00     .00        86.
        1     1136  117     .23     .08     .15       297.       *        2     0236  267     .00     .00     .00        83.
        1     1142  118     .35     .11     .24       320.       *        2     0242  268     .00     .00     .00        79.
        1     1148  119     .47     .14     .34       350.       *        2     0248  269     .00     .00     .00        76.
        1     1154  120     .60     .15     .44       389.       *        2     0254  270     .00     .00     .00        72.
        1     1200  121    1.18     .25     .92       444.       *        2     0300  271     .00     .00     .00        69.
        1     1206  122    1.18     .20     .97       524.       *        2     0306  272     .00     .00     .00        66.
        1     1212  123     .60     .09     .51       631.       *        2     0312  273     .00     .00     .00        63.
        1     1218  124     .47     .06     .41       762.       *        2     0318  274     .00     .00     .00        60.
        1     1224  125     .35     .04     .31       914.       *        2     0324  275     .00     .00     .00        58.
        1     1230  126     .23     .03     .20      1082.       *        2     0330  276     .00     .00     .00        55.
        1     1236  127     .16     .02     .14      1257.       *        2     0336  277     .00     .00     .00        53.
        1     1242  128     .15     .02     .13      1433.       *        2     0342  278     .00     .00     .00        51.
        1     1248  129     .13     .02     .12      1601.       *        2     0348  279     .00     .00     .00        48.
        1     1254  130     .12     .01     .11      1751.       *        2     0354  280     .00     .00     .00        46.
        1     1300  131     .11     .01     .10      1878.       *        2     0400  281     .00     .00     .00        44.
        1     1306  132     .10     .01     .09      1978.       *        2     0406  282     .00     .00     .00        42.
        1     1312  133     .10     .01     .09      2047.       *        2     0412  283     .00     .00     .00        40.
        1     1318  134     .09     .01     .08      2084.       *        2     0418  284     .00     .00     .00        39.
        1     1324  135     .09     .01     .08      2091.       *        2     0424  285     .00     .00     .00        37.
        1     1330  136     .09     .01     .08      2079.       *        2     0430  286     .00     .00     .00        35.
        1     1336  137     .08     .01     .08      2056.       *        2     0436  287     .00     .00     .00        34.
        1     1342  138     .08     .01     .07      2026.       *        2     0442  288     .00     .00     .00        32.
        1     1348  139     .08     .01     .07      1991.       *        2     0448  289     .00     .00     .00        31.
        1     1354  140     .07     .01     .07      1955.       *        2     0454  290     .00     .00     .00        29.
        1     1400  141     .07     .01     .06      1918.       *        2     0500  291     .00     .00     .00        28.
        1     1406  142     .07     .01     .06      1880.       *        2     0506  292     .00     .00     .00        27.
        1     1412  143     .07     .01     .06      1841.       *        2     0512  293     .00     .00     .00        26.
        1     1418  144     .06     .01     .06      1803.       *        2     0518  294     .00     .00     .00        25.
        1     1424  145     .06     .01     .06      1765.       *        2     0524  295     .00     .00     .00        23.
        1     1430  146     .06     .01     .06      1727.       *        2     0530  296     .00     .00     .00        22.
        1     1436  147     .06     .01     .05      1690.       *        2     0536  297     .00     .00     .00        21.
        1     1442  148     .06     .01     .05      1653.       *        2     0542  298     .00     .00     .00        20.
        1     1448  149     .06     .01     .05      1616.       *        2     0548  299     .00     .00     .00        20.
        1     1454  150     .05     .00     .05      1580.       *        2     0554  300     .00     .00     .00        19.
                                                                 *
 ************************************************************************************************************************************

     TOTAL RAINFALL =   14.00, TOTAL LOSS =    4.40, TOTAL EXCESS =    9.60

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                            (CFS)
+    2091.     13.40                1369.        489.        393.         393.
                         (INCHES)    6.664       9.522       9.522        9.522
                          (AC-FT)     679.        970.        970.         970.

                          CUMULATIVE AREA =    1.91 SQ MI

 APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

 ************************************************************************************************************************************

                                                HYDROGRAPH AT STATION      A-1
                                                    PLAN 1,   RATIO =   .50
```

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		1500	151	.07	.00	.06	2053.
1		0006	2	.02	.02	.00	0.	1		1506	152	.06	.00	.06	2006.
1		0012	3	.02	.02	.00	0.	1		1512	153	.06	.00	.06	1959.
1		0018	4	.02	.02	.00	0.	1		1518	154	.06	.00	.06	1914.
1		0024	5	.02	.02	.00	0.	1		1524	155	.06	.00	.06	1869.
1		0030	6	.02	.02	.00	0.	1		1530	156	.06	.00	.05	1825.
1		0036	7	.02	.02	.00	0.	1		1536	157	.05	.00	.05	1782.
1		0042	8	.02	.02	.00	0.	1		1542	158	.05	.00	.05	1740.
1		0048	9	.02	.02	.00	0.	1		1548	159	.05	.00	.05	1699.
1		0054	10	.02	.02	.00	0.	1		1554	160	.05	.00	.05	1658.
1		0100	11	.02	.02	.00	0.	1		1600	161	.05	.00	.04	1618.
1		0106	12	.02	.02	.00	0.	1		1606	162	.05	.00	.04	1579.
1		0112	13	.02	.02	.00	0.	1		1612	163	.04	.00	.04	1541.
1		0118	14	.02	.02	.00	0.	1		1618	164	.04	.00	.04	1503.
1		0124	15	.02	.02	.00	0.	1		1624	165	.04	.00	.04	1466.
1		0130	16	.02	.02	.00	0.	1		1630	166	.04	.00	.04	1429.
1		0136	17	.02	.02	.00	0.	1		1636	167	.04	.00	.04	1394.
1		0142	18	.02	.02	.00	0.	1		1642	168	.04	.00	.04	1359.
1		0148	19	.02	.02	.00	0.	1		1648	169	.04	.00	.04	1325.
1		0154	20	.02	.02	.00	0.	1		1654	170	.04	.00	.04	1292.
1		0200	21	.02	.02	.00	0.	1		1700	171	.04	.00	.03	1259.
1		0206	22	.02	.02	.00	0.	1		1706	172	.04	.00	.03	1227.
1		0212	23	.02	.02	.00	0.	1		1712	173	.04	.00	.03	1197.
1		0218	24	.02	.02	.00	0.	1		1718	174	.03	.00	.03	1167.
1		0224	25	.02	.02	.00	0.	1		1724	175	.03	.00	.03	1138.
1		0230	26	.02	.02	.00	0.	1		1730	176	.03	.00	.03	1109.
1		0236	27	.02	.02	.00	0.	1		1736	177	.03	.00	.03	1082.
1		0242	28	.02	.02	.00	0.	1		1742	178	.03	.00	.03	1055.
1		0248	29	.02	.02	.00	0.	1		1748	179	.03	.00	.03	1028.
1		0254	30	.02	.02	.00	0.	1		1754	180	.03	.00	.03	1003.
1		0300	31	.02	.02	.00	0.	1		1800	181	.03	.00	.03	978.
1		0306	32	.02	.02	.00	0.	1		1806	182	.03	.00	.03	954.
1		0312	33	.02	.02	.00	0.	1		1812	183	.03	.00	.03	930.
1		0318	34	.02	.02	.00	0.	1		1818	184	.03	.00	.03	907.
1		0324	35	.02	.02	.00	0.	1		1824	185	.03	.00	.03	884.
1		0330	36	.02	.02	.00	0.	1		1830	186	.03	.00	.03	862.
1		0336	37	.02	.02	.00	0.	1		1836	187	.03	.00	.03	841.
1		0342	38	.02	.02	.00	0.	1		1842	188	.03	.00	.02	820.
1		0348	39	.02	.02	.00	0.	1		1848	189	.03	.00	.02	800.
1		0354	40	.02	.02	.00	0.	1		1854	190	.03	.00	.02	780.
1		0400	41	.02	.02	.00	0.	1		1900	191	.03	.00	.02	761.
1		0406	42	.02	.02	.00	0.	1		1906	192	.02	.00	.02	743.
1		0412	43	.02	.02	.00	0.	1		1912	193	.03	.00	.02	725.
1		0418	44	.02	.02	.00	0.	1		1918	194	.02	.00	.02	708.
1		0424	45	.02	.02	.00	0.	1		1924	195	.02	.00	.02	692.
1		0430	46	.02	.02	.00	0.	1		1930	196	.02	.00	.02	676.
1		0436	47	.02	.02	.00	0.	1		1936	197	.02	.00	.02	660.
1		0442	48	.02	.02	.00	0.	1		1942	198	.02	.00	.02	645.
1		0448	49	.02	.02	.00	0.	1		1948	199	.02	.00	.02	631.
1		0454	50	.03	.02	.00	0.	1		1954	200	.02	.00	.02	617.
1		0500	51	.02	.02	.00	0.	1		2000	201	.02	.00	.02	603.
1		0506	52	.03	.03	.00	0.	1		2006	202	.02	.00	.02	590.
1		0512	53	.03	.02	.00	0.	1		2012	203	.02	.00	.02	577.
1		0518	54	.03	.02	.00	0.	1		2018	204	.02	.00	.02	565.

1	0524	55	.03	.02	.00	0.	*	1	2024	205	.02	.00	.02	553.
1	0530	56	.03	.02	.00	0.	*	1	2030	206	.02	.00	.02	541.
1	0536	57	.03	.02	.00	1.	*	1	2036	207	.02	.00	.02	530.
1	0542	58	.03	.02	.00	1.	*	1	2042	208	.02	.00	.02	519.
1	0548	59	.03	.02	.00	1.	*	1	2048	209	.02	.00	.02	509.
1	0554	60	.03	.02	.00	2.	*	1	2054	210	.02	.00	.02	499.
1	0600	61	.03	.02	.00	3.	*	1	2100	211	.02	.00	.02	489.
1	0606	62	.03	.02	.00	3.	*	1	2106	212	.02	.00	.02	479.
1	0612	63	.03	.03	.00	4.	*	1	2112	213	.02	.00	.02	470.
1	0618	64	.03	.03	.00	5.	*	1	2118	214	.02	.00	.02	461.
1	0624	65	.03	.03	.00	6.	*	1	2124	215	.02	.00	.02	452.
1	0630	66	.03	.03	.01	7.	*	1	2130	216	.02	.00	.02	444.
1	0636	67	.03	.03	.01	9.	*	1	2136	217	.02	.00	.02	435.
1	0642	68	.03	.03	.01	10.	*	1	2142	218	.02	.00	.02	428.
1	0648	69	.03	.03	.01	12.	*	1	2148	219	.02	.00	.02	420.
1	0654	70	.04	.03	.01	14.	*	1	2154	220	.02	.00	.02	412.
1	0700	71	.04	.03	.01	15.	*	1	2200	221	.02	.00	.02	405.
1	0706	72	.04	.03	.01	17.	*	1	2206	222	.02	.00	.02	398.
1	0712	73	.04	.03	.01	20.	*	1	2212	223	.02	.00	.02	391.
1	0718	74	.04	.03	.01	22.	*	1	2218	224	.02	.00	.02	384.
1	0724	75	.04	.03	.01	24.	*	1	2224	225	.02	.00	.02	378.
1	0730	76	.04	.03	.01	27.	*	1	2230	226	.02	.00	.02	371.
1	0736	77	.04	.03	.01	30.	*	1	2236	227	.02	.00	.02	365.
1	0742	78	.04	.03	.01	33.	*	1	2242	228	.02	.00	.02	359.
1	0748	79	.04	.03	.01	36.	*	1	2248	229	.02	.00	.02	353.
1	0754	80	.04	.03	.01	40.	*	1	2254	230	.02	.00	.02	347.
1	0800	81	.04	.03	.01	43.	*	1	2300	231	.02	.00	.02	342.
1	0806	82	.05	.03	.02	47.	*	1	2306	232	.02	.00	.02	336.
1	0812	83	.05	.03	.02	51.	*	1	2312	233	.02	.00	.02	331.
1	0818	84	.05	.03	.02	55.	*	1	2318	234	.02	.00	.02	326.
1	0824	85	.05	.03	.02	59.	*	1	2324	235	.02	.00	.02	321.
1	0830	86	.05	.03	.02	64.	*	1	2330	236	.02	.00	.02	316.
1	0836	87	.06	.03	.02	69.	*	1	2336	237	.02	.00	.01	311.
1	0842	88	.06	.03	.02	74.	*	1	2342	238	.02	.00	.01	306.
1	0848	89	.06	.04	.03	80.	*	1	2348	239	.02	.00	.01	301.
1	0854	90	.06	.04	.03	85.	*	1	2354	240	.02	.00	.01	297.
1	0900	91	.07	.04	.03	92.	*	2	0000	241	.02	.00	.01	292.
1	0906	92	.07	.04	.03	98.	*	2	0006	242	.00	.00	.00	287.
1	0912	93	.07	.04	.03	105.	*	2	0012	243	.00	.00	.00	283.
1	0918	94	.07	.04	.03	113.	*	2	0018	244	.00	.00	.00	278.
1	0924	95	.07	.04	.04	120.	*	2	0024	245	.00	.00	.00	272.
1	0930	96	.07	.04	.04	129.	*	2	0030	246	.00	.00	.00	266.
1	0936	97	.08	.04	.04	138.	*	2	0036	247	.00	.00	.00	259.
1	0942	98	.08	.04	.04	147.	*	2	0042	248	.00	.00	.00	252.
1	0948	99	.08	.04	.04	156.	*	2	0048	249	.00	.00	.00	244.
1	0954	100	.08	.04	.04	167.	*	2	0054	250	.00	.00	.00	236.
1	1000	101	.08	.04	.05	177.	*	2	0100	251	.00	.00	.00	227.
1	1006	102	.09	.04	.05	188.	*	2	0106	252	.00	.00	.00	217.
1	1012	103	.09	.04	.05	200.	*	2	0112	253	.00	.00	.00	207.
1	1018	104	.10	.04	.06	212.	*	2	0118	254	.00	.00	.00	195.
1	1024	105	.10	.04	.06	225.	*	2	0124	255	.00	.00	.00	184.
1	1030	106	.10	.04	.06	238.	*	2	0130	256	.00	.00	.00	175.
1	1036	107	.11	.04	.07	252.	*	2	0136	257	.00	.00	.00	166.
1	1042	108	.11	.04	.07	267.	*	2	0142	258	.00	.00	.00	159.
1	1048	109	.12	.04	.07	283.	*	2	0148	259	.00	.00	.00	151.
1	1054	110	.12	.04	.08	299.	*	2	0154	260	.00	.00	.00	145.
1	1100	111	.13	.04	.08	317.	*	2	0200	261	.00	.00	.00	138.
1	1106	112	.14	.04	.09	335.	*	2	0206	262	.00	.00	.00	132.

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        1     1112  113     .15     .05     .10       355.       *        2     0212  263     .00     .00     .00       126.
        1     1118  114     .17     .05     .12       376.       *        2     0218  264     .00     .00     .00       121.
        1     1124  115     .18     .05     .13       399.       *        2     0224  265     .00     .00     .00       116.
        1     1130  116     .20     .06     .14       424.       *        2     0230  266     .00     .00     .00       111.
        1     1136  117     .29     .08     .21       452.       *        2     0236  267     .00     .00     .00       106.
        1     1142  118     .44     .11     .33       485.       *        2     0242  268     .00     .00     .00       101.
        1     1148  119     .59     .13     .46       526.       *        2     0248  269     .00     .00     .00        97.
        1     1154  120     .75     .15     .60       579.       *        2     0254  270     .00     .00     .00        93.
        1     1200  121    1.47     .24    1.23       653.       *        2     0300  271     .00     .00     .00        89.
        1     1206  122    1.47     .19    1.28       761.       *        2     0306  272     .00     .00     .00        85.
        1     1212  123     .75     .08     .67       904.       *        2     0312  273     .00     .00     .00        81.
        1     1218  124     .59     .06     .54      1080.       *        2     0318  274     .00     .00     .00        77.
        1     1224  125     .44     .04     .40      1282.       *        2     0324  275     .00     .00     .00        74.
        1     1230  126     .29     .02     .26      1504.       *        2     0330  276     .00     .00     .00        71.
        1     1236  127     .20     .02     .18      1736.       *        2     0336  277     .00     .00     .00        68.
        1     1242  128     .18     .02     .17      1968.       *        2     0342  278     .00     .00     .00        65.
        1     1248  129     .17     .01     .15      2187.       *        2     0348  279     .00     .00     .00        62.
        1     1254  130     .15     .01     .14      2383.       *        2     0354  280     .00     .00     .00        59.
        1     1300  131     .14     .01     .13      2548.       *        2     0400  281     .00     .00     .00        57.
        1     1306  132     .13     .01     .12      2676.       *        2     0406  282     .00     .00     .00        54.
        1     1312  133     .12     .01     .11      2764.       *        2     0412  283     .00     .00     .00        52.
        1     1318  134     .12     .01     .11      2808.       *        2     0418  284     .00     .00     .00        49.
        1     1324  135     .11     .01     .10      2814.       *        2     0424  285     .00     .00     .00        47.
        1     1330  136     .11     .01     .10      2794.       *        2     0430  286     .00     .00     .00        45.
        1     1336  137     .10     .01     .10      2760.       *        2     0436  287     .00     .00     .00        43.
        1     1342  138     .10     .01     .09      2716.       *        2     0442  288     .00     .00     .00        41.
        1     1348  139     .10     .01     .09      2668.       *        2     0448  289     .00     .00     .00        39.
        1     1354  140     .09     .01     .09      2617.       *        2     0454  290     .00     .00     .00        38.
        1     1400  141     .09     .01     .08      2565.       *        2     0500  291     .00     .00     .00        36.
        1     1406  142     .08     .01     .08      2513.       *        2     0506  292     .00     .00     .00        34.
        1     1412  143     .08     .01     .08      2460.       *        2     0512  293     .00     .00     .00        33.
        1     1418  144     .08     .01     .08      2407.       *        2     0518  294     .00     .00     .00        31.
        1     1424  145     .08     .01     .07      2355.       *        2     0524  295     .00     .00     .00        30.
        1     1430  146     .08     .01     .07      2303.       *        2     0530  296     .00     .00     .00        29.
        1     1436  147     .07     .00     .07      2252.       *        2     0536  297     .00     .00     .00        27.
        1     1442  148     .07     .00     .07      2201.       *        2     0542  298     .00     .00     .00        26.
        1     1448  149     .07     .00     .07      2151.       *        2     0548  299     .00     .00     .00        25.
        1     1454  150     .07     .00     .06      2102.       *        2     0554  300     .00     .00     .00        24.
                                                                  *
 ************************************************************************************************************************************

     TOTAL RAINFALL =   17.50, TOTAL LOSS =    4.61, TOTAL EXCESS =   12.89

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                             (CFS)
+    2814.     13.40                1829.        657.        527.         527.
                         (INCHES)    8.903      12.792      12.792       12.792
                          (AC-FT)     907.       1303.       1303.        1303.

                          CUMULATIVE AREA =    1.91 SQ MI

 APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

 ************************************************************************************************************************************

                                                HYDROGRAPH AT STATION      A-1
```

PLAN 1, RATIO = 1.00

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		1500	151	.14	.00	.13	4594.
1		0006	2	.04	.04	.00	0.	1		1506	152	.13	.00	.12	4483.
1		0012	3	.04	.04	.00	0.	1		1512	153	.13	.00	.12	4374.
1		0018	4	.03	.03	.00	0.	1		1518	154	.12	.00	.12	4267.
1		0024	5	.04	.04	.00	0.	1		1524	155	.12	.00	.12	4163.
1		0030	6	.03	.03	.00	0.	1		1530	156	.11	.00	.11	4061.
1		0036	7	.04	.04	.00	0.	1		1536	157	.11	.00	.11	3961.
1		0042	8	.04	.04	.00	0.	1		1542	158	.11	.00	.10	3864.
1		0048	9	.04	.04	.00	0.	1		1548	159	.10	.00	.10	3768.
1		0054	10	.03	.03	.00	0.	1		1554	160	.10	.00	.10	3674.
1		0100	11	.04	.04	.00	0.	1		1600	161	.09	.00	.09	3583.
1		0106	12	.04	.04	.00	0.	1		1606	162	.09	.00	.09	3493.
1		0112	13	.04	.04	.00	0.	1		1612	163	.09	.00	.09	3404.
1		0118	14	.04	.04	.00	0.	1		1618	164	.09	.00	.09	3318.
1		0124	15	.04	.04	.00	0.	1		1624	165	.08	.00	.08	3233.
1		0130	16	.03	.03	.00	0.	1		1630	166	.08	.00	.08	3150.
1		0136	17	.04	.04	.00	0.	1		1636	167	.08	.00	.08	3069.
1		0142	18	.04	.04	.00	0.	1		1642	168	.08	.00	.08	2989.
1		0148	19	.03	.03	.00	0.	1		1648	169	.08	.00	.08	2912.
1		0154	20	.04	.04	.00	0.	1		1654	170	.08	.00	.07	2836.
1		0200	21	.04	.04	.00	0.	1		1700	171	.07	.00	.07	2763.
1		0206	22	.04	.04	.00	0.	1		1706	172	.07	.00	.07	2691.
1		0212	23	.04	.04	.00	0.	1		1712	173	.07	.00	.07	2622.
1		0218	24	.04	.04	.00	0.	1		1718	174	.07	.00	.07	2554.
1		0224	25	.04	.04	.00	0.	1		1724	175	.07	.00	.07	2488.
1		0230	26	.04	.04	.00	0.	1		1730	176	.07	.00	.06	2424.
1		0236	27	.04	.04	.00	0.	1		1736	177	.06	.00	.06	2362.
1		0242	28	.04	.04	.00	0.	1		1742	178	.06	.00	.06	2301.
1		0248	29	.04	.04	.00	0.	1		1748	179	.06	.00	.06	2243.
1		0254	30	.04	.04	.00	0.	1		1754	180	.06	.00	.06	2185.
1		0300	31	.04	.04	.00	0.	1		1800	181	.06	.00	.06	2129.
1		0306	32	.04	.04	.00	0.	1		1806	182	.06	.00	.05	2075.
1		0312	33	.04	.04	.00	0.	1		1812	183	.06	.00	.05	2022.
1		0318	34	.04	.04	.00	1.	1		1818	184	.05	.00	.05	1970.
1		0324	35	.04	.04	.00	1.	1		1824	185	.05	.00	.05	1920.
1		0330	36	.04	.04	.01	2.	1		1830	186	.05	.00	.05	1871.
1		0336	37	.04	.04	.01	3.	1		1836	187	.05	.00	.05	1823.
1		0342	38	.04	.04	.01	4.	1		1842	188	.05	.00	.05	1777.
1		0348	39	.04	.04	.01	5.	1		1848	189	.05	.00	.05	1732.
1		0354	40	.04	.04	.01	7.	1		1854	190	.05	.00	.05	1688.
1		0400	41	.05	.04	.01	9.	1		1900	191	.05	.00	.05	1646.
1		0406	42	.05	.04	.01	11.	1		1906	192	.05	.00	.05	1606.
1		0412	43	.05	.04	.01	13.	1		1912	193	.05	.00	.05	1566.
1		0418	44	.05	.04	.01	16.	1		1918	194	.05	.00	.05	1528.
1		0424	45	.05	.04	.01	19.	1		1924	195	.05	.00	.05	1491.
1		0430	46	.05	.04	.01	22.	1		1930	196	.05	.00	.05	1456.
1		0436	47	.05	.04	.01	25.	1		1936	197	.05	.00	.05	1421.
1		0442	48	.05	.03	.01	29.	1		1942	198	.05	.00	.05	1388.
1		0448	49	.05	.03	.01	33.	1		1948	199	.05	.00	.05	1356.
1		0454	50	.05	.03	.02	37.	1		1954	200	.05	.00	.05	1325.
1		0500	51	.05	.03	.02	41.	1		2000	201	.05	.00	.05	1295.
1		0506	52	.05	.04	.02	46.	1		2006	202	.05	.00	.04	1266.

1	0512	53	.05	.03	.02	50.	*	1	2012	203	.05	.00	.04	1238.
1	0518	54	.05	.03	.02	55.	*	1	2018	204	.04	.00	.04	1210.
1	0524	55	.05	.03	.02	60.	*	1	2024	205	.04	.00	.04	1184.
1	0530	56	.05	.03	.02	66.	*	1	2030	206	.04	.00	.04	1159.
1	0536	57	.05	.03	.02	71.	*	1	2036	207	.04	.00	.04	1134.
1	0542	58	.05	.03	.02	77.	*	1	2042	208	.04	.00	.04	1110.
1	0548	59	.05	.03	.02	82.	*	1	2048	209	.04	.00	.04	1087.
1	0554	60	.06	.03	.02	88.	*	1	2054	210	.04	.00	.04	1064.
1	0600	61	.06	.03	.02	94.	*	1	2100	211	.04	.00	.04	1042.
1	0606	62	.06	.03	.03	100.	*	1	2106	212	.04	.00	.04	1021.
1	0612	63	.06	.03	.03	107.	*	1	2112	213	.04	.00	.04	1001.
1	0618	64	.06	.03	.03	113.	*	1	2118	214	.04	.00	.04	981.
1	0624	65	.06	.03	.03	120.	*	1	2124	215	.04	.00	.04	962.
1	0630	66	.06	.03	.03	127.	*	1	2130	216	.04	.00	.04	943.
1	0636	67	.07	.03	.03	134.	*	1	2136	217	.04	.00	.04	925.
1	0642	68	.07	.03	.03	141.	*	1	2142	218	.04	.00	.04	908.
1	0648	69	.07	.03	.04	149.	*	1	2148	219	.04	.00	.04	891.
1	0654	70	.07	.03	.04	157.	*	1	2154	220	.04	.00	.04	874.
1	0700	71	.07	.03	.04	165.	*	1	2200	221	.04	.00	.04	859.
1	0706	72	.07	.03	.04	174.	*	1	2206	222	.04	.00	.04	843.
1	0712	73	.08	.03	.04	183.	*	1	2212	223	.04	.00	.04	828.
1	0718	74	.08	.03	.04	192.	*	1	2218	224	.04	.00	.04	813.
1	0724	75	.08	.03	.05	202.	*	1	2224	225	.04	.00	.04	799.
1	0730	76	.08	.03	.05	212.	*	1	2230	226	.04	.00	.04	785.
1	0736	77	.08	.03	.05	223.	*	1	2236	227	.04	.00	.04	771.
1	0742	78	.09	.03	.05	234.	*	1	2242	228	.03	.00	.03	758.
1	0748	79	.09	.03	.05	245.	*	1	2248	229	.03	.00	.03	745.
1	0754	80	.09	.03	.05	257.	*	1	2254	230	.03	.00	.03	733.
1	0800	81	.09	.03	.06	269.	*	1	2300	231	.03	.00	.03	721.
1	0806	82	.09	.03	.06	282.	*	1	2306	232	.03	.00	.03	709.
1	0812	83	.10	.03	.06	295.	*	1	2312	233	.03	.00	.03	697.
1	0818	84	.10	.04	.07	308.	*	1	2318	234	.03	.00	.03	685.
1	0824	85	.11	.04	.07	322.	*	1	2324	235	.03	.00	.03	674.
1	0830	86	.11	.04	.07	336.	*	1	2330	236	.03	.00	.03	663.
1	0836	87	.11	.04	.08	351.	*	1	2336	237	.03	.00	.03	653.
1	0842	88	.12	.04	.08	367.	*	1	2342	238	.03	.00	.03	642.
1	0848	89	.12	.04	.08	384.	*	1	2348	239	.03	.00	.03	632.
1	0854	90	.13	.04	.09	401.	*	1	2354	240	.03	.00	.03	622.
1	0900	91	.13	.04	.09	419.	*	2	0000	241	.03	.00	.03	612.
1	0906	92	.13	.04	.10	438.	*	2	0006	242	.00	.00	.00	602.
1	0912	93	.14	.04	.10	459.	*	2	0012	243	.00	.00	.00	592.
1	0918	94	.14	.04	.10	480.	*	2	0018	244	.00	.00	.00	581.
1	0924	95	.15	.04	.11	502.	*	2	0024	245	.00	.00	.00	569.
1	0930	96	.15	.04	.11	525.	*	2	0030	246	.00	.00	.00	556.
1	0936	97	.15	.04	.12	550.	*	2	0036	247	.00	.00	.00	542.
1	0942	98	.16	.04	.12	575.	*	2	0042	248	.00	.00	.00	527.
1	0948	99	.16	.04	.13	601.	*	2	0048	249	.00	.00	.00	510.
1	0954	100	.17	.04	.13	628.	*	2	0054	250	.00	.00	.00	492.
1	1000	101	.17	.04	.13	657.	*	2	0100	251	.00	.00	.00	473.
1	1006	102	.18	.04	.14	686.	*	2	0106	252	.00	.00	.00	453.
1	1012	103	.18	.04	.15	716.	*	2	0112	253	.00	.00	.00	432.
1	1018	104	.19	.04	.16	747.	*	2	0118	254	.00	.00	.00	407.
1	1024	105	.20	.04	.16	779.	*	2	0124	255	.00	.00	.00	383.
1	1030	106	.21	.04	.17	813.	*	2	0130	256	.00	.00	.00	364.
1	1036	107	.22	.04	.18	848.	*	2	0136	257	.00	.00	.00	346.
1	1042	108	.23	.04	.19	885.	*	2	0142	258	.00	.00	.00	330.
1	1048	109	.23	.04	.20	923.	*	2	0148	259	.00	.00	.00	315.
1	1054	110	.24	.04	.21	963.	*	2	0154	260	.00	.00	.00	301.

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        1     1100  111     .25     .04     .22      1006.       *        2     0200  261     .00     .00     .00       287.
        1     1106  112     .27     .04     .23      1050.       *        2     0206  262     .00     .00     .00       275.
        1     1112  113     .30     .04     .26      1097.       *        2     0212  263     .00     .00     .00       263.
        1     1118  114     .34     .04     .29      1147.       *        2     0218  264     .00     .00     .00       251.
        1     1124  115     .37     .04     .32      1202.       *        2     0224  265     .00     .00     .00       240.
        1     1130  116     .40     .05     .36      1260.       *        2     0230  266     .00     .00     .00       230.
        1     1136  117     .57     .06     .51      1326.       *        2     0236  267     .00     .00     .00       220.
        1     1142  118     .88     .08     .79      1402.       *        2     0242  268     .00     .00     .00       210.
        1     1148  119    1.19     .10    1.09      1497.       *        2     0248  269     .00     .00     .00       201.
        1     1154  120    1.49     .11    1.39      1621.       *        2     0254  270     .00     .00     .00       192.
        1     1200  121    2.94     .17    2.77      1792.       *        2     0300  271     .00     .00     .00       184.
        1     1206  122    2.94     .13    2.81      2036.       *        2     0306  272     .00     .00     .00       176.
        1     1212  123    1.49     .05    1.44      2360.       *        2     0312  273     .00     .00     .00       168.
        1     1218  124    1.19     .04    1.15      2753.       *        2     0318  274     .00     .00     .00       161.
        1     1224  125     .88     .03     .85      3202.       *        2     0324  275     .00     .00     .00       154.
        1     1230  126     .57     .02     .55      3690.       *        2     0330  276     .00     .00     .00       147.
        1     1236  127     .40     .01     .39      4199.       *        2     0336  277     .00     .00     .00       141.
        1     1242  128     .37     .01     .36      4703.       *        2     0342  278     .00     .00     .00       134.
        1     1248  129     .34     .01     .33      5175.       *        2     0348  279     .00     .00     .00       129.
        1     1254  130     .30     .01     .30      5593.       *        2     0354  280     .00     .00     .00       123.
        1     1300  131     .27     .01     .26      5940.       *        2     0400  281     .00     .00     .00       117.
        1     1306  132     .25     .01     .25      6205.       *        2     0406  282     .00     .00     .00       112.
        1     1312  133     .24     .01     .24      6378.       *        2     0412  283     .00     .00     .00       107.
        1     1318  134     .23     .01     .23      6456.       *        2     0418  284     .00     .00     .00       103.
        1     1324  135     .23     .01     .22      6450.       *        2     0424  285     .00     .00     .00        98.
        1     1330  136     .22     .00     .21      6389.       *        2     0430  286     .00     .00     .00        94.
        1     1336  137     .21     .00     .20      6297.       *        2     0436  287     .00     .00     .00        90.
        1     1342  138     .20     .00     .20      6187.       *        2     0442  288     .00     .00     .00        86.
        1     1348  139     .19     .00     .19      6066.       *        2     0448  289     .00     .00     .00        82.
        1     1354  140     .18     .00     .18      5941.       *        2     0454  290     .00     .00     .00        78.
        1     1400  141     .18     .00     .17      5814.       *        2     0500  291     .00     .00     .00        75.
        1     1406  142     .17     .00     .17      5687.       *        2     0506  292     .00     .00     .00        71.
        1     1412  143     .17     .00     .16      5559.       *        2     0512  293     .00     .00     .00        68.
        1     1418  144     .16     .00     .16      5433.       *        2     0518  294     .00     .00     .00        65.
        1     1424  145     .16     .00     .15      5308.       *        2     0524  295     .00     .00     .00        62.
        1     1430  146     .15     .00     .15      5184.       *        2     0530  296     .00     .00     .00        59.
        1     1436  147     .15     .00     .15      5062.       *        2     0536  297     .00     .00     .00        57.
        1     1442  148     .15     .00     .14      4942.       *        2     0542  298     .00     .00     .00        54.
        1     1448  149     .14     .00     .14      4824.       *        2     0548  299     .00     .00     .00        52.
        1     1454  150     .14     .00     .13      4708.       *        2     0554  300     .00     .00     .00        49.
                                                                  *
 ************************************************************************************************************************************

     TOTAL RAINFALL =   35.00, TOTAL LOSS =    5.08, TOTAL EXCESS =   29.92

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                           (CFS)
+    6456.     13.30                4142.       1522.       1224.        1224.
                        (INCHES)   20.162      29.636      29.696       29.696
                         (AC-FT)    2054.       3019.       3025.        3025.

                         CUMULATIVE AREA =    1.91 SQ MI
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          **************
          *            *
  55 KK   *     DAM-1  *     COOPER STREET DAM
          *            *
          **************
                        *** ROUTE FLOW ***
                        *** STAGE-STORAGE-DISCHARGE FROM USGS QUADS ***

             HYDROGRAPH ROUTING DATA

  58 RS        STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        ELEV  TYPE OF INITIAL CONDITION
                    RSVRIC       25.38  INITIAL CONDITION
                         X         .00 WORKING R AND D COEFFICIENT

  59 SA            AREA          .0      19.1      23.4      30.5

  60 SE        ELEVATION       13.20     25.38     30.00     35.00

  61 SQ        DISCHARGE          0.        4.       19.       30.      159.      281.      342.      426.      581.      716.
                                857.     1004.     1157.     1315.     1419.     1456.     1536.     1613.     1686.     1824.

  63 SE        ELEVATION       25.20     25.50     26.00     26.20     27.00     27.50     27.72     28.00     28.50     29.00
                               29.50     30.00     30.50     31.00     31.28     31.50     32.00     32.50     33.00     34.00

  65 ST        TOP OF DAM
                     TOPEL       31.28  ELEVATION AT TOP OF DAM
                    DAMWID         .00  DAM WIDTH
                      COQD        2.60  WEIR COEFFICIENT
                      EXPD        1.50  EXPONENT OF HEAD

     SW        DAM WIDTH         .00     64.80    258.30    350.00    430.40    529.70    616.10    691.40    760.80    800.00
     SE        ELEVATION       31.28     31.50     32.00     32.50     33.00     34.00     35.00     36.00     37.00     38.00


                                                                  ***

                                                   COMPUTED STORAGE-ELEVATION DATA

           STORAGE        .00     78.57    176.59    310.90
         ELEVATION      13.20     25.38     30.00     35.00

                                                COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

                                                      (INCLUDING FLOW OVER DAM)

           STORAGE        .00     75.17     78.57     80.87     90.60     94.55    110.73    121.13    125.77    131.75
           OUTFLOW        .00       .00      2.58      4.30     18.90     29.60    159.10    281.10    342.10    425.60
         ELEVATION      13.20     25.20     25.38     25.50     26.00     26.20     27.00     27.50     27.72     28.00

           STORAGE     142.61    153.70    165.03    176.59    188.44    200.63    207.61    213.16    226.04    239.28
           OUTFLOW     580.90    716.30    857.40   1004.20   1156.70   1315.00   1418.50   1463.18   1710.13   2272.42
         ELEVATION      28.50     29.00     29.50     30.00     30.50     31.00     31.28     31.50     32.00     32.50
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STORAGE	252.87	281.14	310.90
OUTFLOW	3146.91	5801.71	9628.62
ELEVATION	33.00	34.00	35.00

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HYDROGRAPH AT STATION DAM-1
PLAN 1, RATIO = .30

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	3.	78.6	25.4	1		1000	101	3.	79.4	25.4	1		2000	201	406.	130.3	27.9
1		0006	2	3.	78.5	25.4	1		1006	102	3.	79.7	25.4	1		2006	202	397.	129.7	27.9
1		0012	3	3.	78.5	25.4	1		1012	103	4.	80.1	25.5	1		2012	203	388.	129.0	27.9
1		0018	4	3.	78.5	25.4	1		1018	104	4.	80.5	25.5	1		2018	204	379.	128.4	27.8
1		0024	5	3.	78.5	25.4	1		1024	105	4.	80.9	25.5	1		2024	205	371.	127.8	27.8
1		0030	6	3.	78.5	25.4	1		1030	106	5.	81.4	25.5	1		2030	206	362.	127.2	27.8
1		0036	7	2.	78.4	25.4	1		1036	107	6.	81.9	25.6	1		2036	207	354.	126.7	27.8
1		0042	8	2.	78.4	25.4	1		1042	108	7.	82.4	25.6	1		2042	208	347.	126.1	27.7
1		0048	9	2.	78.4	25.4	1		1048	109	8.	83.0	25.6	1		2048	209	339.	125.6	27.7
1		0054	10	2.	78.4	25.4	1		1054	110	9.	83.7	25.6	1		2054	210	333.	125.0	27.7
1		0100	11	2.	78.4	25.4	1		1100	111	10.	84.4	25.7	1		2100	211	326.	124.5	27.7
1		0106	12	2.	78.3	25.4	1		1106	112	11.	85.1	25.7	1		2106	212	320.	124.0	27.6
1		0112	13	2.	78.3	25.4	1		1112	113	12.	85.9	25.8	1		2112	213	313.	123.6	27.6
1		0118	14	2.	78.3	25.4	1		1118	114	13.	86.8	25.8	1		2118	214	307.	123.1	27.6
1		0124	15	2.	78.3	25.4	1		1124	115	15.	87.8	25.9	1		2124	215	301.	122.6	27.6
1		0130	16	2.	78.3	25.4	1		1130	116	16.	88.8	25.9	1		2130	216	295.	122.2	27.6
1		0136	17	2.	78.2	25.4	1		1136	117	18.	89.9	26.0	1		2136	217	289.	121.8	27.5
1		0142	18	2.	78.2	25.4	1		1142	118	20.	91.1	26.0	1		2142	218	284.	121.3	27.5
1		0148	19	2.	78.2	25.4	1		1148	119	24.	92.4	26.1	1		2148	219	279.	120.9	27.5
1		0154	20	2.	78.2	25.4	1		1154	120	28.	93.9	26.2	1		2154	220	274.	120.5	27.5
1		0200	21	2.	78.2	25.4	1		1200	121	38.	95.6	26.3	1		2200	221	269.	120.1	27.5
1		0206	22	2.	78.2	25.4	1		1206	122	53.	97.5	26.3	1		2206	222	265.	119.7	27.4
1		0212	23	2.	78.1	25.4	1		1212	123	72.	99.8	26.5	1		2212	223	260.	119.3	27.4
1		0218	24	2.	78.1	25.4	1		1218	124	94.	102.5	26.6	1		2218	224	256.	119.0	27.4
1		0224	25	2.	78.1	25.4	1		1224	125	121.	105.9	26.8	1		2224	225	252.	118.6	27.4
1		0230	26	2.	78.1	25.4	1		1230	126	153.	109.9	27.0	1		2230	226	247.	118.2	27.4
1		0236	27	2.	78.1	25.4	1		1236	127	204.	114.5	27.2	1		2236	227	243.	117.9	27.3
1		0242	28	2.	78.0	25.4	1		1242	128	264.	119.7	27.4	1		2242	228	239.	117.5	27.3
1		0248	29	2.	78.0	25.4	1		1248	129	335.	125.3	27.7	1		2248	229	235.	117.2	27.3
1		0254	30	2.	78.0	25.4	1		1254	130	416.	131.1	28.0	1		2254	230	231.	116.9	27.3
1		0300	31	2.	78.0	25.3	1		1300	131	501.	137.0	28.2	1		2300	231	228.	116.5	27.3
1		0306	32	2.	78.0	25.3	1		1306	132	585.	142.9	28.5	1		2306	232	224.	116.2	27.3
1		0312	33	2.	78.0	25.3	1		1312	133	655.	148.7	28.8	1		2312	233	220.	115.9	27.3
1		0318	34	2.	77.9	25.3	1		1318	134	723.	154.2	29.0	1		2318	234	217.	115.6	27.2
1		0324	35	2.	77.9	25.3	1		1324	135	787.	159.3	29.2	1		2324	235	213.	115.3	27.2
1		0330	36	2.	77.9	25.3	1		1330	136	844.	164.0	29.5	1		2330	236	210.	115.0	27.2
1		0336	37	2.	77.9	25.3	1		1336	137	896.	168.1	29.6	1		2336	237	206.	114.7	27.2
1		0342	38	2.	77.9	25.3	1		1342	138	942.	171.7	29.8	1		2342	238	203.	114.4	27.2
1		0348	39	2.	77.9	25.3	1		1348	139	981.	174.7	29.9	1		2348	239	200.	114.2	27.2
1		0354	40	2.	77.8	25.3	1		1354	140	1014.	177.3	30.0	1		2354	240	196.	113.9	27.2
1		0400	41	2.	77.8	25.3	1		1400	141	1042.	179.5	30.1	2		0000	241	193.	113.6	27.1
1		0406	42	2.	77.8	25.3	1		1406	142	1065.	181.2	30.2	2		0006	242	190.	113.4	27.1
1		0412	43	2.	77.8	25.3	1		1412	143	1082.	182.6	30.3	2		0012	243	187.	113.1	27.1
1		0418	44	2.	77.8	25.3	1		1418	144	1096.	183.7	30.3	2		0018	244	184.	112.9	27.1
1		0424	45	2.	77.8	25.3	1		1424	145	1106.	184.5	30.3	2		0024	245	181.	112.6	27.1

1	0430	46	2.	77.7	25.3	*	1	1430	146	1113.	185.0	30.4	*	2	0030	246	178.	112.4	27.1
1	0436	47	2.	77.7	25.3	*	1	1436	147	1116.	185.3	30.4	*	2	0036	247	175.	112.1	27.1
1	0442	48	2.	77.7	25.3	*	1	1442	148	1117.	185.3	30.4	*	2	0042	248	172.	111.8	27.1
1	0448	49	2.	77.7	25.3	*	1	1448	149	1115.	185.2	30.4	*	2	0048	249	169.	111.6	27.0
1	0454	50	2.	77.7	25.3	*	1	1454	150	1112.	184.9	30.4	*	2	0054	250	166.	111.3	27.0
1	0500	51	2.	77.7	25.3	*	1	1500	151	1106.	184.5	30.3	*	2	0100	251	162.	111.0	27.0
1	0506	52	2.	77.6	25.3	*	1	1506	152	1099.	183.9	30.3	*	2	0106	252	159.	110.7	27.0
1	0512	53	2.	77.6	25.3	*	1	1512	153	1090.	183.2	30.3	*	2	0112	253	156.	110.4	27.0
1	0518	54	2.	77.6	25.3	*	1	1518	154	1080.	182.4	30.2	*	2	0118	254	154.	110.0	27.0
1	0524	55	2.	77.6	25.3	*	1	1524	155	1068.	181.5	30.2	*	2	0124	255	151.	109.6	26.9
1	0530	56	2.	77.6	25.3	*	1	1530	156	1056.	180.6	30.2	*	2	0130	256	147.	109.2	26.9
1	0536	57	2.	77.6	25.3	*	1	1536	157	1043.	179.5	30.1	*	2	0136	257	144.	108.8	26.9
1	0542	58	2.	77.6	25.3	*	1	1542	158	1029.	178.5	30.1	*	2	0142	258	141.	108.4	26.9
1	0548	59	2.	77.5	25.3	*	1	1548	159	1014.	177.3	30.0	*	2	0148	259	137.	108.0	26.9
1	0554	60	2.	77.5	25.3	*	1	1554	160	999.	176.2	30.0	*	2	0154	260	134.	107.5	26.8
1	0600	61	2.	77.5	25.3	*	1	1600	161	984.	175.0	29.9	*	2	0200	261	130.	107.1	26.8
1	0606	62	2.	77.5	25.3	*	1	1606	162	968.	173.7	29.9	*	2	0206	262	127.	106.7	26.8
1	0612	63	2.	77.5	25.3	*	1	1612	163	952.	172.5	29.8	*	2	0212	263	123.	106.2	26.8
1	0618	64	2.	77.5	25.3	*	1	1618	164	936.	171.2	29.8	*	2	0218	264	120.	105.8	26.8
1	0624	65	2.	77.5	25.3	*	1	1624	165	920.	169.9	29.7	*	2	0224	265	117.	105.4	26.7
1	0630	66	2.	77.4	25.3	*	1	1630	166	903.	168.6	29.7	*	2	0230	266	113.	104.9	26.7
1	0636	67	2.	77.4	25.3	*	1	1636	167	886.	167.3	29.6	*	2	0236	267	110.	104.5	26.7
1	0642	68	2.	77.4	25.3	*	1	1642	168	869.	165.9	29.5	*	2	0242	268	107.	104.1	26.7
1	0648	69	2.	77.4	25.3	*	1	1648	169	852.	164.6	29.5	*	2	0248	269	103.	103.7	26.7
1	0654	70	2.	77.4	25.3	*	1	1654	170	836.	163.3	29.4	*	2	0254	270	100.	103.3	26.6
1	0700	71	2.	77.4	25.3	*	1	1700	171	819.	162.0	29.4	*	2	0300	271	97.	102.9	26.6
1	0706	72	2.	77.4	25.3	*	1	1706	172	803.	160.6	29.3	*	2	0306	272	94.	102.5	26.6
1	0712	73	2.	77.3	25.3	*	1	1712	173	787.	159.3	29.2	*	2	0312	273	91.	102.1	26.6
1	0718	74	2.	77.3	25.3	*	1	1718	174	770.	158.0	29.2	*	2	0318	274	88.	101.7	26.6
1	0724	75	2.	77.3	25.3	*	1	1724	175	754.	156.7	29.1	*	2	0324	275	85.	101.4	26.5
1	0730	76	2.	77.3	25.3	*	1	1730	176	738.	155.4	29.1	*	2	0330	276	82.	101.0	26.5
1	0736	77	2.	77.3	25.3	*	1	1736	177	722.	154.1	29.0	*	2	0336	277	79.	100.7	26.5
1	0742	78	2.	77.3	25.3	*	1	1742	178	707.	152.9	29.0	*	2	0342	278	77.	100.4	26.5
1	0748	79	2.	77.3	25.3	*	1	1748	179	692.	151.7	28.9	*	2	0348	279	74.	100.0	26.5
1	0754	80	2.	77.3	25.3	*	1	1754	180	677.	150.4	28.9	*	2	0354	280	71.	99.7	26.5
1	0800	81	2.	77.3	25.3	*	1	1800	181	662.	149.2	28.8	*	2	0400	281	69.	99.4	26.4
1	0806	82	2.	77.3	25.3	*	1	1806	182	648.	148.0	28.7	*	2	0406	282	66.	99.1	26.4
1	0812	83	2.	77.3	25.3	*	1	1812	183	633.	146.9	28.7	*	2	0412	283	64.	98.8	26.4
1	0818	84	2.	77.3	25.3	*	1	1818	184	619.	145.7	28.6	*	2	0418	284	62.	98.5	26.4
1	0824	85	2.	77.3	25.3	*	1	1824	185	605.	144.6	28.6	*	2	0424	285	60.	98.3	26.4
1	0830	86	2.	77.3	25.3	*	1	1830	186	592.	143.5	28.5	*	2	0430	286	57.	98.0	26.4
1	0836	87	2.	77.3	25.3	*	1	1836	187	578.	142.4	28.5	*	2	0436	287	55.	97.7	26.4
1	0842	88	2.	77.4	25.3	*	1	1842	188	563.	141.3	28.4	*	2	0442	288	53.	97.5	26.3
1	0848	89	2.	77.4	25.3	*	1	1848	189	548.	140.3	28.4	*	2	0448	289	51.	97.2	26.3
1	0854	90	2.	77.5	25.3	*	1	1854	190	534.	139.3	28.3	*	2	0454	290	49.	97.0	26.3
1	0900	91	2.	77.6	25.3	*	1	1900	191	520.	138.3	28.3	*	2	0500	291	48.	96.8	26.3
1	0906	92	2.	77.7	25.3	*	1	1906	192	507.	137.4	28.3	*	2	0506	292	46.	96.5	26.3
1	0912	93	2.	77.8	25.3	*	1	1912	193	494.	136.5	28.2	*	2	0512	293	44.	96.3	26.3
1	0918	94	2.	77.9	25.3	*	1	1918	194	481.	135.6	28.2	*	2	0518	294	42.	96.1	26.3
1	0924	95	2.	78.0	25.4	*	1	1924	195	469.	134.8	28.1	*	2	0524	295	41.	95.9	26.3
1	0930	96	2.	78.2	25.4	*	1	1930	196	458.	134.0	28.1	*	2	0530	296	39.	95.7	26.3
1	0936	97	2.	78.4	25.4	*	1	1936	197	447.	133.2	28.1	*	2	0536	297	38.	95.6	26.3
1	0942	98	3.	78.6	25.4	*	1	1942	198	436.	132.5	28.0	*	2	0542	298	36.	95.4	26.2
1	0948	99	3.	78.8	25.4	*	1	1948	199	425.	131.7	28.0	*	2	0548	299	35.	95.2	26.2
1	0954	100	3.	79.1	25.4	*	1	1954	200	415.	131.0	28.0	*	2	0554	300	33.	95.0	26.2
						*							*						

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PEAK OUTFLOW IS 1117. AT TIME 14.70 HOURS

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 1117.	14.70		867.	318.	255.	255.
		(INCHES)	4.222	6.186	6.196	6.196
		(AC-FT)	430.	630.	631.	631.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)				
185.	14.70	166.	118.	110.	110.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	29.90-HR
+ (FEET)	(HR)				
30.37	14.70	29.52	27.28	26.90	26.90

CUMULATIVE AREA = 1.91 SQ MI

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HYDROGRAPH AT STATION DAM-1
PLAN 1, RATIO = .40

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	3.	78.6	25.4	1		1000	101	11.	85.4	25.7	1		2000	201	602.	144.3	28.6
1		0006	2	3.	78.5	25.4	1		1006	102	12.	86.2	25.8	1		2006	202	588.	143.2	28.5
1		0012	3	3.	78.5	25.4	1		1012	103	14.	87.0	25.8	1		2012	203	574.	142.1	28.5
1		0018	4	3.	78.5	25.4	1		1018	104	15.	87.9	25.9	1		2018	204	559.	141.0	28.4
1		0024	5	3.	78.5	25.4	1		1024	105	16.	88.8	25.9	1		2024	205	545.	140.0	28.4
1		0030	6	3.	78.5	25.4	1		1030	106	18.	89.8	26.0	1		2030	206	531.	139.1	28.3
1		0036	7	2.	78.4	25.4	1		1036	107	20.	90.9	26.0	1		2036	207	518.	138.2	28.3
1		0042	8	2.	78.4	25.4	1		1042	108	23.	92.0	26.1	1		2042	208	505.	137.3	28.3
1		0048	9	2.	78.4	25.4	1		1048	109	26.	93.2	26.1	1		2048	209	493.	136.4	28.2
1		0054	10	2.	78.4	25.4	1		1054	110	29.	94.5	26.2	1		2054	210	481.	135.6	28.2
1		0100	11	2.	78.4	25.4	1		1100	111	40.	95.8	26.3	1		2100	211	470.	134.8	28.1
1		0106	12	2.	78.3	25.4	1		1106	112	51.	97.1	26.3	1		2106	212	459.	134.1	28.1
1		0112	13	2.	78.3	25.4	1		1112	113	62.	98.5	26.4	1		2112	213	449.	133.4	28.1
1		0118	14	2.	78.3	25.4	1		1118	114	73.	99.9	26.5	1		2118	214	439.	132.7	28.0
1		0124	15	2.	78.3	25.4	1		1124	115	84.	101.3	26.5	1		2124	215	429.	132.0	28.0
1		0130	16	2.	78.3	25.4	1		1130	116	96.	102.8	26.6	1		2130	216	420.	131.4	28.0
1		0136	17	2.	78.2	25.4	1		1136	117	108.	104.3	26.7	1		2136	217	412.	130.7	28.0
1		0142	18	2.	78.2	25.4	1		1142	118	121.	105.9	26.8	1		2142	218	403.	130.1	27.9
1		0148	19	2.	78.2	25.4	1		1148	119	134.	107.6	26.8	1		2148	219	395.	129.5	27.9
1		0154	20	2.	78.2	25.4	1		1154	120	149.	109.5	26.9	1		2154	220	387.	129.0	27.9
1		0200	21	2.	78.2	25.4	1		1200	121	169.	111.6	27.0	1		2200	221	379.	128.4	27.8
1		0206	22	2.	78.2	25.4	1		1206	122	199.	114.1	27.2	1		2206	222	372.	127.9	27.8
1		0212	23	2.	78.1	25.4	1		1212	123	234.	117.1	27.3	1		2212	223	365.	127.4	27.8
1		0218	24	2.	78.1	25.4	1		1218	124	276.	120.7	27.5	1		2218	224	358.	126.9	27.8
1		0224	25	2.	78.1	25.4	1		1224	125	334.	125.1	27.7	1		2224	225	351.	126.4	27.7

1	0230	26	2.	78.1	25.4	*	1	1230	126	405.	130.3	27.9	*	1	2230	226	344.	125.9	27.7
1	0236	27	2.	78.1	25.4	*	1	1236	127	490.	136.2	28.2	*	1	2236	227	338.	125.5	27.7
1	0242	28	2.	78.0	25.4	*	1	1242	128	584.	142.9	28.5	*	1	2242	228	332.	125.0	27.7
1	0248	29	2.	78.0	25.4	*	1	1248	129	674.	150.2	28.8	*	1	2248	229	327.	124.6	27.7
1	0254	30	2.	78.0	25.4	*	1	1254	130	771.	158.0	29.2	*	1	2254	230	321.	124.2	27.6
1	0300	31	2.	78.0	25.3	*	1	1300	131	873.	166.2	29.6	*	1	2300	231	316.	123.8	27.6
1	0306	32	2.	78.0	25.3	*	1	1306	132	978.	174.5	29.9	*	1	2306	232	310.	123.3	27.6
1	0312	33	2.	78.0	25.3	*	1	1312	133	1082.	182.6	30.3	*	1	2312	233	305.	122.9	27.6
1	0318	34	2.	77.9	25.3	*	1	1318	134	1180.	190.2	30.6	*	1	2318	234	300.	122.6	27.6
1	0324	35	2.	77.9	25.3	*	1	1324	135	1272.	197.3	30.9	*	1	2324	235	295.	122.2	27.5
1	0330	36	2.	77.9	25.3	*	1	1330	136	1360.	203.6	31.1	*	1	2330	236	290.	121.8	27.5
1	0336	37	2.	77.9	25.3	*	1	1336	137	1429.	209.2	31.3	*	1	2336	237	285.	121.4	27.5
1	0342	38	2.	77.9	25.3	*	1	1342	138	1473.	214.1	31.5	*	1	2342	238	281.	121.1	27.5
1	0348	39	2.	77.9	25.3	*	1	1348	139	1530.	218.3	31.7	*	1	2348	239	277.	120.7	27.5
1	0354	40	2.	77.8	25.3	*	1	1354	140	1595.	221.6	31.8	*	1	2354	240	273.	120.4	27.5
1	0400	41	2.	77.8	25.3	*	1	1400	141	1658.	224.2	31.9	*	2	0000	241	269.	120.1	27.4
1	0406	42	2.	77.8	25.3	*	1	1406	142	1708.	226.0	32.0	*	2	0006	242	265.	119.7	27.4
1	0412	43	2.	77.8	25.3	*	1	1412	143	1741.	227.0	32.0	*	2	0012	243	261.	119.4	27.4
1	0418	44	2.	77.8	25.3	*	1	1418	144	1759.	227.6	32.1	*	2	0018	244	257.	119.1	27.4
1	0424	45	2.	77.8	25.3	*	1	1424	145	1765.	227.8	32.1	*	2	0024	245	253.	118.7	27.4
1	0430	46	2.	77.7	25.3	*	1	1430	146	1761.	227.6	32.1	*	2	0030	246	249.	118.4	27.4
1	0436	47	2.	77.7	25.3	*	1	1436	147	1749.	227.3	32.0	*	2	0036	247	245.	118.0	27.4
1	0442	48	2.	77.7	25.3	*	1	1442	148	1732.	226.8	32.0	*	2	0042	248	241.	117.7	27.3
1	0448	49	2.	77.7	25.3	*	1	1448	149	1711.	226.1	32.0	*	2	0048	249	237.	117.3	27.3
1	0454	50	2.	77.7	25.3	*	1	1454	150	1688.	225.3	32.0	*	2	0054	250	232.	116.9	27.3
1	0500	51	2.	77.7	25.3	*	1	1500	151	1664.	224.4	31.9	*	2	0100	251	227.	116.5	27.3
1	0506	52	2.	77.6	25.3	*	1	1506	152	1637.	223.4	31.9	*	2	0106	252	222.	116.1	27.3
1	0512	53	2.	77.6	25.3	*	1	1512	153	1611.	222.3	31.9	*	2	0112	253	217.	115.6	27.2
1	0518	54	2.	77.6	25.3	*	1	1518	154	1585.	221.2	31.8	*	2	0118	254	212.	115.2	27.2
1	0524	55	2.	77.6	25.3	*	1	1524	155	1561.	220.0	31.8	*	2	0124	255	206.	114.7	27.2
1	0530	56	2.	77.6	25.3	*	1	1530	156	1537.	218.7	31.7	*	2	0130	256	200.	114.2	27.2
1	0536	57	2.	77.6	25.3	*	1	1536	157	1515.	217.3	31.7	*	2	0136	257	193.	113.6	27.1
1	0542	58	2.	77.6	25.3	*	1	1542	158	1494.	215.9	31.6	*	2	0142	258	187.	113.1	27.1
1	0548	59	2.	77.5	25.3	*	1	1548	159	1476.	214.3	31.5	*	2	0148	259	181.	112.6	27.1
1	0554	60	2.	77.5	25.3	*	1	1554	160	1459.	212.7	31.5	*	2	0154	260	175.	112.1	27.1
1	0600	61	2.	77.5	25.3	*	1	1600	161	1443.	211.0	31.4	*	2	0200	261	169.	111.6	27.0
1	0606	62	2.	77.5	25.3	*	1	1606	162	1429.	209.1	31.3	*	2	0206	262	163.	111.1	27.0
1	0612	63	2.	77.5	25.3	*	1	1612	163	1411.	207.1	31.3	*	2	0212	263	158.	110.6	27.0
1	0618	64	2.	77.5	25.3	*	1	1618	164	1382.	205.1	31.2	*	2	0218	264	154.	110.1	27.0
1	0624	65	2.	77.5	25.3	*	1	1624	165	1352.	203.1	31.1	*	2	0224	265	150.	109.6	26.9
1	0630	66	2.	77.4	25.3	*	1	1630	166	1322.	201.1	31.0	*	2	0230	266	146.	109.1	26.9
1	0636	67	2.	77.4	25.3	*	1	1636	167	1296.	199.2	30.9	*	2	0236	267	142.	108.6	26.9
1	0642	68	2.	77.4	25.3	*	1	1642	168	1271.	197.2	30.9	*	2	0242	268	138.	108.1	26.9
1	0648	69	2.	77.4	25.3	*	1	1648	169	1246.	195.3	30.8	*	2	0248	269	135.	107.6	26.8
1	0654	70	2.	77.4	25.3	*	1	1654	170	1220.	193.3	30.7	*	2	0254	270	131.	107.1	26.8
1	0700	71	2.	77.4	25.3	*	1	1700	171	1195.	191.4	30.6	*	2	0300	271	127.	106.7	26.8
1	0706	72	2.	77.4	25.3	*	1	1706	172	1170.	189.4	30.5	*	2	0306	272	123.	106.2	26.8
1	0712	73	2.	77.5	25.3	*	1	1712	173	1145.	187.5	30.5	*	2	0312	273	119.	105.7	26.8
1	0718	74	2.	77.5	25.3	*	1	1718	174	1121.	185.6	30.4	*	2	0318	274	116.	105.2	26.7
1	0724	75	2.	77.5	25.3	*	1	1724	175	1097.	183.7	30.3	*	2	0324	275	112.	104.8	26.7
1	0730	76	2.	77.6	25.3	*	1	1730	176	1073.	181.9	30.2	*	2	0330	276	109.	104.4	26.7
1	0736	77	2.	77.6	25.3	*	1	1736	177	1049.	180.0	30.1	*	2	0336	277	105.	103.9	26.7
1	0742	78	2.	77.7	25.3	*	1	1742	178	1025.	178.2	30.1	*	2	0342	278	102.	103.5	26.6
1	0748	79	2.	77.8	25.3	*	1	1748	179	1002.	176.4	30.0	*	2	0348	279	98.	103.1	26.6
1	0754	80	2.	77.9	25.3	*	1	1754	180	980.	174.7	29.9	*	2	0354	280	95.	102.7	26.6
1	0800	81	2.	78.0	25.3	*	1	1800	181	958.	172.9	29.8	*	2	0400	281	92.	102.3	26.6
1	0806	82	2.	78.1	25.4	*	1	1806	182	936.	171.2	29.8	*	2	0406	282	89.	101.9	26.6
1	0812	83	2.	78.2	25.4	*	1	1812	183	915.	169.5	29.7	*	2	0412	283	86.	101.5	26.5

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   1     0818  84       2.     78.4    25.4 *  1     1818 184     894.    167.9    29.6 *  2     0418 284      83.    101.1    26.5
   1     0824  85       3.     78.6    25.4 *  1     1824 185     873.    166.3    29.6 *  2     0424 285      80.    100.8    26.5
   1     0830  86       3.     78.8    25.4 *  1     1830 186     853.    164.7    29.5 *  2     0430 286      77.    100.4    26.5
   1     0836  87       3.     79.0    25.4 *  1     1836 187     834.    163.1    29.4 *  2     0436 287      74.    100.1    26.5
   1     0842  88       3.     79.2    25.4 *  1     1842 188     814.    161.6    29.3 *  2     0442 288      72.     99.8    26.5
   1     0848  89       3.     79.5    25.4 *  1     1848 189     796.    160.0    29.3 *  2     0448 289      69.     99.4    26.4
   1     0854  90       3.     79.8    25.4 *  1     1854 190     777.    158.6    29.2 *  2     0454 290      67.     99.1    26.4
   1     0900  91       4.     80.1    25.5 *  1     1900 191     759.    157.1    29.2 *  2     0500 291      64.     98.8    26.4
   1     0906  92       4.     80.5    25.5 *  1     1906 192     741.    155.7    29.1 *  2     0506 292      62.     98.5    26.4
   1     0912  93       4.     80.9    25.5 *  1     1912 193     724.    154.3    29.0 *  2     0512 293      60.     98.3    26.4
   1     0918  94       5.     81.3    25.5 *  1     1918 194     707.    152.9    29.0 *  2     0518 294      57.     98.0    26.4
   1     0924  95       6.     81.7    25.5 *  1     1924 195     691.    151.6    28.9 *  2     0524 295      55.     97.7    26.4
   1     0930  96       6.     82.2    25.6 *  1     1930 196     675.    150.3    28.8 *  2     0530 296      53.     97.5    26.3
   1     0936  97       7.     82.8    25.6 *  1     1936 197     660.    149.1    28.8 *  2     0536 297      51.     97.2    26.3
   1     0942  98       8.     83.4    25.6 *  1     1942 198     645.    147.8    28.7 *  2     0542 298      49.     97.0    26.3
   1     0948  99       9.     84.0    25.7 *  1     1948 199     630.    146.6    28.7 *  2     0548 299      47.     96.7    26.3
   1     0954 100      10.     84.7    25.7 *  1     1954 200     616.    145.4    28.6 *  2     0554 300      46.     96.5    26.3
                                            *                                             *
 ************************************************************************************************************************************

 PEAK OUTFLOW IS     1765. AT TIME  14.40 HOURS


  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                       6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                           (CFS)
+    1765.     14.40                 1308.        480.        386.         386.
                         (INCHES)    6.365       9.345       9.355        9.355
                          (AC-FT)     648.        952.        953.         953.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                       6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
      228.     14.40                   199.        131.        121.         121.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                       6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
     32.07     14.40                  30.91       27.88       27.38        27.38

                          CUMULATIVE AREA =    1.91 SQ MI


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                                                HYDROGRAPH AT STATION    DAM-1
                                                    PLAN 1,   RATIO =   .50

 ************************************************************************************************************************************
                                            *                                             *
  DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE
                                            *                                             *
   1     0000   1       3.     78.6    25.4 *  1     1000 101      29.     94.3    26.2 *  1     2000 201     778.    158.6    29.2
   1     0006   2       3.     78.5    25.4 *  1     1006 102      38.     95.5    26.2 *  1     2006 202     760.    157.2    29.2
   1     0012   3       3.     78.5    25.4 *  1     1012 103      48.     96.8    26.3 *  1     2012 203     743.    155.8    29.1
   1     0018   4       3.     78.5    25.4 *  1     1018 104      58.     98.1    26.4 *  1     2018 204     726.    154.5    29.0
   1     0024   5       3.     78.5    25.4 *  1     1024 105      68.     99.3    26.4 *  1     2024 205     710.    153.2    29.0
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1	0030	6	3.	78.5	25.4	*	1	1030	106	79.	100.6	26.5	*	1	2030	206	695.	151.9	28.9
1	0036	7	2.	78.4	25.4	*	1	1036	107	90.	102.0	26.6	*	1	2036	207	680.	150.7	28.9
1	0042	8	2.	78.4	25.4	*	1	1042	108	101.	103.3	26.6	*	1	2042	208	665.	149.5	28.8
1	0048	9	2.	78.4	25.4	*	1	1048	109	112.	104.7	26.7	*	1	2048	209	651.	148.3	28.8
1	0054	10	2.	78.4	25.4	*	1	1054	110	123.	106.2	26.8	*	1	2054	210	637.	147.2	28.7
1	0100	11	2.	78.4	25.4	*	1	1100	111	135.	107.6	26.8	*	1	2100	211	623.	146.0	28.7
1	0106	12	2.	78.3	25.4	*	1	1106	112	147.	109.2	26.9	*	1	2106	212	610.	145.0	28.6
1	0112	13	2.	78.3	25.4	*	1	1112	113	160.	110.8	27.0	*	1	2112	213	597.	143.9	28.6
1	0118	14	2.	78.3	25.4	*	1	1118	114	179.	112.4	27.1	*	1	2118	214	584.	142.9	28.5
1	0124	15	2.	78.3	25.4	*	1	1124	115	198.	114.0	27.2	*	1	2124	215	571.	141.9	28.5
1	0130	16	2.	78.3	25.4	*	1	1130	116	218.	115.7	27.2	*	1	2130	216	557.	140.9	28.4
1	0136	17	2.	78.2	25.4	*	1	1136	117	238.	117.4	27.3	*	1	2136	217	544.	140.0	28.4
1	0142	18	2.	78.2	25.4	*	1	1142	118	259.	119.3	27.4	*	1	2142	218	532.	139.2	28.3
1	0148	19	2.	78.2	25.4	*	1	1148	119	282.	121.2	27.5	*	1	2148	219	520.	138.3	28.3
1	0154	20	2.	78.2	25.4	*	1	1154	120	310.	123.3	27.6	*	1	2154	220	508.	137.5	28.3
1	0200	21	2.	78.2	25.4	*	1	1200	121	341.	125.7	27.7	*	1	2200	221	497.	136.7	28.2
1	0206	22	2.	78.2	25.4	*	1	1206	122	381.	128.5	27.9	*	1	2206	222	487.	136.0	28.2
1	0212	23	2.	78.1	25.4	*	1	1212	123	430.	132.0	28.0	*	1	2212	223	476.	135.3	28.2
1	0218	24	2.	78.1	25.4	*	1	1218	124	493.	136.4	28.2	*	1	2218	224	467.	134.6	28.1
1	0224	25	2.	78.1	25.4	*	1	1224	125	569.	141.8	28.5	*	1	2224	225	457.	133.9	28.1
1	0230	26	2.	78.1	25.4	*	1	1230	126	650.	148.2	28.8	*	1	2230	226	448.	133.3	28.1
1	0236	27	2.	78.1	25.4	*	1	1236	127	743.	155.8	29.1	*	1	2236	227	439.	132.7	28.0
1	0242	28	2.	78.0	25.4	*	1	1242	128	851.	164.5	29.5	*	1	2242	228	430.	132.1	28.0
1	0248	29	2.	78.0	25.4	*	1	1248	129	973.	174.1	29.9	*	1	2248	229	422.	131.5	28.0
1	0254	30	2.	78.0	25.4	*	1	1254	130	1105.	184.4	30.3	*	1	2254	230	415.	131.0	28.0
1	0300	31	2.	78.0	25.3	*	1	1300	131	1243.	195.1	30.8	*	1	2300	231	407.	130.4	27.9
1	0306	32	2.	78.0	25.3	*	1	1306	132	1391.	205.7	31.2	*	1	2306	232	400.	129.9	27.9
1	0312	33	2.	78.0	25.3	*	1	1312	133	1499.	216.2	31.6	*	1	2312	233	393.	129.4	27.9
1	0318	34	2.	77.9	25.3	*	1	1318	134	1708.	226.0	32.0	*	1	2318	234	386.	128.9	27.9
1	0324	35	2.	77.9	25.3	*	1	1324	135	2006.	233.9	32.3	*	1	2324	235	379.	128.4	27.8
1	0330	36	2.	77.9	25.3	*	1	1330	136	2275.	239.3	32.5	*	1	2330	236	372.	127.9	27.8
1	0336	37	2.	77.9	25.3	*	1	1336	137	2464.	242.7	32.6	*	1	2336	237	366.	127.5	27.8
1	0342	38	2.	77.9	25.3	*	1	1342	138	2570.	244.4	32.7	*	1	2342	238	360.	127.0	27.8
1	0348	39	2.	77.9	25.3	*	1	1348	139	2618.	245.2	32.7	*	1	2348	239	354.	126.6	27.8
1	0354	40	2.	77.8	25.3	*	1	1354	140	2628.	245.4	32.7	*	1	2354	240	348.	126.2	27.7
1	0400	41	2.	77.8	25.3	*	1	1400	141	2613.	245.1	32.7	*	2	0000	241	342.	125.8	27.7
1	0406	42	2.	77.8	25.3	*	1	1406	142	2584.	244.7	32.7	*	2	0006	242	337.	125.4	27.7
1	0412	43	2.	77.8	25.3	*	1	1412	143	2546.	244.0	32.7	*	2	0012	243	331.	125.0	27.7
1	0418	44	2.	77.8	25.3	*	1	1418	144	2503.	243.3	32.7	*	2	0018	244	326.	124.6	27.7
1	0424	45	2.	77.8	25.3	*	1	1424	145	2457.	242.6	32.6	*	2	0024	245	321.	124.2	27.6
1	0430	46	2.	77.7	25.3	*	1	1430	146	2410.	241.8	32.6	*	2	0030	246	316.	123.8	27.6
1	0436	47	2.	77.7	25.3	*	1	1436	147	2362.	240.9	32.6	*	2	0036	247	310.	123.4	27.6
1	0442	48	2.	77.7	25.3	*	1	1442	148	2314.	240.0	32.5	*	2	0042	248	305.	122.9	27.6
1	0448	49	2.	77.7	25.3	*	1	1448	149	2266.	239.2	32.5	*	2	0048	249	299.	122.5	27.6
1	0454	50	2.	77.7	25.3	*	1	1454	150	2219.	238.3	32.5	*	2	0054	250	293.	122.0	27.5
1	0500	51	2.	77.7	25.3	*	1	1500	151	2172.	237.3	32.4	*	2	0100	251	287.	121.6	27.5
1	0506	52	2.	77.6	25.3	*	1	1506	152	2126.	236.4	32.4	*	2	0106	252	280.	121.0	27.5
1	0512	53	2.	77.6	25.3	*	1	1512	153	2081.	235.5	32.4	*	2	0112	253	274.	120.5	27.5
1	0518	54	2.	77.6	25.3	*	1	1518	154	2037.	234.5	32.3	*	2	0118	254	267.	119.9	27.4
1	0524	55	2.	77.6	25.3	*	1	1524	155	1993.	233.6	32.3	*	2	0124	255	260.	119.3	27.4
1	0530	56	2.	77.6	25.3	*	1	1530	156	1951.	232.6	32.2	*	2	0130	256	253.	118.7	27.4
1	0536	57	2.	77.6	25.3	*	1	1536	157	1910.	231.6	32.2	*	2	0136	257	245.	118.0	27.4
1	0542	58	2.	77.6	25.3	*	1	1542	158	1870.	230.6	32.2	*	2	0142	258	238.	117.4	27.3
1	0548	59	2.	77.6	25.3	*	1	1548	159	1830.	229.6	32.1	*	2	0148	259	230.	116.7	27.3
1	0554	60	2.	77.6	25.3	*	1	1554	160	1792.	228.6	32.1	*	2	0154	260	222.	116.1	27.3
1	0600	61	2.	77.6	25.3	*	1	1600	161	1754.	227.4	32.1	*	2	0200	261	215.	115.5	27.2
1	0606	62	2.	77.6	25.3	*	1	1606	162	1718.	226.3	32.0	*	2	0206	262	208.	114.8	27.2
1	0612	63	2.	77.6	25.3	*	1	1612	163	1684.	225.1	32.0	*	2	0212	263	200.	114.2	27.2

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   1     0618  64       2.     77.6    25.3 *  1     1618 164    1651.    223.9    31.9 *  2     0218 264     193.    113.6    27.1
   1     0624  65       2.     77.6    25.3 *  1     1624 165    1620.    222.7    31.9 *  2     0224 265     186.    113.0    27.1
   1     0630  66       2.     77.7    25.3 *  1     1630 166    1590.    221.4    31.8 *  2     0230 266     179.    112.4    27.1
   1     0636  67       2.     77.7    25.3 *  1     1636 167    1562.    220.0    31.8 *  2     0236 267     173.    111.9    27.1
   1     0642  68       2.     77.8    25.3 *  1     1642 168    1536.    218.6    31.7 *  2     0242 268     166.    111.3    27.0
   1     0648  69       2.     77.9    25.3 *  1     1648 169    1512.    217.1    31.7 *  2     0248 269     160.    110.8    27.0
   1     0654  70       2.     78.0    25.3 *  1     1654 170    1490.    215.5    31.6 *  2     0254 270     156.    110.3    27.0
   1     0700  71       2.     78.1    25.4 *  1     1700 171    1470.    213.8    31.5 *  2     0300 271     152.    109.8    27.0
   1     0706  72       2.     78.2    25.4 *  1     1706 172    1452.    212.0    31.5 *  2     0306 272     147.    109.2    26.9
   1     0712  73       2.     78.3    25.4 *  1     1712 173    1436.    210.1    31.4 *  2     0312 273     143.    108.7    26.9
   1     0718  74       2.     78.5    25.4 *  1     1718 174    1422.    208.1    31.3 *  2     0318 274     139.    108.2    26.9
   1     0724  75       3.     78.6    25.4 *  1     1724 175    1394.    206.0    31.2 *  2     0324 275     135.    107.7    26.9
   1     0730  76       3.     78.8    25.4 *  1     1730 176    1363.    203.9    31.1 *  2     0330 276     131.    107.2    26.8
   1     0736  77       3.     79.0    25.4 *  1     1736 177    1332.    201.8    31.0 *  2     0336 277     127.    106.7    26.8
   1     0742  78       3.     79.3    25.4 *  1     1742 178    1304.    199.7    31.0 *  2     0342 278     123.    106.2    26.8
   1     0748  79       3.     79.5    25.4 *  1     1748 179    1277.    197.7    30.9 *  2     0348 279     120.    105.7    26.8
   1     0754  80       3.     79.8    25.4 *  1     1754 180    1251.    195.7    30.8 *  2     0354 280     116.    105.3    26.7
   1     0800  81       4.     80.1    25.5 *  1     1800 181    1225.    193.6    30.7 *  2     0400 281     112.    104.8    26.7
   1     0806  82       4.     80.4    25.5 *  1     1806 182    1198.    191.6    30.6 *  2     0406 282     109.    104.3    26.7
   1     0812  83       4.     80.8    25.5 *  1     1812 183    1172.    189.6    30.5 *  2     0412 283     105.    103.9    26.7
   1     0818  84       5.     81.2    25.5 *  1     1818 184    1147.    187.7    30.5 *  2     0418 284     102.    103.5    26.6
   1     0824  85       5.     81.6    25.5 *  1     1824 185    1122.    185.7    30.4 *  2     0424 285      98.    103.0    26.6
   1     0830  86       6.     82.1    25.6 *  1     1830 186    1098.    183.8    30.3 *  2     0430 286      95.    102.6    26.6
   1     0836  87       7.     82.6    25.6 *  1     1836 187    1073.    181.9    30.2 *  2     0436 287      92.    102.2    26.6
   1     0842  88       8.     83.1    25.6 *  1     1842 188    1049.    180.0    30.1 *  2     0442 288      88.    101.8    26.6
   1     0848  89       9.     83.7    25.6 *  1     1848 189    1025.    178.2    30.1 *  2     0448 289      85.    101.4    26.5
   1     0854  90       9.     84.3    25.7 *  1     1854 190    1002.    176.4    30.0 *  2     0454 290      82.    101.1    26.5
   1     0900  91      10.     85.0    25.7 *  1     1900 191     979.    174.6    29.9 *  2     0500 291      79.    100.7    26.5
   1     0906  92      12.     85.6    25.7 *  1     1906 192     957.    172.8    29.8 *  2     0506 292      77.    100.4    26.5
   1     0912  93      13.     86.4    25.8 *  1     1912 193     935.    171.1    29.8 *  2     0512 293      74.    100.0    26.5
   1     0918  94      14.     87.2    25.8 *  1     1918 194     914.    169.4    29.7 *  2     0518 294      71.     99.7    26.5
   1     0924  95      15.     88.0    25.9 *  1     1924 195     893.    167.8    29.6 *  2     0524 295      69.     99.4    26.4
   1     0930  96      16.     88.9    25.9 *  1     1930 196     872.    166.2    29.5 *  2     0530 296      66.     99.1    26.4
   1     0936  97      18.     89.9    26.0 *  1     1936 197     852.    164.6    29.5 *  2     0536 297      64.     98.7    26.4
   1     0942  98      20.     90.9    26.0 *  1     1942 198     833.    163.0    29.4 *  2     0542 298      61.     98.5    26.4
   1     0948  99      23.     92.0    26.1 *  1     1948 199     814.    161.5    29.3 *  2     0548 299      59.     98.2    26.4
   1     0954 100      26.     93.1    26.1 *  1     1954 200     796.    160.0    29.3 *  2     0554 300      57.     97.9    26.4
                                               *                                            *
 ***************************************************************************************************************************************

 PEAK OUTFLOW IS     2628. AT TIME  13.90 HOURS


  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                            (CFS)
+    2628.     13.90                1757.        648.        520.         520.
                         (INCHES)   8.555      12.608      12.619       12.619
                          (AC-FT)    871.       1284.       1285.        1285.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
      245.     13.90                 219.        141.        129.         129.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     29.90-HR
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+   (FEET)       (HR)
     32.73      13.90                 31.73       28.33       27.74        27.74

                        CUMULATIVE AREA =    1.91 SQ MI
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HYDROGRAPH AT STATION DAM-1
PLAN 1, RATIO = 1.00

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	3.	78.6	25.4	*	1		1000	101	454.	133.7	28.1	*	1		2000	201	1486.	215.2	31.6
1		0006	2	3.	78.5	25.4	*	1		1006	102	478.	135.4	28.2	*	1		2006	202	1468.	213.6	31.5
1		0012	3	3.	78.5	25.4	*	1		1012	103	503.	137.1	28.2	*	1		2012	203	1451.	211.9	31.5
1		0018	4	3.	78.5	25.4	*	1		1018	104	528.	138.9	28.3	*	1		2018	204	1436.	210.1	31.4
1		0024	5	3.	78.5	25.4	*	1		1024	105	554.	140.7	28.4	*	1		2024	205	1422.	208.2	31.3
1		0030	6	3.	78.5	25.4	*	1		1030	106	581.	142.6	28.5	*	1		2030	206	1398.	206.2	31.2
1		0036	7	2.	78.4	25.4	*	1		1036	107	605.	144.6	28.6	*	1		2036	207	1369.	204.3	31.1
1		0042	8	2.	78.4	25.4	*	1		1042	108	630.	146.6	28.7	*	1		2042	208	1341.	202.3	31.1
1		0048	9	2.	78.4	25.4	*	1		1048	109	656.	148.7	28.8	*	1		2048	209	1313.	200.5	31.0
1		0054	10	2.	78.4	25.4	*	1		1054	110	683.	151.0	28.9	*	1		2054	210	1289.	198.6	30.9
1		0100	11	2.	78.4	25.4	*	1		1100	111	712.	153.3	29.0	*	1		2100	211	1266.	196.8	30.8
1		0106	12	2.	78.3	25.4	*	1		1106	112	742.	155.8	29.1	*	1		2106	212	1242.	195.0	30.8
1		0112	13	2.	78.3	25.4	*	1		1112	113	775.	158.4	29.2	*	1		2112	213	1219.	193.2	30.7
1		0118	14	2.	78.3	25.4	*	1		1118	114	808.	161.1	29.3	*	1		2118	214	1196.	191.5	30.6
1		0124	15	2.	78.3	25.4	*	1		1124	115	844.	163.9	29.5	*	1		2124	215	1174.	189.7	30.6
1		0130	16	2.	78.3	25.4	*	1		1130	116	882.	166.9	29.6	*	1		2130	216	1151.	188.0	30.5
1		0136	17	2.	78.2	25.4	*	1		1136	117	923.	170.1	29.7	*	1		2136	217	1130.	186.4	30.4
1		0142	18	2.	78.2	25.4	*	1		1142	118	966.	173.6	29.9	*	1		2142	218	1109.	184.7	30.3
1		0148	19	2.	78.2	25.4	*	1		1148	119	1014.	177.3	30.0	*	1		2148	219	1088.	183.1	30.3
1		0154	20	2.	78.2	25.4	*	1		1154	120	1069.	181.6	30.2	*	1		2154	220	1068.	181.5	30.2
1		0200	21	2.	78.2	25.4	*	1		1200	121	1133.	186.5	30.4	*	1		2200	221	1048.	179.9	30.1
1		0206	22	2.	78.2	25.4	*	1		1206	122	1212.	192.6	30.7	*	1		2206	222	1028.	178.4	30.1
1		0212	23	2.	78.1	25.4	*	1		1212	123	1311.	200.3	31.0	*	1		2212	223	1009.	176.9	30.0
1		0218	24	2.	78.1	25.4	*	1		1218	124	1436.	210.1	31.4	*	1		2218	224	990.	175.5	30.0
1		0224	25	2.	78.1	25.4	*	1		1224	125	1605.	222.1	31.8	*	1		2224	225	972.	174.1	29.9
1		0230	26	2.	78.1	25.4	*	1		1230	126	2076.	235.4	32.4	*	1		2230	226	955.	172.7	29.8
1		0236	27	2.	78.1	25.4	*	1		1236	127	2788.	247.8	32.8	*	1		2236	227	937.	171.3	29.8
1		0242	28	2.	78.0	25.4	*	1		1242	128	3566.	258.2	33.2	*	1		2242	228	920.	170.0	29.7
1		0248	29	2.	78.0	25.4	*	1		1248	129	4287.	266.4	33.5	*	1		2248	229	904.	168.7	29.7
1		0254	30	2.	78.0	25.4	*	1		1254	130	4904.	272.7	33.7	*	1		2254	230	887.	167.4	29.6
1		0300	31	2.	78.0	25.3	*	1		1300	131	5411.	277.6	33.9	*	1		2300	231	871.	166.1	29.5
1		0306	32	2.	78.0	25.3	*	1		1306	132	5811.	281.2	34.0	*	1		2306	232	856.	164.9	29.5
1		0312	33	2.	78.0	25.3	*	1		1312	133	6108.	283.8	34.1	*	1		2312	233	841.	163.7	29.4
1		0318	34	2.	77.9	25.3	*	1		1318	134	6302.	285.5	34.2	*	1		2318	234	827.	162.6	29.4
1		0324	35	2.	77.9	25.3	*	1		1324	135	6397.	286.3	34.2	*	1		2324	235	813.	161.4	29.3
1		0330	36	2.	77.9	25.3	*	1		1330	136	6411.	286.5	34.2	*	1		2330	236	799.	160.3	29.3
1		0336	37	2.	77.9	25.3	*	1		1336	137	6368.	286.1	34.2	*	1		2336	237	785.	159.2	29.2
1		0342	38	2.	77.9	25.3	*	1		1342	138	6289.	285.4	34.1	*	1		2342	238	772.	158.1	29.2
1		0348	39	2.	78.0	25.3	*	1		1348	139	6187.	284.5	34.1	*	1		2348	239	759.	157.1	29.2
1		0354	40	2.	78.0	25.4	*	1		1354	140	6074.	283.5	34.1	*	1		2354	240	746.	156.1	29.1
1		0400	41	2.	78.0	25.4	*	1		1400	141	5953.	282.5	34.0	*	2		0000	241	733.	155.1	29.1
1		0406	42	2.	78.1	25.4	*	1		1406	142	5830.	281.4	34.0	*	2		0006	242	721.	154.1	29.0
1		0412	43	2.	78.2	25.4	*	1		1412	143	5705.	280.3	34.0	*	2		0012	243	709.	153.1	29.0

1	0418	44	2.	78.3	25.4	*	1	1418	144	5580.	279.1	33.9	*	2	0018	244	698.	152.2	28.9
1	0424	45	2.	78.4	25.4	*	1	1424	145	5456.	278.0	33.9	*	2	0024	245	686.	151.2	28.9
1	0430	46	3.	78.6	25.4	*	1	1430	146	5332.	276.8	33.9	*	2	0030	246	675.	150.3	28.8
1	0436	47	3.	78.7	25.4	*	1	1436	147	5210.	275.7	33.8	*	2	0036	247	663.	149.3	28.8
1	0442	48	3.	78.9	25.4	*	1	1442	148	5090.	274.5	33.8	*	2	0042	248	651.	148.3	28.8
1	0448	49	3.	79.2	25.4	*	1	1448	149	4971.	273.4	33.7	*	2	0048	249	638.	147.3	28.7
1	0454	50	3.	79.4	25.4	*	1	1454	150	4855.	272.2	33.7	*	2	0054	250	625.	146.2	28.7
1	0500	51	3.	79.7	25.4	*	1	1500	151	4740.	271.1	33.6	*	2	0100	251	611.	145.1	28.6
1	0506	52	4.	80.0	25.5	*	1	1506	152	4628.	269.9	33.6	*	2	0106	252	597.	143.9	28.6
1	0512	53	4.	80.4	25.5	*	1	1512	153	4518.	268.8	33.6	*	2	0112	253	582.	142.7	28.5
1	0518	54	4.	80.8	25.5	*	1	1518	154	4411.	267.7	33.5	*	2	0118	254	565.	141.5	28.4
1	0524	55	5.	81.2	25.5	*	1	1524	155	4305.	266.6	33.5	*	2	0124	255	546.	140.1	28.4
1	0530	56	6.	81.7	25.5	*	1	1530	156	4202.	265.5	33.5	*	2	0130	256	527.	138.8	28.3
1	0536	57	6.	82.2	25.6	*	1	1536	157	4102.	264.4	33.4	*	2	0136	257	508.	137.5	28.3
1	0542	58	7.	82.8	25.6	*	1	1542	158	4003.	263.3	33.4	*	2	0142	258	489.	136.2	28.2
1	0548	59	8.	83.4	25.6	*	1	1548	159	3907.	262.2	33.3	*	2	0148	259	470.	134.9	28.1
1	0554	60	9.	84.0	25.7	*	1	1554	160	3813.	261.1	33.3	*	2	0154	260	452.	133.6	28.1
1	0600	61	10.	84.7	25.7	*	1	1600	161	3720.	260.0	33.3	*	2	0200	261	435.	132.4	28.0
1	0606	62	11.	85.4	25.7	*	1	1606	162	3630.	259.0	33.2	*	2	0206	262	418.	131.2	28.0
1	0612	63	12.	86.2	25.8	*	1	1612	163	3541.	257.9	33.2	*	2	0212	263	401.	130.0	27.9
1	0618	64	13.	87.0	25.8	*	1	1618	164	3454.	256.8	33.1	*	2	0218	264	386.	128.9	27.9
1	0624	65	15.	87.8	25.9	*	1	1624	165	3369.	255.8	33.1	*	2	0224	265	370.	127.8	27.8
1	0630	66	16.	88.7	25.9	*	1	1630	166	3286.	254.7	33.1	*	2	0230	266	356.	126.7	27.8
1	0636	67	17.	89.6	26.0	*	1	1636	167	3205.	253.6	33.0	*	2	0236	267	341.	125.7	27.7
1	0642	68	19.	90.6	26.0	*	1	1642	168	3126.	252.6	33.0	*	2	0242	268	328.	124.7	27.7
1	0648	69	22.	91.7	26.1	*	1	1648	169	3048.	251.5	33.0	*	2	0248	269	316.	123.8	27.6
1	0654	70	25.	92.7	26.1	*	1	1654	170	2972.	250.5	32.9	*	2	0254	270	303.	122.8	27.6
1	0700	71	28.	93.9	26.2	*	1	1700	171	2898.	249.4	32.9	*	2	0300	271	292.	121.9	27.5
1	0706	72	33.	95.0	26.2	*	1	1706	172	2826.	248.4	32.8	*	2	0306	272	280.	121.0	27.5
1	0712	73	43.	96.2	26.3	*	1	1712	173	2756.	247.3	32.8	*	2	0312	273	270.	120.2	27.5
1	0718	74	52.	97.3	26.3	*	1	1718	174	2688.	246.3	32.8	*	2	0318	274	261.	119.4	27.4
1	0724	75	61.	98.5	26.4	*	1	1724	175	2621.	245.3	32.7	*	2	0324	275	251.	118.5	27.4
1	0730	76	71.	99.6	26.5	*	1	1730	176	2557.	244.2	32.7	*	2	0330	276	242.	117.7	27.3
1	0736	77	80.	100.8	26.5	*	1	1736	177	2494.	243.2	32.6	*	2	0336	277	233.	117.0	27.3
1	0742	78	90.	102.0	26.6	*	1	1742	178	2433.	242.2	32.6	*	2	0342	278	224.	116.2	27.3
1	0748	79	99.	103.2	26.6	*	1	1748	179	2375.	241.1	32.6	*	2	0348	279	215.	115.5	27.2
1	0754	80	109.	104.4	26.7	*	1	1754	180	2318.	240.1	32.5	*	2	0354	280	207.	114.8	27.2
1	0800	81	119.	105.6	26.8	*	1	1800	181	2263.	239.1	32.5	*	2	0400	281	199.	114.1	27.2
1	0806	82	129.	106.9	26.8	*	1	1806	182	2208.	238.1	32.5	*	2	0406	282	191.	113.4	27.1
1	0812	83	139.	108.2	26.9	*	1	1812	183	2156.	237.0	32.4	*	2	0412	283	184.	112.8	27.1
1	0818	84	149.	109.5	26.9	*	1	1818	184	2105.	236.0	32.4	*	2	0418	284	176.	112.2	27.1
1	0824	85	160.	110.8	27.0	*	1	1824	185	2055.	234.9	32.3	*	2	0424	285	169.	111.6	27.0
1	0830	86	176.	112.1	27.1	*	1	1830	186	2007.	233.9	32.3	*	2	0430	286	162.	111.0	27.0
1	0836	87	191.	113.4	27.1	*	1	1836	187	1961.	232.8	32.3	*	2	0436	287	157.	110.4	27.0
1	0842	88	207.	114.7	27.2	*	1	1842	188	1915.	231.7	32.2	*	2	0442	288	152.	109.9	27.0
1	0848	89	222.	116.1	27.3	*	1	1848	189	1872.	230.7	32.2	*	2	0448	289	148.	109.3	26.9
1	0854	90	238.	117.4	27.3	*	1	1854	190	1827.	229.5	32.1	*	2	0454	290	144.	108.8	26.9
1	0900	91	254.	118.8	27.4	*	1	1900	191	1785.	228.4	32.1	*	2	0500	291	140.	108.3	26.9
1	0906	92	270.	120.2	27.5	*	1	1906	192	1746.	227.2	32.0	*	2	0506	292	135.	107.7	26.9
1	0912	93	287.	121.6	27.5	*	1	1912	193	1710.	226.0	32.0	*	2	0512	293	131.	107.2	26.8
1	0918	94	305.	123.0	27.6	*	1	1918	194	1675.	224.8	32.0	*	2	0518	294	127.	106.7	26.8
1	0924	95	324.	124.4	27.7	*	1	1924	195	1642.	223.6	31.9	*	2	0524	295	123.	106.2	26.8
1	0930	96	344.	125.9	27.7	*	1	1930	196	1611.	222.3	31.9	*	2	0530	296	119.	105.7	26.8
1	0936	97	365.	127.4	27.8	*	1	1936	197	1582.	221.0	31.8	*	2	0536	297	115.	105.2	26.7
1	0942	98	386.	128.9	27.9	*	1	1942	198	1555.	219.7	31.8	*	2	0542	298	111.	104.7	26.7
1	0948	99	408.	130.5	27.9	*	1	1948	199	1530.	218.3	31.7	*	2	0548	299	108.	104.2	26.7
1	0954	100	430.	132.1	28.0	*	1	1954	200	1507.	216.8	31.6	*	2	0554	300	104.	103.8	26.7
						*							*						

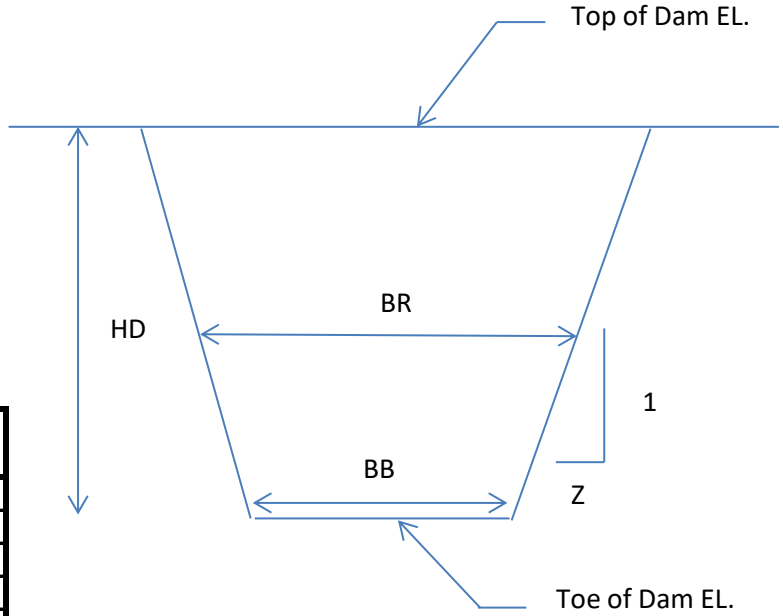
```
*****************************************************************************************************************************

 PEAK OUTFLOW IS     6411. AT TIME  13.50 HOURS


  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                           (CFS)
+    6411.     13.50                4094.       1513.       1215.        1215.
                        (INCHES)    19.930      29.460      29.473       29.473
                         (AC-FT)     2030.       3001.       3002.        3002.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
      286.     13.50                 262.        176.        157.         157.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
     34.18     13.50                33.33       29.82       28.95        28.95

                         CUMULATIVE AREA =    1.91 SQ MI

1

                PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                  FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                                TIME TO PEAK IN HOURS


                                                          RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN            RATIO 1  RATIO 2  RATIO 3  RATIO 4
                                                        .30      .40      .50     1.00

 HYDROGRAPH AT
+                   A-1      1.91     1   FLOW        1383.    2091.    2814.    6456.
                                          TIME        13.40    13.40    13.40    13.30

 ROUTED TO
+                  DAM-1      1.91     1   FLOW        1117.    1765.    2628.    6411.
                                          TIME        14.70    14.40    13.90    13.50

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       30.37    32.07    32.73    34.18
                                          TIME        14.70    14.40    13.90    13.50
1                                 SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION    DAM-1
                              (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)


      PLAN  1 ..............                 INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                                ELEVATION          25.38              31.28            31.28
                                STORAGE              79.               208.             208.
                                OUTFLOW               3.              1419.            1419.


                       RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
```

OF PMF	RESERVOIR W.S.ELEV	DEPTH OVER DAM	STORAGE AC-FT	OUTFLOW CFS	OVER TOP HOURS	MAX OUTFLOW HOURS	FAILURE HOURS
.30	30.37	.00	185.	1117.	.00	14.70	.00
.40	32.07	.79	228.	1765.	2.60	14.40	.00
.50	32.73	1.45	245.	2628.	4.20	13.90	.00
1.00	34.18	2.90	286.	6411.	8.20	13.50	.00

*** NORMAL END OF HEC-1 ***

Project: **Almonesson Lake Dam** By: CWM Date: 08/22/2019
Project No. : **13633.001** Checked: JCR Date: 08/22/2019
Location: **Deptford Township, Gloucester County, NJ**

Type of Dam	Earthen
Top of Dam EL.	31.50
Toe of Dam EL.	13.20
Height of Dam (HD)	18.30
Average Breach Width (BR)	54.90
Horizontal Side Slope (Z)	0.50
Time to Failure (TFH)	0.30
Bottom Breach Width (BB)	45.75



HEC-1 Field ID	HEC-1 SB Card	Description
1	13.20	Elevation (ft), of the bottom of breach at maximum
2	45.75	Width (ft), of the bottom of breach at maximum
3	0.50	Side slope of breach (Z)
4	0.30	Time (hrs) for maximum breach to develop
5	Note 3	Elevation (ft), of water surface which will trigger breach

Notes:

1 Breach Parameters based on the recommended by the Federal Energey Regulatory Commission included as Table 1 "Suggested Breach Parameters" of the NJDEP Guidelines for Developing an Emergency Action Plan.
2 Elevations are based on the survey prepared by Remington and Vernick Engineers, dated March 1, 2019.
3 Elevation (ft) of water surface which will trigger breach is the maxium water surface elevation in the impoundment for rainfall events (PMP, 100 Year Storm, etc.). The trigger elevation for a sunny day failure is the normal pool water surface elevation .

Cooper Street (County Route 706) Bridge over Almonesson Creek at Almonesson Lake (Bridge 3-K-3)
Concept Development Study
FPA Project No. 13633.001
Proposed Primary Spillway Rating Curve

	Proposed Primary Spillway Rating Curve													
		Weir 1 Flow 15'-0" Weir, EL. 25.25'				Weir 2 Flow 47'-0" Weir, EL. 25.6				Total Weir Flow	Bridge Orifice Flow		Outflow Rating Curve Summary	
		L (feet)=	15	EL.	25.3	L (feet)=	47	EL.	25.6					Flow
	WSEL.	H (ft)	C	L (ft)	Q	H (ft)	C	L (ft)	Q	Q	H (ft)	Q	WSEL.	CFS
1	25.25	0.0	3.3	15	0.0					0.0			25.25	0.0
2	25.5	0.3	3.3	15	6.2					6.2			25.5	6.2
3	25.6	0.4	3.3	15	10.2	0.00	2.3	47	0.0	10.2			25.6	10.2
4	26	0.8	3.3	15	32.2	0.40	3.3	47	39.2	71.4			26	71.4
5	26.5	1.3	3.3	15	69.2	0.90	3.3	47	132.4	201.6			26.5	201.6
6	27	1.8	3.3	15	114.6	1.40	3.3	47	256.9	371.5			27	371.5
7	27.5	2.3	3.3	15	167.1	1.90	3.3	47	406.2	573.3			27.5	573.3
8	28	2.8	3.3	15	225.7	2.40	3.3	47	576.7	802.4	6.6438	2786.2	28	802.4
9	28.5	3.25	3.3	15	290.0	2.90	3.3	47	766.0	1056.0	7.1438	2889.2	28.5	1056.0
10	29	3.75	3.3	15	359.5	3.40	3.3	47	972.4	1331.8	7.6438	2988.6	29	1331.8
11	29.5	4.25	3.3	15	433.7	3.90	3.3	47	1194.6	1628.3	8.1438	3084.8	29.5	1628.3
12	30	4.75	3.3	15	512.4	4.40	3.3	47	1431.5	1943.9	8.6438	3178.1	30	1943.9
13	30.5	5.25	3.3	15	595.4	4.90	3.3	47	1682.3	2277.8	9.1438	3268.7	30.5	2277.8
14	31	5.75	3.3	15	682.5	5.40	3.3	47	1946.3	2628.8	9.6438	3356.9	31	2628.8
15	31.28	6.03	3.3	15	733.0	5.68	3.3	47	2099.6	2832.6	9.9238	3405.3	31.28	2832.6
16	31.5	6.25	3.3	15	773.4	5.90	3.3	47	2222.7	2996.2	10.1438	3442.8	31.5	2996.2
17	32	6.75	3.3	15	868.1	6.40	3.3	47	2511.2	3379.3	10.6438	3526.6	32	3379.3
18	32.5	7.25	3.3	15	966.3	6.90	3.3	47	2811.2	3777.5	11.1438	3608.5	32.5	3608.5
19	33	7.75	3.3	15	1068.0	7.40	3.3	47	3122.2	4190.2	11.6438	3688.6	33	3688.6
20	34	8.75	3.3	15	1281.2	8.40	3.3	47	3776.0	5057.2	12.6438	3843.7	34	3843.7

Low Point of Dam = 32.13'

```
1****************************************                                                    ****************************************
 *                                      *                                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                *                                                    *          609 SECOND STREET           *
 *                                      *                                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   17SEP19  TIME  09:39:19  *                                                    *           (916) 756-1104             *
 *                                      *                                                    *                                      *
 ****************************************                                                    ****************************************

                                                X     X  XXXXXXX   XXXXX           X
                                                X     X  X        X     X         XX
                                                X     X  X        X                X
                                                XXXXXXX  XXXX     X        XXXXX   X
                                                X     X  X        X                X
                                                X     X  X        X     X          X
                                                X     X  XXXXXXX   XXXXX          XXX


          THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

          THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
          THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
          NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
          DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
          KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1                                                   HEC-1 INPUT                                                   PAGE  1

          LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

            1           ID    PREPARED BY FRENCH & PARRELLO ASSOCIATES
            2           ID    ALMONESSON LAKE DAM
            3           ID    FPA PROJECT NO. 13633.001
            4           ID    DEPTFORD TOWNSHIP, GLOUCESTER COUNTY, NEW JERSEY
            5           ID
            6           ID    DATE PREPARED: JULY 2019
            7           ID    HYDROLOGIC AND HYDRAULIC REPORT
            8           ID
            9           ID    VERTICAL DATUM IS NAVD88
           10           ID    2, 5, 10, 25, 50, AND 100 YEAR STORM, TYPE III DISTRIBUTION
           11           ID    NOAA ATLAS 14, VOL. 2, VER. 3 POINT PRECIPITATION FREQUENCY ESTIMATES
           12           ID    NCRS 24-HOUR RAINFALL DISTRIBUTION
           13           ID
           14           ID    ALMONESSON LAKE DAM
           15           ID    STORAGE INFORMATION AND RATING CURVE FROM DAM EVALUATION REPORT - PHASE I
           16           ID    FOR ALMONESSON LAKE DAM BY SCHOOR DEPALMA DATED OCTOBER 2001
           17           ID    DRAINAGE AREA DERIVED FROM USGS TOPOGRAPHIC QUADRANGLES
           18           ID
           19           ID    2, 5, 10, 25, 50, AND 100 YEAR STORM EVENTS
           20           ID    PROPOSED CONDITION
```

```
          21          ID
                      *DIAGRAM
          22          IT       6       0       0     300
          23          IO       0       0
          24          JR    PREC   0.395   0.507     0.6   0.742   0.864       1

          25          KK     A-1SUB-AREA 1 TO COOPER STREET
          26          KM  *** COMPUTE HYDROGRAPH-RUNOFF TO COOPER STREET  ***
          27          IN       6
          28          PB    8.31
          29          PC  0.0000 0.00100 0.00200 0.00300 0.00400 0.00500 0.00600 0.00700 0.00800 0.00900
          30          PC  0.0100 0.01100 0.01200 0.01300 0.01400 0.01500 0.01600 0.01700 0.01800 0.01900
          31          PC  0.0200 0.02101 0.02203 0.02307 0.02412 0.02519 0.02627 0.02737 0.02848 0.02961
          32          PC  0.0308 0.03191 0.03308 0.03427 0.03547 0.03669 0.03792 0.03917 0.04043 0.04171
          33          PC  0.0430 0.04431 0.04563 0.04697 0.04832 0.04969 0.05107 0.05247 0.05388 0.05531
          34          PC  0.0567 0.05821 0.05968 0.06117 0.06267 0.06419 0.06572 0.06727 0.06883 0.07041
          35          PC  0.0720 0.07363 0.07530 0.07703 0.07880 0.08063 0.08250 0.08443 0.08640 0.08843
          36          PC  0.0905 0.09263 0.09480 0.09703 0.09930 0.10163 0.10400 0.10643 0.10890 0.11143
          37          PC  0.1140 0.11666 0.11943 0.12232 0.12532 0.12844 0.13167 0.13502 0.13848 0.14206
          38          PC  0.1458 0.14956 0.15348 0.15752 0.16167 0.16594 0.17032 0.17482 0.17943 0.18416
          39          PC  0.1890 0.19402 0.19928 0.20478 0.21052 0.21650 0.22272 0.22918 0.23588 0.24282
          40          PC  0.2500 0.25776 0.26644 0.27604 0.28656 0.29800 0.31430 0.33940 0.37330 0.41600
          41          PC  0.5000 0.58400 0.62670 0.66060 0.68570 0.70200 0.71344 0.72396 0.73356 0.74224
          42          PC  0.7500 0.75718 0.76412 0.77082 0.77728 0.78350 0.78948 0.79522 0.80072 0.80598
          43          PC  0.8110 0.81584 0.82057 0.82518 0.82968 0.83406 0.83833 0.84248 0.84652 0.85044
          44          PC  0.8543 0.85794 0.86152 0.86498 0.86833 0.87156 0.87468 0.87768 0.88057 0.88334
          45          PC  0.8860 0.88858 0.89110 0.89358 0.89600 0.89838 0.90070 0.90298 0.90520 0.90738
          46          PC  0.9095 0.91158 0.91360 0.91558 0.91750 0.91938 0.92120 0.92298 0.92470 0.92638
          47          PC  0.9280 0.92959 0.93117 0.93273 0.93428 0.93581 0.93733 0.93883 0.94032 0.94179
          48          PC  0.9433 0.94469 0.94612 0.94753 0.94893 0.95031 0.95168 0.95303 0.95437 0.95569
          49          PC  0.9570 0.95829 0.95958 0.96085 0.96211 0.96336 0.96460 0.96582 0.96704 0.96824
          50          PC  0.9694 0.97062 0.97179 0.97295 0.97410 0.97523 0.97636 0.97747 0.97858 0.97967
          51          PC  0.9808 0.98182 0.98288 0.98392 0.98496 0.98598 0.98700 0.98800 0.98899 0.98997
          52          PC  0.9909 0.99189 0.99284 0.99377 0.99470 0.99561 0.99651 0.99740 0.99828 0.99914
          53          PC  1.0000 1.00000 1.00000 1.00000 1.00000
1                                                HEC-1 INPUT                                          PAGE  2

         LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          54          BA    1.91
          55          LS       0      68
          56          US    1.27     0.4

          57          KK   DAM-1COOPER STREET DAM
          58          KM  *** ROUTE FLOW ***
          59          KM  *** STAGE-STORAGE-DISCHARGE FROM USGS QUADS ***
          60          RS       1    ELEV   25.38
          61          SA  0.0023  19.139  23.366  30.516
          62          SE    13.2   25.38      30      35
          63          SQ       0  6.187510.2496082271.38873432201.6050546371.5176165573.2646327802.40950
          64          SQ  1628.2612091943.9412782277.7580092628.7738572832.5505682996.1833873379.2848513
          65          SE   25.25    25.5    25.6      26    26.5      27    27.5      28    28.5      29
          66          SE    29.5      30    30.5      31   31.28    31.5      32    32.5      33      34
          67          ST   32.13       0     3.1     1.5
          68          SW       0    44.4   333.3   417.3   478.4   531.3   582.1   625.5   760.8     800
          69          SE   32.13   32.16    32.5      33      34    34.5      35      36      37      38
          70          ZZ
1
```

```
                 SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    25         A-1
                 V
                 V
    57       DAM-1

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                                    ****************************************
 *                                      *                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                                    *          609 SECOND STREET           *
 *                                      *                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   17SEP19  TIME  09:39:19  *                                    *           (916) 756-1104             *
 *                                      *                                    *                                      *
 ****************************************                                    ****************************************
```

PREPARED BY FRENCH & PARRELLO ASSOCIATES
ALMONESSON LAKE DAM
FPA PROJECT NO. 13633.001
DEPTFORD TOWNSHIP, GLOUCESTER COUNTY, NEW JERSEY

DATE PREPARED: JULY 2019
HYDROLOGIC AND HYDRAULIC REPORT

VERTICAL DATUM IS NAVD88
2, 5, 10, 25, 50, AND 100 YEAR STORM, TYPE III DISTRIBUTION
NOAA ATLAS 14, VOL. 2, VER. 3 POINT PRECIPITATION FREQUENCY ESTIMATES
NCRS 24-HOUR RAINFALL DISTRIBUTION

ALMONESSON LAKE DAM
STORAGE INFORMATION AND RATING CURVE FROM DAM EVALUATION REPORT - PHASE I
FOR ALMONESSON LAKE DAM BY SCHOOR DEPALMA DATED OCTOBER 2001
DRAINAGE AREA DERIVED FROM USGS TOPOGRAPHIC QUADRANGLES

2, 5, 10, 25, 50, AND 100 YEAR STORM EVENTS
PROPOSED CONDITION

```
  23 IO          OUTPUT CONTROL VARIABLES
                       IPRNT           0  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN           6  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1    0  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         300  NUMBER OF HYDROGRAPH ORDINATES
```

```
                    NDDATE      2    0  ENDING DATE
                    NDTIME        0554  ENDING TIME
                    ICENT           19  CENTURY MARK

                  COMPUTATION INTERVAL     .10 HOURS
                       TOTAL TIME BASE   29.90 HOURS

          ENGLISH UNITS
               DRAINAGE AREA         SQUARE MILES
               PRECIPITATION DEPTH   INCHES
               LENGTH, ELEVATION     FEET
               FLOW                  CUBIC FEET PER SECOND
               STORAGE VOLUME        ACRE-FEET
               SURFACE AREA          ACRES
               TEMPERATURE           DEGREES FAHRENHEIT

     JP          MULTI-PLAN OPTION
                      NPLAN           1  NUMBER OF PLANS

     JR          MULTI-RATIO OPTION
                     RATIOS OF PRECIPITATION
                     .40       .51       .60       .74       .86      1.00


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  25 KK     *       A-1  *     SUB-AREA 1 TO COOPER STREET
            *            *
            **************
                          *** COMPUTE HYDROGRAPH-RUNOFF TO COOPER STREET  ***

  27 IN          TIME DATA FOR INPUT TIME SERIES
                      JXMIN           6  TIME INTERVAL IN MINUTES
                     JXDATE      1    0  STARTING DATE
                     JXTIME           0  STARTING TIME

               SUBBASIN RUNOFF DATA

  54 BA          SUBBASIN CHARACTERISTICS
                      TAREA        1.91  SUBBASIN AREA

                 PRECIPITATION DATA

  28 PB               STORM        8.31  BASIN TOTAL PRECIPITATION

  29 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
```

```
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .01      .01      .01      .01      .01      .01      .01      .01      .01      .01
      .01      .01      .01      .01      .01      .02      .03      .03      .04      .08
      .08      .04      .03      .03      .02      .01      .01      .01      .01      .01
      .01      .01      .01      .01      .01      .01      .01      .01      .01      .01
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00

 55 LS          SCS LOSS RATE
                     STRTL         .94  INITIAL ABSTRACTION
                    CRVNBR       68.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

 56 US          SNYDER UNITGRAPH
                        TP        1.27  LAG
                        CP         .40  PEAKING COEFFICIENT

                SYNTHETIC ACCUMULATED-AREA VS. TIME CURVE WILL BE USED

                                                        ***
APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

                                                UNIT HYDROGRAPH PARAMETERS
                                          CLARK   TC=  1.30 HR,       R=  2.38 HR
                                         SNYDER   TP=  1.27 HR,      CP=   .40

                                                    UNIT HYDROGRAPH
                                             133 END-OF-PERIOD ORDINATES
              8.       29.       60.       97.      138.      184.      231.      277.      317.      350.
            375.      392.      398.      389.      373.      358.      343.      329.      316.      303.
            290.      278.      267.      256.      245.      235.      226.      216.      207.      199.
            191.      183.      175.      168.      161.      155.      148.      142.      136.      131.
            125.      120.      115.      111.      106.      102.       97.       93.       90.       86.
             82.       79.       76.       73.       70.       67.       64.       61.       59.       56.
             54.       52.       50.       48.       46.       44.       42.       40.       39.       37.
             36.       34.       33.       31.       30.       29.       28.       27.       25.       24.
             23.       22.       22.       21.       20.       19.       18.       17.       17.       16.
             15.       15.       14.       14.       13.       12.       12.       11.       11.       11.
             10.       10.        9.        9.        9.        8.        8.        8.        7.        7.
              7.        6.        6.        6.        6.        5.        5.        5.        5.        5.
              4.        4.        4.        4.        4.        4.        3.        3.        3.        3.
              3.        3.        3.

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                                                HYDROGRAPH AT STATION      A-1

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DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
								*								
1		0000	1	.00	.00	.00	0.	*	1		1500	151	.03	.01	.03	737.
1		0006	2	.01	.01	.00	0.	*	1		1506	152	.03	.01	.02	722.
1		0012	3	.01	.01	.00	0.	*	1		1512	153	.03	.01	.02	707.
1		0018	4	.01	.01	.00	0.	*	1		1518	154	.03	.01	.02	692.
1		0024	5	.01	.01	.00	0.	*	1		1524	155	.03	.01	.02	678.
1		0030	6	.01	.01	.00	0.	*	1		1530	156	.03	.00	.02	663.
1		0036	7	.01	.01	.00	0.	*	1		1536	157	.03	.00	.02	649.
1		0042	8	.01	.01	.00	0.	*	1		1542	158	.02	.00	.02	635.
1		0048	9	.01	.01	.00	0.	*	1		1548	159	.02	.00	.02	622.
1		0054	10	.01	.01	.00	0.	*	1		1554	160	.02	.00	.02	608.
1		0100	11	.01	.01	.00	0.	*	1		1600	161	.02	.00	.02	595.
1		0106	12	.01	.01	.00	0.	*	1		1606	162	.02	.00	.02	582.
1		0112	13	.01	.01	.00	0.	*	1		1612	163	.02	.00	.02	569.
1		0118	14	.01	.01	.00	0.	*	1		1618	164	.02	.00	.02	556.
1		0124	15	.01	.01	.00	0.	*	1		1624	165	.02	.00	.02	543.
1		0130	16	.01	.01	.00	0.	*	1		1630	166	.02	.00	.02	531.
1		0136	17	.01	.01	.00	0.	*	1		1636	167	.02	.00	.02	519.
1		0142	18	.01	.01	.00	0.	*	1		1642	168	.02	.00	.02	507.
1		0148	19	.01	.01	.00	0.	*	1		1648	169	.02	.00	.02	495.
1		0154	20	.01	.01	.00	0.	*	1		1654	170	.02	.00	.01	483.
1		0200	21	.01	.01	.00	0.	*	1		1700	171	.02	.00	.01	472.
1		0206	22	.01	.01	.00	0.	*	1		1706	172	.02	.00	.01	461.
1		0212	23	.01	.01	.00	0.	*	1		1712	173	.02	.00	.01	450.
1		0218	24	.01	.01	.00	0.	*	1		1718	174	.02	.00	.01	440.
1		0224	25	.01	.01	.00	0.	*	1		1724	175	.02	.00	.01	429.
1		0230	26	.01	.01	.00	0.	*	1		1730	176	.02	.00	.01	419.
1		0236	27	.01	.01	.00	0.	*	1		1736	177	.02	.00	.01	410.
1		0242	28	.01	.01	.00	0.	*	1		1742	178	.01	.00	.01	400.
1		0248	29	.01	.01	.00	0.	*	1		1748	179	.01	.00	.01	391.
1		0254	30	.01	.01	.00	0.	*	1		1754	180	.01	.00	.01	382.
1		0300	31	.01	.01	.00	0.	*	1		1800	181	.01	.00	.01	373.
1		0306	32	.01	.01	.00	0.	*	1		1806	182	.01	.00	.01	364.
1		0312	33	.01	.01	.00	0.	*	1		1812	183	.01	.00	.01	356.
1		0318	34	.01	.01	.00	0.	*	1		1818	184	.01	.00	.01	347.
1		0324	35	.01	.01	.00	0.	*	1		1824	185	.01	.00	.01	339.
1		0330	36	.01	.01	.00	0.	*	1		1830	186	.01	.00	.01	331.
1		0336	37	.01	.01	.00	0.	*	1		1836	187	.01	.00	.01	324.
1		0342	38	.01	.01	.00	0.	*	1		1842	188	.01	.00	.01	316.
1		0348	39	.01	.01	.00	0.	*	1		1848	189	.01	.00	.01	309.
1		0354	40	.01	.01	.00	0.	*	1		1854	190	.01	.00	.01	302.
1		0400	41	.01	.01	.00	0.	*	1		1900	191	.01	.00	.01	295.
1		0406	42	.01	.01	.00	0.	*	1		1906	192	.01	.00	.01	288.
1		0412	43	.01	.01	.00	0.	*	1		1912	193	.01	.00	.01	282.
1		0418	44	.01	.01	.00	0.	*	1		1918	194	.01	.00	.01	275.
1		0424	45	.01	.01	.00	0.	*	1		1924	195	.01	.00	.01	269.
1		0430	46	.01	.01	.00	0.	*	1		1930	196	.01	.00	.01	263.
1		0436	47	.01	.01	.00	0.	*	1		1936	197	.01	.00	.01	258.
1		0442	48	.01	.01	.00	0.	*	1		1942	198	.01	.00	.01	252.
1		0448	49	.01	.01	.00	0.	*	1		1948	199	.01	.00	.01	247.
1		0454	50	.01	.01	.00	0.	*	1		1954	200	.01	.00	.01	242.
1		0500	51	.01	.01	.00	0.	*	1		2000	201	.01	.00	.01	237.
1		0506	52	.01	.01	.00	0.	*	1		2006	202	.01	.00	.01	232.
1		0512	53	.01	.01	.00	0.	*	1		2012	203	.01	.00	.01	227.
1		0518	54	.01	.01	.00	0.	*	1		2018	204	.01	.00	.01	223.
1		0524	55	.01	.01	.00	0.	*	1		2024	205	.01	.00	.01	218.
1		0530	56	.01	.01	.00	0.	*	1		2030	206	.01	.00	.01	214.

1	0536	57	.01	.01	.00	0.	*	1	2036	207	.01	.00	.01	210.
1	0542	58	.01	.01	.00	0.	*	1	2042	208	.01	.00	.01	206.
1	0548	59	.01	.01	.00	0.	*	1	2048	209	.01	.00	.01	202.
1	0554	60	.01	.01	.00	0.	*	1	2054	210	.01	.00	.01	198.
1	0600	61	.01	.01	.00	0.	*	1	2100	211	.01	.00	.01	194.
1	0606	62	.01	.01	.00	0.	*	1	2106	212	.01	.00	.01	191.
1	0612	63	.01	.01	.00	0.	*	1	2112	213	.01	.00	.01	187.
1	0618	64	.01	.01	.00	0.	*	1	2118	214	.01	.00	.01	184.
1	0624	65	.01	.01	.00	0.	*	1	2124	215	.01	.00	.01	181.
1	0630	66	.02	.02	.00	0.	*	1	2130	216	.01	.00	.01	178.
1	0636	67	.02	.02	.00	0.	*	1	2136	217	.01	.00	.01	175.
1	0642	68	.02	.02	.00	0.	*	1	2142	218	.01	.00	.01	172.
1	0648	69	.02	.02	.00	0.	*	1	2148	219	.01	.00	.01	169.
1	0654	70	.02	.02	.00	0.	*	1	2154	220	.01	.00	.01	166.
1	0700	71	.02	.02	.00	0.	*	1	2200	221	.01	.00	.01	163.
1	0706	72	.02	.02	.00	0.	*	1	2206	222	.01	.00	.01	161.
1	0712	73	.02	.02	.00	0.	*	1	2212	223	.01	.00	.01	158.
1	0718	74	.02	.02	.00	0.	*	1	2218	224	.01	.00	.01	155.
1	0724	75	.02	.02	.00	0.	*	1	2224	225	.01	.00	.01	153.
1	0730	76	.02	.02	.00	0.	*	1	2230	226	.01	.00	.01	151.
1	0736	77	.02	.02	.00	0.	*	1	2236	227	.01	.00	.01	148.
1	0742	78	.02	.02	.00	0.	*	1	2242	228	.01	.00	.01	146.
1	0748	79	.02	.02	.00	0.	*	1	2248	229	.01	.00	.01	144.
1	0754	80	.02	.02	.00	0.	*	1	2254	230	.01	.00	.01	142.
1	0800	81	.02	.02	.00	0.	*	1	2300	231	.01	.00	.01	139.
1	0806	82	.02	.02	.00	0.	*	1	2306	232	.01	.00	.01	137.
1	0812	83	.02	.02	.00	0.	*	1	2312	233	.01	.00	.01	135.
1	0818	84	.02	.02	.00	0.	*	1	2318	234	.01	.00	.01	133.
1	0824	85	.02	.02	.00	0.	*	1	2324	235	.01	.00	.01	131.
1	0830	86	.03	.02	.00	0.	*	1	2330	236	.01	.00	.01	129.
1	0836	87	.03	.03	.00	0.	*	1	2336	237	.01	.00	.01	128.
1	0842	88	.03	.03	.00	0.	*	1	2342	238	.01	.00	.01	126.
1	0848	89	.03	.03	.00	1.	*	1	2348	239	.01	.00	.01	124.
1	0854	90	.03	.03	.00	1.	*	1	2354	240	.01	.00	.01	122.
1	0900	91	.03	.03	.00	1.	*	2	0000	241	.01	.00	.01	120.
1	0906	92	.03	.03	.00	2.	*	2	0006	242	.00	.00	.00	119.
1	0912	93	.03	.03	.00	3.	*	2	0012	243	.00	.00	.00	117.
1	0918	94	.03	.03	.00	3.	*	2	0018	244	.00	.00	.00	115.
1	0924	95	.03	.03	.01	4.	*	2	0024	245	.00	.00	.00	113.
1	0930	96	.04	.03	.01	6.	*	2	0030	246	.00	.00	.00	110.
1	0936	97	.04	.03	.01	7.	*	2	0036	247	.00	.00	.00	107.
1	0942	98	.04	.03	.01	8.	*	2	0042	248	.00	.00	.00	104.
1	0948	99	.04	.03	.01	10.	*	2	0048	249	.00	.00	.00	101.
1	0954	100	.04	.03	.01	12.	*	2	0054	250	.00	.00	.00	98.
1	1000	101	.04	.03	.01	14.	*	2	0100	251	.00	.00	.00	94.
1	1006	102	.04	.03	.01	16.	*	2	0106	252	.00	.00	.00	90.
1	1012	103	.04	.03	.01	18.	*	2	0112	253	.00	.00	.00	86.
1	1018	104	.05	.03	.01	21.	*	2	0118	254	.00	.00	.00	82.
1	1024	105	.05	.04	.01	24.	*	2	0124	255	.00	.00	.00	77.
1	1030	106	.05	.04	.01	27.	*	2	0130	256	.00	.00	.00	73.
1	1036	107	.05	.04	.02	30.	*	2	0136	257	.00	.00	.00	70.
1	1042	108	.05	.04	.02	34.	*	2	0142	258	.00	.00	.00	67.
1	1048	109	.06	.04	.02	38.	*	2	0148	259	.00	.00	.00	64.
1	1054	110	.06	.04	.02	42.	*	2	0154	260	.00	.00	.00	61.
1	1100	111	.06	.04	.02	46.	*	2	0200	261	.00	.00	.00	58.
1	1106	112	.06	.04	.02	51.	*	2	0206	262	.00	.00	.00	56.
1	1112	113	.07	.05	.03	57.	*	2	0212	263	.00	.00	.00	53.
1	1118	114	.08	.05	.03	63.	*	2	0218	264	.00	.00	.00	51.

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        1     1124  115     .09     .05     .04       69.       *       2     0224  265     .00     .00     .00       49.
        1     1130  116     .10     .05     .04       76.       *       2     0230  266     .00     .00     .00       47.
        1     1136  117     .14     .08     .06       85.       *       2     0236  267     .00     .00     .00       45.
        1     1142  118     .21     .11     .10       94.       *       2     0242  268     .00     .00     .00       43.
        1     1148  119     .28     .14     .14      107.       *       2     0248  269     .00     .00     .00       41.
        1     1154  120     .35     .16     .20      123.       *       2     0254  270     .00     .00     .00       39.
        1     1200  121     .70     .27     .43      147.       *       2     0300  271     .00     .00     .00       37.
        1     1206  122     .70     .23     .47      182.       *       2     0306  272     .00     .00     .00       36.
        1     1212  123     .35     .10     .25      231.       *       2     0312  273     .00     .00     .00       34.
        1     1218  124     .28     .08     .21      292.       *       2     0318  274     .00     .00     .00       33.
        1     1224  125     .21     .05     .16      364.       *       2     0324  275     .00     .00     .00       31.
        1     1230  126     .14     .03     .10      443.       *       2     0330  276     .00     .00     .00       30.
        1     1236  127     .10     .02     .07      527.       *       2     0336  277     .00     .00     .00       29.
        1     1242  128     .09     .02     .07      613.       *       2     0342  278     .00     .00     .00       27.
        1     1248  129     .08     .02     .06      695.       *       2     0348  279     .00     .00     .00       26.
        1     1254  130     .07     .02     .06      770.       *       2     0354  280     .00     .00     .00       25.
        1     1300  131     .06     .01     .05      835.       *       2     0400  281     .00     .00     .00       24.
        1     1306  132     .06     .01     .05      888.       *       2     0406  282     .00     .00     .00       23.
        1     1312  133     .06     .01     .05      926.       *       2     0412  283     .00     .00     .00       22.
        1     1318  134     .06     .01     .04      948.       *       2     0418  284     .00     .00     .00       21.
        1     1324  135     .05     .01     .04      957.       *       2     0424  285     .00     .00     .00       20.
        1     1330  136     .05     .01     .04      955.       *       2     0430  286     .00     .00     .00       19.
        1     1336  137     .05     .01     .04      948.       *       2     0436  287     .00     .00     .00       18.
        1     1342  138     .05     .01     .04      937.       *       2     0442  288     .00     .00     .00       17.
        1     1348  139     .05     .01     .04      924.       *       2     0448  289     .00     .00     .00       17.
        1     1354  140     .04     .01     .03      909.       *       2     0454  290     .00     .00     .00       16.
        1     1400  141     .04     .01     .03      894.       *       2     0500  291     .00     .00     .00       15.
        1     1406  142     .04     .01     .03      879.       *       2     0506  292     .00     .00     .00       14.
        1     1412  143     .04     .01     .03      863.       *       2     0512  293     .00     .00     .00       14.
        1     1418  144     .04     .01     .03      847.       *       2     0518  294     .00     .00     .00       13.
        1     1424  145     .04     .01     .03      831.       *       2     0524  295     .00     .00     .00       13.
        1     1430  146     .04     .01     .03      815.       *       2     0530  296     .00     .00     .00       12.
        1     1436  147     .04     .01     .03      800.       *       2     0536  297     .00     .00     .00       12.
        1     1442  148     .03     .01     .03      784.       *       2     0542  298     .00     .00     .00       11.
        1     1448  149     .03     .01     .03      768.       *       2     0548  299     .00     .00     .00       11.
        1     1454  150     .03     .01     .03      752.       *       2     0554  300     .00     .00     .00       10.
                                                                 *
 ************************************************************************************************************************************

     TOTAL RAINFALL =    8.31, TOTAL LOSS =    3.81, TOTAL EXCESS =    4.50

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+     957.     13.40                644.        229.        184.         184.
                        (INCHES)    3.136       4.459       4.459        4.459
                         (AC-FT)     319.        454.        454.         454.

                         CUMULATIVE AREA =    1.91 SQ MI

 APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

 ************************************************************************************************************************************

                                                HYDROGRAPH AT STATION      A-1
                                                    PLAN 1,   RATIO =   .40
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DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		1500	151	.01	.01	.01	123.
1		0006	2	.00	.00	.00	0.	1		1506	152	.01	.01	.01	122.
1		0012	3	.00	.00	.00	0.	1		1512	153	.01	.01	.01	120.
1		0018	4	.00	.00	.00	0.	1		1518	154	.01	.01	.01	119.
1		0024	5	.00	.00	.00	0.	1		1524	155	.01	.01	.01	117.
1		0030	6	.00	.00	.00	0.	1		1530	156	.01	.01	.01	115.
1		0036	7	.00	.00	.00	0.	1		1536	157	.01	.01	.01	114.
1		0042	8	.00	.00	.00	0.	1		1542	158	.01	.00	.00	112.
1		0048	9	.00	.00	.00	0.	1		1548	159	.01	.00	.00	110.
1		0054	10	.00	.00	.00	0.	1		1554	160	.01	.00	.00	109.
1		0100	11	.00	.00	.00	0.	1		1600	161	.01	.00	.00	107.
1		0106	12	.00	.00	.00	0.	1		1606	162	.01	.00	.00	105.
1		0112	13	.00	.00	.00	0.	1		1612	163	.01	.00	.00	104.
1		0118	14	.00	.00	.00	0.	1		1618	164	.01	.00	.00	102.
1		0124	15	.00	.00	.00	0.	1		1624	165	.01	.00	.00	100.
1		0130	16	.00	.00	.00	0.	1		1630	166	.01	.00	.00	98.
1		0136	17	.00	.00	.00	0.	1		1636	167	.01	.00	.00	97.
1		0142	18	.00	.00	.00	0.	1		1642	168	.01	.00	.00	95.
1		0148	19	.00	.00	.00	0.	1		1648	169	.01	.00	.00	93.
1		0154	20	.00	.00	.00	0.	1		1654	170	.01	.00	.00	92.
1		0200	21	.00	.00	.00	0.	1		1700	171	.01	.00	.00	90.
1		0206	22	.00	.00	.00	0.	1		1706	172	.01	.00	.00	88.
1		0212	23	.00	.00	.00	0.	1		1712	173	.01	.00	.00	87.
1		0218	24	.00	.00	.00	0.	1		1718	174	.01	.00	.00	85.
1		0224	25	.00	.00	.00	0.	1		1724	175	.01	.00	.00	83.
1		0230	26	.00	.00	.00	0.	1		1730	176	.01	.00	.00	82.
1		0236	27	.00	.00	.00	0.	1		1736	177	.01	.00	.00	80.
1		0242	28	.00	.00	.00	0.	1		1742	178	.01	.00	.00	79.
1		0248	29	.00	.00	.00	0.	1		1748	179	.01	.00	.00	77.
1		0254	30	.00	.00	.00	0.	1		1754	180	.01	.00	.00	76.
1		0300	31	.00	.00	.00	0.	1		1800	181	.01	.00	.00	74.
1		0306	32	.00	.00	.00	0.	1		1806	182	.01	.00	.00	73.
1		0312	33	.00	.00	.00	0.	1		1812	183	.01	.00	.00	72.
1		0318	34	.00	.00	.00	0.	1		1818	184	.01	.00	.00	70.
1		0324	35	.00	.00	.00	0.	1		1824	185	.01	.00	.00	69.
1		0330	36	.00	.00	.00	0.	1		1830	186	.01	.00	.00	67.
1		0336	37	.00	.00	.00	0.	1		1836	187	.00	.00	.00	66.
1		0342	38	.00	.00	.00	0.	1		1842	188	.00	.00	.00	65.
1		0348	39	.00	.00	.00	0.	1		1848	189	.00	.00	.00	64.
1		0354	40	.00	.00	.00	0.	1		1854	190	.00	.00	.00	62.
1		0400	41	.00	.00	.00	0.	1		1900	191	.00	.00	.00	61.
1		0406	42	.00	.00	.00	0.	1		1906	192	.00	.00	.00	60.
1		0412	43	.00	.00	.00	0.	1		1912	193	.00	.00	.00	59.
1		0418	44	.00	.00	.00	0.	1		1918	194	.00	.00	.00	58.
1		0424	45	.00	.00	.00	0.	1		1924	195	.00	.00	.00	57.
1		0430	46	.00	.00	.00	0.	1		1930	196	.00	.00	.00	56.
1		0436	47	.00	.00	.00	0.	1		1936	197	.00	.00	.00	55.
1		0442	48	.00	.00	.00	0.	1		1942	198	.00	.00	.00	54.
1		0448	49	.00	.00	.00	0.	1		1948	199	.00	.00	.00	53.
1		0454	50	.00	.00	.00	0.	1		1954	200	.00	.00	.00	52.
1		0500	51	.00	.00	.00	0.	1		2000	201	.00	.00	.00	51.
1		0506	52	.00	.00	.00	0.	1		2006	202	.00	.00	.00	50.
1		0512	53	.00	.00	.00	0.	1		2012	203	.00	.00	.00	49.
1		0518	54	.00	.00	.00	0.	1		2018	204	.00	.00	.00	48.

1	0524	55	.00	.00	.00	0.	*	1	2024	205	.00	.00	.00	48.
1	0530	56	.00	.00	.00	0.	*	1	2030	206	.00	.00	.00	47.
1	0536	57	.01	.01	.00	0.	*	1	2036	207	.00	.00	.00	46.
1	0542	58	.01	.01	.00	0.	*	1	2042	208	.00	.00	.00	45.
1	0548	59	.01	.01	.00	0.	*	1	2048	209	.00	.00	.00	45.
1	0554	60	.01	.01	.00	0.	*	1	2054	210	.00	.00	.00	44.
1	0600	61	.01	.01	.00	0.	*	1	2100	211	.00	.00	.00	43.
1	0606	62	.01	.01	.00	0.	*	1	2106	212	.00	.00	.00	43.
1	0612	63	.01	.01	.00	0.	*	1	2112	213	.00	.00	.00	42.
1	0618	64	.01	.01	.00	0.	*	1	2118	214	.00	.00	.00	41.
1	0624	65	.01	.01	.00	0.	*	1	2124	215	.00	.00	.00	41.
1	0630	66	.01	.01	.00	0.	*	1	2130	216	.00	.00	.00	40.
1	0636	67	.01	.01	.00	0.	*	1	2136	217	.00	.00	.00	40.
1	0642	68	.01	.01	.00	0.	*	1	2142	218	.00	.00	.00	39.
1	0648	69	.01	.01	.00	0.	*	1	2148	219	.00	.00	.00	39.
1	0654	70	.01	.01	.00	0.	*	1	2154	220	.00	.00	.00	38.
1	0700	71	.01	.01	.00	0.	*	1	2200	221	.00	.00	.00	37.
1	0706	72	.01	.01	.00	0.	*	1	2206	222	.00	.00	.00	37.
1	0712	73	.01	.01	.00	0.	*	1	2212	223	.00	.00	.00	36.
1	0718	74	.01	.01	.00	0.	*	1	2218	224	.00	.00	.00	36.
1	0724	75	.01	.01	.00	0.	*	1	2224	225	.00	.00	.00	36.
1	0730	76	.01	.01	.00	0.	*	1	2230	226	.00	.00	.00	35.
1	0736	77	.01	.01	.00	0.	*	1	2236	227	.00	.00	.00	35.
1	0742	78	.01	.01	.00	0.	*	1	2242	228	.00	.00	.00	34.
1	0748	79	.01	.01	.00	0.	*	1	2248	229	.00	.00	.00	34.
1	0754	80	.01	.01	.00	0.	*	1	2254	230	.00	.00	.00	33.
1	0800	81	.01	.01	.00	0.	*	1	2300	231	.00	.00	.00	33.
1	0806	82	.01	.01	.00	0.	*	1	2306	232	.00	.00	.00	32.
1	0812	83	.01	.01	.00	0.	*	1	2312	233	.00	.00	.00	32.
1	0818	84	.01	.01	.00	0.	*	1	2318	234	.00	.00	.00	32.
1	0824	85	.01	.01	.00	0.	*	1	2324	235	.00	.00	.00	31.
1	0830	86	.01	.01	.00	0.	*	1	2330	236	.00	.00	.00	31.
1	0836	87	.01	.01	.00	0.	*	1	2336	237	.00	.00	.00	30.
1	0842	88	.01	.01	.00	0.	*	1	2342	238	.00	.00	.00	30.
1	0848	89	.01	.01	.00	0.	*	1	2348	239	.00	.00	.00	30.
1	0854	90	.01	.01	.00	0.	*	1	2354	240	.00	.00	.00	29.
1	0900	91	.01	.01	.00	0.	*	2	0000	241	.00	.00	.00	29.
1	0906	92	.01	.01	.00	0.	*	2	0006	242	.00	.00	.00	29.
1	0912	93	.01	.01	.00	0.	*	2	0012	243	.00	.00	.00	28.
1	0918	94	.01	.01	.00	0.	*	2	0018	244	.00	.00	.00	28.
1	0924	95	.01	.01	.00	0.	*	2	0024	245	.00	.00	.00	27.
1	0930	96	.01	.01	.00	0.	*	2	0030	246	.00	.00	.00	27.
1	0936	97	.01	.01	.00	0.	*	2	0036	247	.00	.00	.00	26.
1	0942	98	.01	.01	.00	0.	*	2	0042	248	.00	.00	.00	26.
1	0948	99	.02	.02	.00	0.	*	2	0048	249	.00	.00	.00	25.
1	0954	100	.02	.02	.00	0.	*	2	0054	250	.00	.00	.00	24.
1	1000	101	.02	.02	.00	0.	*	2	0100	251	.00	.00	.00	23.
1	1006	102	.02	.02	.00	0.	*	2	0106	252	.00	.00	.00	22.
1	1012	103	.02	.02	.00	0.	*	2	0112	253	.00	.00	.00	21.
1	1018	104	.02	.02	.00	0.	*	2	0118	254	.00	.00	.00	20.
1	1024	105	.02	.02	.00	0.	*	2	0124	255	.00	.00	.00	19.
1	1030	106	.02	.02	.00	0.	*	2	0130	256	.00	.00	.00	18.
1	1036	107	.02	.02	.00	0.	*	2	0136	257	.00	.00	.00	18.
1	1042	108	.02	.02	.00	0.	*	2	0142	258	.00	.00	.00	17.
1	1048	109	.02	.02	.00	0.	*	2	0148	259	.00	.00	.00	16.
1	1054	110	.02	.02	.00	0.	*	2	0154	260	.00	.00	.00	15.
1	1100	111	.02	.02	.00	0.	*	2	0200	261	.00	.00	.00	15.
1	1106	112	.03	.03	.00	0.	*	2	0206	262	.00	.00	.00	14.

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         1     1112  113     .03     .03     .00         0.       *        2     0212  263     .00     .00     .00        13.
         1     1118  114     .03     .03     .00         0.       *        2     0218  264     .00     .00     .00        13.
         1     1124  115     .03     .03     .00         0.       *        2     0224  265     .00     .00     .00        12.
         1     1130  116     .04     .04     .00         0.       *        2     0230  266     .00     .00     .00        12.
         1     1136  117     .05     .05     .00         0.       *        2     0236  267     .00     .00     .00        11.
         1     1142  118     .08     .08     .00         0.       *        2     0242  268     .00     .00     .00        11.
         1     1148  119     .11     .10     .01         0.       *        2     0248  269     .00     .00     .00        10.
         1     1154  120     .14     .12     .02         1.       *        2     0254  270     .00     .00     .00        10.
         1     1200  121     .28     .22     .06         2.       *        2     0300  271     .00     .00     .00         9.
         1     1206  122     .28     .20     .08         5.       *        2     0306  272     .00     .00     .00         9.
         1     1212  123     .14     .09     .05        10.       *        2     0312  273     .00     .00     .00         9.
         1     1218  124     .11     .07     .04        18.       *        2     0318  274     .00     .00     .00         8.
         1     1224  125     .08     .05     .03        27.       *        2     0324  275     .00     .00     .00         8.
         1     1230  126     .05     .03     .02        38.       *        2     0330  276     .00     .00     .00         8.
         1     1236  127     .04     .02     .02        50.       *        2     0336  277     .00     .00     .00         7.
         1     1242  128     .03     .02     .01        64.       *        2     0342  278     .00     .00     .00         7.
         1     1248  129     .03     .02     .01        78.       *        2     0348  279     .00     .00     .00         7.
         1     1254  130     .03     .02     .01        91.       *        2     0354  280     .00     .00     .00         6.
         1     1300  131     .03     .01     .01       103.       *        2     0400  281     .00     .00     .00         6.
         1     1306  132     .02     .01     .01       114.       *        2     0406  282     .00     .00     .00         6.
         1     1312  133     .02     .01     .01       123.       *        2     0412  283     .00     .00     .00         6.
         1     1318  134     .02     .01     .01       129.       *        2     0418  284     .00     .00     .00         5.
         1     1324  135     .02     .01     .01       133.       *        2     0424  285     .00     .00     .00         5.
         1     1330  136     .02     .01     .01       136.       *        2     0430  286     .00     .00     .00         5.
         1     1336  137     .02     .01     .01       137.       *        2     0436  287     .00     .00     .00         5.
         1     1342  138     .02     .01     .01       137.       *        2     0442  288     .00     .00     .00         4.
         1     1348  139     .02     .01     .01       137.       *        2     0448  289     .00     .00     .00         4.
         1     1354  140     .02     .01     .01       137.       *        2     0454  290     .00     .00     .00         4.
         1     1400  141     .02     .01     .01       136.       *        2     0500  291     .00     .00     .00         4.
         1     1406  142     .02     .01     .01       135.       *        2     0506  292     .00     .00     .00         4.
         1     1412  143     .02     .01     .01       134.       *        2     0512  293     .00     .00     .00         4.
         1     1418  144     .02     .01     .01       133.       *        2     0518  294     .00     .00     .00         3.
         1     1424  145     .01     .01     .01       132.       *        2     0524  295     .00     .00     .00         3.
         1     1430  146     .01     .01     .01       131.       *        2     0530  296     .00     .00     .00         3.
         1     1436  147     .01     .01     .01       129.       *        2     0536  297     .00     .00     .00         3.
         1     1442  148     .01     .01     .01       128.       *        2     0542  298     .00     .00     .00         3.
         1     1448  149     .01     .01     .01       126.       *        2     0548  299     .00     .00     .00         3.
         1     1454  150     .01     .01     .01       125.       *        2     0554  300     .00     .00     .00         3.
                                                                  *
 ************************************************************************************************************************************

     TOTAL RAINFALL =    3.28, TOTAL LOSS =    2.50, TOTAL EXCESS =     .78

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                              (CFS)
+     137.     13.70                105.         40.         32.          32.
                          (INCHES)      .511        .770        .770         .770
                           (AC-FT)       52.         78.         78.          78.

                           CUMULATIVE AREA =    1.91 SQ MI

 APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

 ************************************************************************************************************************************

                                                HYDROGRAPH AT STATION      A-1
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PLAN 1, RATIO = .51

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		1500	151	.02	.01	.01	218.
1		0006	2	.00	.00	.00	0.	1		1506	152	.02	.01	.01	214.
1		0012	3	.00	.00	.00	0.	1		1512	153	.02	.01	.01	211.
1		0018	4	.00	.00	.00	0.	1		1518	154	.01	.01	.01	208.
1		0024	5	.00	.00	.00	0.	1		1524	155	.01	.01	.01	204.
1		0030	6	.00	.00	.00	0.	1		1530	156	.01	.01	.01	201.
1		0036	7	.00	.00	.00	0.	1		1536	157	.01	.01	.01	197.
1		0042	8	.00	.00	.00	0.	1		1542	158	.01	.01	.01	194.
1		0048	9	.00	.00	.00	0.	1		1548	159	.01	.00	.01	191.
1		0054	10	.00	.00	.00	0.	1		1554	160	.01	.00	.01	187.
1		0100	11	.00	.00	.00	0.	1		1600	161	.01	.00	.01	184.
1		0106	12	.00	.00	.00	0.	1		1606	162	.01	.00	.01	181.
1		0112	13	.00	.00	.00	0.	1		1612	163	.01	.00	.01	177.
1		0118	14	.00	.00	.00	0.	1		1618	164	.01	.00	.01	174.
1		0124	15	.00	.00	.00	0.	1		1624	165	.01	.00	.01	170.
1		0130	16	.00	.00	.00	0.	1		1630	166	.01	.00	.01	167.
1		0136	17	.00	.00	.00	0.	1		1636	167	.01	.00	.01	164.
1		0142	18	.00	.00	.00	0.	1		1642	168	.01	.00	.01	161.
1		0148	19	.00	.00	.00	0.	1		1648	169	.01	.00	.01	157.
1		0154	20	.00	.00	.00	0.	1		1654	170	.01	.00	.01	154.
1		0200	21	.00	.00	.00	0.	1		1700	171	.01	.00	.01	151.
1		0206	22	.00	.00	.00	0.	1		1706	172	.01	.00	.01	148.
1		0212	23	.00	.00	.00	0.	1		1712	173	.01	.00	.01	145.
1		0218	24	.00	.00	.00	0.	1		1718	174	.01	.00	.01	142.
1		0224	25	.00	.00	.00	0.	1		1724	175	.01	.00	.01	139.
1		0230	26	.00	.00	.00	0.	1		1730	176	.01	.00	.00	136.
1		0236	27	.00	.00	.00	0.	1		1736	177	.01	.00	.00	134.
1		0242	28	.00	.00	.00	0.	1		1742	178	.01	.00	.00	131.
1		0248	29	.00	.00	.00	0.	1		1748	179	.01	.00	.00	128.
1		0254	30	.00	.00	.00	0.	1		1754	180	.01	.00	.00	126.
1		0300	31	.01	.01	.00	0.	1		1800	181	.01	.00	.00	123.
1		0306	32	.00	.00	.00	0.	1		1806	182	.01	.00	.00	120.
1		0312	33	.00	.00	.00	0.	1		1812	183	.01	.00	.00	118.
1		0318	34	.01	.01	.00	0.	1		1818	184	.01	.00	.00	115.
1		0324	35	.01	.01	.00	0.	1		1824	185	.01	.00	.00	113.
1		0330	36	.01	.01	.00	0.	1		1830	186	.01	.00	.00	111.
1		0336	37	.01	.01	.00	0.	1		1836	187	.01	.00	.00	108.
1		0342	38	.01	.01	.00	0.	1		1842	188	.01	.00	.00	106.
1		0348	39	.01	.01	.00	0.	1		1848	189	.01	.00	.00	104.
1		0354	40	.01	.01	.00	0.	1		1854	190	.01	.00	.00	102.
1		0400	41	.01	.01	.00	0.	1		1900	191	.01	.00	.00	100.
1		0406	42	.01	.01	.00	0.	1		1906	192	.01	.00	.00	98.
1		0412	43	.01	.01	.00	0.	1		1912	193	.01	.00	.00	96.
1		0418	44	.01	.01	.00	0.	1		1918	194	.01	.00	.00	94.
1		0424	45	.01	.01	.00	0.	1		1924	195	.01	.00	.00	92.
1		0430	46	.01	.01	.00	0.	1		1930	196	.01	.00	.00	90.
1		0436	47	.01	.01	.00	0.	1		1936	197	.01	.00	.00	88.
1		0442	48	.01	.01	.00	0.	1		1942	198	.01	.00	.00	87.
1		0448	49	.01	.01	.00	0.	1		1948	199	.01	.00	.00	85.
1		0454	50	.01	.01	.00	0.	1		1954	200	.01	.00	.00	83.
1		0500	51	.01	.01	.00	0.	1		2000	201	.01	.00	.00	82.
1		0506	52	.01	.01	.00	0.	1		2006	202	.01	.00	.00	80.

1	0512	53	.01	.01	.00	0.	*	1	2012	203	.01	.00	.00	79.
1	0518	54	.01	.01	.00	0.	*	1	2018	204	.01	.00	.00	78.
1	0524	55	.01	.01	.00	0.	*	1	2024	205	.01	.00	.00	76.
1	0530	56	.01	.01	.00	0.	*	1	2030	206	.01	.00	.00	75.
1	0536	57	.01	.01	.00	0.	*	1	2036	207	.01	.00	.00	74.
1	0542	58	.01	.01	.00	0.	*	1	2042	208	.01	.00	.00	72.
1	0548	59	.01	.01	.00	0.	*	1	2048	209	.01	.00	.00	71.
1	0554	60	.01	.01	.00	0.	*	1	2054	210	.01	.00	.00	70.
1	0600	61	.01	.01	.00	0.	*	1	2100	211	.00	.00	.00	69.
1	0606	62	.01	.01	.00	0.	*	1	2106	212	.01	.00	.00	68.
1	0612	63	.01	.01	.00	0.	*	1	2112	213	.00	.00	.00	67.
1	0618	64	.01	.01	.00	0.	*	1	2118	214	.00	.00	.00	66.
1	0624	65	.01	.01	.00	0.	*	1	2124	215	.00	.00	.00	64.
1	0630	66	.01	.01	.00	0.	*	1	2130	216	.00	.00	.00	63.
1	0636	67	.01	.01	.00	0.	*	1	2136	217	.00	.00	.00	63.
1	0642	68	.01	.01	.00	0.	*	1	2142	218	.00	.00	.00	62.
1	0648	69	.01	.01	.00	0.	*	1	2148	219	.00	.00	.00	61.
1	0654	70	.01	.01	.00	0.	*	1	2154	220	.00	.00	.00	60.
1	0700	71	.01	.01	.00	0.	*	1	2200	221	.00	.00	.00	59.
1	0706	72	.01	.01	.00	0.	*	1	2206	222	.00	.00	.00	58.
1	0712	73	.01	.01	.00	0.	*	1	2212	223	.00	.00	.00	57.
1	0718	74	.01	.01	.00	0.	*	1	2218	224	.00	.00	.00	56.
1	0724	75	.01	.01	.00	0.	*	1	2224	225	.00	.00	.00	56.
1	0730	76	.01	.01	.00	0.	*	1	2230	226	.00	.00	.00	55.
1	0736	77	.01	.01	.00	0.	*	1	2236	227	.00	.00	.00	54.
1	0742	78	.01	.01	.00	0.	*	1	2242	228	.00	.00	.00	53.
1	0748	79	.01	.01	.00	0.	*	1	2248	229	.00	.00	.00	53.
1	0754	80	.01	.01	.00	0.	*	1	2254	230	.00	.00	.00	52.
1	0800	81	.01	.01	.00	0.	*	1	2300	231	.00	.00	.00	51.
1	0806	82	.01	.01	.00	0.	*	1	2306	232	.00	.00	.00	51.
1	0812	83	.01	.01	.00	0.	*	1	2312	233	.00	.00	.00	50.
1	0818	84	.01	.01	.00	0.	*	1	2318	234	.00	.00	.00	49.
1	0824	85	.01	.01	.00	0.	*	1	2324	235	.00	.00	.00	49.
1	0830	86	.01	.01	.00	0.	*	1	2330	236	.00	.00	.00	48.
1	0836	87	.01	.01	.00	0.	*	1	2336	237	.00	.00	.00	47.
1	0842	88	.01	.01	.00	0.	*	1	2342	238	.00	.00	.00	47.
1	0848	89	.01	.01	.00	0.	*	1	2348	239	.00	.00	.00	46.
1	0854	90	.02	.02	.00	0.	*	1	2354	240	.00	.00	.00	45.
1	0900	91	.02	.02	.00	0.	*	2	0000	241	.00	.00	.00	45.
1	0906	92	.02	.02	.00	0.	*	2	0006	242	.00	.00	.00	44.
1	0912	93	.02	.02	.00	0.	*	2	0012	243	.00	.00	.00	44.
1	0918	94	.02	.02	.00	0.	*	2	0018	244	.00	.00	.00	43.
1	0924	95	.02	.02	.00	0.	*	2	0024	245	.00	.00	.00	42.
1	0930	96	.02	.02	.00	0.	*	2	0030	246	.00	.00	.00	41.
1	0936	97	.02	.02	.00	0.	*	2	0036	247	.00	.00	.00	40.
1	0942	98	.02	.02	.00	0.	*	2	0042	248	.00	.00	.00	39.
1	0948	99	.02	.02	.00	0.	*	2	0048	249	.00	.00	.00	38.
1	0954	100	.02	.02	.00	0.	*	2	0054	250	.00	.00	.00	37.
1	1000	101	.02	.02	.00	0.	*	2	0100	251	.00	.00	.00	36.
1	1006	102	.02	.02	.00	0.	*	2	0106	252	.00	.00	.00	34.
1	1012	103	.02	.02	.00	0.	*	2	0112	253	.00	.00	.00	33.
1	1018	104	.02	.02	.00	0.	*	2	0118	254	.00	.00	.00	31.
1	1024	105	.02	.02	.00	0.	*	2	0124	255	.00	.00	.00	30.
1	1030	106	.03	.03	.00	0.	*	2	0130	256	.00	.00	.00	28.
1	1036	107	.03	.03	.00	0.	*	2	0136	257	.00	.00	.00	27.
1	1042	108	.03	.03	.00	0.	*	2	0142	258	.00	.00	.00	26.
1	1048	109	.03	.03	.00	0.	*	2	0148	259	.00	.00	.00	24.
1	1054	110	.03	.03	.00	0.	*	2	0154	260	.00	.00	.00	23.

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        1     1100  111     .03     .03     .00         0.       *        2     0200  261     .00     .00     .00        22.
        1     1106  112     .03     .03     .00         0.       *        2     0206  262     .00     .00     .00        21.
        1     1112  113     .04     .03     .00         0.       *        2     0212  263     .00     .00     .00        20.
        1     1118  114     .04     .04     .00         1.       *        2     0218  264     .00     .00     .00        20.
        1     1124  115     .04     .04     .00         1.       *        2     0224  265     .00     .00     .00        19.
        1     1130  116     .05     .04     .01         1.       *        2     0230  266     .00     .00     .00        18.
        1     1136  117     .07     .06     .01         2.       *        2     0236  267     .00     .00     .00        17.
        1     1142  118     .11     .09     .02         3.       *        2     0242  268     .00     .00     .00        16.
        1     1148  119     .14     .11     .03         5.       *        2     0248  269     .00     .00     .00        16.
        1     1154  120     .18     .14     .04         8.       *        2     0254  270     .00     .00     .00        15.
        1     1200  121     .35     .24     .11        12.       *        2     0300  271     .00     .00     .00        14.
        1     1206  122     .35     .21     .14        20.       *        2     0306  272     .00     .00     .00        14.
        1     1212  123     .18     .10     .08        31.       *        2     0312  273     .00     .00     .00        13.
        1     1218  124     .14     .08     .07        47.       *        2     0318  274     .00     .00     .00        13.
        1     1224  125     .11     .05     .05        66.       *        2     0324  275     .00     .00     .00        12.
        1     1230  126     .07     .03     .03        88.       *        2     0330  276     .00     .00     .00        11.
        1     1236  127     .05     .02     .02       112.       *        2     0336  277     .00     .00     .00        11.
        1     1242  128     .04     .02     .02       137.       *        2     0342  278     .00     .00     .00        11.
        1     1248  129     .04     .02     .02       162.       *        2     0348  279     .00     .00     .00        10.
        1     1254  130     .04     .02     .02       185.       *        2     0354  280     .00     .00     .00        10.
        1     1300  131     .03     .02     .02       206.       *        2     0400  281     .00     .00     .00         9.
        1     1306  132     .03     .01     .02       224.       *        2     0406  282     .00     .00     .00         9.
        1     1312  133     .03     .01     .02       239.       *        2     0412  283     .00     .00     .00         8.
        1     1318  134     .03     .01     .02       248.       *        2     0418  284     .00     .00     .00         8.
        1     1324  135     .03     .01     .02       254.       *        2     0424  285     .00     .00     .00         8.
        1     1330  136     .03     .01     .01       257.       *        2     0430  286     .00     .00     .00         7.
        1     1336  137     .03     .01     .01       257.       *        2     0436  287     .00     .00     .00         7.
        1     1342  138     .02     .01     .01       256.       *        2     0442  288     .00     .00     .00         7.
        1     1348  139     .02     .01     .01       254.       *        2     0448  289     .00     .00     .00         6.
        1     1354  140     .02     .01     .01       252.       *        2     0454  290     .00     .00     .00         6.
        1     1400  141     .02     .01     .01       250.       *        2     0500  291     .00     .00     .00         6.
        1     1406  142     .02     .01     .01       247.       *        2     0506  292     .00     .00     .00         6.
        1     1412  143     .02     .01     .01       244.       *        2     0512  293     .00     .00     .00         5.
        1     1418  144     .02     .01     .01       241.       *        2     0518  294     .00     .00     .00         5.
        1     1424  145     .02     .01     .01       238.       *        2     0524  295     .00     .00     .00         5.
        1     1430  146     .02     .01     .01       235.       *        2     0530  296     .00     .00     .00         5.
        1     1436  147     .02     .01     .01       232.       *        2     0536  297     .00     .00     .00         4.
        1     1442  148     .02     .01     .01       228.       *        2     0542  298     .00     .00     .00         4.
        1     1448  149     .02     .01     .01       225.       *        2     0548  299     .00     .00     .00         4.
        1     1454  150     .02     .01     .01       221.       *        2     0554  300     .00     .00     .00         4.
                                                                 *
 ************************************************************************************************************************************

     TOTAL RAINFALL =    4.21, TOTAL LOSS =    2.87, TOTAL EXCESS =    1.34

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+     257.     13.60                187.         68.         55.          55.
                        (INCHES)    .909       1.329       1.329        1.329
                         (AC-FT)     93.        135.        135.         135.

                         CUMULATIVE AREA =    1.91 SQ MI

 APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

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HYDROGRAPH AT STATION A-1
PLAN 1, RATIO = .60

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		1500	151	.02	.01	.01	306.
1		0006	2	.00	.00	.00	0.	1		1506	152	.02	.01	.01	301.
1		0012	3	.00	.00	.00	0.	1		1512	153	.02	.01	.01	295.
1		0018	4	.00	.00	.00	0.	1		1518	154	.02	.01	.01	290.
1		0024	5	.00	.00	.00	0.	1		1524	155	.02	.01	.01	285.
1		0030	6	.00	.00	.00	0.	1		1530	156	.02	.01	.01	280.
1		0036	7	.00	.00	.00	0.	1		1536	157	.02	.01	.01	275.
1		0042	8	.00	.00	.00	0.	1		1542	158	.01	.01	.01	270.
1		0048	9	.00	.00	.00	0.	1		1548	159	.01	.00	.01	265.
1		0054	10	.00	.00	.00	0.	1		1554	160	.01	.00	.01	260.
1		0100	11	.00	.00	.00	0.	1		1600	161	.01	.00	.01	255.
1		0106	12	.00	.00	.00	0.	1		1606	162	.01	.00	.01	250.
1		0112	13	.00	.00	.00	0.	1		1612	163	.01	.00	.01	245.
1		0118	14	.00	.00	.00	0.	1		1618	164	.01	.00	.01	240.
1		0124	15	.00	.00	.00	0.	1		1624	165	.01	.00	.01	235.
1		0130	16	.00	.00	.00	0.	1		1630	166	.01	.00	.01	230.
1		0136	17	.00	.00	.00	0.	1		1636	167	.01	.00	.01	225.
1		0142	18	.00	.00	.00	0.	1		1642	168	.01	.00	.01	221.
1		0148	19	.00	.00	.00	0.	1		1648	169	.01	.00	.01	216.
1		0154	20	.00	.00	.00	0.	1		1654	170	.01	.00	.01	211.
1		0200	21	.00	.00	.00	0.	1		1700	171	.01	.00	.01	207.
1		0206	22	.01	.01	.00	0.	1		1706	172	.01	.00	.01	202.
1		0212	23	.01	.01	.00	0.	1		1712	173	.01	.00	.01	198.
1		0218	24	.01	.01	.00	0.	1		1718	174	.01	.00	.01	194.
1		0224	25	.01	.01	.00	0.	1		1724	175	.01	.00	.01	190.
1		0230	26	.01	.01	.00	0.	1		1730	176	.01	.00	.01	186.
1		0236	27	.01	.01	.00	0.	1		1736	177	.01	.00	.01	182.
1		0242	28	.01	.01	.00	0.	1		1742	178	.01	.00	.01	178.
1		0248	29	.01	.01	.00	0.	1		1748	179	.01	.00	.01	174.
1		0254	30	.01	.01	.00	0.	1		1754	180	.01	.00	.01	170.
1		0300	31	.01	.01	.00	0.	1		1800	181	.01	.00	.01	167.
1		0306	32	.01	.01	.00	0.	1		1806	182	.01	.00	.01	163.
1		0312	33	.01	.01	.00	0.	1		1812	183	.01	.00	.01	160.
1		0318	34	.01	.01	.00	0.	1		1818	184	.01	.00	.01	156.
1		0324	35	.01	.01	.00	0.	1		1824	185	.01	.00	.01	153.
1		0330	36	.01	.01	.00	0.	1		1830	186	.01	.00	.01	150.
1		0336	37	.01	.01	.00	0.	1		1836	187	.01	.00	.01	146.
1		0342	38	.01	.01	.00	0.	1		1842	188	.01	.00	.01	143.
1		0348	39	.01	.01	.00	0.	1		1848	189	.01	.00	.01	140.
1		0354	40	.01	.01	.00	0.	1		1854	190	.01	.00	.01	137.
1		0400	41	.01	.01	.00	0.	1		1900	191	.01	.00	.01	134.
1		0406	42	.01	.01	.00	0.	1		1906	192	.01	.00	.00	131.
1		0412	43	.01	.01	.00	0.	1		1912	193	.01	.00	.00	129.
1		0418	44	.01	.01	.00	0.	1		1918	194	.01	.00	.00	126.
1		0424	45	.01	.01	.00	0.	1		1924	195	.01	.00	.00	123.
1		0430	46	.01	.01	.00	0.	1		1930	196	.01	.00	.00	121.
1		0436	47	.01	.01	.00	0.	1		1936	197	.01	.00	.00	118.
1		0442	48	.01	.01	.00	0.	1		1942	198	.01	.00	.00	116.
1		0448	49	.01	.01	.00	0.	1		1948	199	.01	.00	.00	114.
1		0454	50	.01	.01	.00	0.	1		1954	200	.01	.00	.00	112.

1	0500	51	.01	.01	.00	0.	*	1	2000	201	.01	.00	.00	109.
1	0506	52	.01	.01	.00	0.	*	1	2006	202	.01	.00	.00	107.
1	0512	53	.01	.01	.00	0.	*	1	2012	203	.01	.00	.00	105.
1	0518	54	.01	.01	.00	0.	*	1	2018	204	.01	.00	.00	103.
1	0524	55	.01	.01	.00	0.	*	1	2024	205	.01	.00	.00	102.
1	0530	56	.01	.01	.00	0.	*	1	2030	206	.01	.00	.00	100.
1	0536	57	.01	.01	.00	0.	*	1	2036	207	.01	.00	.00	98.
1	0542	58	.01	.01	.00	0.	*	1	2042	208	.01	.00	.00	96.
1	0548	59	.01	.01	.00	0.	*	1	2048	209	.01	.00	.00	95.
1	0554	60	.01	.01	.00	0.	*	1	2054	210	.01	.00	.00	93.
1	0600	61	.01	.01	.00	0.	*	1	2100	211	.01	.00	.00	91.
1	0606	62	.01	.01	.00	0.	*	1	2106	212	.01	.00	.00	90.
1	0612	63	.01	.01	.00	0.	*	1	2112	213	.01	.00	.00	88.
1	0618	64	.01	.01	.00	0.	*	1	2118	214	.01	.00	.00	87.
1	0624	65	.01	.01	.00	0.	*	1	2124	215	.01	.00	.00	85.
1	0630	66	.01	.01	.00	0.	*	1	2130	216	.01	.00	.00	84.
1	0636	67	.01	.01	.00	0.	*	1	2136	217	.01	.00	.00	83.
1	0642	68	.01	.01	.00	0.	*	1	2142	218	.01	.00	.00	81.
1	0648	69	.01	.01	.00	0.	*	1	2148	219	.01	.00	.00	80.
1	0654	70	.01	.01	.00	0.	*	1	2154	220	.01	.00	.00	79.
1	0700	71	.01	.01	.00	0.	*	1	2200	221	.01	.00	.00	78.
1	0706	72	.01	.01	.00	0.	*	1	2206	222	.01	.00	.00	77.
1	0712	73	.01	.01	.00	0.	*	1	2212	223	.01	.00	.00	75.
1	0718	74	.01	.01	.00	0.	*	1	2218	224	.01	.00	.00	74.
1	0724	75	.01	.01	.00	0.	*	1	2224	225	.01	.00	.00	73.
1	0730	76	.01	.01	.00	0.	*	1	2230	226	.01	.00	.00	72.
1	0736	77	.01	.01	.00	0.	*	1	2236	227	.01	.00	.00	71.
1	0742	78	.01	.01	.00	0.	*	1	2242	228	.00	.00	.00	70.
1	0748	79	.01	.01	.00	0.	*	1	2248	229	.00	.00	.00	69.
1	0754	80	.01	.01	.00	0.	*	1	2254	230	.00	.00	.00	68.
1	0800	81	.01	.01	.00	0.	*	1	2300	231	.00	.00	.00	67.
1	0806	82	.01	.01	.00	0.	*	1	2306	232	.00	.00	.00	66.
1	0812	83	.01	.01	.00	0.	*	1	2312	233	.00	.00	.00	65.
1	0818	84	.01	.01	.00	0.	*	1	2318	234	.00	.00	.00	64.
1	0824	85	.01	.01	.00	0.	*	1	2324	235	.00	.00	.00	64.
1	0830	86	.02	.02	.00	0.	*	1	2330	236	.00	.00	.00	63.
1	0836	87	.02	.02	.00	0.	*	1	2336	237	.00	.00	.00	62.
1	0842	88	.02	.02	.00	0.	*	1	2342	238	.00	.00	.00	61.
1	0848	89	.02	.02	.00	0.	*	1	2348	239	.00	.00	.00	60.
1	0854	90	.02	.02	.00	0.	*	1	2354	240	.00	.00	.00	59.
1	0900	91	.02	.02	.00	0.	*	2	0000	241	.00	.00	.00	59.
1	0906	92	.02	.02	.00	0.	*	2	0006	242	.00	.00	.00	58.
1	0912	93	.02	.02	.00	0.	*	2	0012	243	.00	.00	.00	57.
1	0918	94	.02	.02	.00	0.	*	2	0018	244	.00	.00	.00	56.
1	0924	95	.02	.02	.00	0.	*	2	0024	245	.00	.00	.00	55.
1	0930	96	.02	.02	.00	0.	*	2	0030	246	.00	.00	.00	54.
1	0936	97	.02	.02	.00	0.	*	2	0036	247	.00	.00	.00	53.
1	0942	98	.02	.02	.00	0.	*	2	0042	248	.00	.00	.00	51.
1	0948	99	.02	.02	.00	0.	*	2	0048	249	.00	.00	.00	50.
1	0954	100	.02	.02	.00	0.	*	2	0054	250	.00	.00	.00	48.
1	1000	101	.02	.02	.00	0.	*	2	0100	251	.00	.00	.00	46.
1	1006	102	.03	.02	.00	0.	*	2	0106	252	.00	.00	.00	45.
1	1012	103	.03	.03	.00	0.	*	2	0112	253	.00	.00	.00	43.
1	1018	104	.03	.03	.00	0.	*	2	0118	254	.00	.00	.00	40.
1	1024	105	.03	.03	.00	0.	*	2	0124	255	.00	.00	.00	38.
1	1030	106	.03	.03	.00	0.	*	2	0130	256	.00	.00	.00	36.
1	1036	107	.03	.03	.00	0.	*	2	0136	257	.00	.00	.00	35.
1	1042	108	.03	.03	.00	0.	*	2	0142	258	.00	.00	.00	33.

```
         1     1048  109     .03     .03     .00        1.       *        2     0148  259     .00     .00     .00        32.
         1     1054  110     .03     .03     .00        1.       *        2     0154  260     .00     .00     .00        30.
         1     1100  111     .04     .03     .00        2.       *        2     0200  261     .00     .00     .00        29.
         1     1106  112     .04     .03     .00        2.       *        2     0206  262     .00     .00     .00        28.
         1     1112  113     .04     .04     .01        3.       *        2     0212  263     .00     .00     .00        26.
         1     1118  114     .05     .04     .01        4.       *        2     0218  264     .00     .00     .00        25.
         1     1124  115     .05     .04     .01        6.       *        2     0224  265     .00     .00     .00        24.
         1     1130  116     .06     .05     .01        7.       *        2     0230  266     .00     .00     .00        23.
         1     1136  117     .08     .06     .02        9.       *        2     0236  267     .00     .00     .00        22.
         1     1142  118     .13     .10     .03       12.       *        2     0242  268     .00     .00     .00        21.
         1     1148  119     .17     .12     .05       15.       *        2     0248  269     .00     .00     .00        20.
         1     1154  120     .21     .14     .07       20.       *        2     0254  270     .00     .00     .00        19.
         1     1200  121     .42     .25     .16       28.       *        2     0300  271     .00     .00     .00        19.
         1     1206  122     .42     .22     .20       40.       *        2     0306  272     .00     .00     .00        18.
         1     1212  123     .21     .10     .11       58.       *        2     0312  273     .00     .00     .00        17.
         1     1218  124     .17     .08     .09       82.       *        2     0318  274     .00     .00     .00        16.
         1     1224  125     .13     .05     .07      109.       *        2     0324  275     .00     .00     .00        16.
         1     1230  126     .08     .03     .05      141.       *        2     0330  276     .00     .00     .00        15.
         1     1236  127     .06     .02     .03      176.       *        2     0336  277     .00     .00     .00        14.
         1     1242  128     .05     .02     .03      211.       *        2     0342  278     .00     .00     .00        14.
         1     1248  129     .05     .02     .03      246.       *        2     0348  279     .00     .00     .00        13.
         1     1254  130     .04     .02     .03      279.       *        2     0354  280     .00     .00     .00        12.
         1     1300  131     .04     .02     .02      308.       *        2     0400  281     .00     .00     .00        12.
         1     1306  132     .04     .01     .02      332.       *        2     0406  282     .00     .00     .00        11.
         1     1312  133     .03     .01     .02      351.       *        2     0412  283     .00     .00     .00        11.
         1     1318  134     .03     .01     .02      363.       *        2     0418  284     .00     .00     .00        10.
         1     1324  135     .03     .01     .02      370.       *        2     0424  285     .00     .00     .00        10.
         1     1330  136     .03     .01     .02      372.       *        2     0430  286     .00     .00     .00         9.
         1     1336  137     .03     .01     .02      372.       *        2     0436  287     .00     .00     .00         9.
         1     1342  138     .03     .01     .02      369.       *        2     0442  288     .00     .00     .00         9.
         1     1348  139     .03     .01     .02      366.       *        2     0448  289     .00     .00     .00         8.
         1     1354  140     .03     .01     .02      362.       *        2     0454  290     .00     .00     .00         8.
         1     1400  141     .03     .01     .02      358.       *        2     0500  291     .00     .00     .00         8.
         1     1406  142     .02     .01     .02      353.       *        2     0506  292     .00     .00     .00         7.
         1     1412  143     .02     .01     .02      348.       *        2     0512  293     .00     .00     .00         7.
         1     1418  144     .02     .01     .01      343.       *        2     0518  294     .00     .00     .00         7.
         1     1424  145     .02     .01     .01      338.       *        2     0524  295     .00     .00     .00         6.
         1     1430  146     .02     .01     .01      333.       *        2     0530  296     .00     .00     .00         6.
         1     1436  147     .02     .01     .01      327.       *        2     0536  297     .00     .00     .00         6.
         1     1442  148     .02     .01     .01      322.       *        2     0542  298     .00     .00     .00         6.
         1     1448  149     .02     .01     .01      317.       *        2     0548  299     .00     .00     .00         5.
         1     1454  150     .02     .01     .01      311.       *        2     0554  300     .00     .00     .00         5.
                                                                 *
 ************************************************************************************************************************************

     TOTAL RAINFALL =    4.99, TOTAL LOSS =    3.12, TOTAL EXCESS =    1.87

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                            (CFS)
+     372.     13.50                263.         95.         76.          76.
                         (INCHES)   1.282       1.852       1.852        1.852
                          (AC-FT)    131.        189.        189.         189.

                          CUMULATIVE AREA =    1.91 SQ MI

 APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS
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HYDROGRAPH AT STATION A-1
PLAN 1, RATIO = .74

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		1500	151	.02	.01	.02	452.
1		0006	2	.01	.01	.00	0.	1		1506	152	.02	.01	.02	443.
1		0012	3	.01	.01	.00	0.	1		1512	153	.02	.01	.02	435.
1		0018	4	.01	.01	.00	0.	1		1518	154	.02	.01	.02	426.
1		0024	5	.01	.01	.00	0.	1		1524	155	.02	.01	.02	418.
1		0030	6	.01	.01	.00	0.	1		1530	156	.02	.01	.01	410.
1		0036	7	.01	.01	.00	0.	1		1536	157	.02	.01	.01	402.
1		0042	8	.01	.01	.00	0.	1		1542	158	.02	.00	.01	394.
1		0048	9	.01	.01	.00	0.	1		1548	159	.02	.00	.01	386.
1		0054	10	.01	.01	.00	0.	1		1554	160	.02	.00	.01	378.
1		0100	11	.01	.01	.00	0.	1		1600	161	.02	.00	.01	370.
1		0106	12	.01	.01	.00	0.	1		1606	162	.02	.00	.01	363.
1		0112	13	.01	.01	.00	0.	1		1612	163	.02	.00	.01	355.
1		0118	14	.01	.01	.00	0.	1		1618	164	.02	.00	.01	348.
1		0124	15	.01	.01	.00	0.	1		1624	165	.01	.00	.01	340.
1		0130	16	.01	.01	.00	0.	1		1630	166	.01	.00	.01	333.
1		0136	17	.01	.01	.00	0.	1		1636	167	.01	.00	.01	325.
1		0142	18	.01	.01	.00	0.	1		1642	168	.01	.00	.01	318.
1		0148	19	.01	.01	.00	0.	1		1648	169	.01	.00	.01	311.
1		0154	20	.01	.01	.00	0.	1		1654	170	.01	.00	.01	304.
1		0200	21	.01	.01	.00	0.	1		1700	171	.01	.00	.01	298.
1		0206	22	.01	.01	.00	0.	1		1706	172	.01	.00	.01	291.
1		0212	23	.01	.01	.00	0.	1		1712	173	.01	.00	.01	284.
1		0218	24	.01	.01	.00	0.	1		1718	174	.01	.00	.01	278.
1		0224	25	.01	.01	.00	0.	1		1724	175	.01	.00	.01	272.
1		0230	26	.01	.01	.00	0.	1		1730	176	.01	.00	.01	266.
1		0236	27	.01	.01	.00	0.	1		1736	177	.01	.00	.01	260.
1		0242	28	.01	.01	.00	0.	1		1742	178	.01	.00	.01	254.
1		0248	29	.01	.01	.00	0.	1		1748	179	.01	.00	.01	248.
1		0254	30	.01	.01	.00	0.	1		1754	180	.01	.00	.01	243.
1		0300	31	.01	.01	.00	0.	1		1800	181	.01	.00	.01	238.
1		0306	32	.01	.01	.00	0.	1		1806	182	.01	.00	.01	232.
1		0312	33	.01	.01	.00	0.	1		1812	183	.01	.00	.01	227.
1		0318	34	.01	.01	.00	0.	1		1818	184	.01	.00	.01	222.
1		0324	35	.01	.01	.00	0.	1		1824	185	.01	.00	.01	217.
1		0330	36	.01	.01	.00	0.	1		1830	186	.01	.00	.01	212.
1		0336	37	.01	.01	.00	0.	1		1836	187	.01	.00	.01	207.
1		0342	38	.01	.01	.00	0.	1		1842	188	.01	.00	.01	203.
1		0348	39	.01	.01	.00	0.	1		1848	189	.01	.00	.01	198.
1		0354	40	.01	.01	.00	0.	1		1854	190	.01	.00	.01	194.
1		0400	41	.01	.01	.00	0.	1		1900	191	.01	.00	.01	189.
1		0406	42	.01	.01	.00	0.	1		1906	192	.01	.00	.01	185.
1		0412	43	.01	.01	.00	0.	1		1912	193	.01	.00	.01	181.
1		0418	44	.01	.01	.00	0.	1		1918	194	.01	.00	.01	177.
1		0424	45	.01	.01	.00	0.	1		1924	195	.01	.00	.01	174.
1		0430	46	.01	.01	.00	0.	1		1930	196	.01	.00	.01	170.
1		0436	47	.01	.01	.00	0.	1		1936	197	.01	.00	.01	167.
1		0442	48	.01	.01	.00	0.	1		1942	198	.01	.00	.01	163.

1	0448	49	.01	.01	.00	0.	*	1	1948	199	.01	.00	.01	160.
1	0454	50	.01	.01	.00	0.	*	1	1954	200	.01	.00	.01	157.
1	0500	51	.01	.01	.00	0.	*	1	2000	201	.01	.00	.01	154.
1	0506	52	.01	.01	.00	0.	*	1	2006	202	.01	.00	.01	151.
1	0512	53	.01	.01	.00	0.	*	1	2012	203	.01	.00	.01	148.
1	0518	54	.01	.01	.00	0.	*	1	2018	204	.01	.00	.01	145.
1	0524	55	.01	.01	.00	0.	*	1	2024	205	.01	.00	.01	142.
1	0530	56	.01	.01	.00	0.	*	1	2030	206	.01	.00	.01	139.
1	0536	57	.01	.01	.00	0.	*	1	2036	207	.01	.00	.01	137.
1	0542	58	.01	.01	.00	0.	*	1	2042	208	.01	.00	.01	134.
1	0548	59	.01	.01	.00	0.	*	1	2048	209	.01	.00	.01	132.
1	0554	60	.01	.01	.00	0.	*	1	2054	210	.01	.00	.01	129.
1	0600	61	.01	.01	.00	0.	*	1	2100	211	.01	.00	.01	127.
1	0606	62	.01	.01	.00	0.	*	1	2106	212	.01	.00	.01	125.
1	0612	63	.01	.01	.00	0.	*	1	2112	213	.01	.00	.01	123.
1	0618	64	.01	.01	.00	0.	*	1	2118	214	.01	.00	.01	121.
1	0624	65	.01	.01	.00	0.	*	1	2124	215	.01	.00	.01	119.
1	0630	66	.01	.01	.00	0.	*	1	2130	216	.01	.00	.01	117.
1	0636	67	.01	.01	.00	0.	*	1	2136	217	.01	.00	.01	115.
1	0642	68	.01	.01	.00	0.	*	1	2142	218	.01	.00	.01	113.
1	0648	69	.01	.01	.00	0.	*	1	2148	219	.01	.00	.01	111.
1	0654	70	.01	.01	.00	0.	*	1	2154	220	.01	.00	.01	109.
1	0700	71	.01	.01	.00	0.	*	1	2200	221	.01	.00	.01	108.
1	0706	72	.01	.01	.00	0.	*	1	2206	222	.01	.00	.00	106.
1	0712	73	.01	.01	.00	0.	*	1	2212	223	.01	.00	.01	104.
1	0718	74	.01	.01	.00	0.	*	1	2218	224	.01	.00	.00	103.
1	0724	75	.01	.01	.00	0.	*	1	2224	225	.01	.00	.00	101.
1	0730	76	.01	.01	.00	0.	*	1	2230	226	.01	.00	.00	100.
1	0736	77	.01	.01	.00	0.	*	1	2236	227	.01	.00	.00	98.
1	0742	78	.01	.01	.00	0.	*	1	2242	228	.01	.00	.00	97.
1	0748	79	.02	.02	.00	0.	*	1	2248	229	.01	.00	.00	95.
1	0754	80	.02	.02	.00	0.	*	1	2254	230	.01	.00	.00	94.
1	0800	81	.02	.02	.00	0.	*	1	2300	231	.01	.00	.00	92.
1	0806	82	.02	.02	.00	0.	*	1	2306	232	.01	.00	.00	91.
1	0812	83	.02	.02	.00	0.	*	1	2312	233	.01	.00	.00	90.
1	0818	84	.02	.02	.00	0.	*	1	2318	234	.01	.00	.00	89.
1	0824	85	.02	.02	.00	0.	*	1	2324	235	.01	.00	.00	87.
1	0830	86	.02	.02	.00	0.	*	1	2330	236	.01	.00	.00	86.
1	0836	87	.02	.02	.00	0.	*	1	2336	237	.01	.00	.00	85.
1	0842	88	.02	.02	.00	0.	*	1	2342	238	.01	.00	.00	84.
1	0848	89	.02	.02	.00	0.	*	1	2348	239	.01	.00	.00	83.
1	0854	90	.02	.02	.00	0.	*	1	2354	240	.01	.00	.00	81.
1	0900	91	.02	.02	.00	0.	*	2	0000	241	.01	.00	.00	80.
1	0906	92	.02	.02	.00	0.	*	2	0006	242	.00	.00	.00	79.
1	0912	93	.02	.02	.00	0.	*	2	0012	243	.00	.00	.00	78.
1	0918	94	.02	.02	.00	0.	*	2	0018	244	.00	.00	.00	77.
1	0924	95	.03	.03	.00	0.	*	2	0024	245	.00	.00	.00	75.
1	0930	96	.03	.03	.00	0.	*	2	0030	246	.00	.00	.00	74.
1	0936	97	.03	.03	.00	0.	*	2	0036	247	.00	.00	.00	72.
1	0942	98	.03	.03	.00	0.	*	2	0042	248	.00	.00	.00	70.
1	0948	99	.03	.03	.00	0.	*	2	0048	249	.00	.00	.00	68.
1	0954	100	.03	.03	.00	0.	*	2	0054	250	.00	.00	.00	66.
1	1000	101	.03	.03	.00	1.	*	2	0100	251	.00	.00	.00	63.
1	1006	102	.03	.03	.00	1.	*	2	0106	252	.00	.00	.00	61.
1	1012	103	.03	.03	.00	2.	*	2	0112	253	.00	.00	.00	58.
1	1018	104	.03	.03	.00	2.	*	2	0118	254	.00	.00	.00	55.
1	1024	105	.04	.03	.00	3.	*	2	0124	255	.00	.00	.00	52.
1	1030	106	.04	.03	.01	4.	*	2	0130	256	.00	.00	.00	49.

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        1     1036  107     .04     .03     .01        5.       *        2     0136  257     .00     .00     .00        47.
        1     1042  108     .04     .03     .01        6.       *        2     0142  258     .00     .00     .00        45.
        1     1048  109     .04     .03     .01        8.       *        2     0148  259     .00     .00     .00        43.
        1     1054  110     .04     .03     .01        9.       *        2     0154  260     .00     .00     .00        41.
        1     1100  111     .04     .04     .01       11.       *        2     0200  261     .00     .00     .00        39.
        1     1106  112     .05     .04     .01       13.       *        2     0206  262     .00     .00     .00        38.
        1     1112  113     .05     .04     .01       16.       *        2     0212  263     .00     .00     .00        36.
        1     1118  114     .06     .04     .01       19.       *        2     0218  264     .00     .00     .00        34.
        1     1124  115     .06     .05     .02       22.       *        2     0224  265     .00     .00     .00        33.
        1     1130  116     .07     .05     .02       25.       *        2     0230  266     .00     .00     .00        31.
        1     1136  117     .10     .07     .03       29.       *        2     0236  267     .00     .00     .00        30.
        1     1142  118     .15     .10     .05       34.       *        2     0242  268     .00     .00     .00        29.
        1     1148  119     .21     .13     .08       41.       *        2     0248  269     .00     .00     .00        27.
        1     1154  120     .26     .15     .11       50.       *        2     0254  270     .00     .00     .00        26.
        1     1200  121     .52     .26     .25       63.       *        2     0300  271     .00     .00     .00        25.
        1     1206  122     .52     .23     .29       83.       *        2     0306  272     .00     .00     .00        24.
        1     1212  123     .26     .10     .16      111.       *        2     0312  273     .00     .00     .00        23.
        1     1218  124     .21     .08     .13      147.       *        2     0318  274     .00     .00     .00        22.
        1     1224  125     .15     .05     .10      190.       *        2     0324  275     .00     .00     .00        21.
        1     1230  126     .10     .03     .07      238.       *        2     0330  276     .00     .00     .00        20.
        1     1236  127     .07     .02     .05      289.       *        2     0336  277     .00     .00     .00        19.
        1     1242  128     .06     .02     .04      342.       *        2     0342  278     .00     .00     .00        18.
        1     1248  129     .06     .02     .04      393.       *        2     0348  279     .00     .00     .00        18.
        1     1254  130     .05     .02     .04      440.       *        2     0354  280     .00     .00     .00        17.
        1     1300  131     .05     .02     .03      482.       *        2     0400  281     .00     .00     .00        16.
        1     1306  132     .04     .01     .03      516.       *        2     0406  282     .00     .00     .00        15.
        1     1312  133     .04     .01     .03      542.       *        2     0412  283     .00     .00     .00        15.
        1     1318  134     .04     .01     .03      558.       *        2     0418  284     .00     .00     .00        14.
        1     1324  135     .04     .01     .03      565.       *        2     0424  285     .00     .00     .00        13.
        1     1330  136     .04     .01     .03      567.       *        2     0430  286     .00     .00     .00        13.
        1     1336  137     .04     .01     .03      564.       *        2     0436  287     .00     .00     .00        12.
        1     1342  138     .04     .01     .02      559.       *        2     0442  288     .00     .00     .00        12.
        1     1348  139     .03     .01     .02      553.       *        2     0448  289     .00     .00     .00        11.
        1     1354  140     .03     .01     .02      545.       *        2     0454  290     .00     .00     .00        11.
        1     1400  141     .03     .01     .02      538.       *        2     0500  291     .00     .00     .00        10.
        1     1406  142     .03     .01     .02      530.       *        2     0506  292     .00     .00     .00        10.
        1     1412  143     .03     .01     .02      521.       *        2     0512  293     .00     .00     .00         9.
        1     1418  144     .03     .01     .02      513.       *        2     0518  294     .00     .00     .00         9.
        1     1424  145     .03     .01     .02      504.       *        2     0524  295     .00     .00     .00         9.
        1     1430  146     .03     .01     .02      495.       *        2     0530  296     .00     .00     .00         8.
        1     1436  147     .03     .01     .02      487.       *        2     0536  297     .00     .00     .00         8.
        1     1442  148     .03     .01     .02      478.       *        2     0542  298     .00     .00     .00         7.
        1     1448  149     .02     .01     .02      469.       *        2     0548  299     .00     .00     .00         7.
        1     1454  150     .02     .01     .02      460.       *        2     0554  300     .00     .00     .00         7.
                                                                 *
 ************************************************************************************************************************************

     TOTAL RAINFALL =    6.17, TOTAL LOSS =    3.42, TOTAL EXCESS =    2.75

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                            (CFS)
+     567.     13.50                391.        140.        112.         112.
                         (INCHES)    1.905       2.724       2.724        2.724
                          (AC-FT)     194.        278.        278.         278.

                         CUMULATIVE AREA =    1.91 SQ MI
```

APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

****

HYDROGRAPH AT STATION A-1
PLAN 1, RATIO = .86

****

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	*	1		1500	151	.03	.01	.02	584.
1		0006	2	.01	.01	.00	0.	*	1		1506	152	.03	.01	.02	573.
1		0012	3	.01	.01	.00	0.	*	1		1512	153	.03	.01	.02	561.
1		0018	4	.01	.01	.00	0.	*	1		1518	154	.02	.01	.02	550.
1		0024	5	.01	.01	.00	0.	*	1		1524	155	.02	.01	.02	539.
1		0030	6	.01	.01	.00	0.	*	1		1530	156	.02	.01	.02	528.
1		0036	7	.01	.01	.00	0.	*	1		1536	157	.02	.00	.02	517.
1		0042	8	.01	.01	.00	0.	*	1		1542	158	.02	.00	.02	506.
1		0048	9	.01	.01	.00	0.	*	1		1548	159	.02	.00	.02	496.
1		0054	10	.01	.01	.00	0.	*	1		1554	160	.02	.00	.02	485.
1		0100	11	.01	.01	.00	0.	*	1		1600	161	.02	.00	.01	475.
1		0106	12	.01	.01	.00	0.	*	1		1606	162	.02	.00	.01	465.
1		0112	13	.01	.01	.00	0.	*	1		1612	163	.02	.00	.01	455.
1		0118	14	.01	.01	.00	0.	*	1		1618	164	.02	.00	.01	445.
1		0124	15	.01	.01	.00	0.	*	1		1624	165	.02	.00	.01	435.
1		0130	16	.01	.01	.00	0.	*	1		1630	166	.02	.00	.01	425.
1		0136	17	.01	.01	.00	0.	*	1		1636	167	.02	.00	.01	415.
1		0142	18	.01	.01	.00	0.	*	1		1642	168	.02	.00	.01	406.
1		0148	19	.01	.01	.00	0.	*	1		1648	169	.02	.00	.01	397.
1		0154	20	.01	.01	.00	0.	*	1		1654	170	.02	.00	.01	388.
1		0200	21	.01	.01	.00	0.	*	1		1700	171	.02	.00	.01	379.
1		0206	22	.01	.01	.00	0.	*	1		1706	172	.01	.00	.01	370.
1		0212	23	.01	.01	.00	0.	*	1		1712	173	.01	.00	.01	362.
1		0218	24	.01	.01	.00	0.	*	1		1718	174	.01	.00	.01	353.
1		0224	25	.01	.01	.00	0.	*	1		1724	175	.01	.00	.01	345.
1		0230	26	.01	.01	.00	0.	*	1		1730	176	.01	.00	.01	338.
1		0236	27	.01	.01	.00	0.	*	1		1736	177	.01	.00	.01	330.
1		0242	28	.01	.01	.00	0.	*	1		1742	178	.01	.00	.01	322.
1		0248	29	.01	.01	.00	0.	*	1		1748	179	.01	.00	.01	315.
1		0254	30	.01	.01	.00	0.	*	1		1754	180	.01	.00	.01	308.
1		0300	31	.01	.01	.00	0.	*	1		1800	181	.01	.00	.01	301.
1		0306	32	.01	.01	.00	0.	*	1		1806	182	.01	.00	.01	294.
1		0312	33	.01	.01	.00	0.	*	1		1812	183	.01	.00	.01	287.
1		0318	34	.01	.01	.00	0.	*	1		1818	184	.01	.00	.01	281.
1		0324	35	.01	.01	.00	0.	*	1		1824	185	.01	.00	.01	274.
1		0330	36	.01	.01	.00	0.	*	1		1830	186	.01	.00	.01	268.
1		0336	37	.01	.01	.00	0.	*	1		1836	187	.01	.00	.01	262.
1		0342	38	.01	.01	.00	0.	*	1		1842	188	.01	.00	.01	256.
1		0348	39	.01	.01	.00	0.	*	1		1848	189	.01	.00	.01	250.
1		0354	40	.01	.01	.00	0.	*	1		1854	190	.01	.00	.01	244.
1		0400	41	.01	.01	.00	0.	*	1		1900	191	.01	.00	.01	239.
1		0406	42	.01	.01	.00	0.	*	1		1906	192	.01	.00	.01	233.
1		0412	43	.01	.01	.00	0.	*	1		1912	193	.01	.00	.01	228.
1		0418	44	.01	.01	.00	0.	*	1		1918	194	.01	.00	.01	223.
1		0424	45	.01	.01	.00	0.	*	1		1924	195	.01	.00	.01	218.
1		0430	46	.01	.01	.00	0.	*	1		1930	196	.01	.00	.01	214.

1	0436	47	.01	.01	.00	0.	*	1	1936	197	.01	.00	.01	209.
1	0442	48	.01	.01	.00	0.	*	1	1942	198	.01	.00	.01	205.
1	0448	49	.01	.01	.00	0.	*	1	1948	199	.01	.00	.01	201.
1	0454	50	.01	.01	.00	0.	*	1	1954	200	.01	.00	.01	196.
1	0500	51	.01	.01	.00	0.	*	1	2000	201	.01	.00	.01	193.
1	0506	52	.01	.01	.00	0.	*	1	2006	202	.01	.00	.01	189.
1	0512	53	.01	.01	.00	0.	*	1	2012	203	.01	.00	.01	185.
1	0518	54	.01	.01	.00	0.	*	1	2018	204	.01	.00	.01	181.
1	0524	55	.01	.01	.00	0.	*	1	2024	205	.01	.00	.01	178.
1	0530	56	.01	.01	.00	0.	*	1	2030	206	.01	.00	.01	174.
1	0536	57	.01	.01	.00	0.	*	1	2036	207	.01	.00	.01	171.
1	0542	58	.01	.01	.00	0.	*	1	2042	208	.01	.00	.01	168.
1	0548	59	.01	.01	.00	0.	*	1	2048	209	.01	.00	.01	165.
1	0554	60	.01	.01	.00	0.	*	1	2054	210	.01	.00	.01	162.
1	0600	61	.01	.01	.00	0.	*	1	2100	211	.01	.00	.01	159.
1	0606	62	.01	.01	.00	0.	*	1	2106	212	.01	.00	.01	156.
1	0612	63	.01	.01	.00	0.	*	1	2112	213	.01	.00	.01	153.
1	0618	64	.01	.01	.00	0.	*	1	2118	214	.01	.00	.01	150.
1	0624	65	.01	.01	.00	0.	*	1	2124	215	.01	.00	.01	148.
1	0630	66	.01	.01	.00	0.	*	1	2130	216	.01	.00	.01	145.
1	0636	67	.01	.01	.00	0.	*	1	2136	217	.01	.00	.01	143.
1	0642	68	.01	.01	.00	0.	*	1	2142	218	.01	.00	.01	140.
1	0648	69	.01	.01	.00	0.	*	1	2148	219	.01	.00	.01	138.
1	0654	70	.01	.01	.00	0.	*	1	2154	220	.01	.00	.01	136.
1	0700	71	.01	.01	.00	0.	*	1	2200	221	.01	.00	.01	134.
1	0706	72	.02	.02	.00	0.	*	1	2206	222	.01	.00	.01	132.
1	0712	73	.02	.02	.00	0.	*	1	2212	223	.01	.00	.01	130.
1	0718	74	.02	.02	.00	0.	*	1	2218	224	.01	.00	.01	127.
1	0724	75	.02	.02	.00	0.	*	1	2224	225	.01	.00	.01	126.
1	0730	76	.02	.02	.00	0.	*	1	2230	226	.01	.00	.01	124.
1	0736	77	.02	.02	.00	0.	*	1	2236	227	.01	.00	.01	122.
1	0742	78	.02	.02	.00	0.	*	1	2242	228	.01	.00	.01	120.
1	0748	79	.02	.02	.00	0.	*	1	2248	229	.01	.00	.01	118.
1	0754	80	.02	.02	.00	0.	*	1	2254	230	.01	.00	.01	116.
1	0800	81	.02	.02	.00	0.	*	1	2300	231	.01	.00	.01	115.
1	0806	82	.02	.02	.00	0.	*	1	2306	232	.01	.00	.01	113.
1	0812	83	.02	.02	.00	0.	*	1	2312	233	.01	.00	.01	111.
1	0818	84	.02	.02	.00	0.	*	1	2318	234	.01	.00	.01	110.
1	0824	85	.02	.02	.00	0.	*	1	2324	235	.01	.00	.01	108.
1	0830	86	.02	.02	.00	0.	*	1	2330	236	.01	.00	.01	107.
1	0836	87	.02	.02	.00	0.	*	1	2336	237	.01	.00	.01	105.
1	0842	88	.02	.02	.00	0.	*	1	2342	238	.01	.00	.01	104.
1	0848	89	.02	.02	.00	0.	*	1	2348	239	.01	.00	.01	102.
1	0854	90	.03	.02	.00	0.	*	1	2354	240	.01	.00	.01	101.
1	0900	91	.03	.03	.00	0.	*	2	0000	241	.01	.00	.01	99.
1	0906	92	.03	.03	.00	0.	*	2	0006	242	.00	.00	.00	98.
1	0912	93	.03	.03	.00	0.	*	2	0012	243	.00	.00	.00	96.
1	0918	94	.03	.03	.00	0.	*	2	0018	244	.00	.00	.00	95.
1	0924	95	.03	.03	.00	1.	*	2	0024	245	.00	.00	.00	93.
1	0930	96	.03	.03	.00	1.	*	2	0030	246	.00	.00	.00	91.
1	0936	97	.03	.03	.00	2.	*	2	0036	247	.00	.00	.00	89.
1	0942	98	.03	.03	.00	2.	*	2	0042	248	.00	.00	.00	86.
1	0948	99	.03	.03	.00	3.	*	2	0048	249	.00	.00	.00	84.
1	0954	100	.03	.03	.00	4.	*	2	0054	250	.00	.00	.00	81.
1	1000	101	.03	.03	.01	5.	*	2	0100	251	.00	.00	.00	78.
1	1006	102	.04	.03	.01	6.	*	2	0106	252	.00	.00	.00	75.
1	1012	103	.04	.03	.01	7.	*	2	0112	253	.00	.00	.00	71.
1	1018	104	.04	.03	.01	9.	*	2	0118	254	.00	.00	.00	68.

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        1     1024  105     .04     .03     .01       11.       *       2     0124  255     .00     .00     .00       64.
        1     1030  106     .04     .03     .01       12.       *       2     0130  256     .00     .00     .00       61.
        1     1036  107     .04     .03     .01       15.       *       2     0136  257     .00     .00     .00       58.
        1     1042  108     .05     .04     .01       17.       *       2     0142  258     .00     .00     .00       55.
        1     1048  109     .05     .04     .01       20.       *       2     0148  259     .00     .00     .00       53.
        1     1054  110     .05     .04     .01       22.       *       2     0154  260     .00     .00     .00       50.
        1     1100  111     .05     .04     .01       26.       *       2     0200  261     .00     .00     .00       48.
        1     1106  112     .06     .04     .02       29.       *       2     0206  262     .00     .00     .00       46.
        1     1112  113     .06     .04     .02       33.       *       2     0212  263     .00     .00     .00       44.
        1     1118  114     .07     .05     .02       37.       *       2     0218  264     .00     .00     .00       42.
        1     1124  115     .08     .05     .03       42.       *       2     0224  265     .00     .00     .00       40.
        1     1130  116     .08     .05     .03       47.       *       2     0230  266     .00     .00     .00       39.
        1     1136  117     .12     .07     .04       53.       *       2     0236  267     .00     .00     .00       37.
        1     1142  118     .18     .11     .07       60.       *       2     0242  268     .00     .00     .00       35.
        1     1148  119     .24     .13     .11       69.       *       2     0248  269     .00     .00     .00       34.
        1     1154  120     .31     .16     .15       82.       *       2     0254  270     .00     .00     .00       32.
        1     1200  121     .60     .27     .33      100.       *       2     0300  271     .00     .00     .00       31.
        1     1206  122     .60     .23     .37      127.       *       2     0306  272     .00     .00     .00       30.
        1     1212  123     .31     .10     .20      165.       *       2     0312  273     .00     .00     .00       28.
        1     1218  124     .24     .08     .17      212.       *       2     0318  274     .00     .00     .00       27.
        1     1224  125     .18     .05     .13      268.       *       2     0324  275     .00     .00     .00       26.
        1     1230  126     .12     .03     .08      331.       *       2     0330  276     .00     .00     .00       25.
        1     1236  127     .08     .02     .06      398.       *       2     0336  277     .00     .00     .00       24.
        1     1242  128     .08     .02     .05      466.       *       2     0342  278     .00     .00     .00       23.
        1     1248  129     .07     .02     .05      531.       *       2     0348  279     .00     .00     .00       22.
        1     1254  130     .06     .02     .05      592.       *       2     0354  280     .00     .00     .00       21.
        1     1300  131     .06     .01     .04      644.       *       2     0400  281     .00     .00     .00       20.
        1     1306  132     .05     .01     .04      687.       *       2     0406  282     .00     .00     .00       19.
        1     1312  133     .05     .01     .04      719.       *       2     0412  283     .00     .00     .00       18.
        1     1318  134     .05     .01     .04      738.       *       2     0418  284     .00     .00     .00       17.
        1     1324  135     .05     .01     .03      746.       *       2     0424  285     .00     .00     .00       16.
        1     1330  136     .04     .01     .03      746.       *       2     0430  286     .00     .00     .00       16.
        1     1336  137     .04     .01     .03      741.       *       2     0436  287     .00     .00     .00       15.
        1     1342  138     .04     .01     .03      734.       *       2     0442  288     .00     .00     .00       14.
        1     1348  139     .04     .01     .03      724.       *       2     0448  289     .00     .00     .00       14.
        1     1354  140     .04     .01     .03      714.       *       2     0454  290     .00     .00     .00       13.
        1     1400  141     .04     .01     .03      703.       *       2     0500  291     .00     .00     .00       13.
        1     1406  142     .03     .01     .03      691.       *       2     0506  292     .00     .00     .00       12.
        1     1412  143     .03     .01     .03      680.       *       2     0512  293     .00     .00     .00       11.
        1     1418  144     .03     .01     .03      668.       *       2     0518  294     .00     .00     .00       11.
        1     1424  145     .03     .01     .02      656.       *       2     0524  295     .00     .00     .00       10.
        1     1430  146     .03     .01     .02      644.       *       2     0530  296     .00     .00     .00       10.
        1     1436  147     .03     .01     .02      632.       *       2     0536  297     .00     .00     .00       10.
        1     1442  148     .03     .01     .02      620.       *       2     0542  298     .00     .00     .00        9.
        1     1448  149     .03     .01     .02      608.       *       2     0548  299     .00     .00     .00        9.
        1     1454  150     .03     .01     .02      596.       *       2     0554  300     .00     .00     .00        8.
                                                                 *
 ************************************************************************************************************************

     TOTAL RAINFALL =    7.18, TOTAL LOSS =    3.62, TOTAL EXCESS =    3.56

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                           (CFS)
+     746.     13.50                508.        181.        145.         145.
                         (INCHES)   2.475       3.525       3.525        3.525
                          (AC-FT)    252.        359.        359.         359.
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CUMULATIVE AREA = 1.91 SQ MI

APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

****

HYDROGRAPH AT STATION A-1
PLAN 1, RATIO = 1.00

****

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	*	1		1500	151	.03	.01	.03	737.
1		0006	2	.01	.01	.00	0.	*	1		1506	152	.03	.01	.02	722.
1		0012	3	.01	.01	.00	0.	*	1		1512	153	.03	.01	.02	707.
1		0018	4	.01	.01	.00	0.	*	1		1518	154	.03	.01	.02	692.
1		0024	5	.01	.01	.00	0.	*	1		1524	155	.03	.01	.02	678.
1		0030	6	.01	.01	.00	0.	*	1		1530	156	.03	.00	.02	663.
1		0036	7	.01	.01	.00	0.	*	1		1536	157	.03	.00	.02	649.
1		0042	8	.01	.01	.00	0.	*	1		1542	158	.02	.00	.02	635.
1		0048	9	.01	.01	.00	0.	*	1		1548	159	.02	.00	.02	622.
1		0054	10	.01	.01	.00	0.	*	1		1554	160	.02	.00	.02	608.
1		0100	11	.01	.01	.00	0.	*	1		1600	161	.02	.00	.02	595.
1		0106	12	.01	.01	.00	0.	*	1		1606	162	.02	.00	.02	582.
1		0112	13	.01	.01	.00	0.	*	1		1612	163	.02	.00	.02	569.
1		0118	14	.01	.01	.00	0.	*	1		1618	164	.02	.00	.02	556.
1		0124	15	.01	.01	.00	0.	*	1		1624	165	.02	.00	.02	543.
1		0130	16	.01	.01	.00	0.	*	1		1630	166	.02	.00	.02	531.
1		0136	17	.01	.01	.00	0.	*	1		1636	167	.02	.00	.02	519.
1		0142	18	.01	.01	.00	0.	*	1		1642	168	.02	.00	.02	507.
1		0148	19	.01	.01	.00	0.	*	1		1648	169	.02	.00	.02	495.
1		0154	20	.01	.01	.00	0.	*	1		1654	170	.02	.00	.01	483.
1		0200	21	.01	.01	.00	0.	*	1		1700	171	.02	.00	.01	472.
1		0206	22	.01	.01	.00	0.	*	1		1706	172	.02	.00	.01	461.
1		0212	23	.01	.01	.00	0.	*	1		1712	173	.02	.00	.01	450.
1		0218	24	.01	.01	.00	0.	*	1		1718	174	.02	.00	.01	440.
1		0224	25	.01	.01	.00	0.	*	1		1724	175	.02	.00	.01	429.
1		0230	26	.01	.01	.00	0.	*	1		1730	176	.02	.00	.01	419.
1		0236	27	.01	.01	.00	0.	*	1		1736	177	.02	.00	.01	410.
1		0242	28	.01	.01	.00	0.	*	1		1742	178	.01	.00	.01	400.
1		0248	29	.01	.01	.00	0.	*	1		1748	179	.01	.00	.01	391.
1		0254	30	.01	.01	.00	0.	*	1		1754	180	.01	.00	.01	382.
1		0300	31	.01	.01	.00	0.	*	1		1800	181	.01	.00	.01	373.
1		0306	32	.01	.01	.00	0.	*	1		1806	182	.01	.00	.01	364.
1		0312	33	.01	.01	.00	0.	*	1		1812	183	.01	.00	.01	356.
1		0318	34	.01	.01	.00	0.	*	1		1818	184	.01	.00	.01	347.
1		0324	35	.01	.01	.00	0.	*	1		1824	185	.01	.00	.01	339.
1		0330	36	.01	.01	.00	0.	*	1		1830	186	.01	.00	.01	331.
1		0336	37	.01	.01	.00	0.	*	1		1836	187	.01	.00	.01	324.
1		0342	38	.01	.01	.00	0.	*	1		1842	188	.01	.00	.01	316.
1		0348	39	.01	.01	.00	0.	*	1		1848	189	.01	.00	.01	309.
1		0354	40	.01	.01	.00	0.	*	1		1854	190	.01	.00	.01	302.
1		0400	41	.01	.01	.00	0.	*	1		1900	191	.01	.00	.01	295.
1		0406	42	.01	.01	.00	0.	*	1		1906	192	.01	.00	.01	288.
1		0412	43	.01	.01	.00	0.	*	1		1912	193	.01	.00	.01	282.
1		0418	44	.01	.01	.00	0.	*	1		1918	194	.01	.00	.01	275.

1	0424	45	.01	.01	.00	0.	*	1	1924	195	.01	.00	.01	269.
1	0430	46	.01	.01	.00	0.	*	1	1930	196	.01	.00	.01	263.
1	0436	47	.01	.01	.00	0.	*	1	1936	197	.01	.00	.01	258.
1	0442	48	.01	.01	.00	0.	*	1	1942	198	.01	.00	.01	252.
1	0448	49	.01	.01	.00	0.	*	1	1948	199	.01	.00	.01	247.
1	0454	50	.01	.01	.00	0.	*	1	1954	200	.01	.00	.01	242.
1	0500	51	.01	.01	.00	0.	*	1	2000	201	.01	.00	.01	237.
1	0506	52	.01	.01	.00	0.	*	1	2006	202	.01	.00	.01	232.
1	0512	53	.01	.01	.00	0.	*	1	2012	203	.01	.00	.01	227.
1	0518	54	.01	.01	.00	0.	*	1	2018	204	.01	.00	.01	223.
1	0524	55	.01	.01	.00	0.	*	1	2024	205	.01	.00	.01	218.
1	0530	56	.01	.01	.00	0.	*	1	2030	206	.01	.00	.01	214.
1	0536	57	.01	.01	.00	0.	*	1	2036	207	.01	.00	.01	210.
1	0542	58	.01	.01	.00	0.	*	1	2042	208	.01	.00	.01	206.
1	0548	59	.01	.01	.00	0.	*	1	2048	209	.01	.00	.01	202.
1	0554	60	.01	.01	.00	0.	*	1	2054	210	.01	.00	.01	198.
1	0600	61	.01	.01	.00	0.	*	1	2100	211	.01	.00	.01	194.
1	0606	62	.01	.01	.00	0.	*	1	2106	212	.01	.00	.01	191.
1	0612	63	.01	.01	.00	0.	*	1	2112	213	.01	.00	.01	187.
1	0618	64	.01	.01	.00	0.	*	1	2118	214	.01	.00	.01	184.
1	0624	65	.01	.01	.00	0.	*	1	2124	215	.01	.00	.01	181.
1	0630	66	.02	.02	.00	0.	*	1	2130	216	.01	.00	.01	178.
1	0636	67	.02	.02	.00	0.	*	1	2136	217	.01	.00	.01	175.
1	0642	68	.02	.02	.00	0.	*	1	2142	218	.01	.00	.01	172.
1	0648	69	.02	.02	.00	0.	*	1	2148	219	.01	.00	.01	169.
1	0654	70	.02	.02	.00	0.	*	1	2154	220	.01	.00	.01	166.
1	0700	71	.02	.02	.00	0.	*	1	2200	221	.01	.00	.01	163.
1	0706	72	.02	.02	.00	0.	*	1	2206	222	.01	.00	.01	161.
1	0712	73	.02	.02	.00	0.	*	1	2212	223	.01	.00	.01	158.
1	0718	74	.02	.02	.00	0.	*	1	2218	224	.01	.00	.01	155.
1	0724	75	.02	.02	.00	0.	*	1	2224	225	.01	.00	.01	153.
1	0730	76	.02	.02	.00	0.	*	1	2230	226	.01	.00	.01	151.
1	0736	77	.02	.02	.00	0.	*	1	2236	227	.01	.00	.01	148.
1	0742	78	.02	.02	.00	0.	*	1	2242	228	.01	.00	.01	146.
1	0748	79	.02	.02	.00	0.	*	1	2248	229	.01	.00	.01	144.
1	0754	80	.02	.02	.00	0.	*	1	2254	230	.01	.00	.01	142.
1	0800	81	.02	.02	.00	0.	*	1	2300	231	.01	.00	.01	139.
1	0806	82	.02	.02	.00	0.	*	1	2306	232	.01	.00	.01	137.
1	0812	83	.02	.02	.00	0.	*	1	2312	233	.01	.00	.01	135.
1	0818	84	.02	.02	.00	0.	*	1	2318	234	.01	.00	.01	133.
1	0824	85	.02	.02	.00	0.	*	1	2324	235	.01	.00	.01	131.
1	0830	86	.03	.02	.00	0.	*	1	2330	236	.01	.00	.01	129.
1	0836	87	.03	.03	.00	0.	*	1	2336	237	.01	.00	.01	128.
1	0842	88	.03	.03	.00	0.	*	1	2342	238	.01	.00	.01	126.
1	0848	89	.03	.03	.00	1.	*	1	2348	239	.01	.00	.01	124.
1	0854	90	.03	.03	.00	1.	*	1	2354	240	.01	.00	.01	122.
1	0900	91	.03	.03	.00	1.	*	2	0000	241	.01	.00	.01	120.
1	0906	92	.03	.03	.00	2.	*	2	0006	242	.00	.00	.00	119.
1	0912	93	.03	.03	.00	3.	*	2	0012	243	.00	.00	.00	117.
1	0918	94	.03	.03	.00	3.	*	2	0018	244	.00	.00	.00	115.
1	0924	95	.03	.03	.01	4.	*	2	0024	245	.00	.00	.00	113.
1	0930	96	.04	.03	.01	6.	*	2	0030	246	.00	.00	.00	110.
1	0936	97	.04	.03	.01	7.	*	2	0036	247	.00	.00	.00	107.
1	0942	98	.04	.03	.01	8.	*	2	0042	248	.00	.00	.00	104.
1	0948	99	.04	.03	.01	10.	*	2	0048	249	.00	.00	.00	101.
1	0954	100	.04	.03	.01	12.	*	2	0054	250	.00	.00	.00	98.
1	1000	101	.04	.03	.01	14.	*	2	0100	251	.00	.00	.00	94.
1	1006	102	.04	.03	.01	16.	*	2	0106	252	.00	.00	.00	90.

1	1012	103	.04	.03	.01	18.	*	2	0112	253	.00	.00	.00	86.
1	1018	104	.05	.03	.01	21.	*	2	0118	254	.00	.00	.00	82.
1	1024	105	.05	.04	.01	24.	*	2	0124	255	.00	.00	.00	77.
1	1030	106	.05	.04	.01	27.	*	2	0130	256	.00	.00	.00	73.
1	1036	107	.05	.04	.02	30.	*	2	0136	257	.00	.00	.00	70.
1	1042	108	.05	.04	.02	34.	*	2	0142	258	.00	.00	.00	67.
1	1048	109	.06	.04	.02	38.	*	2	0148	259	.00	.00	.00	64.
1	1054	110	.06	.04	.02	42.	*	2	0154	260	.00	.00	.00	61.
1	1100	111	.06	.04	.02	46.	*	2	0200	261	.00	.00	.00	58.
1	1106	112	.06	.04	.02	51.	*	2	0206	262	.00	.00	.00	56.
1	1112	113	.07	.05	.03	57.	*	2	0212	263	.00	.00	.00	53.
1	1118	114	.08	.05	.03	63.	*	2	0218	264	.00	.00	.00	51.
1	1124	115	.09	.05	.04	69.	*	2	0224	265	.00	.00	.00	49.
1	1130	116	.10	.05	.04	76.	*	2	0230	266	.00	.00	.00	47.
1	1136	117	.14	.08	.06	85.	*	2	0236	267	.00	.00	.00	45.
1	1142	118	.21	.11	.10	94.	*	2	0242	268	.00	.00	.00	43.
1	1148	119	.28	.14	.14	107.	*	2	0248	269	.00	.00	.00	41.
1	1154	120	.35	.16	.20	123.	*	2	0254	270	.00	.00	.00	39.
1	1200	121	.70	.27	.43	147.	*	2	0300	271	.00	.00	.00	37.
1	1206	122	.70	.23	.47	182.	*	2	0306	272	.00	.00	.00	36.
1	1212	123	.35	.10	.25	231.	*	2	0312	273	.00	.00	.00	34.
1	1218	124	.28	.08	.21	292.	*	2	0318	274	.00	.00	.00	33.
1	1224	125	.21	.05	.16	364.	*	2	0324	275	.00	.00	.00	31.
1	1230	126	.14	.03	.10	443.	*	2	0330	276	.00	.00	.00	30.
1	1236	127	.10	.02	.07	527.	*	2	0336	277	.00	.00	.00	29.
1	1242	128	.09	.02	.07	613.	*	2	0342	278	.00	.00	.00	27.
1	1248	129	.08	.02	.06	695.	*	2	0348	279	.00	.00	.00	26.
1	1254	130	.07	.02	.06	770.	*	2	0354	280	.00	.00	.00	25.
1	1300	131	.06	.01	.05	835.	*	2	0400	281	.00	.00	.00	24.
1	1306	132	.06	.01	.05	888.	*	2	0406	282	.00	.00	.00	23.
1	1312	133	.06	.01	.05	926.	*	2	0412	283	.00	.00	.00	22.
1	1318	134	.06	.01	.04	948.	*	2	0418	284	.00	.00	.00	21.
1	1324	135	.05	.01	.04	957.	*	2	0424	285	.00	.00	.00	20.
1	1330	136	.05	.01	.04	955.	*	2	0430	286	.00	.00	.00	19.
1	1336	137	.05	.01	.04	948.	*	2	0436	287	.00	.00	.00	18.
1	1342	138	.05	.01	.04	937.	*	2	0442	288	.00	.00	.00	17.
1	1348	139	.05	.01	.04	924.	*	2	0448	289	.00	.00	.00	17.
1	1354	140	.04	.01	.03	909.	*	2	0454	290	.00	.00	.00	16.
1	1400	141	.04	.01	.03	894.	*	2	0500	291	.00	.00	.00	15.
1	1406	142	.04	.01	.03	879.	*	2	0506	292	.00	.00	.00	14.
1	1412	143	.04	.01	.03	863.	*	2	0512	293	.00	.00	.00	14.
1	1418	144	.04	.01	.03	847.	*	2	0518	294	.00	.00	.00	13.
1	1424	145	.04	.01	.03	831.	*	2	0524	295	.00	.00	.00	13.
1	1430	146	.04	.01	.03	815.	*	2	0530	296	.00	.00	.00	12.
1	1436	147	.04	.01	.03	800.	*	2	0536	297	.00	.00	.00	12.
1	1442	148	.03	.01	.03	784.	*	2	0542	298	.00	.00	.00	11.
1	1448	149	.03	.01	.03	768.	*	2	0548	299	.00	.00	.00	11.
1	1454	150	.03	.01	.03	752.	*	2	0554	300	.00	.00	.00	10.
							*							

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TOTAL RAINFALL = 8.31, TOTAL LOSS = 3.81, TOTAL EXCESS = 4.50

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW (CFS) 6-HR	24-HR	72-HR	29.90-HR
+ 957.	13.40	644.	229.	184.	184.

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                    (INCHES)     3.136       4.459       4.459        4.459
                     (AC-FT)      319.        454.        454.         454.

                     CUMULATIVE AREA =    1.91 SQ MI



*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
  57 KK   *     DAM-1  *     COOPER STREET DAM
          *            *
          **************
                         *** ROUTE FLOW ***
                         *** STAGE-STORAGE-DISCHARGE FROM USGS QUADS ***

             HYDROGRAPH ROUTING DATA

  60 RS        STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        ELEV  TYPE OF INITIAL CONDITION
                    RSVRIC       25.38  INITIAL CONDITION
                         X         .00 WORKING R AND D COEFFICIENT

  61 SA            AREA          .0      19.1      23.4      30.5

  62 SE        ELEVATION       13.20     25.38     30.00     35.00

  63 SQ        DISCHARGE          0.        6.       10.    82271. 87343220.        2.     6372.  6165573. 26463280.        2.
                               1628. 61209190.        4.     2278.    92628. 77385730.       33.    82996. 33873380.        0.

  65 SE        ELEVATION       25.25     25.50     25.60     26.00     26.50     27.00     27.50     28.00     28.50     29.00
                               29.50     30.00     30.50     31.00     31.28     31.50     32.00     32.50     33.00     34.00

  67 ST        TOP OF DAM
                     TOPEL       32.13  ELEVATION AT TOP OF DAM
                    DAMWID         .00  DAM WIDTH
                      COQD        3.10  WEIR COEFFICIENT
                      EXPD        1.50  EXPONENT OF HEAD

     SW        DAM WIDTH         .00     44.40    333.30    417.30    478.40    531.30    582.10    625.50    760.80    800.00
     SE        ELEVATION       32.13     32.16     32.50     33.00     34.00     34.50     35.00     36.00     37.00     38.00


                                                                  ***

                                                   COMPUTED STORAGE-ELEVATION DATA

           STORAGE        .00     78.57    176.59    310.90
         ELEVATION      13.20     25.38     30.00     35.00

                                                 COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

                                                       (INCLUDING FLOW OVER DAM)
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STORAGE	.00	76.10	78.57	80.87	82.80	90.60	100.55	110.73	121.13	131.75	
OUTFLOW	.00	.00	3.22	6.19	10.25	82271.38**********		1.61	6371.526165573.00		
ELEVATION	13.20	25.25	25.38	25.50	25.60	26.00	26.50	27.00	27.50	28.00	
STORAGE	142.61	153.70	165.03	176.59	188.44	200.63	207.61	213.16	226.04	239.28	
OUTFLOW	**********	2.41	1628.20**********		3.94	2277.76	92628.00**********		32.55	83090.96	
ELEVATION	28.50	29.00	29.50	30.00	30.50	31.00	31.28	31.50	32.00	32.50	
STORAGE	252.87	281.14	310.90								
OUTFLOW	**********	2705.38**********									
ELEVATION	33.00	34.00	35.00								

****

HYDROGRAPH AT STATION DAM-1
PLAN 1, RATIO = .40

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	3.	78.6	25.4	1		1000	101	1.	76.9	25.3	1		2000	201	51.	82.8	25.6
1		0006	2	3.	78.5	25.4	1		1006	102	1.	76.9	25.3	1		2006	202	51.	82.8	25.6
1		0012	3	3.	78.5	25.4	1		1012	103	1.	76.9	25.3	1		2012	203	51.	82.8	25.6
1		0018	4	3.	78.5	25.4	1		1018	104	1.	76.9	25.3	1		2018	204	51.	82.8	25.6
1		0024	5	3.	78.5	25.4	1		1024	105	1.	76.9	25.3	1		2024	205	51.	82.8	25.6
1		0030	6	3.	78.4	25.4	1		1030	106	1.	76.9	25.3	1		2030	206	51.	82.8	25.6
1		0036	7	3.	78.4	25.4	1		1036	107	1.	76.9	25.3	1		2036	207	51.	82.8	25.6
1		0042	8	3.	78.4	25.4	1		1042	108	1.	76.9	25.3	1		2042	208	51.	82.8	25.6
1		0048	9	3.	78.4	25.4	1		1048	109	1.	76.9	25.3	1		2048	209	51.	82.8	25.6
1		0054	10	3.	78.3	25.4	1		1054	110	1.	76.9	25.3	1		2054	210	51.	82.8	25.6
1		0100	11	3.	78.3	25.4	1		1100	111	1.	76.8	25.3	1		2100	211	51.	82.8	25.6
1		0106	12	3.	78.3	25.4	1		1106	112	1.	76.8	25.3	1		2106	212	51.	82.8	25.6
1		0112	13	3.	78.3	25.4	1		1112	113	1.	76.8	25.3	1		2112	213	51.	82.8	25.6
1		0118	14	3.	78.2	25.4	1		1118	114	1.	76.8	25.3	1		2118	214	51.	82.8	25.6
1		0124	15	3.	78.2	25.4	1		1124	115	1.	76.8	25.3	1		2124	215	51.	82.8	25.6
1		0130	16	3.	78.2	25.4	1		1130	116	1.	76.8	25.3	1		2130	216	51.	82.8	25.6
1		0136	17	3.	78.2	25.4	1		1136	117	1.	76.8	25.3	1		2136	217	51.	82.8	25.6
1		0142	18	3.	78.2	25.4	1		1142	118	1.	76.8	25.3	1		2142	218	51.	82.8	25.6
1		0148	19	3.	78.1	25.4	1		1148	119	1.	76.8	25.3	1		2148	219	51.	82.8	25.6
1		0154	20	3.	78.1	25.4	1		1154	120	1.	76.8	25.3	1		2154	220	51.	82.8	25.6
1		0200	21	3.	78.1	25.4	1		1200	121	1.	76.8	25.3	1		2200	221	51.	82.8	25.6
1		0206	22	3.	78.1	25.4	1		1206	122	1.	76.8	25.3	1		2206	222	51.	82.8	25.6
1		0212	23	3.	78.0	25.4	1		1212	123	1.	76.9	25.3	1		2212	223	51.	82.8	25.6
1		0218	24	3.	78.0	25.4	1		1218	124	1.	77.0	25.3	1		2218	224	51.	82.8	25.6
1		0224	25	2.	78.0	25.4	1		1224	125	1.	77.2	25.3	1		2224	225	51.	82.8	25.6
1		0230	26	2.	78.0	25.3	1		1230	126	2.	77.4	25.3	1		2230	226	51.	82.8	25.6
1		0236	27	2.	78.0	25.3	1		1236	127	2.	77.8	25.3	1		2236	227	51.	82.8	25.6
1		0242	28	2.	77.9	25.3	1		1242	128	3.	78.2	25.4	1		2242	228	51.	82.8	25.6
1		0248	29	2.	77.9	25.3	1		1248	129	3.	78.8	25.4	1		2248	229	51.	82.8	25.6
1		0254	30	2.	77.9	25.3	1		1254	130	4.	79.4	25.4	1		2254	230	17.	82.8	25.6
1		0300	31	2.	77.9	25.3	1		1300	131	5.	80.2	25.5	1		2300	231	17.	82.8	25.6
1		0306	32	2.	77.9	25.3	1		1306	132	7.	81.0	25.5	1		2306	232	17.	82.8	25.6
1		0312	33	2.	77.8	25.3	1		1312	133	8.	82.0	25.6	1		2312	233	17.	82.8	25.6
1		0318	34	2.	77.8	25.3	1		1318	134	38.	82.8	25.6	1		2318	234	17.	82.8	25.6
1		0324	35	2.	77.8	25.3	1		1324	135	220.	82.8	25.6	1		2324	235	17.	82.8	25.6
1		0330	36	2.	77.8	25.3	1		1330	136	53.	82.8	25.6	1		2330	236	17.	82.8	25.6
1		0336	37	2.	77.8	25.3	1		1336	137	216.	82.8	25.6	1		2336	237	17.	82.8	25.6

1	0342	38	2.	77.8	25.3	*	1	1342	138	62.	82.8	25.6	*	1	2342	238	17.	82.8	25.6
1	0348	39	2.	77.7	25.3	*	1	1348	139	209.	82.8	25.6	*	1	2348	239	17.	82.8	25.6
1	0354	40	2.	77.7	25.3	*	1	1354	140	68.	82.8	25.6	*	1	2354	240	17.	82.8	25.6
1	0400	41	2.	77.7	25.3	*	1	1400	141	203.	82.8	25.6	*	2	0000	241	17.	82.8	25.6
1	0406	42	2.	77.7	25.3	*	1	1406	142	71.	82.8	25.6	*	2	0006	242	17.	82.8	25.6
1	0412	43	2.	77.7	25.3	*	1	1412	143	195.	82.8	25.6	*	2	0012	243	17.	82.8	25.6
1	0418	44	2.	77.6	25.3	*	1	1418	144	75.	82.8	25.6	*	2	0018	244	17.	82.8	25.6
1	0424	45	2.	77.6	25.3	*	1	1424	145	187.	82.8	25.6	*	2	0024	245	17.	82.8	25.6
1	0430	46	2.	77.6	25.3	*	1	1430	146	78.	82.8	25.6	*	2	0030	246	17.	82.8	25.6
1	0436	47	2.	77.6	25.3	*	1	1436	147	179.	82.8	25.6	*	2	0036	247	17.	82.8	25.6
1	0442	48	2.	77.6	25.3	*	1	1442	148	81.	82.8	25.6	*	2	0042	248	17.	82.8	25.6
1	0448	49	2.	77.6	25.3	*	1	1448	149	171.	82.8	25.6	*	2	0048	249	17.	82.8	25.6
1	0454	50	2.	77.6	25.3	*	1	1454	150	82.	82.8	25.6	*	2	0054	250	17.	82.8	25.6
1	0500	51	2.	77.5	25.3	*	1	1500	151	165.	82.8	25.6	*	2	0100	251	17.	82.8	25.6
1	0506	52	2.	77.5	25.3	*	1	1506	152	82.	82.8	25.6	*	2	0106	252	17.	82.8	25.6
1	0512	53	2.	77.5	25.3	*	1	1512	153	159.	82.8	25.6	*	2	0112	253	17.	82.8	25.6
1	0518	54	2.	77.5	25.3	*	1	1518	154	82.	82.8	25.6	*	2	0118	254	17.	82.8	25.6
1	0524	55	2.	77.5	25.3	*	1	1524	155	152.	82.8	25.6	*	2	0124	255	17.	82.8	25.6
1	0530	56	2.	77.5	25.3	*	1	1530	156	82.	82.8	25.6	*	2	0130	256	17.	82.8	25.6
1	0536	57	2.	77.4	25.3	*	1	1536	157	146.	82.8	25.6	*	2	0136	257	17.	82.8	25.6
1	0542	58	2.	77.4	25.3	*	1	1542	158	81.	82.8	25.6	*	2	0142	258	17.	82.8	25.6
1	0548	59	2.	77.4	25.3	*	1	1548	159	140.	82.8	25.6	*	2	0148	259	17.	82.8	25.6
1	0554	60	2.	77.4	25.3	*	1	1554	160	80.	82.8	25.6	*	2	0154	260	17.	82.8	25.6
1	0600	61	2.	77.4	25.3	*	1	1600	161	134.	82.8	25.6	*	2	0200	261	17.	82.8	25.6
1	0606	62	2.	77.4	25.3	*	1	1606	162	80.	82.8	25.6	*	2	0206	262	17.	82.8	25.6
1	0612	63	2.	77.4	25.3	*	1	1612	163	128.	82.8	25.6	*	2	0212	263	17.	82.8	25.6
1	0618	64	2.	77.3	25.3	*	1	1618	164	79.	82.8	25.6	*	2	0218	264	17.	82.8	25.6
1	0624	65	2.	77.3	25.3	*	1	1624	165	122.	82.8	25.6	*	2	0224	265	17.	82.8	25.6
1	0630	66	2.	77.3	25.3	*	1	1630	166	78.	82.8	25.6	*	2	0230	266	17.	82.8	25.6
1	0636	67	2.	77.3	25.3	*	1	1636	167	84.	82.8	25.6	*	2	0236	267	17.	82.8	25.6
1	0642	68	2.	77.3	25.3	*	1	1642	168	84.	82.8	25.6	*	2	0242	268	17.	82.8	25.6
1	0648	69	2.	77.3	25.3	*	1	1648	169	84.	82.8	25.6	*	2	0248	269	17.	82.8	25.6
1	0654	70	2.	77.3	25.3	*	1	1654	170	84.	82.8	25.6	*	2	0254	270	17.	82.8	25.6
1	0700	71	2.	77.3	25.3	*	1	1700	171	84.	82.8	25.6	*	2	0300	271	17.	82.8	25.6
1	0706	72	1.	77.2	25.3	*	1	1706	172	84.	82.8	25.6	*	2	0306	272	17.	82.8	25.6
1	0712	73	1.	77.2	25.3	*	1	1712	173	84.	82.8	25.6	*	2	0312	273	17.	82.8	25.6
1	0718	74	1.	77.2	25.3	*	1	1718	174	84.	82.8	25.6	*	2	0318	274	17.	82.8	25.6
1	0724	75	1.	77.2	25.3	*	1	1724	175	84.	82.8	25.6	*	2	0324	275	17.	82.8	25.6
1	0730	76	1.	77.2	25.3	*	1	1730	176	84.	82.8	25.6	*	2	0330	276	17.	82.8	25.6
1	0736	77	1.	77.2	25.3	*	1	1736	177	84.	82.8	25.6	*	2	0336	277	17.	82.8	25.6
1	0742	78	1.	77.2	25.3	*	1	1742	178	84.	82.8	25.6	*	2	0342	278	17.	82.8	25.6
1	0748	79	1.	77.2	25.3	*	1	1748	179	84.	82.8	25.6	*	2	0348	279	17.	82.8	25.6
1	0754	80	1.	77.1	25.3	*	1	1754	180	84.	82.8	25.6	*	2	0354	280	17.	82.8	25.6
1	0800	81	1.	77.1	25.3	*	1	1800	181	84.	82.8	25.6	*	2	0400	281	17.	82.8	25.6
1	0806	82	1.	77.1	25.3	*	1	1806	182	84.	82.8	25.6	*	2	0406	282	17.	82.8	25.6
1	0812	83	1.	77.1	25.3	*	1	1812	183	84.	82.8	25.6	*	2	0412	283	17.	82.8	25.6
1	0818	84	1.	77.1	25.3	*	1	1818	184	84.	82.8	25.6	*	2	0418	284	17.	82.8	25.6
1	0824	85	1.	77.1	25.3	*	1	1824	185	84.	82.8	25.6	*	2	0424	285	17.	82.8	25.6
1	0830	86	1.	77.1	25.3	*	1	1830	186	84.	82.8	25.6	*	2	0430	286	17.	82.8	25.6
1	0836	87	1.	77.1	25.3	*	1	1836	187	51.	82.8	25.6	*	2	0436	287	17.	82.8	25.6
1	0842	88	1.	77.1	25.3	*	1	1842	188	51.	82.8	25.6	*	2	0442	288	17.	82.8	25.6
1	0848	89	1.	77.1	25.3	*	1	1848	189	51.	82.8	25.6	*	2	0448	289	17.	82.8	25.6
1	0854	90	1.	77.0	25.3	*	1	1854	190	51.	82.8	25.6	*	2	0454	290	17.	82.8	25.6
1	0900	91	1.	77.0	25.3	*	1	1900	191	51.	82.8	25.6	*	2	0500	291	17.	82.8	25.6
1	0906	92	1.	77.0	25.3	*	1	1906	192	51.	82.8	25.6	*	2	0506	292	17.	82.8	25.6
1	0912	93	1.	77.0	25.3	*	1	1912	193	51.	82.8	25.6	*	2	0512	293	17.	82.8	25.6
1	0918	94	1.	77.0	25.3	*	1	1918	194	51.	82.8	25.6	*	2	0518	294	17.	82.8	25.6
1	0924	95	1.	77.0	25.3	*	1	1924	195	51.	82.8	25.6	*	2	0524	295	17.	82.8	25.6

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   1     0930  96       1.     77.0    25.3 *  1     1930 196      51.     82.8    25.6 *  2     0530 296      17.     82.8    25.6
   1     0936  97       1.     77.0    25.3 *  1     1936 197      51.     82.8    25.6 *  2     0536 297      17.     82.8    25.6
   1     0942  98       1.     77.0    25.3 *  1     1942 198      51.     82.8    25.6 *  2     0542 298      17.     82.8    25.6
   1     0948  99       1.     77.0    25.3 *  1     1948 199      51.     82.8    25.6 *  2     0548 299      17.     82.8    25.6
   1     0954 100       1.     76.9    25.3 *  1     1954 200      51.     82.8    25.6 *  2     0554 300      17.     82.8    25.6
                                             *                                            *
 ************************************************************************************************************************************

 PEAK OUTFLOW IS      220. AT TIME  13.40 HOURS


  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+     220.     13.40                100.         38.         31.          31.
                        (INCHES)    .488        .744        .756         .756
                         (AC-FT)     50.         76.         77.          77.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
       83.     13.40                 83.         81.         80.          80.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
     25.60     13.40               25.60       25.51       25.48        25.48

                         CUMULATIVE AREA =    1.91 SQ MI


 ************************************************************************************************************************************

                                                HYDROGRAPH AT STATION    DAM-1
                                                    PLAN 1,   RATIO =   .51

 ************************************************************************************************************************************
                                             *                                            *
  DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE
                                             *                                            *
   1     0000   1       3.     78.6    25.4 *  1     1000 101       1.     76.9    25.3 *  1     2000 201      73.     82.8    25.6
   1     0006   2       3.     78.5    25.4 *  1     1006 102       1.     76.9    25.3 *  1     2006 202      73.     82.8    25.6
   1     0012   3       3.     78.5    25.4 *  1     1012 103       1.     76.9    25.3 *  1     2012 203      73.     82.8    25.6
   1     0018   4       3.     78.5    25.4 *  1     1018 104       1.     76.9    25.3 *  1     2018 204      73.     82.8    25.6
   1     0024   5       3.     78.5    25.4 *  1     1024 105       1.     76.9    25.3 *  1     2024 205      73.     82.8    25.6
   1     0030   6       3.     78.4    25.4 *  1     1030 106       1.     76.9    25.3 *  1     2030 206      73.     82.8    25.6
   1     0036   7       3.     78.4    25.4 *  1     1036 107       1.     76.9    25.3 *  1     2036 207      73.     82.8    25.6
   1     0042   8       3.     78.4    25.4 *  1     1042 108       1.     76.9    25.3 *  1     2042 208      73.     82.8    25.6
   1     0048   9       3.     78.4    25.4 *  1     1048 109       1.     76.9    25.3 *  1     2048 209      73.     82.8    25.6
   1     0054  10       3.     78.3    25.4 *  1     1054 110       1.     76.9    25.3 *  1     2054 210      73.     82.8    25.6
   1     0100  11       3.     78.3    25.4 *  1     1100 111       1.     76.8    25.3 *  1     2100 211      73.     82.8    25.6
   1     0106  12       3.     78.3    25.4 *  1     1106 112       1.     76.8    25.3 *  1     2106 212      73.     82.8    25.6
   1     0112  13       3.     78.3    25.4 *  1     1112 113       1.     76.8    25.3 *  1     2112 213      73.     82.8    25.6
   1     0118  14       3.     78.2    25.4 *  1     1118 114       1.     76.8    25.3 *  1     2118 214      73.     82.8    25.6
   1     0124  15       3.     78.2    25.4 *  1     1124 115       1.     76.8    25.3 *  1     2124 215      73.     82.8    25.6
   1     0130  16       3.     78.2    25.4 *  1     1130 116       1.     76.8    25.3 *  1     2130 216      73.     82.8    25.6
   1     0136  17       3.     78.2    25.4 *  1     1136 117       1.     76.8    25.3 *  1     2136 217      73.     82.8    25.6
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1	0142	18	3.	78.2	25.4	*	1	1142	118	1.	76.8	25.3	*	1	2142	218	73.	82.8	25.6
1	0148	19	3.	78.1	25.4	*	1	1148	119	1.	76.9	25.3	*	1	2148	219	73.	82.8	25.6
1	0154	20	3.	78.1	25.4	*	1	1154	120	1.	76.9	25.3	*	1	2154	220	73.	82.8	25.6
1	0200	21	3.	78.1	25.4	*	1	1200	121	1.	77.0	25.3	*	1	2200	221	73.	82.8	25.6
1	0206	22	3.	78.1	25.4	*	1	1206	122	1.	77.1	25.3	*	1	2206	222	73.	82.8	25.6
1	0212	23	3.	78.0	25.4	*	1	1212	123	2.	77.3	25.3	*	1	2212	223	73.	82.8	25.6
1	0218	24	3.	78.0	25.4	*	1	1218	124	2.	77.6	25.3	*	1	2218	224	73.	82.8	25.6
1	0224	25	2.	78.0	25.4	*	1	1224	125	3.	78.1	25.4	*	1	2224	225	40.	82.8	25.6
1	0230	26	2.	78.0	25.3	*	1	1230	126	3.	78.7	25.4	*	1	2230	226	40.	82.8	25.6
1	0236	27	2.	78.0	25.3	*	1	1236	127	4.	79.5	25.4	*	1	2236	227	40.	82.8	25.6
1	0242	28	2.	77.9	25.3	*	1	1242	128	6.	80.5	25.5	*	1	2242	228	40.	82.8	25.6
1	0248	29	2.	77.9	25.3	*	1	1248	129	8.	81.6	25.5	*	1	2248	229	40.	82.8	25.6
1	0254	30	2.	77.9	25.3	*	1	1254	130	54.	82.8	25.6	*	1	2254	230	40.	82.8	25.6
1	0300	31	2.	77.9	25.3	*	1	1300	131	330.	82.8	25.6	*	1	2300	231	40.	82.8	25.6
1	0306	32	2.	77.9	25.3	*	1	1306	132	106.	82.8	25.6	*	1	2306	232	40.	82.8	25.6
1	0312	33	2.	77.8	25.3	*	1	1312	133	353.	82.8	25.6	*	1	2312	233	40.	82.8	25.6
1	0318	34	2.	77.8	25.3	*	1	1318	134	139.	82.8	25.6	*	1	2318	234	40.	82.8	25.6
1	0324	35	2.	77.8	25.3	*	1	1324	135	357.	82.8	25.6	*	1	2324	235	40.	82.8	25.6
1	0330	36	2.	77.8	25.3	*	1	1330	136	158.	82.8	25.6	*	1	2330	236	40.	82.8	25.6
1	0336	37	2.	77.8	25.3	*	1	1336	137	350.	82.8	25.6	*	1	2336	237	40.	82.8	25.6
1	0342	38	2.	77.8	25.3	*	1	1342	138	167.	82.8	25.6	*	1	2342	238	40.	82.8	25.6
1	0348	39	2.	77.7	25.3	*	1	1348	139	339.	82.8	25.6	*	1	2348	239	40.	82.8	25.6
1	0354	40	2.	77.7	25.3	*	1	1354	140	171.	82.8	25.6	*	1	2354	240	40.	82.8	25.6
1	0400	41	2.	77.7	25.3	*	1	1400	141	328.	82.8	25.6	*	2	0000	241	40.	82.8	25.6
1	0406	42	2.	77.7	25.3	*	1	1406	142	173.	82.8	25.6	*	2	0006	242	40.	82.8	25.6
1	0412	43	2.	77.7	25.3	*	1	1412	143	314.	82.8	25.6	*	2	0012	243	40.	82.8	25.6
1	0418	44	2.	77.6	25.3	*	1	1418	144	175.	82.8	25.6	*	2	0018	244	40.	82.8	25.6
1	0424	45	2.	77.6	25.3	*	1	1424	145	303.	82.8	25.6	*	2	0024	245	40.	82.8	25.6
1	0430	46	2.	77.6	25.3	*	1	1430	146	173.	82.8	25.6	*	2	0030	246	40.	82.8	25.6
1	0436	47	2.	77.6	25.3	*	1	1436	147	291.	82.8	25.6	*	2	0036	247	40.	82.8	25.6
1	0442	48	2.	77.6	25.3	*	1	1442	148	171.	82.8	25.6	*	2	0042	248	40.	82.8	25.6
1	0448	49	2.	77.6	25.3	*	1	1448	149	278.	82.8	25.6	*	2	0048	249	40.	82.8	25.6
1	0454	50	2.	77.6	25.3	*	1	1454	150	171.	82.8	25.6	*	2	0054	250	40.	82.8	25.6
1	0500	51	2.	77.5	25.3	*	1	1500	151	266.	82.8	25.6	*	2	0100	251	40.	82.8	25.6
1	0506	52	2.	77.5	25.3	*	1	1506	152	168.	82.8	25.6	*	2	0106	252	40.	82.8	25.6
1	0512	53	2.	77.5	25.3	*	1	1512	153	255.	82.8	25.6	*	2	0112	253	40.	82.8	25.6
1	0518	54	2.	77.5	25.3	*	1	1518	154	166.	82.8	25.6	*	2	0118	254	40.	82.8	25.6
1	0524	55	2.	77.5	25.3	*	1	1524	155	243.	82.8	25.6	*	2	0124	255	40.	82.8	25.6
1	0530	56	2.	77.5	25.3	*	1	1530	156	164.	82.8	25.6	*	2	0130	256	40.	82.8	25.6
1	0536	57	2.	77.4	25.3	*	1	1536	157	234.	82.8	25.6	*	2	0136	257	40.	82.8	25.6
1	0542	58	2.	77.4	25.3	*	1	1542	158	159.	82.8	25.6	*	2	0142	258	40.	82.8	25.6
1	0548	59	2.	77.4	25.3	*	1	1548	159	223.	82.8	25.6	*	2	0148	259	40.	82.8	25.6
1	0554	60	2.	77.4	25.3	*	1	1554	160	156.	82.8	25.6	*	2	0154	260	40.	82.8	25.6
1	0600	61	2.	77.4	25.3	*	1	1600	161	214.	82.8	25.6	*	2	0200	261	10.	82.8	25.6
1	0606	62	2.	77.4	25.3	*	1	1606	162	152.	82.8	25.6	*	2	0206	262	10.	82.8	25.6
1	0612	63	2.	77.4	25.3	*	1	1612	163	204.	82.8	25.6	*	2	0212	263	10.	82.8	25.6
1	0618	64	2.	77.3	25.3	*	1	1618	164	149.	82.8	25.6	*	2	0218	264	10.	82.8	25.6
1	0624	65	2.	77.3	25.3	*	1	1624	165	194.	82.8	25.6	*	2	0224	265	10.	82.8	25.6
1	0630	66	2.	77.3	25.3	*	1	1630	166	145.	82.8	25.6	*	2	0230	266	10.	82.8	25.6
1	0636	67	2.	77.3	25.3	*	1	1636	167	184.	82.8	25.6	*	2	0236	267	10.	82.8	25.6
1	0642	68	2.	77.3	25.3	*	1	1642	168	142.	82.8	25.6	*	2	0242	268	10.	82.8	25.6
1	0648	69	2.	77.3	25.3	*	1	1648	169	143.	82.8	25.6	*	2	0248	269	10.	82.8	25.6
1	0654	70	2.	77.3	25.3	*	1	1654	170	143.	82.8	25.6	*	2	0254	270	10.	82.8	25.6
1	0700	71	2.	77.3	25.3	*	1	1700	171	143.	82.8	25.6	*	2	0300	271	10.	82.8	25.6
1	0706	72	1.	77.2	25.3	*	1	1706	172	143.	82.8	25.6	*	2	0306	272	10.	82.8	25.6
1	0712	73	1.	77.2	25.3	*	1	1712	173	143.	82.8	25.6	*	2	0312	273	10.	82.8	25.6
1	0718	74	1.	77.2	25.3	*	1	1718	174	143.	82.8	25.6	*	2	0318	274	10.	82.8	25.6
1	0724	75	1.	77.2	25.3	*	1	1724	175	143.	82.8	25.6	*	2	0324	275	10.	82.8	25.6

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   1     0730  76       1.     77.2    25.3 *  1     1730 176     143.     82.8    25.6 *  2     0330 276      10.     82.8    25.6
   1     0736  77       1.     77.2    25.3 *  1     1736 177     143.     82.8    25.6 *  2     0336 277      10.     82.8    25.6
   1     0742  78       1.     77.2    25.3 *  1     1742 178     143.     82.8    25.6 *  2     0342 278      10.     82.8    25.6
   1     0748  79       1.     77.2    25.3 *  1     1748 179     143.     82.8    25.6 *  2     0348 279      10.     82.8    25.6
   1     0754  80       1.     77.1    25.3 *  1     1754 180     143.     82.8    25.6 *  2     0354 280      10.     82.8    25.6
   1     0800  81       1.     77.1    25.3 *  1     1800 181     106.     82.8    25.6 *  2     0400 281      10.     82.8    25.6
   1     0806  82       1.     77.1    25.3 *  1     1806 182     106.     82.8    25.6 *  2     0406 282      10.     82.8    25.6
   1     0812  83       1.     77.1    25.3 *  1     1812 183     106.     82.8    25.6 *  2     0412 283      10.     82.8    25.6
   1     0818  84       1.     77.1    25.3 *  1     1818 184     106.     82.8    25.6 *  2     0418 284      10.     82.8    25.6
   1     0824  85       1.     77.1    25.3 *  1     1824 185     106.     82.8    25.6 *  2     0424 285      10.     82.8    25.6
   1     0830  86       1.     77.1    25.3 *  1     1830 186     106.     82.8    25.6 *  2     0430 286      10.     82.8    25.6
   1     0836  87       1.     77.1    25.3 *  1     1836 187     106.     82.8    25.6 *  2     0436 287      10.     82.8    25.6
   1     0842  88       1.     77.1    25.3 *  1     1842 188     106.     82.8    25.6 *  2     0442 288      10.     82.8    25.6
   1     0848  89       1.     77.1    25.3 *  1     1848 189     106.     82.8    25.6 *  2     0448 289      10.     82.8    25.6
   1     0854  90       1.     77.0    25.3 *  1     1854 190     106.     82.8    25.6 *  2     0454 290      10.     82.8    25.6
   1     0900  91       1.     77.0    25.3 *  1     1900 191     106.     82.8    25.6 *  2     0500 291      10.     82.8    25.6
   1     0906  92       1.     77.0    25.3 *  1     1906 192     106.     82.8    25.6 *  2     0506 292      10.     82.8    25.6
   1     0912  93       1.     77.0    25.3 *  1     1912 193     106.     82.8    25.6 *  2     0512 293      10.     82.8    25.6
   1     0918  94       1.     77.0    25.3 *  1     1918 194     106.     82.8    25.6 *  2     0518 294      10.     82.8    25.6
   1     0924  95       1.     77.0    25.3 *  1     1924 195     106.     82.8    25.6 *  2     0524 295      10.     82.8    25.6
   1     0930  96       1.     77.0    25.3 *  1     1930 196     106.     82.8    25.6 *  2     0530 296      10.     82.8    25.6
   1     0936  97       1.     77.0    25.3 *  1     1936 197      73.     82.8    25.6 *  2     0536 297      10.     82.8    25.6
   1     0942  98       1.     77.0    25.3 *  1     1942 198      73.     82.8    25.6 *  2     0542 298      10.     82.8    25.6
   1     0948  99       1.     77.0    25.3 *  1     1948 199      73.     82.8    25.6 *  2     0548 299      10.     82.8    25.6
   1     0954 100       1.     76.9    25.3 *  1     1954 200      73.     82.8    25.6 *  2     0554 300      10.     82.8    25.6
                                                *                                                *
 ************************************************************************************************************************************

 PEAK OUTFLOW IS      357. AT TIME  13.40 HOURS


  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+     357.     13.40                184.         65.         53.          53.
                        (INCHES)    .894       1.275       1.286        1.286
                         (AC-FT)     91.        130.        131.         131.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
       83.     13.20                 83.         81.         81.          81.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
     25.60     13.40               25.60       25.52       25.48        25.48

                         CUMULATIVE AREA =    1.91 SQ MI


 ************************************************************************************************************************************

                                                HYDROGRAPH AT STATION    DAM-1
                                                    PLAN 1,   RATIO =   .60

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	3.	78.6	25.4	1		1000	101	1.	76.9	25.3	1		2000	201	95.	82.8	25.6
1		0006	2	3.	78.5	25.4	1		1006	102	1.	76.9	25.3	1		2006	202	95.	82.8	25.6
1		0012	3	3.	78.5	25.4	1		1012	103	1.	76.9	25.3	1		2012	203	95.	82.8	25.6
1		0018	4	3.	78.5	25.4	1		1018	104	1.	76.9	25.3	1		2018	204	95.	82.8	25.6
1		0024	5	3.	78.5	25.4	1		1024	105	1.	76.9	25.3	1		2024	205	95.	82.8	25.6
1		0030	6	3.	78.4	25.4	1		1030	106	1.	76.9	25.3	1		2030	206	95.	82.8	25.6
1		0036	7	3.	78.4	25.4	1		1036	107	1.	76.9	25.3	1		2036	207	95.	82.8	25.6
1		0042	8	3.	78.4	25.4	1		1042	108	1.	76.9	25.3	1		2042	208	95.	82.8	25.6
1		0048	9	3.	78.4	25.4	1		1048	109	1.	76.9	25.3	1		2048	209	95.	82.8	25.6
1		0054	10	3.	78.3	25.4	1		1054	110	1.	76.9	25.3	1		2054	210	95.	82.8	25.6
1		0100	11	3.	78.3	25.4	1		1100	111	1.	76.9	25.3	1		2100	211	95.	82.8	25.6
1		0106	12	3.	78.3	25.4	1		1106	112	1.	76.9	25.3	1		2106	212	95.	82.8	25.6
1		0112	13	3.	78.3	25.4	1		1112	113	1.	76.9	25.3	1		2112	213	95.	82.8	25.6
1		0118	14	3.	78.2	25.4	1		1118	114	1.	76.9	25.3	1		2118	214	95.	82.8	25.6
1		0124	15	3.	78.2	25.4	1		1124	115	1.	77.0	25.3	1		2124	215	95.	82.8	25.6
1		0130	16	3.	78.2	25.4	1		1130	116	1.	77.0	25.3	1		2130	216	95.	82.8	25.6
1		0136	17	3.	78.2	25.4	1		1136	117	1.	77.1	25.3	1		2136	217	95.	82.8	25.6
1		0142	18	3.	78.2	25.4	1		1142	118	1.	77.1	25.3	1		2142	218	95.	82.8	25.6
1		0148	19	3.	78.1	25.4	1		1148	119	1.	77.2	25.3	1		2148	219	95.	82.8	25.6
1		0154	20	3.	78.1	25.4	1		1154	120	2.	77.4	25.3	1		2154	220	95.	82.8	25.6
1		0200	21	3.	78.1	25.4	1		1200	121	2.	77.6	25.3	1		2200	221	95.	82.8	25.6
1		0206	22	3.	78.1	25.4	1		1206	122	2.	77.8	25.3	1		2206	222	60.	82.8	25.6
1		0212	23	3.	78.0	25.4	1		1212	123	3.	78.2	25.4	1		2212	223	60.	82.8	25.6
1		0218	24	3.	78.0	25.4	1		1218	124	3.	78.8	25.4	1		2218	224	60.	82.8	25.6
1		0224	25	2.	78.0	25.4	1		1224	125	4.	79.5	25.4	1		2224	225	60.	82.8	25.6
1		0230	26	2.	78.0	25.3	1		1230	126	6.	80.5	25.5	1		2230	226	60.	82.8	25.6
1		0236	27	2.	78.0	25.3	1		1236	127	8.	81.8	25.5	1		2236	227	60.	82.8	25.6
1		0242	28	2.	77.9	25.3	1		1242	128	128.	82.8	25.6	1		2242	228	60.	82.8	25.6
1		0248	29	2.	77.9	25.3	1		1248	129	327.	82.8	25.6	1		2248	229	60.	82.8	25.6
1		0254	30	2.	77.9	25.3	1		1254	130	201.	82.8	25.6	1		2254	230	60.	82.8	25.6
1		0300	31	2.	77.9	25.3	1		1300	131	382.	82.8	25.6	1		2300	231	60.	82.8	25.6
1		0306	32	2.	77.9	25.3	1		1306	132	261.	82.8	25.6	1		2306	232	60.	82.8	25.6
1		0312	33	2.	77.8	25.3	1		1312	133	421.	82.8	25.6	1		2312	233	60.	82.8	25.6
1		0318	34	2.	77.8	25.3	1		1318	134	296.	82.8	25.6	1		2318	234	60.	82.8	25.6
1		0324	35	2.	77.8	25.3	1		1324	135	437.	82.8	25.6	1		2324	235	60.	82.8	25.6
1		0330	36	2.	77.8	25.3	1		1330	136	307.	82.8	25.6	1		2330	236	60.	82.8	25.6
1		0336	37	2.	77.8	25.3	1		1336	137	436.	82.8	25.6	1		2336	237	60.	82.8	25.6
1		0342	38	2.	77.8	25.3	1		1342	138	308.	82.8	25.6	1		2342	238	60.	82.8	25.6
1		0348	39	2.	77.7	25.3	1		1348	139	424.	82.8	25.6	1		2348	239	60.	82.8	25.6
1		0354	40	2.	77.7	25.3	1		1354	140	307.	82.8	25.6	1		2354	240	60.	82.8	25.6
1		0400	41	2.	77.7	25.3	1		1400	141	411.	82.8	25.6	2		0000	241	60.	82.8	25.6
1		0406	42	2.	77.7	25.3	1		1406	142	302.	82.8	25.6	2		0006	242	60.	82.8	25.6
1		0412	43	2.	77.7	25.3	1		1412	143	398.	82.8	25.6	2		0012	243	60.	82.8	25.6
1		0418	44	2.	77.6	25.3	1		1418	144	295.	82.8	25.6	2		0018	244	60.	82.8	25.6
1		0424	45	2.	77.6	25.3	1		1424	145	385.	82.8	25.6	2		0024	245	60.	82.8	25.6
1		0430	46	2.	77.6	25.3	1		1430	146	288.	82.8	25.6	2		0030	246	60.	82.8	25.6
1		0436	47	2.	77.6	25.3	1		1436	147	372.	82.8	25.6	2		0036	247	60.	82.8	25.6
1		0442	48	2.	77.6	25.3	1		1442	148	280.	82.8	25.6	2		0042	248	60.	82.8	25.6
1		0448	49	2.	77.6	25.3	1		1448	149	357.	82.8	25.6	2		0048	249	60.	82.8	25.6
1		0454	50	2.	77.6	25.3	1		1454	150	273.	82.8	25.6	2		0054	250	60.	82.8	25.6
1		0500	51	2.	77.5	25.3	1		1500	151	344.	82.8	25.6	2		0100	251	60.	82.8	25.6
1		0506	52	2.	77.5	25.3	1		1506	152	265.	82.8	25.6	2		0106	252	60.	82.8	25.6
1		0512	53	2.	77.5	25.3	1		1512	153	329.	82.8	25.6	2		0112	253	60.	82.8	25.6
1		0518	54	2.	77.5	25.3	1		1518	154	258.	82.8	25.6	2		0118	254	24.	82.8	25.6
1		0524	55	2.	77.5	25.3	1		1524	155	316.	82.8	25.6	2		0124	255	24.	82.8	25.6

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   1     0530  56       2.     77.5    25.3 *  1     1530 156     251.     82.8    25.6 *  2     0130 256      24.     82.8    25.6
   1     0536  57       2.     77.4    25.3 *  1     1536 157     302.     82.8    25.6 *  2     0136 257      24.     82.8    25.6
   1     0542  58       2.     77.4    25.3 *  1     1542 158     243.     82.8    25.6 *  2     0142 258      24.     82.8    25.6
   1     0548  59       2.     77.4    25.3 *  1     1548 159     288.     82.8    25.6 *  2     0148 259      24.     82.8    25.6
   1     0554  60       2.     77.4    25.3 *  1     1554 160     237.     82.8    25.6 *  2     0154 260      24.     82.8    25.6
   1     0600  61       2.     77.4    25.3 *  1     1600 161     244.     82.8    25.6 *  2     0200 261      24.     82.8    25.6
   1     0606  62       2.     77.4    25.3 *  1     1606 162     244.     82.8    25.6 *  2     0206 262      24.     82.8    25.6
   1     0612  63       2.     77.4    25.3 *  1     1612 163     244.     82.8    25.6 *  2     0212 263      24.     82.8    25.6
   1     0618  64       2.     77.3    25.3 *  1     1618 164     244.     82.8    25.6 *  2     0218 264      24.     82.8    25.6
   1     0624  65       2.     77.3    25.3 *  1     1624 165     244.     82.8    25.6 *  2     0224 265      24.     82.8    25.6
   1     0630  66       2.     77.3    25.3 *  1     1630 166     244.     82.8    25.6 *  2     0230 266      24.     82.8    25.6
   1     0636  67       2.     77.3    25.3 *  1     1636 167     244.     82.8    25.6 *  2     0236 267      24.     82.8    25.6
   1     0642  68       2.     77.3    25.3 *  1     1642 168     203.     82.8    25.6 *  2     0242 268      24.     82.8    25.6
   1     0648  69       2.     77.3    25.3 *  1     1648 169     203.     82.8    25.6 *  2     0248 269      24.     82.8    25.6
   1     0654  70       2.     77.3    25.3 *  1     1654 170     203.     82.8    25.6 *  2     0254 270      24.     82.8    25.6
   1     0700  71       2.     77.3    25.3 *  1     1700 171     203.     82.8    25.6 *  2     0300 271      24.     82.8    25.6
   1     0706  72       1.     77.2    25.3 *  1     1706 172     203.     82.8    25.6 *  2     0306 272      24.     82.8    25.6
   1     0712  73       1.     77.2    25.3 *  1     1712 173     203.     82.8    25.6 *  2     0312 273      24.     82.8    25.6
   1     0718  74       1.     77.2    25.3 *  1     1718 174     203.     82.8    25.6 *  2     0318 274      24.     82.8    25.6
   1     0724  75       1.     77.2    25.3 *  1     1724 175     203.     82.8    25.6 *  2     0324 275      24.     82.8    25.6
   1     0730  76       1.     77.2    25.3 *  1     1730 176     203.     82.8    25.6 *  2     0330 276      24.     82.8    25.6
   1     0736  77       1.     77.2    25.3 *  1     1736 177     165.     82.8    25.6 *  2     0336 277      24.     82.8    25.6
   1     0742  78       1.     77.2    25.3 *  1     1742 178     165.     82.8    25.6 *  2     0342 278      24.     82.8    25.6
   1     0748  79       1.     77.2    25.3 *  1     1748 179     165.     82.8    25.6 *  2     0348 279      24.     82.8    25.6
   1     0754  80       1.     77.1    25.3 *  1     1754 180     165.     82.8    25.6 *  2     0354 280      24.     82.8    25.6
   1     0800  81       1.     77.1    25.3 *  1     1800 181     165.     82.8    25.6 *  2     0400 281      24.     82.8    25.6
   1     0806  82       1.     77.1    25.3 *  1     1806 182     165.     82.8    25.6 *  2     0406 282      24.     82.8    25.6
   1     0812  83       1.     77.1    25.3 *  1     1812 183     165.     82.8    25.6 *  2     0412 283      24.     82.8    25.6
   1     0818  84       1.     77.1    25.3 *  1     1818 184     165.     82.8    25.6 *  2     0418 284      24.     82.8    25.6
   1     0824  85       1.     77.1    25.3 *  1     1824 185     165.     82.8    25.6 *  2     0424 285      24.     82.8    25.6
   1     0830  86       1.     77.1    25.3 *  1     1830 186     165.     82.8    25.6 *  2     0430 286      24.     82.8    25.6
   1     0836  87       1.     77.1    25.3 *  1     1836 187     131.     82.8    25.6 *  2     0436 287      24.     82.8    25.6
   1     0842  88       1.     77.1    25.3 *  1     1842 188     131.     82.8    25.6 *  2     0442 288      24.     82.8    25.6
   1     0848  89       1.     77.1    25.3 *  1     1848 189     131.     82.8    25.6 *  2     0448 289      24.     82.8    25.6
   1     0854  90       1.     77.0    25.3 *  1     1854 190     131.     82.8    25.6 *  2     0454 290      24.     82.8    25.6
   1     0900  91       1.     77.0    25.3 *  1     1900 191     131.     82.8    25.6 *  2     0500 291      24.     82.8    25.6
   1     0906  92       1.     77.0    25.3 *  1     1906 192     131.     82.8    25.6 *  2     0506 292      24.     82.8    25.6
   1     0912  93       1.     77.0    25.3 *  1     1912 193     131.     82.8    25.6 *  2     0512 293      10.     82.7    25.6
   1     0918  94       1.     77.0    25.3 *  1     1918 194     131.     82.8    25.6 *  2     0518 294      10.     82.7    25.6
   1     0924  95       1.     77.0    25.3 *  1     1924 195     131.     82.8    25.6 *  2     0524 295      10.     82.7    25.6
   1     0930  96       1.     77.0    25.3 *  1     1930 196     131.     82.8    25.6 *  2     0530 296      10.     82.7    25.6
   1     0936  97       1.     77.0    25.3 *  1     1936 197     131.     82.8    25.6 *  2     0536 297      10.     82.7    25.6
   1     0942  98       1.     77.0    25.3 *  1     1942 198     131.     82.8    25.6 *  2     0542 298      10.     82.7    25.6
   1     0948  99       1.     77.0    25.3 *  1     1948 199     131.     82.8    25.6 *  2     0548 299      10.     82.7    25.6
   1     0954 100       1.     76.9    25.3 *  1     1954 200      95.     82.8    25.6 *  2     0554 300      10.     82.7    25.6
                                                *                                            *
 ************************************************************************************************************************************

 PEAK OUTFLOW IS      437. AT TIME  13.40 HOURS


  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                              (CFS)
+     437.     13.40                   262.         94.         76.          76.
                           (INCHES)   1.278       1.822       1.833        1.833
                            (AC-FT)    130.        186.        187.         187.
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PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)				
83.	13.40	83.	81.	81.	81.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (FEET)	(HR)				
25.60	13.40	25.60	25.52	25.49	25.49

CUMULATIVE AREA = 1.91 SQ MI

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HYDROGRAPH AT STATION DAM-1
PLAN 1, RATIO = .74

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	3.	78.6	25.4	1		1000	101	1.	77.0	25.3	1		2000	201	162.	82.8	25.6
1		0006	2	3.	78.5	25.4	1		1006	102	1.	77.0	25.3	1		2006	202	162.	82.8	25.6
1		0012	3	3.	78.5	25.4	1		1012	103	1.	77.0	25.3	1		2012	203	162.	82.8	25.6
1		0018	4	3.	78.5	25.4	1		1018	104	1.	77.0	25.3	1		2018	204	162.	82.8	25.6
1		0024	5	3.	78.5	25.4	1		1024	105	1.	77.0	25.3	1		2024	205	125.	82.8	25.6
1		0030	6	3.	78.4	25.4	1		1030	106	1.	77.0	25.3	1		2030	206	125.	82.8	25.6
1		0036	7	3.	78.4	25.4	1		1036	107	1.	77.0	25.3	1		2036	207	125.	82.8	25.6
1		0042	8	3.	78.4	25.4	1		1042	108	1.	77.0	25.3	1		2042	208	125.	82.8	25.6
1		0048	9	3.	78.4	25.4	1		1048	109	1.	77.1	25.3	1		2048	209	125.	82.8	25.6
1		0054	10	3.	78.3	25.4	1		1054	110	1.	77.2	25.3	1		2054	210	125.	82.8	25.6
1		0100	11	3.	78.3	25.4	1		1100	111	1.	77.2	25.3	1		2100	211	125.	82.8	25.6
1		0106	12	3.	78.3	25.4	1		1106	112	2.	77.3	25.3	1		2106	212	125.	82.8	25.6
1		0112	13	3.	78.3	25.4	1		1112	113	2.	77.4	25.3	1		2112	213	125.	82.8	25.6
1		0118	14	3.	78.2	25.4	1		1118	114	2.	77.5	25.3	1		2118	214	125.	82.8	25.6
1		0124	15	3.	78.2	25.4	1		1124	115	2.	77.7	25.3	1		2124	215	125.	82.8	25.6
1		0130	16	3.	78.2	25.4	1		1130	116	2.	77.9	25.3	1		2130	216	125.	82.8	25.6
1		0136	17	3.	78.2	25.4	1		1136	117	3.	78.1	25.4	1		2136	217	125.	82.8	25.6
1		0142	18	3.	78.2	25.4	1		1142	118	3.	78.3	25.4	1		2142	218	125.	82.8	25.6
1		0148	19	3.	78.1	25.4	1		1148	119	3.	78.6	25.4	1		2148	219	125.	82.8	25.6
1		0154	20	3.	78.1	25.4	1		1154	120	4.	78.9	25.4	1		2154	220	125.	82.8	25.6
1		0200	21	3.	78.1	25.4	1		1200	121	4.	79.4	25.4	1		2200	221	125.	82.8	25.6
1		0206	22	3.	78.1	25.4	1		1206	122	5.	79.9	25.5	1		2206	222	89.	82.8	25.6
1		0212	23	3.	78.0	25.4	1		1212	123	6.	80.7	25.5	1		2212	223	89.	82.8	25.6
1		0218	24	3.	78.0	25.4	1		1218	124	8.	81.7	25.5	1		2218	224	89.	82.8	25.6
1		0224	25	2.	78.0	25.4	1		1224	125	62.	82.8	25.6	1		2224	225	89.	82.8	25.6
1		0230	26	2.	78.0	25.3	1		1230	126	357.	82.8	25.6	1		2230	226	89.	82.8	25.6
1		0236	27	2.	78.0	25.3	1		1236	127	173.	82.8	25.6	1		2236	227	89.	82.8	25.6
1		0242	28	2.	77.9	25.3	1		1242	128	449.	82.8	25.6	1		2242	228	89.	82.8	25.6
1		0248	29	2.	77.9	25.3	1		1248	129	289.	82.8	25.6	1		2248	229	89.	82.8	25.6
1		0254	30	2.	77.9	25.3	1		1254	130	536.	82.8	25.6	1		2254	230	89.	82.8	25.6
1		0300	31	2.	77.9	25.3	1		1300	131	389.	82.8	25.6	1		2300	231	89.	82.8	25.6
1		0306	32	2.	77.9	25.3	1		1306	132	601.	82.9	25.6	1		2306	232	89.	82.8	25.6
1		0312	33	2.	77.8	25.3	1		1312	133	461.	82.8	25.6	1		2312	233	89.	82.8	25.6
1		0318	34	2.	77.8	25.3	1		1318	134	636.	82.9	25.6	1		2318	234	89.	82.8	25.6
1		0324	35	2.	77.8	25.3	1		1324	135	491.	82.8	25.6	1		2324	235	89.	82.8	25.6

1	0330	36	2.	77.8	25.3	*	1	1330	136	638.	82.9	25.6	*	1	2330	236	89.	82.8	25.6
1	0336	37	2.	77.8	25.3	*	1	1336	137	496.	82.8	25.6	*	1	2336	237	89.	82.8	25.6
1	0342	38	2.	77.8	25.3	*	1	1342	138	624.	82.9	25.6	*	1	2342	238	89.	82.8	25.6
1	0348	39	2.	77.7	25.3	*	1	1348	139	491.	82.8	25.6	*	1	2348	239	89.	82.8	25.6
1	0354	40	2.	77.7	25.3	*	1	1354	140	606.	82.9	25.6	*	1	2354	240	89.	82.8	25.6
1	0400	41	2.	77.7	25.3	*	1	1400	141	480.	82.8	25.6	*	2	0000	241	89.	82.8	25.6
1	0406	42	2.	77.7	25.3	*	1	1406	142	584.	82.9	25.6	*	2	0006	242	89.	82.8	25.6
1	0412	43	2.	77.7	25.3	*	1	1412	143	470.	82.8	25.6	*	2	0012	243	89.	82.8	25.6
1	0418	44	2.	77.6	25.3	*	1	1418	144	565.	82.8	25.6	*	2	0018	244	89.	82.8	25.6
1	0424	45	2.	77.6	25.3	*	1	1424	145	454.	82.8	25.6	*	2	0024	245	89.	82.8	25.6
1	0430	46	2.	77.6	25.3	*	1	1430	146	543.	82.8	25.6	*	2	0030	246	89.	82.8	25.6
1	0436	47	2.	77.6	25.3	*	1	1436	147	441.	82.8	25.6	*	2	0036	247	89.	82.8	25.6
1	0442	48	2.	77.6	25.3	*	1	1442	148	524.	82.8	25.6	*	2	0042	248	54.	82.8	25.6
1	0448	49	2.	77.6	25.3	*	1	1448	149	426.	82.8	25.6	*	2	0048	249	54.	82.8	25.6
1	0454	50	2.	77.6	25.3	*	1	1454	150	503.	82.8	25.6	*	2	0054	250	54.	82.8	25.6
1	0500	51	2.	77.5	25.3	*	1	1500	151	412.	82.8	25.6	*	2	0100	251	54.	82.8	25.6
1	0506	52	2.	77.5	25.3	*	1	1506	152	482.	82.8	25.6	*	2	0106	252	54.	82.8	25.6
1	0512	53	2.	77.5	25.3	*	1	1512	153	398.	82.8	25.6	*	2	0112	253	54.	82.8	25.6
1	0518	54	2.	77.5	25.3	*	1	1518	154	462.	82.8	25.6	*	2	0118	254	54.	82.8	25.6
1	0524	55	2.	77.5	25.3	*	1	1524	155	384.	82.8	25.6	*	2	0124	255	54.	82.8	25.6
1	0530	56	2.	77.5	25.3	*	1	1530	156	442.	82.8	25.6	*	2	0130	256	54.	82.8	25.6
1	0536	57	2.	77.4	25.3	*	1	1536	157	371.	82.8	25.6	*	2	0136	257	54.	82.8	25.6
1	0542	58	2.	77.4	25.3	*	1	1542	158	423.	82.8	25.6	*	2	0142	258	54.	82.8	25.6
1	0548	59	2.	77.4	25.3	*	1	1548	159	359.	82.8	25.6	*	2	0148	259	54.	82.8	25.6
1	0554	60	2.	77.4	25.3	*	1	1554	160	404.	82.8	25.6	*	2	0154	260	54.	82.8	25.6
1	0600	61	2.	77.4	25.3	*	1	1600	161	345.	82.8	25.6	*	2	0200	261	54.	82.8	25.6
1	0606	62	2.	77.4	25.3	*	1	1606	162	390.	82.8	25.6	*	2	0206	262	54.	82.8	25.6
1	0612	63	2.	77.4	25.3	*	1	1612	163	329.	82.8	25.6	*	2	0212	263	20.	82.8	25.6
1	0618	64	2.	77.3	25.3	*	1	1618	164	374.	82.8	25.6	*	2	0218	264	20.	82.8	25.6
1	0624	65	2.	77.3	25.3	*	1	1624	165	315.	82.8	25.6	*	2	0224	265	20.	82.8	25.6
1	0630	66	2.	77.3	25.3	*	1	1630	166	354.	82.8	25.6	*	2	0230	266	20.	82.8	25.6
1	0636	67	2.	77.3	25.3	*	1	1636	167	305.	82.8	25.6	*	2	0236	267	20.	82.8	25.6
1	0642	68	2.	77.3	25.3	*	1	1642	168	305.	82.8	25.6	*	2	0242	268	20.	82.8	25.6
1	0648	69	2.	77.3	25.3	*	1	1648	169	305.	82.8	25.6	*	2	0248	269	20.	82.8	25.6
1	0654	70	2.	77.3	25.3	*	1	1654	170	305.	82.8	25.6	*	2	0254	270	20.	82.8	25.6
1	0700	71	2.	77.3	25.3	*	1	1700	171	305.	82.8	25.6	*	2	0300	271	20.	82.8	25.6
1	0706	72	1.	77.2	25.3	*	1	1706	172	305.	82.8	25.6	*	2	0306	272	20.	82.8	25.6
1	0712	73	1.	77.2	25.3	*	1	1712	173	271.	82.8	25.6	*	2	0312	273	20.	82.8	25.6
1	0718	74	1.	77.2	25.3	*	1	1718	174	271.	82.8	25.6	*	2	0318	274	20.	82.8	25.6
1	0724	75	1.	77.2	25.3	*	1	1724	175	271.	82.8	25.6	*	2	0324	275	20.	82.8	25.6
1	0730	76	1.	77.2	25.3	*	1	1730	176	271.	82.8	25.6	*	2	0330	276	20.	82.8	25.6
1	0736	77	1.	77.2	25.3	*	1	1736	177	271.	82.8	25.6	*	2	0336	277	20.	82.8	25.6
1	0742	78	1.	77.2	25.3	*	1	1742	178	271.	82.8	25.6	*	2	0342	278	20.	82.8	25.6
1	0748	79	1.	77.2	25.3	*	1	1748	179	233.	82.8	25.6	*	2	0348	279	20.	82.8	25.6
1	0754	80	1.	77.1	25.3	*	1	1754	180	233.	82.8	25.6	*	2	0354	280	20.	82.8	25.6
1	0800	81	1.	77.1	25.3	*	1	1800	181	233.	82.8	25.6	*	2	0400	281	20.	82.8	25.6
1	0806	82	1.	77.1	25.3	*	1	1806	182	233.	82.8	25.6	*	2	0406	282	20.	82.8	25.6
1	0812	83	1.	77.1	25.3	*	1	1812	183	233.	82.8	25.6	*	2	0412	283	20.	82.8	25.6
1	0818	84	1.	77.1	25.3	*	1	1818	184	233.	82.8	25.6	*	2	0418	284	20.	82.8	25.6
1	0824	85	1.	77.1	25.3	*	1	1824	185	233.	82.8	25.6	*	2	0424	285	20.	82.8	25.6
1	0830	86	1.	77.1	25.3	*	1	1830	186	197.	82.8	25.6	*	2	0430	286	20.	82.8	25.6
1	0836	87	1.	77.1	25.3	*	1	1836	187	197.	82.8	25.6	*	2	0436	287	20.	82.8	25.6
1	0842	88	1.	77.1	25.3	*	1	1842	188	197.	82.8	25.6	*	2	0442	288	20.	82.8	25.6
1	0848	89	1.	77.1	25.3	*	1	1848	189	197.	82.8	25.6	*	2	0448	289	20.	82.8	25.6
1	0854	90	1.	77.0	25.3	*	1	1854	190	197.	82.8	25.6	*	2	0454	290	20.	82.8	25.6
1	0900	91	1.	77.0	25.3	*	1	1900	191	197.	82.8	25.6	*	2	0500	291	20.	82.8	25.6
1	0906	92	1.	77.0	25.3	*	1	1906	192	197.	82.8	25.6	*	2	0506	292	20.	82.8	25.6
1	0912	93	1.	77.0	25.3	*	1	1912	193	197.	82.8	25.6	*	2	0512	293	20.	82.8	25.6

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   1     0918  94       1.     77.0    25.3 *  1     1918 194     162.     82.8    25.6 *  2     0518 294      20.     82.8    25.6
   1     0924  95       1.     77.0    25.3 *  1     1924 195     162.     82.8    25.6 *  2     0524 295      20.     82.8    25.6
   1     0930  96       1.     77.0    25.3 *  1     1930 196     162.     82.8    25.6 *  2     0530 296      20.     82.8    25.6
   1     0936  97       1.     77.0    25.3 *  1     1936 197     162.     82.8    25.6 *  2     0536 297      20.     82.8    25.6
   1     0942  98       1.     77.0    25.3 *  1     1942 198     162.     82.8    25.6 *  2     0542 298      20.     82.8    25.6
   1     0948  99       1.     77.0    25.3 *  1     1948 199     162.     82.8    25.6 *  2     0548 299      20.     82.8    25.6
   1     0954 100       1.     77.0    25.3 *  1     1954 200     162.     82.8    25.6 *  2     0554 300      20.     82.8    25.6
                                             *                                            *
 ************************************************************************************************************************************

 PEAK OUTFLOW IS      638. AT TIME  13.50 HOURS


  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                            (CFS)
+     638.     13.50                    391.        138.        111.         111.
                         (INCHES)     1.905       2.687       2.698        2.698
                          (AC-FT)      194.        274.        275.         275.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
       83.     13.30                     83.         81.         81.          81.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
     25.60     13.50                   25.60       25.53       25.49        25.49

                         CUMULATIVE AREA =    1.91 SQ MI


 ************************************************************************************************************************************

                                                HYDROGRAPH AT STATION    DAM-1
                                                    PLAN 1,   RATIO =   .86

 ************************************************************************************************************************************
                                             *                                            *
  DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE
                                             *                                            *
   1     0000   1       3.     78.6    25.4 *  1     1000 101       1.     77.1    25.3 *  1     2000 201     181.     82.8    25.6
   1     0006   2       3.     78.5    25.4 *  1     1006 102       1.     77.1    25.3 *  1     2006 202     181.     82.8    25.6
   1     0012   3       3.     78.5    25.4 *  1     1012 103       1.     77.1    25.3 *  1     2012 203     181.     82.8    25.6
   1     0018   4       3.     78.5    25.4 *  1     1018 104       1.     77.2    25.3 *  1     2018 204     181.     82.8    25.6
   1     0024   5       3.     78.5    25.4 *  1     1024 105       2.     77.3    25.3 *  1     2024 205     181.     82.8    25.6
   1     0030   6       3.     78.4    25.4 *  1     1030 106       2.     77.3    25.3 *  1     2030 206     181.     82.8    25.6
   1     0036   7       3.     78.4    25.4 *  1     1036 107       2.     77.4    25.3 *  1     2036 207     181.     82.8    25.6
   1     0042   8       3.     78.4    25.4 *  1     1042 108       2.     77.6    25.3 *  1     2042 208     181.     82.8    25.6
   1     0048   9       3.     78.4    25.4 *  1     1048 109       2.     77.7    25.3 *  1     2048 209     181.     82.8    25.6
   1     0054  10       3.     78.3    25.4 *  1     1054 110       2.     77.9    25.3 *  1     2054 210     146.     82.8    25.6
   1     0100  11       3.     78.3    25.4 *  1     1100 111       3.     78.0    25.4 *  1     2100 211     146.     82.8    25.6
   1     0106  12       3.     78.3    25.4 *  1     1106 112       3.     78.2    25.4 *  1     2106 212     146.     82.8    25.6
   1     0112  13       3.     78.3    25.4 *  1     1112 113       3.     78.5    25.4 *  1     2112 213     146.     82.8    25.6
   1     0118  14       3.     78.2    25.4 *  1     1118 114       3.     78.7    25.4 *  1     2118 214     146.     82.8    25.6
   1     0124  15       3.     78.2    25.4 *  1     1124 115       4.     79.0    25.4 *  1     2124 215     146.     82.8    25.6
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1	0130	16	3.	78.2	25.4 *	1	1130	116	4.	79.4	25.4 *	1	2130	216	146.	82.8	25.6
1	0136	17	3.	78.2	25.4 *	1	1136	117	5.	79.7	25.4 *	1	2136	217	146.	82.8	25.6
1	0142	18	3.	78.2	25.4 *	1	1142	118	5.	80.2	25.5 *	1	2142	218	146.	82.8	25.6
1	0148	19	3.	78.1	25.4 *	1	1148	119	6.	80.7	25.5 *	1	2148	219	146.	82.8	25.6
1	0154	20	3.	78.1	25.4 *	1	1154	120	7.	81.2	25.5 *	1	2154	220	146.	82.8	25.6
1	0200	21	3.	78.1	25.4 *	1	1200	121	8.	81.9	25.6 *	1	2200	221	146.	82.8	25.6
1	0206	22	3.	78.1	25.4 *	1	1206	122	10.	82.8	25.6 *	1	2206	222	146.	82.8	25.6
1	0212	23	3.	78.0	25.4 *	1	1212	123	270.	82.8	25.6 *	1	2212	223	146.	82.8	25.6
1	0218	24	3.	78.0	25.4 *	1	1218	124	110.	82.8	25.6 *	1	2218	224	112.	82.8	25.6
1	0224	25	2.	78.0	25.4 *	1	1224	125	365.	82.8	25.6 *	1	2224	225	112.	82.8	25.6
1	0230	26	2.	78.0	25.3 *	1	1230	126	237.	82.8	25.6 *	1	2230	226	112.	82.8	25.6
1	0236	27	2.	78.0	25.3 *	1	1236	127	484.	82.8	25.6 *	1	2236	227	112.	82.8	25.6
1	0242	28	2.	77.9	25.3 *	1	1242	128	381.	82.8	25.6 *	1	2242	228	112.	82.8	25.6
1	0248	29	2.	77.9	25.3 *	1	1248	129	612.	82.9	25.6 *	1	2248	229	112.	82.8	25.6
1	0254	30	2.	77.9	25.3 *	1	1254	130	514.	82.8	25.6 *	1	2254	230	112.	82.8	25.6
1	0300	31	2.	77.9	25.3 *	1	1300	131	713.	82.9	25.6 *	1	2300	231	112.	82.8	25.6
1	0306	32	2.	77.9	25.3 *	1	1306	132	621.	82.9	25.6 *	1	2306	232	112.	82.8	25.6
1	0312	33	2.	77.8	25.3 *	1	1312	133	787.	82.9	25.6 *	1	2312	233	112.	82.8	25.6
1	0318	34	2.	77.8	25.3 *	1	1318	134	673.	82.9	25.6 *	1	2318	234	112.	82.8	25.6
1	0324	35	2.	77.8	25.3 *	1	1324	135	814.	82.9	25.6 *	1	2324	235	112.	82.8	25.6
1	0330	36	2.	77.8	25.3 *	1	1330	136	681.	82.9	25.6 *	1	2330	236	112.	82.8	25.6
1	0336	37	2.	77.8	25.3 *	1	1336	137	797.	82.9	25.6 *	1	2336	237	112.	82.8	25.6
1	0342	38	2.	77.8	25.3 *	1	1342	138	681.	82.9	25.6 *	1	2342	238	112.	82.8	25.6
1	0348	39	2.	77.7	25.3 *	1	1348	139	777.	82.9	25.6 *	1	2348	239	112.	82.8	25.6
1	0354	40	2.	77.7	25.3 *	1	1354	140	664.	82.9	25.6 *	1	2354	240	112.	82.8	25.6
1	0400	41	2.	77.7	25.3 *	1	1400	141	747.	82.9	25.6 *	2	0000	241	112.	82.8	25.6
1	0406	42	2.	77.7	25.3 *	1	1406	142	650.	82.9	25.6 *	2	0006	242	112.	82.8	25.6
1	0412	43	2.	77.7	25.3 *	1	1412	143	721.	82.9	25.6 *	2	0012	243	112.	82.8	25.6
1	0418	44	2.	77.6	25.3 *	1	1418	144	629.	82.9	25.6 *	2	0018	244	112.	82.8	25.6
1	0424	45	2.	77.6	25.3 *	1	1424	145	687.	82.9	25.6 *	2	0024	245	77.	82.8	25.6
1	0430	46	2.	77.6	25.3 *	1	1430	146	614.	82.9	25.6 *	2	0030	246	77.	82.8	25.6
1	0436	47	2.	77.6	25.3 *	1	1436	147	659.	82.9	25.6 *	2	0036	247	77.	82.8	25.6
1	0442	48	2.	77.6	25.3 *	1	1442	148	594.	82.9	25.6 *	2	0042	248	77.	82.8	25.6
1	0448	49	2.	77.6	25.3 *	1	1448	149	600.	82.9	25.6 *	2	0048	249	77.	82.8	25.6
1	0454	50	2.	77.6	25.3 *	1	1454	150	600.	82.9	25.6 *	2	0054	250	77.	82.8	25.6
1	0500	51	2.	77.5	25.3 *	1	1500	151	600.	82.9	25.6 *	2	0100	251	77.	82.8	25.6
1	0506	52	2.	77.5	25.3 *	1	1506	152	558.	82.8	25.6 *	2	0106	252	77.	82.8	25.6
1	0512	53	2.	77.5	25.3 *	1	1512	153	558.	82.8	25.6 *	2	0112	253	77.	82.8	25.6
1	0518	54	2.	77.5	25.3 *	1	1518	154	558.	82.8	25.6 *	2	0118	254	77.	82.8	25.6
1	0524	55	2.	77.5	25.3 *	1	1524	155	558.	82.8	25.6 *	2	0124	255	77.	82.8	25.6
1	0530	56	2.	77.5	25.3 *	1	1530	156	510.	82.8	25.6 *	2	0130	256	77.	82.8	25.6
1	0536	57	2.	77.4	25.3 *	1	1536	157	510.	82.8	25.6 *	2	0136	257	43.	82.8	25.6
1	0542	58	2.	77.4	25.3 *	1	1542	158	510.	82.8	25.6 *	2	0142	258	43.	82.8	25.6
1	0548	59	2.	77.4	25.3 *	1	1548	159	510.	82.8	25.6 *	2	0148	259	43.	82.8	25.6
1	0554	60	2.	77.4	25.3 *	1	1554	160	472.	82.8	25.6 *	2	0154	260	43.	82.8	25.6
1	0600	61	2.	77.4	25.3 *	1	1600	161	472.	82.8	25.6 *	2	0200	261	43.	82.8	25.6
1	0606	62	2.	77.4	25.3 *	1	1606	162	472.	82.8	25.6 *	2	0206	262	43.	82.8	25.6
1	0612	63	2.	77.4	25.3 *	1	1612	163	472.	82.8	25.6 *	2	0212	263	43.	82.8	25.6
1	0618	64	2.	77.3	25.3 *	1	1618	164	428.	82.8	25.6 *	2	0218	264	43.	82.8	25.6
1	0624	65	2.	77.3	25.3 *	1	1624	165	428.	82.8	25.6 *	2	0224	265	43.	82.8	25.6
1	0630	66	2.	77.3	25.3 *	1	1630	166	428.	82.8	25.6 *	2	0230	266	43.	82.8	25.6
1	0636	67	2.	77.3	25.3 *	1	1636	167	428.	82.8	25.6 *	2	0236	267	43.	82.8	25.6
1	0642	68	2.	77.3	25.3 *	1	1642	168	428.	82.8	25.6 *	2	0242	268	43.	82.8	25.6
1	0648	69	2.	77.3	25.3 *	1	1648	169	377.	82.8	25.6 *	2	0248	269	43.	82.8	25.6
1	0654	70	2.	77.3	25.3 *	1	1654	170	377.	82.8	25.6 *	2	0254	270	43.	82.8	25.6
1	0700	71	2.	77.3	25.3 *	1	1700	171	377.	82.8	25.6 *	2	0300	271	43.	82.8	25.6
1	0706	72	1.	77.2	25.3 *	1	1706	172	377.	82.8	25.6 *	2	0306	272	43.	82.8	25.6
1	0712	73	1.	77.2	25.3 *	1	1712	173	377.	82.8	25.6 *	2	0312	273	43.	82.8	25.6

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   1     0718  74       1.     77.2    25.3 *  1     1718 174     339.     82.8    25.6 *  2     0318 274      43.     82.8    25.6
   1     0724  75       1.     77.2    25.3 *  1     1724 175     339.     82.8    25.6 *  2     0324 275      43.     82.8    25.6
   1     0730  76       1.     77.2    25.3 *  1     1730 176     339.     82.8    25.6 *  2     0330 276      10.     82.8    25.6
   1     0736  77       1.     77.2    25.3 *  1     1736 177     339.     82.8    25.6 *  2     0336 277      10.     82.8    25.6
   1     0742  78       1.     77.2    25.3 *  1     1742 178     339.     82.8    25.6 *  2     0342 278      10.     82.8    25.6
   1     0748  79       1.     77.2    25.3 *  1     1748 179     299.     82.8    25.6 *  2     0348 279      10.     82.8    25.6
   1     0754  80       1.     77.1    25.3 *  1     1754 180     299.     82.8    25.6 *  2     0354 280      10.     82.8    25.6
   1     0800  81       1.     77.1    25.3 *  1     1800 181     299.     82.8    25.6 *  2     0400 281      10.     82.8    25.6
   1     0806  82       1.     77.1    25.3 *  1     1806 182     299.     82.8    25.6 *  2     0406 282      10.     82.8    25.6
   1     0812  83       1.     77.1    25.3 *  1     1812 183     299.     82.8    25.6 *  2     0412 283      10.     82.8    25.6
   1     0818  84       1.     77.1    25.3 *  1     1818 184     299.     82.8    25.6 *  2     0418 284      10.     82.8    25.6
   1     0824  85       1.     77.1    25.3 *  1     1824 185     257.     82.8    25.6 *  2     0424 285      10.     82.8    25.6
   1     0830  86       1.     77.1    25.3 *  1     1830 186     257.     82.8    25.6 *  2     0430 286      10.     82.8    25.6
   1     0836  87       1.     77.1    25.3 *  1     1836 187     257.     82.8    25.6 *  2     0436 287      10.     82.8    25.6
   1     0842  88       1.     77.1    25.3 *  1     1842 188     257.     82.8    25.6 *  2     0442 288      10.     82.8    25.6
   1     0848  89       1.     77.1    25.3 *  1     1848 189     257.     82.8    25.6 *  2     0448 289      10.     82.8    25.6
   1     0854  90       1.     77.0    25.3 *  1     1854 190     257.     82.8    25.6 *  2     0454 290      10.     82.8    25.6
   1     0900  91       1.     77.0    25.3 *  1     1900 191     257.     82.8    25.6 *  2     0500 291      10.     82.8    25.6
   1     0906  92       1.     77.0    25.3 *  1     1906 192     217.     82.8    25.6 *  2     0506 292      10.     82.8    25.6
   1     0912  93       1.     77.0    25.3 *  1     1912 193     217.     82.8    25.6 *  2     0512 293      10.     82.8    25.6
   1     0918  94       1.     77.0    25.3 *  1     1918 194     217.     82.8    25.6 *  2     0518 294      10.     82.8    25.6
   1     0924  95       1.     77.0    25.3 *  1     1924 195     217.     82.8    25.6 *  2     0524 295      10.     82.8    25.6
   1     0930  96       1.     77.0    25.3 *  1     1930 196     217.     82.8    25.6 *  2     0530 296      10.     82.8    25.6
   1     0936  97       1.     77.0    25.3 *  1     1936 197     217.     82.8    25.6 *  2     0536 297      10.     82.8    25.6
   1     0942  98       1.     77.0    25.3 *  1     1942 198     217.     82.8    25.6 *  2     0542 298      10.     82.8    25.6
   1     0948  99       1.     77.0    25.3 *  1     1948 199     217.     82.8    25.6 *  2     0548 299      10.     82.8    25.6
   1     0954 100       1.     77.0    25.3 *  1     1954 200     181.     82.8    25.6 *  2     0554 300      10.     82.8    25.6
                                             *                                                 *
 ************************************************************************************************************************************

 PEAK OUTFLOW IS      814. AT TIME  13.40 HOURS


  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                           (CFS)
+     814.     13.40                    509.        178.        144.         144.
                         (INCHES)     2.476       3.472       3.484        3.484
                          (AC-FT)      252.        354.        355.         355.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
       83.     13.40                     83.         81.         81.          81.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
     25.60     13.40                   25.60       25.53       25.50        25.50

                          CUMULATIVE AREA =    1.91 SQ MI


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                                                HYDROGRAPH AT STATION    DAM-1
                                                    PLAN 1,   RATIO =  1.00
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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	3.	78.6	25.4	1		1000	101	2.	77.5	25.3	1		2000	201	241.	82.8	25.6
1		0006	2	3.	78.5	25.4	1		1006	102	2.	77.6	25.3	1		2006	202	241.	82.8	25.6
1		0012	3	3.	78.5	25.4	1		1012	103	2.	77.7	25.3	1		2012	203	241.	82.8	25.6
1		0018	4	3.	78.5	25.4	1		1018	104	2.	77.8	25.3	1		2018	204	241.	82.8	25.6
1		0024	5	3.	78.5	25.4	1		1024	105	2.	78.0	25.3	1		2024	205	201.	82.8	25.6
1		0030	6	3.	78.4	25.4	1		1030	106	3.	78.2	25.4	1		2030	206	201.	82.8	25.6
1		0036	7	3.	78.4	25.4	1		1036	107	3.	78.4	25.4	1		2036	207	201.	82.8	25.6
1		0042	8	3.	78.4	25.4	1		1042	108	3.	78.6	25.4	1		2042	208	201.	82.8	25.6
1		0048	9	3.	78.4	25.4	1		1048	109	4.	78.9	25.4	1		2048	209	201.	82.8	25.6
1		0054	10	3.	78.3	25.4	1		1054	110	4.	79.2	25.4	1		2054	210	201.	82.8	25.6
1		0100	11	3.	78.3	25.4	1		1100	111	4.	79.5	25.4	1		2100	211	201.	82.8	25.6
1		0106	12	3.	78.3	25.4	1		1106	112	5.	79.9	25.4	1		2106	212	201.	82.8	25.6
1		0112	13	3.	78.3	25.4	1		1112	113	5.	80.3	25.5	1		2112	213	201.	82.8	25.6
1		0118	14	3.	78.2	25.4	1		1118	114	6.	80.7	25.5	1		2118	214	201.	82.8	25.6
1		0124	15	3.	78.2	25.4	1		1124	115	7.	81.2	25.5	1		2124	215	164.	82.8	25.6
1		0130	16	3.	78.2	25.4	1		1130	116	8.	81.7	25.5	1		2130	216	164.	82.8	25.6
1		0136	17	3.	78.2	25.4	1		1136	117	9.	82.3	25.6	1		2136	217	164.	82.8	25.6
1		0142	18	3.	78.2	25.4	1		1142	118	58.	82.8	25.6	1		2142	218	164.	82.8	25.6
1		0148	19	3.	78.1	25.4	1		1148	119	142.	82.8	25.6	1		2148	219	164.	82.8	25.6
1		0154	20	3.	78.1	25.4	1		1154	120	89.	82.8	25.6	1		2154	220	164.	82.8	25.6
1		0200	21	3.	78.1	25.4	1		1200	121	179.	82.8	25.6	1		2200	221	164.	82.8	25.6
1		0206	22	3.	78.1	25.4	1		1206	122	179.	82.8	25.6	1		2206	222	164.	82.8	25.6
1		0212	23	3.	78.0	25.4	1		1212	123	233.	82.8	25.6	1		2212	223	164.	82.8	25.6
1		0218	24	3.	78.0	25.4	1		1218	124	288.	82.8	25.6	1		2218	224	164.	82.8	25.6
1		0224	25	2.	78.0	25.4	1		1224	125	365.	82.8	25.6	1		2224	225	164.	82.8	25.6
1		0230	26	2.	78.0	25.3	1		1230	126	436.	82.8	25.6	1		2230	226	164.	82.8	25.6
1		0236	27	2.	78.0	25.3	1		1236	127	532.	82.8	25.6	1		2236	227	164.	82.8	25.6
1		0242	28	2.	77.9	25.3	1		1242	128	602.	82.9	25.6	1		2242	228	131.	82.8	25.6
1		0248	29	2.	77.9	25.3	1		1248	129	698.	82.9	25.6	1		2248	229	131.	82.8	25.6
1		0254	30	2.	77.9	25.3	1		1254	130	768.	82.9	25.6	1		2254	230	131.	82.8	25.6
1		0300	31	2.	77.9	25.3	1		1300	131	839.	82.9	25.6	1		2300	231	131.	82.8	25.6
1		0306	32	2.	77.9	25.3	1		1306	132	885.	82.9	25.6	1		2306	232	131.	82.8	25.6
1		0312	33	2.	77.8	25.3	1		1312	133	930.	82.9	25.6	1		2312	233	131.	82.8	25.6
1		0318	34	2.	77.8	25.3	1		1318	134	930.	82.9	25.6	1		2318	234	131.	82.8	25.6
1		0324	35	2.	77.8	25.3	1		1324	135	976.	82.9	25.6	1		2324	235	131.	82.8	25.6
1		0330	36	2.	77.8	25.3	1		1330	136	937.	82.9	25.6	1		2330	236	131.	82.8	25.6
1		0336	37	2.	77.8	25.3	1		1336	137	937.	82.9	25.6	1		2336	237	131.	82.8	25.6
1		0342	38	2.	77.8	25.3	1		1342	138	937.	82.9	25.6	1		2342	238	131.	82.8	25.6
1		0348	39	2.	77.7	25.3	1		1348	139	937.	82.9	25.6	1		2348	239	131.	82.8	25.6
1		0354	40	2.	77.7	25.3	1		1354	140	897.	82.9	25.6	1		2354	240	131.	82.8	25.6
1		0400	41	2.	77.7	25.3	1		1400	141	897.	82.9	25.6	2		0000	241	131.	82.8	25.6
1		0406	42	2.	77.7	25.3	1		1406	142	897.	82.9	25.6	2		0006	242	131.	82.8	25.6
1		0412	43	2.	77.7	25.3	1		1412	143	847.	82.9	25.6	2		0012	243	131.	82.8	25.6
1		0418	44	2.	77.6	25.3	1		1418	144	847.	82.9	25.6	2		0018	244	131.	82.8	25.6
1		0424	45	2.	77.6	25.3	1		1424	145	847.	82.9	25.6	2		0024	245	97.	82.8	25.6
1		0430	46	2.	77.6	25.3	1		1430	146	801.	82.9	25.6	2		0030	246	97.	82.8	25.6
1		0436	47	2.	77.6	25.3	1		1436	147	801.	82.9	25.6	2		0036	247	97.	82.8	25.6
1		0442	48	2.	77.6	25.3	1		1442	148	801.	82.9	25.6	2		0042	248	97.	82.8	25.6
1		0448	49	2.	77.6	25.3	1		1448	149	752.	82.9	25.6	2		0048	249	97.	82.8	25.6
1		0454	50	2.	77.6	25.3	1		1454	150	752.	82.9	25.6	2		0054	250	97.	82.8	25.6
1		0500	51	2.	77.5	25.3	1		1500	151	752.	82.9	25.6	2		0100	251	97.	82.8	25.6
1		0506	52	2.	77.5	25.3	1		1506	152	708.	82.9	25.6	2		0106	252	97.	82.8	25.6
1		0512	53	2.	77.5	25.3	1		1512	153	708.	82.9	25.6	2		0112	253	97.	82.8	25.6

```
  1     0518  54       2.     77.5    25.3 *  1     1518 154     708.     82.9    25.6 *  2     0118 254      97.     82.8    25.6
  1     0524  55       2.     77.5    25.3 *  1     1524 155     663.     82.9    25.6 *  2     0124 255      62.     82.8    25.6
  1     0530  56       2.     77.5    25.3 *  1     1530 156     663.     82.9    25.6 *  2     0130 256      62.     82.8    25.6
  1     0536  57       2.     77.4    25.3 *  1     1536 157     663.     82.9    25.6 *  2     0136 257      62.     82.8    25.6
  1     0542  58       2.     77.4    25.3 *  1     1542 158     623.     82.9    25.6 *  2     0142 258      62.     82.8    25.6
  1     0548  59       2.     77.4    25.3 *  1     1548 159     623.     82.9    25.6 *  2     0148 259      62.     82.8    25.6
  1     0554  60       2.     77.4    25.3 *  1     1554 160     623.     82.9    25.6 *  2     0154 260      62.     82.8    25.6
  1     0600  61       2.     77.4    25.3 *  1     1600 161     581.     82.9    25.6 *  2     0200 261      62.     82.8    25.6
  1     0606  62       2.     77.4    25.3 *  1     1606 162     581.     82.9    25.6 *  2     0206 262      62.     82.8    25.6
  1     0612  63       2.     77.4    25.3 *  1     1612 163     581.     82.9    25.6 *  2     0212 263      62.     82.8    25.6
  1     0618  64       2.     77.3    25.3 *  1     1618 164     544.     82.8    25.6 *  2     0218 264      62.     82.8    25.6
  1     0624  65       2.     77.3    25.3 *  1     1624 165     544.     82.8    25.6 *  2     0224 265      62.     82.8    25.6
  1     0630  66       2.     77.3    25.3 *  1     1630 166     544.     82.8    25.6 *  2     0230 266      62.     82.8    25.6
  1     0636  67       2.     77.3    25.3 *  1     1636 167     506.     82.8    25.6 *  2     0236 267      29.     82.8    25.6
  1     0642  68       2.     77.3    25.3 *  1     1642 168     506.     82.8    25.6 *  2     0242 268      29.     82.8    25.6
  1     0648  69       2.     77.3    25.3 *  1     1648 169     506.     82.8    25.6 *  2     0248 269      29.     82.8    25.6
  1     0654  70       2.     77.3    25.3 *  1     1654 170     506.     82.8    25.6 *  2     0254 270      29.     82.8    25.6
  1     0700  71       2.     77.3    25.3 *  1     1700 171     450.     82.8    25.6 *  2     0300 271      29.     82.8    25.6
  1     0706  72       1.     77.2    25.3 *  1     1706 172     450.     82.8    25.6 *  2     0306 272      29.     82.8    25.6
  1     0712  73       1.     77.2    25.3 *  1     1712 173     450.     82.8    25.6 *  2     0312 273      29.     82.8    25.6
  1     0718  74       1.     77.2    25.3 *  1     1718 174     450.     82.8    25.6 *  2     0318 274      29.     82.8    25.6
  1     0724  75       1.     77.2    25.3 *  1     1724 175     450.     82.8    25.6 *  2     0324 275      29.     82.8    25.6
  1     0730  76       1.     77.2    25.3 *  1     1730 176     400.     82.8    25.6 *  2     0330 276      29.     82.8    25.6
  1     0736  77       1.     77.2    25.3 *  1     1736 177     400.     82.8    25.6 *  2     0336 277      29.     82.8    25.6
  1     0742  78       1.     77.2    25.3 *  1     1742 178     400.     82.8    25.6 *  2     0342 278      29.     82.8    25.6
  1     0748  79       1.     77.2    25.3 *  1     1748 179     400.     82.8    25.6 *  2     0348 279      29.     82.8    25.6
  1     0754  80       1.     77.1    25.3 *  1     1754 180     400.     82.8    25.6 *  2     0354 280      29.     82.8    25.6
  1     0800  81       1.     77.1    25.3 *  1     1800 181     355.     82.8    25.6 *  2     0400 281      29.     82.8    25.6
  1     0806  82       1.     77.1    25.3 *  1     1806 182     355.     82.8    25.6 *  2     0406 282      29.     82.8    25.6
  1     0812  83       1.     77.1    25.3 *  1     1812 183     355.     82.8    25.6 *  2     0412 283      29.     82.8    25.6
  1     0818  84       1.     77.1    25.3 *  1     1818 184     355.     82.8    25.6 *  2     0418 284      29.     82.8    25.6
  1     0824  85       1.     77.1    25.3 *  1     1824 185     355.     82.8    25.6 *  2     0424 285      29.     82.8    25.6
  1     0830  86       1.     77.1    25.3 *  1     1830 186     316.     82.8    25.6 *  2     0430 286      29.     82.8    25.6
  1     0836  87       1.     77.1    25.3 *  1     1836 187     316.     82.8    25.6 *  2     0436 287      29.     82.8    25.6
  1     0842  88       1.     77.1    25.3 *  1     1842 188     316.     82.8    25.6 *  2     0442 288      29.     82.8    25.6
  1     0848  89       1.     77.1    25.3 *  1     1848 189     316.     82.8    25.6 *  2     0448 289      29.     82.8    25.6
  1     0854  90       1.     77.1    25.3 *  1     1854 190     316.     82.8    25.6 *  2     0454 290      29.     82.8    25.6
  1     0900  91       1.     77.1    25.3 *  1     1900 191     281.     82.8    25.6 *  2     0500 291      29.     82.8    25.6
  1     0906  92       1.     77.1    25.3 *  1     1906 192     281.     82.8    25.6 *  2     0506 292      29.     82.8    25.6
  1     0912  93       1.     77.1    25.3 *  1     1912 193     281.     82.8    25.6 *  2     0512 293      29.     82.8    25.6
  1     0918  94       1.     77.1    25.3 *  1     1918 194     281.     82.8    25.6 *  2     0518 294      29.     82.8    25.6
  1     0924  95       1.     77.1    25.3 *  1     1924 195     281.     82.8    25.6 *  2     0524 295      29.     82.8    25.6
  1     0930  96       1.     77.1    25.3 *  1     1930 196     281.     82.8    25.6 *  2     0530 296      10.     82.7    25.6
  1     0936  97       1.     77.2    25.3 *  1     1936 197     241.     82.8    25.6 *  2     0536 297      10.     82.7    25.6
  1     0942  98       1.     77.2    25.3 *  1     1942 198     241.     82.8    25.6 *  2     0542 298      10.     82.7    25.6
  1     0948  99       2.     77.3    25.3 *  1     1948 199     241.     82.8    25.6 *  2     0548 299      10.     82.7    25.6
  1     0954 100       2.     77.4    25.3 *  1     1954 200     241.     82.8    25.6 *  2     0554 300      10.     82.7    25.6
                                              *                                            *
*****************************************************************************************************************************************

 PEAK OUTFLOW IS      976. AT TIME  13.40 HOURS


  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                                (CFS)
+     976.     13.40                644.        227.        183.         183.
```

```
                        (INCHES)     3.136       4.421       4.432        4.432
                         (AC-FT)      319.        450.        452.         452.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
       83.     13.40                  83.         82.         81.          81.

  PEAK STAGE    TIME                           MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
     25.60     13.40                25.60       25.54       25.50        25.50

                         CUMULATIVE AREA =    1.91 SQ MI

1

                PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                  FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                                TIME TO PEAK IN HOURS


                                                                  RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN            RATIO 1  RATIO 2  RATIO 3  RATIO 4  RATIO 5  RATIO 6
                                                         .40      .51      .60      .74      .86     1.00

 HYDROGRAPH AT
+                   A-1      1.91     1   FLOW         137.     257.     372.     567.     746.     957.
                                          TIME        13.70    13.60    13.50    13.50    13.50    13.40

 ROUTED TO
+                  DAM-1      1.91     1   FLOW         220.     357.     437.     638.     814.     976.
                                          TIME        13.40    13.40    13.40    13.50    13.40    13.40

                                       ** PEAK STAGES IN FEET **
                                       1   STAGE       25.60    25.60    25.60    25.60    25.60    25.60
                                           TIME        13.40    13.40    13.40    13.50    13.40    13.40
1                                 SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION    DAM-1
                             (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)


      PLAN  1 ...............                  INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                                ELEVATION          25.38              32.13            32.13
                                STORAGE             79.               229.             229.
                                OUTFLOW              3.             21603.           21603.


                        RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
                          OF     RESERVOIR      DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW   FAILURE
                         PMF      W.S.ELEV    OVER DAM     AC-FT       CFS       HOURS        HOURS       HOURS

                         .40        25.60         .00         83.       220.       .00        13.40         .00
                         .51        25.60         .00         83.       357.       .00        13.40         .00
                         .60        25.60         .00         83.       437.       .00        13.40         .00
                         .74        25.60         .00         83.       638.       .00        13.50         .00
                         .86        25.60         .00         83.       814.       .00        13.40         .00
                        1.00        25.60         .00         83.       976.       .00        13.40         .00
```

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*** NORMAL END OF HEC-1 ***
```

```
1****************************************                                                    ****************************************
 *                                      *                                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                                                    *          609 SECOND STREET           *
 *                                      *                                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   22AUG19  TIME  15:01:13  *                                                    *           (916) 756-1104             *
 *                                      *                                                    *                                      *
 ****************************************                                                    ****************************************


                                                X     X  XXXXXXX   XXXXX           X
                                                X     X  X        X     X         XX
                                                X     X  X        X                X
                                                XXXXXXX  XXXX     X        XXXXX   X
                                                X     X  X        X                X
                                                X     X  X        X     X          X
                                                X     X  XXXXXXX   XXXXX          XXX


            THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

            THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
            THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
            NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
            DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
            KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


1                                                   HEC-1 INPUT                                                PAGE  1

           LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              1          ID    PREPARED BY FRENCH & PARRELLO ASSOCIATES
              2          ID    ALMONESSON LAKE DAM
              3          ID    FPA PROJECT NO. 13633.001
              4          ID    DEPTFORD TOWNSHIP, GLOUCESTER COUNTY, NEW JERSEY
              5          ID
              6          ID    DATE PREPARED: JULY 2019
              7          ID    HYDROLOGIC AND HYDRAULIC REPORT
              8          ID
              9          ID    VERTICAL DATUM IS NAVD88
             10          ID    30%, 40%, 50% AND 100% PMP STORM EVENTS
             11          ID    HMR-51 - ALL SEASON PMP FOR 24-HOUR 10 SQMI
             12          ID
             13          ID  ALMONESSON LAKE DAM
             14          ID  STORAGE INFORMATION AND RATING CURVE DEVELOPED BY FPA
             15          ID  DRAINAGE AREA DERIVED FROM USGS TOPOGRAPHIC QUADRANGLES USING STREAMSTATS
             16          ID
             17          ID  30%, 40%, 50% AND 100% PMP STORM EVENTS
             18          ID  PROPOSED CONDITION
             19          ID
                         *DIAGRAM
```

```
          20          IT       6       0       0     300
          21          IO       0       0
          22          JR    PREC     0.3     0.4     0.5       1

          23          KK     A-1SUB-AREA 1 TO COOPER STREET
          24          KM  *** COMPUTE HYDROGRAPH-RUNOFF TO COOPER STREET  ***
          25          IN       6
          26          PB      35
          27          PC  0.0000 0.00100 0.00200 0.00300 0.00400 0.00500 0.00600 0.00700 0.00800 0.00900
          28          PC  0.0100 0.01100 0.01200 0.01300 0.01400 0.01500 0.01600 0.01700 0.01800 0.01900
          29          PC  0.0200 0.02101 0.02203 0.02307 0.02412 0.02519 0.02627 0.02737 0.02848 0.02961
          30          PC  0.0308 0.03191 0.03308 0.03427 0.03547 0.03669 0.03792 0.03917 0.04043 0.04171
          31          PC  0.0430 0.04431 0.04563 0.04697 0.04832 0.04969 0.05107 0.05247 0.05388 0.05531
          32          PC  0.0567 0.05821 0.05968 0.06117 0.06267 0.06419 0.06572 0.06727 0.06883 0.07041
          33          PC  0.0720 0.07363 0.07530 0.07703 0.07880 0.08063 0.08250 0.08443 0.08640 0.08843
          34          PC  0.0905 0.09263 0.09480 0.09703 0.09930 0.10163 0.10400 0.10643 0.10890 0.11143
          35          PC  0.1140 0.11666 0.11943 0.12232 0.12532 0.12844 0.13167 0.13502 0.13848 0.14206
          36          PC  0.1458 0.14956 0.15348 0.15752 0.16167 0.16594 0.17032 0.17482 0.17943 0.18416
          37          PC  0.1890 0.19402 0.19928 0.20478 0.21052 0.21650 0.22272 0.22918 0.23588 0.24282
          38          PC  0.2500 0.25776 0.26644 0.27604 0.28656 0.29800 0.31430 0.33940 0.37330 0.41600
          39          PC  0.5000 0.58400 0.62670 0.66060 0.68570 0.70200 0.71344 0.72396 0.73356 0.74224
          40          PC  0.7500 0.75718 0.76412 0.77082 0.77728 0.78350 0.78948 0.79522 0.80072 0.80598
          41          PC  0.8110 0.81584 0.82057 0.82518 0.82968 0.83406 0.83833 0.84248 0.84652 0.85044
          42          PC  0.8543 0.85794 0.86152 0.86498 0.86833 0.87156 0.87468 0.87768 0.88057 0.88334
          43          PC  0.8860 0.88858 0.89110 0.89358 0.89600 0.89838 0.90070 0.90298 0.90520 0.90738
          44          PC  0.9095 0.91158 0.91360 0.91558 0.91750 0.91938 0.92120 0.92298 0.92470 0.92638
          45          PC  0.9280 0.92959 0.93117 0.93273 0.93428 0.93581 0.93733 0.93883 0.94032 0.94179
          46          PC  0.9433 0.94469 0.94612 0.94753 0.94893 0.95031 0.95168 0.95303 0.95437 0.95569
          47          PC  0.9570 0.95829 0.95958 0.96085 0.96211 0.96336 0.96460 0.96582 0.96704 0.96824
          48          PC  0.9694 0.97062 0.97179 0.97295 0.97410 0.97523 0.97636 0.97747 0.97858 0.97967
          49          PC  0.9808 0.98182 0.98288 0.98392 0.98496 0.98598 0.98700 0.98800 0.98899 0.98997
          50          PC  0.9909 0.99189 0.99284 0.99377 0.99470 0.99561 0.99651 0.99740 0.99828 0.99914
          51          PC  1.0000 1.00000 1.00000 1.00000 1.00000
          52          BA    1.91
          53          LS       0      68
1                                                HEC-1 INPUT                                                PAGE  2

         LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          54          US    1.27     0.4

          55          KK   DAM-1COOPER STREET DAM
          56          KM  *** ROUTE FLOW ***
          57          KM  *** STAGE-STORAGE-DISCHARGE FROM USGS QUADS ***
          58          RS       1    ELEV   25.38
          59          SA  0.0023  19.139  23.366  30.516
          60          SE    13.2   25.38      30      35
          61          SQ       0     6.2    10.2    71.4   201.6   371.5   573.3   802.4    1056  1331.8
          62          SQ  1628.3  1943.9  2277.8  2628.8  2832.6  2996.2  3379.3  3608.5  3688.6  3843.7
          63          SE   25.25    25.5    25.6      26    26.5      27    27.5      28    28.5      29
          64          SE    29.5      30    30.5      31    31.3    31.5      32    32.5      33      34
          65          ST   32.13       0     2.6     1.5
          66          SW       0    44.4   333.3   417.3   478.4   531.3   582.1   625.5   760.8     800
          67          SE   32.13   32.16    32.5      33      34    34.5      35      36      37      38
          68          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
```

```
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    23         A-1
                 V
                 V
    55       DAM-1

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                                    ****************************************
 *                                      *                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                                    *          609 SECOND STREET           *
 *                                      *                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   22AUG19  TIME  15:01:13  *                                    *           (916) 756-1104             *
 *                                      *                                    *                                      *
 ****************************************                                    ****************************************
```

PREPARED BY FRENCH & PARRELLO ASSOCIATES
ALMONESSON LAKE DAM
FPA PROJECT NO. 13633.001
DEPTFORD TOWNSHIP, GLOUCESTER COUNTY, NEW JERSEY

DATE PREPARED: JULY 2019
HYDROLOGIC AND HYDRAULIC REPORT

VERTICAL DATUM IS NAVD88
30%, 40%, 50% AND 100% PMP STORM EVENTS
HMR-51 - ALL SEASON PMP FOR 24-HOUR 10 SQMI

ALMONESSON LAKE DAM
STORAGE INFORMATION AND RATING CURVE DEVELOPED BY FPA
DRAINAGE AREA DERIVED FROM USGS TOPOGRAPHIC QUADRANGLES USING STREAMSTATS

30%, 40%, 50% AND 100% PMP STORM EVENTS
PROPOSED CONDITION

```
  21 IO          OUTPUT CONTROL VARIABLES
                       IPRNT           0  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN           6  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1    0  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      2    0  ENDING DATE
                      NDTIME        0554  ENDING TIME
                      ICENT          19  CENTURY MARK
```

```
                  COMPUTATION INTERVAL     .10 HOURS
                       TOTAL TIME BASE   29.90 HOURS

          ENGLISH UNITS
               DRAINAGE AREA         SQUARE MILES
               PRECIPITATION DEPTH   INCHES
               LENGTH, ELEVATION     FEET
               FLOW                  CUBIC FEET PER SECOND
               STORAGE VOLUME        ACRE-FEET
               SURFACE AREA          ACRES
               TEMPERATURE           DEGREES FAHRENHEIT

     JP          MULTI-PLAN OPTION
                       NPLAN           1  NUMBER OF PLANS

     JR          MULTI-RATIO OPTION
                     RATIOS OF PRECIPITATION
                     .30       .40       .50      1.00


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  23 KK     *       A-1  *     SUB-AREA 1 TO COOPER STREET
            *            *
            **************
                          *** COMPUTE HYDROGRAPH-RUNOFF TO COOPER STREET  ***

  25 IN          TIME DATA FOR INPUT TIME SERIES
                       JXMIN           6  TIME INTERVAL IN MINUTES
                      JXDATE      1    0  STARTING DATE
                      JXTIME           0  STARTING TIME

               SUBBASIN RUNOFF DATA

  52 BA          SUBBASIN CHARACTERISTICS
                       TAREA        1.91  SUBBASIN AREA

                 PRECIPITATION DATA

  26 PB                STORM       35.00  BASIN TOTAL PRECIPITATION

  27 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .02       .03       .03       .04       .08
```

```
                    .08       .04       .03       .03       .02       .01       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00

  53 LS          SCS LOSS RATE
                      STRTL         .94  INITIAL ABSTRACTION
                     CRVNBR       68.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  54 US          SNYDER UNITGRAPH
                         TP        1.27  LAG
                         CP         .40  PEAKING COEFFICIENT

                 SYNTHETIC ACCUMULATED-AREA VS. TIME CURVE WILL BE USED

                                                                  ***
APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

                                                   UNIT HYDROGRAPH PARAMETERS
                                             CLARK   TC=  1.30 HR,       R=  2.38 HR
                                            SNYDER   TP=  1.27 HR,      CP=   .40

                                                        UNIT HYDROGRAPH
                                                   133 END-OF-PERIOD ORDINATES
                8.       29.       60.       97.      138.      184.      231.      277.      317.      350.
              375.      392.      398.      389.      373.      358.      343.      329.      316.      303.
              290.      278.      267.      256.      245.      235.      226.      216.      207.      199.
              191.      183.      175.      168.      161.      155.      148.      142.      136.      131.
              125.      120.      115.      111.      106.      102.       97.       93.       90.       86.
               82.       79.       76.       73.       70.       67.       64.       61.       59.       56.
               54.       52.       50.       48.       46.       44.       42.       40.       39.       37.
               36.       34.       33.       31.       30.       29.       28.       27.       25.       24.
               23.       22.       22.       21.       20.       19.       18.       17.       17.       16.
               15.       15.       14.       14.       13.       12.       12.       11.       11.       11.
               10.       10.        9.        9.        9.        8.        8.        8.        7.        7.
                7.        6.        6.        6.        6.        5.        5.        5.        5.        5.
                4.        4.        4.        4.        4.        4.        3.        3.        3.        3.
                3.        3.        3.

*****************************************************************************************************************************

                                                   HYDROGRAPH AT STATION      A-1

*****************************************************************************************************************************
                                                                  *
       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q       *       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q
                                                                  *
        1     0000    1     .00     .00     .00         0.       *        1     1500  151     .14     .00     .13      4594.
        1     0006    2     .04     .04     .00         0.       *        1     1506  152     .13     .00     .12      4483.
```

1	0012	3	.04	.04	.00	0.	*	1	1512	153	.13	.00	.12	4374.
1	0018	4	.03	.03	.00	0.	*	1	1518	154	.12	.00	.12	4267.
1	0024	5	.04	.04	.00	0.	*	1	1524	155	.12	.00	.12	4163.
1	0030	6	.03	.03	.00	0.	*	1	1530	156	.11	.00	.11	4061.
1	0036	7	.04	.04	.00	0.	*	1	1536	157	.11	.00	.11	3961.
1	0042	8	.04	.04	.00	0.	*	1	1542	158	.11	.00	.10	3864.
1	0048	9	.04	.04	.00	0.	*	1	1548	159	.10	.00	.10	3768.
1	0054	10	.03	.03	.00	0.	*	1	1554	160	.10	.00	.10	3674.
1	0100	11	.04	.04	.00	0.	*	1	1600	161	.09	.00	.09	3583.
1	0106	12	.04	.04	.00	0.	*	1	1606	162	.09	.00	.09	3493.
1	0112	13	.04	.04	.00	0.	*	1	1612	163	.09	.00	.09	3404.
1	0118	14	.04	.04	.00	0.	*	1	1618	164	.09	.00	.09	3318.
1	0124	15	.04	.04	.00	0.	*	1	1624	165	.08	.00	.08	3233.
1	0130	16	.03	.03	.00	0.	*	1	1630	166	.08	.00	.08	3150.
1	0136	17	.04	.04	.00	0.	*	1	1636	167	.08	.00	.08	3069.
1	0142	18	.04	.04	.00	0.	*	1	1642	168	.08	.00	.08	2989.
1	0148	19	.03	.03	.00	0.	*	1	1648	169	.08	.00	.08	2912.
1	0154	20	.04	.04	.00	0.	*	1	1654	170	.08	.00	.07	2836.
1	0200	21	.04	.04	.00	0.	*	1	1700	171	.07	.00	.07	2763.
1	0206	22	.04	.04	.00	0.	*	1	1706	172	.07	.00	.07	2691.
1	0212	23	.04	.04	.00	0.	*	1	1712	173	.07	.00	.07	2622.
1	0218	24	.04	.04	.00	0.	*	1	1718	174	.07	.00	.07	2554.
1	0224	25	.04	.04	.00	0.	*	1	1724	175	.07	.00	.07	2488.
1	0230	26	.04	.04	.00	0.	*	1	1730	176	.07	.00	.06	2424.
1	0236	27	.04	.04	.00	0.	*	1	1736	177	.06	.00	.06	2362.
1	0242	28	.04	.04	.00	0.	*	1	1742	178	.06	.00	.06	2301.
1	0248	29	.04	.04	.00	0.	*	1	1748	179	.06	.00	.06	2243.
1	0254	30	.04	.04	.00	0.	*	1	1754	180	.06	.00	.06	2185.
1	0300	31	.04	.04	.00	0.	*	1	1800	181	.06	.00	.06	2129.
1	0306	32	.04	.04	.00	0.	*	1	1806	182	.06	.00	.05	2075.
1	0312	33	.04	.04	.00	0.	*	1	1812	183	.06	.00	.05	2022.
1	0318	34	.04	.04	.00	1.	*	1	1818	184	.05	.00	.05	1970.
1	0324	35	.04	.04	.00	1.	*	1	1824	185	.05	.00	.05	1920.
1	0330	36	.04	.04	.01	2.	*	1	1830	186	.05	.00	.05	1871.
1	0336	37	.04	.04	.01	3.	*	1	1836	187	.05	.00	.05	1823.
1	0342	38	.04	.04	.01	4.	*	1	1842	188	.05	.00	.05	1777.
1	0348	39	.04	.04	.01	5.	*	1	1848	189	.05	.00	.05	1732.
1	0354	40	.04	.04	.01	7.	*	1	1854	190	.05	.00	.05	1688.
1	0400	41	.05	.04	.01	9.	*	1	1900	191	.05	.00	.05	1646.
1	0406	42	.05	.04	.01	11.	*	1	1906	192	.05	.00	.05	1606.
1	0412	43	.05	.04	.01	13.	*	1	1912	193	.05	.00	.05	1566.
1	0418	44	.05	.04	.01	16.	*	1	1918	194	.05	.00	.05	1528.
1	0424	45	.05	.04	.01	19.	*	1	1924	195	.05	.00	.05	1491.
1	0430	46	.05	.04	.01	22.	*	1	1930	196	.05	.00	.05	1456.
1	0436	47	.05	.04	.01	25.	*	1	1936	197	.05	.00	.05	1421.
1	0442	48	.05	.03	.01	29.	*	1	1942	198	.05	.00	.05	1388.
1	0448	49	.05	.03	.01	33.	*	1	1948	199	.05	.00	.05	1356.
1	0454	50	.05	.03	.02	37.	*	1	1954	200	.05	.00	.05	1325.
1	0500	51	.05	.03	.02	41.	*	1	2000	201	.05	.00	.05	1295.
1	0506	52	.05	.04	.02	46.	*	1	2006	202	.05	.00	.04	1266.
1	0512	53	.05	.03	.02	50.	*	1	2012	203	.05	.00	.04	1238.
1	0518	54	.05	.03	.02	55.	*	1	2018	204	.04	.00	.04	1210.
1	0524	55	.05	.03	.02	60.	*	1	2024	205	.04	.00	.04	1184.
1	0530	56	.05	.03	.02	66.	*	1	2030	206	.04	.00	.04	1159.
1	0536	57	.05	.03	.02	71.	*	1	2036	207	.04	.00	.04	1134.
1	0542	58	.05	.03	.02	77.	*	1	2042	208	.04	.00	.04	1110.
1	0548	59	.05	.03	.02	82.	*	1	2048	209	.04	.00	.04	1087.
1	0554	60	.06	.03	.02	88.	*	1	2054	210	.04	.00	.04	1064.

1	0600	61	.06	.03	.02	94.	*	1	2100	211	.04	.00	.04	1042.
1	0606	62	.06	.03	.03	100.	*	1	2106	212	.04	.00	.04	1021.
1	0612	63	.06	.03	.03	107.	*	1	2112	213	.04	.00	.04	1001.
1	0618	64	.06	.03	.03	113.	*	1	2118	214	.04	.00	.04	981.
1	0624	65	.06	.03	.03	120.	*	1	2124	215	.04	.00	.04	962.
1	0630	66	.06	.03	.03	127.	*	1	2130	216	.04	.00	.04	943.
1	0636	67	.07	.03	.03	134.	*	1	2136	217	.04	.00	.04	925.
1	0642	68	.07	.03	.03	141.	*	1	2142	218	.04	.00	.04	908.
1	0648	69	.07	.03	.04	149.	*	1	2148	219	.04	.00	.04	891.
1	0654	70	.07	.03	.04	157.	*	1	2154	220	.04	.00	.04	874.
1	0700	71	.07	.03	.04	165.	*	1	2200	221	.04	.00	.04	859.
1	0706	72	.07	.03	.04	174.	*	1	2206	222	.04	.00	.04	843.
1	0712	73	.08	.03	.04	183.	*	1	2212	223	.04	.00	.04	828.
1	0718	74	.08	.03	.04	192.	*	1	2218	224	.04	.00	.04	813.
1	0724	75	.08	.03	.05	202.	*	1	2224	225	.04	.00	.04	799.
1	0730	76	.08	.03	.05	212.	*	1	2230	226	.04	.00	.04	785.
1	0736	77	.08	.03	.05	223.	*	1	2236	227	.04	.00	.04	771.
1	0742	78	.09	.03	.05	234.	*	1	2242	228	.03	.00	.03	758.
1	0748	79	.09	.03	.05	245.	*	1	2248	229	.03	.00	.03	745.
1	0754	80	.09	.03	.05	257.	*	1	2254	230	.03	.00	.03	733.
1	0800	81	.09	.03	.06	269.	*	1	2300	231	.03	.00	.03	721.
1	0806	82	.09	.03	.06	282.	*	1	2306	232	.03	.00	.03	709.
1	0812	83	.10	.03	.06	295.	*	1	2312	233	.03	.00	.03	697.
1	0818	84	.10	.04	.07	308.	*	1	2318	234	.03	.00	.03	685.
1	0824	85	.11	.04	.07	322.	*	1	2324	235	.03	.00	.03	674.
1	0830	86	.11	.04	.07	336.	*	1	2330	236	.03	.00	.03	663.
1	0836	87	.11	.04	.08	351.	*	1	2336	237	.03	.00	.03	653.
1	0842	88	.12	.04	.08	367.	*	1	2342	238	.03	.00	.03	642.
1	0848	89	.12	.04	.08	384.	*	1	2348	239	.03	.00	.03	632.
1	0854	90	.13	.04	.09	401.	*	1	2354	240	.03	.00	.03	622.
1	0900	91	.13	.04	.09	419.	*	2	0000	241	.03	.00	.03	612.
1	0906	92	.13	.04	.10	438.	*	2	0006	242	.00	.00	.00	602.
1	0912	93	.14	.04	.10	459.	*	2	0012	243	.00	.00	.00	592.
1	0918	94	.14	.04	.10	480.	*	2	0018	244	.00	.00	.00	581.
1	0924	95	.15	.04	.11	502.	*	2	0024	245	.00	.00	.00	569.
1	0930	96	.15	.04	.11	525.	*	2	0030	246	.00	.00	.00	556.
1	0936	97	.15	.04	.12	550.	*	2	0036	247	.00	.00	.00	542.
1	0942	98	.16	.04	.12	575.	*	2	0042	248	.00	.00	.00	527.
1	0948	99	.16	.04	.13	601.	*	2	0048	249	.00	.00	.00	510.
1	0954	100	.17	.04	.13	628.	*	2	0054	250	.00	.00	.00	492.
1	1000	101	.17	.04	.13	657.	*	2	0100	251	.00	.00	.00	473.
1	1006	102	.18	.04	.14	686.	*	2	0106	252	.00	.00	.00	453.
1	1012	103	.18	.04	.15	716.	*	2	0112	253	.00	.00	.00	432.
1	1018	104	.19	.04	.16	747.	*	2	0118	254	.00	.00	.00	407.
1	1024	105	.20	.04	.16	779.	*	2	0124	255	.00	.00	.00	383.
1	1030	106	.21	.04	.17	813.	*	2	0130	256	.00	.00	.00	364.
1	1036	107	.22	.04	.18	848.	*	2	0136	257	.00	.00	.00	346.
1	1042	108	.23	.04	.19	885.	*	2	0142	258	.00	.00	.00	330.
1	1048	109	.23	.04	.20	923.	*	2	0148	259	.00	.00	.00	315.
1	1054	110	.24	.04	.21	963.	*	2	0154	260	.00	.00	.00	301.
1	1100	111	.25	.04	.22	1006.	*	2	0200	261	.00	.00	.00	287.
1	1106	112	.27	.04	.23	1050.	*	2	0206	262	.00	.00	.00	275.
1	1112	113	.30	.04	.26	1097.	*	2	0212	263	.00	.00	.00	263.
1	1118	114	.34	.04	.29	1147.	*	2	0218	264	.00	.00	.00	251.
1	1124	115	.37	.04	.32	1202.	*	2	0224	265	.00	.00	.00	240.
1	1130	116	.40	.05	.36	1260.	*	2	0230	266	.00	.00	.00	230.
1	1136	117	.57	.06	.51	1326.	*	2	0236	267	.00	.00	.00	220.
1	1142	118	.88	.08	.79	1402.	*	2	0242	268	.00	.00	.00	210.

```
        1     1148  119    1.19     .10    1.09      1497.       *        2     0248  269     .00     .00     .00       201.
        1     1154  120    1.49     .11    1.39      1621.       *        2     0254  270     .00     .00     .00       192.
        1     1200  121    2.94     .17    2.77      1792.       *        2     0300  271     .00     .00     .00       184.
        1     1206  122    2.94     .13    2.81      2036.       *        2     0306  272     .00     .00     .00       176.
        1     1212  123    1.49     .05    1.44      2360.       *        2     0312  273     .00     .00     .00       168.
        1     1218  124    1.19     .04    1.15      2753.       *        2     0318  274     .00     .00     .00       161.
        1     1224  125     .88     .03     .85      3202.       *        2     0324  275     .00     .00     .00       154.
        1     1230  126     .57     .02     .55      3690.       *        2     0330  276     .00     .00     .00       147.
        1     1236  127     .40     .01     .39      4199.       *        2     0336  277     .00     .00     .00       141.
        1     1242  128     .37     .01     .36      4703.       *        2     0342  278     .00     .00     .00       134.
        1     1248  129     .34     .01     .33      5175.       *        2     0348  279     .00     .00     .00       129.
        1     1254  130     .30     .01     .30      5593.       *        2     0354  280     .00     .00     .00       123.
        1     1300  131     .27     .01     .26      5940.       *        2     0400  281     .00     .00     .00       117.
        1     1306  132     .25     .01     .25      6205.       *        2     0406  282     .00     .00     .00       112.
        1     1312  133     .24     .01     .24      6378.       *        2     0412  283     .00     .00     .00       107.
        1     1318  134     .23     .01     .23      6456.       *        2     0418  284     .00     .00     .00       103.
        1     1324  135     .23     .01     .22      6450.       *        2     0424  285     .00     .00     .00        98.
        1     1330  136     .22     .00     .21      6389.       *        2     0430  286     .00     .00     .00        94.
        1     1336  137     .21     .00     .20      6297.       *        2     0436  287     .00     .00     .00        90.
        1     1342  138     .20     .00     .20      6187.       *        2     0442  288     .00     .00     .00        86.
        1     1348  139     .19     .00     .19      6066.       *        2     0448  289     .00     .00     .00        82.
        1     1354  140     .18     .00     .18      5941.       *        2     0454  290     .00     .00     .00        78.
        1     1400  141     .18     .00     .17      5814.       *        2     0500  291     .00     .00     .00        75.
        1     1406  142     .17     .00     .17      5687.       *        2     0506  292     .00     .00     .00        71.
        1     1412  143     .17     .00     .16      5559.       *        2     0512  293     .00     .00     .00        68.
        1     1418  144     .16     .00     .16      5433.       *        2     0518  294     .00     .00     .00        65.
        1     1424  145     .16     .00     .15      5308.       *        2     0524  295     .00     .00     .00        62.
        1     1430  146     .15     .00     .15      5184.       *        2     0530  296     .00     .00     .00        59.
        1     1436  147     .15     .00     .15      5062.       *        2     0536  297     .00     .00     .00        57.
        1     1442  148     .15     .00     .14      4942.       *        2     0542  298     .00     .00     .00        54.
        1     1448  149     .14     .00     .14      4824.       *        2     0548  299     .00     .00     .00        52.
        1     1454  150     .14     .00     .13      4708.       *        2     0554  300     .00     .00     .00        49.
                                                                 *
 ************************************************************************************************************************

     TOTAL RAINFALL =   35.00, TOTAL LOSS =    5.08, TOTAL EXCESS =   29.92

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                           (CFS)
+    6456.     13.30                4142.       1522.       1224.        1224.
                         (INCHES)   20.162      29.636      29.696       29.696
                          (AC-FT)   2054.       3019.       3025.        3025.

                          CUMULATIVE AREA =    1.91 SQ MI

 APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

 ************************************************************************************************************************

                                                HYDROGRAPH AT STATION      A-1
                                                    PLAN 1,   RATIO =   .30

 ************************************************************************************************************************
                                                                 *
        DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q      *       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q
                                                                 *
```

1	0000	1	.00	.00	.00	0.	*	1	1500	151	.04	.01	.03	1043.
1	0006	2	.01	.01	.00	0.	*	1	1506	152	.04	.01	.03	1020.
1	0012	3	.01	.01	.00	0.	*	1	1512	153	.04	.01	.03	998.
1	0018	4	.01	.01	.00	0.	*	1	1518	154	.04	.00	.03	976.
1	0024	5	.01	.01	.00	0.	*	1	1524	155	.04	.00	.03	955.
1	0030	6	.01	.01	.00	0.	*	1	1530	156	.03	.00	.03	934.
1	0036	7	.01	.01	.00	0.	*	1	1536	157	.03	.00	.03	913.
1	0042	8	.01	.01	.00	0.	*	1	1542	158	.03	.00	.03	893.
1	0048	9	.01	.01	.00	0.	*	1	1548	159	.03	.00	.03	873.
1	0054	10	.01	.01	.00	0.	*	1	1554	160	.03	.00	.03	853.
1	0100	11	.01	.01	.00	0.	*	1	1600	161	.03	.00	.02	834.
1	0106	12	.01	.01	.00	0.	*	1	1606	162	.03	.00	.02	815.
1	0112	13	.01	.01	.00	0.	*	1	1612	163	.03	.00	.02	796.
1	0118	14	.01	.01	.00	0.	*	1	1618	164	.03	.00	.02	777.
1	0124	15	.01	.01	.00	0.	*	1	1624	165	.03	.00	.02	759.
1	0130	16	.01	.01	.00	0.	*	1	1630	166	.02	.00	.02	741.
1	0136	17	.01	.01	.00	0.	*	1	1636	167	.02	.00	.02	724.
1	0142	18	.01	.01	.00	0.	*	1	1642	168	.02	.00	.02	706.
1	0148	19	.01	.01	.00	0.	*	1	1648	169	.02	.00	.02	689.
1	0154	20	.01	.01	.00	0.	*	1	1654	170	.02	.00	.02	673.
1	0200	21	.01	.01	.00	0.	*	1	1700	171	.02	.00	.02	657.
1	0206	22	.01	.01	.00	0.	*	1	1706	172	.02	.00	.02	641.
1	0212	23	.01	.01	.00	0.	*	1	1712	173	.02	.00	.02	625.
1	0218	24	.01	.01	.00	0.	*	1	1718	174	.02	.00	.02	610.
1	0224	25	.01	.01	.00	0.	*	1	1724	175	.02	.00	.02	596.
1	0230	26	.01	.01	.00	0.	*	1	1730	176	.02	.00	.02	581.
1	0236	27	.01	.01	.00	0.	*	1	1736	177	.02	.00	.02	568.
1	0242	28	.01	.01	.00	0.	*	1	1742	178	.02	.00	.02	554.
1	0248	29	.01	.01	.00	0.	*	1	1748	179	.02	.00	.02	541.
1	0254	30	.01	.01	.00	0.	*	1	1754	180	.02	.00	.02	528.
1	0300	31	.01	.01	.00	0.	*	1	1800	181	.02	.00	.01	515.
1	0306	32	.01	.01	.00	0.	*	1	1806	182	.02	.00	.01	503.
1	0312	33	.01	.01	.00	0.	*	1	1812	183	.02	.00	.01	491.
1	0318	34	.01	.01	.00	0.	*	1	1818	184	.02	.00	.01	479.
1	0324	35	.01	.01	.00	0.	*	1	1824	185	.02	.00	.01	468.
1	0330	36	.01	.01	.00	0.	*	1	1830	186	.02	.00	.01	457.
1	0336	37	.01	.01	.00	0.	*	1	1836	187	.02	.00	.01	446.
1	0342	38	.01	.01	.00	0.	*	1	1842	188	.02	.00	.01	435.
1	0348	39	.01	.01	.00	0.	*	1	1848	189	.02	.00	.01	425.
1	0354	40	.01	.01	.00	0.	*	1	1854	190	.02	.00	.01	415.
1	0400	41	.01	.01	.00	0.	*	1	1900	191	.02	.00	.01	405.
1	0406	42	.01	.01	.00	0.	*	1	1906	192	.01	.00	.01	396.
1	0412	43	.01	.01	.00	0.	*	1	1912	193	.02	.00	.01	386.
1	0418	44	.01	.01	.00	0.	*	1	1918	194	.01	.00	.01	378.
1	0424	45	.01	.01	.00	0.	*	1	1924	195	.01	.00	.01	369.
1	0430	46	.01	.01	.00	0.	*	1	1930	196	.01	.00	.01	361.
1	0436	47	.01	.01	.00	0.	*	1	1936	197	.01	.00	.01	353.
1	0442	48	.01	.01	.00	0.	*	1	1942	198	.01	.00	.01	345.
1	0448	49	.01	.01	.00	0.	*	1	1948	199	.01	.00	.01	338.
1	0454	50	.02	.02	.00	0.	*	1	1954	200	.01	.00	.01	331.
1	0500	51	.01	.01	.00	0.	*	1	2000	201	.01	.00	.01	324.
1	0506	52	.02	.02	.00	0.	*	1	2006	202	.01	.00	.01	317.
1	0512	53	.02	.02	.00	0.	*	1	2012	203	.01	.00	.01	310.
1	0518	54	.02	.02	.00	0.	*	1	2018	204	.01	.00	.01	304.
1	0524	55	.02	.02	.00	0.	*	1	2024	205	.01	.00	.01	298.
1	0530	56	.02	.02	.00	0.	*	1	2030	206	.01	.00	.01	292.
1	0536	57	.02	.02	.00	0.	*	1	2036	207	.01	.00	.01	286.
1	0542	58	.02	.02	.00	0.	*	1	2042	208	.01	.00	.01	280.

1	0548	59	.02	.02	.00	0.	*	1	2048	209	.01	.00	.01	275.
1	0554	60	.02	.02	.00	0.	*	1	2054	210	.01	.00	.01	270.
1	0600	61	.02	.02	.00	0.	*	1	2100	211	.01	.00	.01	264.
1	0606	62	.02	.02	.00	0.	*	1	2106	212	.01	.00	.01	259.
1	0612	63	.02	.02	.00	0.	*	1	2112	213	.01	.00	.01	255.
1	0618	64	.02	.02	.00	0.	*	1	2118	214	.01	.00	.01	250.
1	0624	65	.02	.02	.00	0.	*	1	2124	215	.01	.00	.01	245.
1	0630	66	.02	.02	.00	0.	*	1	2130	216	.01	.00	.01	241.
1	0636	67	.02	.02	.00	0.	*	1	2136	217	.01	.00	.01	237.
1	0642	68	.02	.02	.00	0.	*	1	2142	218	.01	.00	.01	233.
1	0648	69	.02	.02	.00	0.	*	1	2148	219	.01	.00	.01	229.
1	0654	70	.02	.02	.00	0.	*	1	2154	220	.01	.00	.01	225.
1	0700	71	.02	.02	.00	0.	*	1	2200	221	.01	.00	.01	221.
1	0706	72	.02	.02	.00	0.	*	1	2206	222	.01	.00	.01	217.
1	0712	73	.02	.02	.00	0.	*	1	2212	223	.01	.00	.01	214.
1	0718	74	.02	.02	.00	0.	*	1	2218	224	.01	.00	.01	210.
1	0724	75	.02	.02	.00	0.	*	1	2224	225	.01	.00	.01	207.
1	0730	76	.02	.02	.00	0.	*	1	2230	226	.01	.00	.01	203.
1	0736	77	.02	.02	.00	0.	*	1	2236	227	.01	.00	.01	200.
1	0742	78	.03	.02	.00	0.	*	1	2242	228	.01	.00	.01	197.
1	0748	79	.03	.02	.00	1.	*	1	2248	229	.01	.00	.01	194.
1	0754	80	.03	.02	.00	1.	*	1	2254	230	.01	.00	.01	191.
1	0800	81	.03	.02	.00	1.	*	1	2300	231	.01	.00	.01	188.
1	0806	82	.03	.02	.00	2.	*	1	2306	232	.01	.00	.01	185.
1	0812	83	.03	.03	.00	2.	*	1	2312	233	.01	.00	.01	182.
1	0818	84	.03	.03	.00	3.	*	1	2318	234	.01	.00	.01	179.
1	0824	85	.03	.03	.00	4.	*	1	2324	235	.01	.00	.01	177.
1	0830	86	.03	.03	.00	5.	*	1	2330	236	.01	.00	.01	174.
1	0836	87	.03	.03	.01	6.	*	1	2336	237	.01	.00	.01	171.
1	0842	88	.04	.03	.01	7.	*	1	2342	238	.01	.00	.01	169.
1	0848	89	.04	.03	.01	9.	*	1	2348	239	.01	.00	.01	166.
1	0854	90	.04	.03	.01	10.	*	1	2354	240	.01	.00	.01	164.
1	0900	91	.04	.03	.01	12.	*	2	0000	241	.01	.00	.01	161.
1	0906	92	.04	.03	.01	14.	*	2	0006	242	.00	.00	.00	159.
1	0912	93	.04	.03	.01	16.	*	2	0012	243	.00	.00	.00	157.
1	0918	94	.04	.03	.01	18.	*	2	0018	244	.00	.00	.00	154.
1	0924	95	.04	.03	.01	21.	*	2	0024	245	.00	.00	.00	151.
1	0930	96	.04	.03	.01	23.	*	2	0030	246	.00	.00	.00	147.
1	0936	97	.05	.03	.01	26.	*	2	0036	247	.00	.00	.00	144.
1	0942	98	.05	.03	.01	30.	*	2	0042	248	.00	.00	.00	140.
1	0948	99	.05	.03	.01	33.	*	2	0048	249	.00	.00	.00	136.
1	0954	100	.05	.03	.02	37.	*	2	0054	250	.00	.00	.00	131.
1	1000	101	.05	.03	.02	41.	*	2	0100	251	.00	.00	.00	126.
1	1006	102	.05	.03	.02	45.	*	2	0106	252	.00	.00	.00	121.
1	1012	103	.06	.04	.02	49.	*	2	0112	253	.00	.00	.00	115.
1	1018	104	.06	.04	.02	54.	*	2	0118	254	.00	.00	.00	109.
1	1024	105	.06	.04	.02	59.	*	2	0124	255	.00	.00	.00	103.
1	1030	106	.06	.04	.02	64.	*	2	0130	256	.00	.00	.00	98.
1	1036	107	.07	.04	.03	70.	*	2	0136	257	.00	.00	.00	93.
1	1042	108	.07	.04	.03	76.	*	2	0142	258	.00	.00	.00	89.
1	1048	109	.07	.04	.03	83.	*	2	0148	259	.00	.00	.00	85.
1	1054	110	.07	.04	.03	90.	*	2	0154	260	.00	.00	.00	81.
1	1100	111	.08	.04	.03	97.	*	2	0200	261	.00	.00	.00	77.
1	1106	112	.08	.04	.04	105.	*	2	0206	262	.00	.00	.00	74.
1	1112	113	.09	.05	.04	114.	*	2	0212	263	.00	.00	.00	71.
1	1118	114	.10	.05	.05	123.	*	2	0218	264	.00	.00	.00	68.
1	1124	115	.11	.05	.06	134.	*	2	0224	265	.00	.00	.00	65.
1	1130	116	.12	.06	.06	145.	*	2	0230	266	.00	.00	.00	62.

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        1     1136  117     .17     .08     .09       158.       *        2     0236  267     .00     .00     .00        59.
        1     1142  118     .26     .11     .15       173.       *        2     0242  268     .00     .00     .00        57.
        1     1148  119     .36     .14     .22       192.       *        2     0248  269     .00     .00     .00        54.
        1     1154  120     .45     .16     .29       217.       *        2     0254  270     .00     .00     .00        52.
        1     1200  121     .88     .27     .62       252.       *        2     0300  271     .00     .00     .00        50.
        1     1206  122     .88     .22     .66       304.       *        2     0306  272     .00     .00     .00        47.
        1     1212  123     .45     .10     .35       375.       *        2     0312  273     .00     .00     .00        45.
        1     1218  124     .36     .07     .28       463.       *        2     0318  274     .00     .00     .00        43.
        1     1224  125     .26     .05     .21       565.       *        2     0324  275     .00     .00     .00        41.
        1     1230  126     .17     .03     .14       678.       *        2     0330  276     .00     .00     .00        40.
        1     1236  127     .12     .02     .10       797.       *        2     0336  277     .00     .00     .00        38.
        1     1242  128     .11     .02     .09       917.       *        2     0342  278     .00     .00     .00        36.
        1     1248  129     .10     .02     .08      1032.       *        2     0348  279     .00     .00     .00        35.
        1     1254  130     .09     .02     .08      1136.       *        2     0354  280     .00     .00     .00        33.
        1     1300  131     .08     .01     .07      1225.       *        2     0400  281     .00     .00     .00        32.
        1     1306  132     .08     .01     .06      1296.       *        2     0406  282     .00     .00     .00        30.
        1     1312  133     .07     .01     .06      1346.       *        2     0412  283     .00     .00     .00        29.
        1     1318  134     .07     .01     .06      1375.       *        2     0418  284     .00     .00     .00        28.
        1     1324  135     .07     .01     .06      1383.       *        2     0424  285     .00     .00     .00        26.
        1     1330  136     .07     .01     .06      1378.       *        2     0430  286     .00     .00     .00        25.
        1     1336  137     .06     .01     .05      1365.       *        2     0436  287     .00     .00     .00        24.
        1     1342  138     .06     .01     .05      1347.       *        2     0442  288     .00     .00     .00        23.
        1     1348  139     .06     .01     .05      1326.       *        2     0448  289     .00     .00     .00        22.
        1     1354  140     .06     .01     .05      1304.       *        2     0454  290     .00     .00     .00        21.
        1     1400  141     .05     .01     .04      1280.       *        2     0500  291     .00     .00     .00        20.
        1     1406  142     .05     .01     .04      1257.       *        2     0506  292     .00     .00     .00        19.
        1     1412  143     .05     .01     .04      1232.       *        2     0512  293     .00     .00     .00        18.
        1     1418  144     .05     .01     .04      1208.       *        2     0518  294     .00     .00     .00        18.
        1     1424  145     .05     .01     .04      1184.       *        2     0524  295     .00     .00     .00        17.
        1     1430  146     .05     .01     .04      1160.       *        2     0530  296     .00     .00     .00        16.
        1     1436  147     .04     .01     .04      1136.       *        2     0536  297     .00     .00     .00        15.
        1     1442  148     .04     .01     .04      1113.       *        2     0542  298     .00     .00     .00        15.
        1     1448  149     .04     .01     .04      1089.       *        2     0548  299     .00     .00     .00        14.
        1     1454  150     .04     .01     .04      1066.       *        2     0554  300     .00     .00     .00        13.
                                                                 *
 ************************************************************************************************************************************

     TOTAL RAINFALL =   10.50, TOTAL LOSS =    4.09, TOTAL EXCESS =    6.41

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                            (CFS)
+    1383.     13.40                918.        326.        262.         262.
                         (INCHES)   4.466       6.352       6.352        6.352
                          (AC-FT)    455.        647.        647.         647.

                          CUMULATIVE AREA =    1.91 SQ MI

 APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

 ************************************************************************************************************************************

                                                HYDROGRAPH AT STATION      A-1
                                                    PLAN 1,   RATIO =   .40

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DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
								*								
1		0000	1	.00	.00	.00	0.	*	1		1500	151	.05	.00	.05	1545.
1		0006	2	.01	.01	.00	0.	*	1		1506	152	.05	.00	.05	1510.
1		0012	3	.01	.01	.00	0.	*	1		1512	153	.05	.00	.05	1476.
1		0018	4	.01	.01	.00	0.	*	1		1518	154	.05	.00	.04	1442.
1		0024	5	.01	.01	.00	0.	*	1		1524	155	.05	.00	.04	1409.
1		0030	6	.01	.01	.00	0.	*	1		1530	156	.05	.00	.04	1377.
1		0036	7	.01	.01	.00	0.	*	1		1536	157	.04	.00	.04	1346.
1		0042	8	.01	.01	.00	0.	*	1		1542	158	.04	.00	.04	1314.
1		0048	9	.01	.01	.00	0.	*	1		1548	159	.04	.00	.04	1284.
1		0054	10	.01	.01	.00	0.	*	1		1554	160	.04	.00	.04	1254.
1		0100	11	.01	.01	.00	0.	*	1		1600	161	.04	.00	.03	1224.
1		0106	12	.01	.01	.00	0.	*	1		1606	162	.04	.00	.03	1195.
1		0112	13	.01	.01	.00	0.	*	1		1612	163	.04	.00	.03	1167.
1		0118	14	.01	.01	.00	0.	*	1		1618	164	.03	.00	.03	1139.
1		0124	15	.01	.01	.00	0.	*	1		1624	165	.03	.00	.03	1111.
1		0130	16	.01	.01	.00	0.	*	1		1630	166	.03	.00	.03	1084.
1		0136	17	.01	.01	.00	0.	*	1		1636	167	.03	.00	.03	1058.
1		0142	18	.01	.01	.00	0.	*	1		1642	168	.03	.00	.03	1031.
1		0148	19	.01	.01	.00	0.	*	1		1648	169	.03	.00	.03	1006.
1		0154	20	.01	.01	.00	0.	*	1		1654	170	.03	.00	.03	981.
1		0200	21	.01	.01	.00	0.	*	1		1700	171	.03	.00	.03	957.
1		0206	22	.01	.01	.00	0.	*	1		1706	172	.03	.00	.03	933.
1		0212	23	.01	.01	.00	0.	*	1		1712	173	.03	.00	.03	910.
1		0218	24	.01	.01	.00	0.	*	1		1718	174	.03	.00	.03	888.
1		0224	25	.01	.01	.00	0.	*	1		1724	175	.03	.00	.02	866.
1		0230	26	.01	.01	.00	0.	*	1		1730	176	.03	.00	.02	845.
1		0236	27	.02	.02	.00	0.	*	1		1736	177	.03	.00	.02	824.
1		0242	28	.02	.02	.00	0.	*	1		1742	178	.02	.00	.02	804.
1		0248	29	.02	.02	.00	0.	*	1		1748	179	.02	.00	.02	784.
1		0254	30	.02	.02	.00	0.	*	1		1754	180	.02	.00	.02	765.
1		0300	31	.02	.02	.00	0.	*	1		1800	181	.02	.00	.02	746.
1		0306	32	.02	.02	.00	0.	*	1		1806	182	.02	.00	.02	728.
1		0312	33	.02	.02	.00	0.	*	1		1812	183	.02	.00	.02	710.
1		0318	34	.02	.02	.00	0.	*	1		1818	184	.02	.00	.02	693.
1		0324	35	.02	.02	.00	0.	*	1		1824	185	.02	.00	.02	676.
1		0330	36	.02	.02	.00	0.	*	1		1830	186	.02	.00	.02	659.
1		0336	37	.02	.02	.00	0.	*	1		1836	187	.02	.00	.02	643.
1		0342	38	.02	.02	.00	0.	*	1		1842	188	.02	.00	.02	627.
1		0348	39	.02	.02	.00	0.	*	1		1848	189	.02	.00	.02	612.
1		0354	40	.02	.02	.00	0.	*	1		1854	190	.02	.00	.02	597.
1		0400	41	.02	.02	.00	0.	*	1		1900	191	.02	.00	.02	583.
1		0406	42	.02	.02	.00	0.	*	1		1906	192	.02	.00	.02	569.
1		0412	43	.02	.02	.00	0.	*	1		1912	193	.02	.00	.02	556.
1		0418	44	.02	.02	.00	0.	*	1		1918	194	.02	.00	.02	543.
1		0424	45	.02	.02	.00	0.	*	1		1924	195	.02	.00	.02	530.
1		0430	46	.02	.02	.00	0.	*	1		1930	196	.02	.00	.02	518.
1		0436	47	.02	.02	.00	0.	*	1		1936	197	.02	.00	.02	506.
1		0442	48	.02	.02	.00	0.	*	1		1942	198	.02	.00	.02	495.
1		0448	49	.02	.02	.00	0.	*	1		1948	199	.02	.00	.02	484.
1		0454	50	.02	.02	.00	0.	*	1		1954	200	.02	.00	.02	474.
1		0500	51	.02	.02	.00	0.	*	1		2000	201	.02	.00	.02	463.
1		0506	52	.02	.02	.00	0.	*	1		2006	202	.02	.00	.02	453.
1		0512	53	.02	.02	.00	0.	*	1		2012	203	.02	.00	.02	444.
1		0518	54	.02	.02	.00	0.	*	1		2018	204	.02	.00	.02	434.
1		0524	55	.02	.02	.00	0.	*	1		2024	205	.02	.00	.02	425.
1		0530	56	.02	.02	.00	0.	*	1		2030	206	.02	.00	.02	417.

1	0536	57	.02	.02	.00	0.	*	1	2036	207	.02	.00	.02	408.
1	0542	58	.02	.02	.00	0.	*	1	2042	208	.02	.00	.02	400.
1	0548	59	.02	.02	.00	0.	*	1	2048	209	.02	.00	.02	392.
1	0554	60	.02	.02	.00	0.	*	1	2054	210	.02	.00	.02	384.
1	0600	61	.02	.02	.00	0.	*	1	2100	211	.02	.00	.02	377.
1	0606	62	.02	.02	.00	0.	*	1	2106	212	.02	.00	.02	369.
1	0612	63	.02	.02	.00	0.	*	1	2112	213	.02	.00	.02	362.
1	0618	64	.02	.02	.00	0.	*	1	2118	214	.02	.00	.02	356.
1	0624	65	.02	.02	.00	0.	*	1	2124	215	.02	.00	.01	349.
1	0630	66	.03	.02	.00	1.	*	1	2130	216	.02	.00	.01	343.
1	0636	67	.03	.02	.00	1.	*	1	2136	217	.02	.00	.01	336.
1	0642	68	.03	.02	.00	1.	*	1	2142	218	.02	.00	.01	330.
1	0648	69	.03	.02	.00	2.	*	1	2148	219	.02	.00	.01	324.
1	0654	70	.03	.03	.00	2.	*	1	2154	220	.02	.00	.01	319.
1	0700	71	.03	.03	.00	3.	*	1	2200	221	.02	.00	.01	313.
1	0706	72	.03	.03	.00	4.	*	1	2206	222	.01	.00	.01	308.
1	0712	73	.03	.03	.00	4.	*	1	2212	223	.01	.00	.01	302.
1	0718	74	.03	.03	.00	5.	*	1	2218	224	.01	.00	.01	297.
1	0724	75	.03	.03	.01	7.	*	1	2224	225	.01	.00	.01	292.
1	0730	76	.03	.03	.01	8.	*	1	2230	226	.01	.00	.01	288.
1	0736	77	.03	.03	.01	9.	*	1	2236	227	.01	.00	.01	283.
1	0742	78	.03	.03	.01	11.	*	1	2242	228	.01	.00	.01	278.
1	0748	79	.03	.03	.01	12.	*	1	2248	229	.01	.00	.01	274.
1	0754	80	.04	.03	.01	14.	*	1	2254	230	.01	.00	.01	269.
1	0800	81	.04	.03	.01	16.	*	1	2300	231	.01	.00	.01	265.
1	0806	82	.04	.03	.01	18.	*	1	2306	232	.01	.00	.01	261.
1	0812	83	.04	.03	.01	20.	*	1	2312	233	.01	.00	.01	257.
1	0818	84	.04	.03	.01	23.	*	1	2318	234	.01	.00	.01	253.
1	0824	85	.04	.03	.01	25.	*	1	2324	235	.01	.00	.01	249.
1	0830	86	.04	.03	.01	28.	*	1	2330	236	.01	.00	.01	245.
1	0836	87	.05	.03	.01	31.	*	1	2336	237	.01	.00	.01	241.
1	0842	88	.05	.03	.01	34.	*	1	2342	238	.01	.00	.01	238.
1	0848	89	.05	.03	.02	38.	*	1	2348	239	.01	.00	.01	234.
1	0854	90	.05	.03	.02	41.	*	1	2354	240	.01	.00	.01	230.
1	0900	91	.05	.03	.02	45.	*	2	0000	241	.01	.00	.01	227.
1	0906	92	.05	.03	.02	49.	*	2	0006	242	.00	.00	.00	223.
1	0912	93	.05	.04	.02	54.	*	2	0012	243	.00	.00	.00	220.
1	0918	94	.06	.04	.02	59.	*	2	0018	244	.00	.00	.00	216.
1	0924	95	.06	.04	.02	64.	*	2	0024	245	.00	.00	.00	212.
1	0930	96	.06	.04	.02	69.	*	2	0030	246	.00	.00	.00	207.
1	0936	97	.06	.04	.03	75.	*	2	0036	247	.00	.00	.00	202.
1	0942	98	.06	.04	.03	81.	*	2	0042	248	.00	.00	.00	196.
1	0948	99	.06	.04	.03	88.	*	2	0048	249	.00	.00	.00	190.
1	0954	100	.07	.04	.03	94.	*	2	0054	250	.00	.00	.00	184.
1	1000	101	.07	.04	.03	102.	*	2	0100	251	.00	.00	.00	177.
1	1006	102	.07	.04	.03	109.	*	2	0106	252	.00	.00	.00	169.
1	1012	103	.07	.04	.04	117.	*	2	0112	253	.00	.00	.00	161.
1	1018	104	.08	.04	.04	126.	*	2	0118	254	.00	.00	.00	152.
1	1024	105	.08	.04	.04	134.	*	2	0124	255	.00	.00	.00	144.
1	1030	106	.08	.04	.04	144.	*	2	0130	256	.00	.00	.00	137.
1	1036	107	.09	.04	.05	154.	*	2	0136	257	.00	.00	.00	130.
1	1042	108	.09	.04	.05	164.	*	2	0142	258	.00	.00	.00	124.
1	1048	109	.09	.04	.05	175.	*	2	0148	259	.00	.00	.00	118.
1	1054	110	.10	.04	.05	187.	*	2	0154	260	.00	.00	.00	113.
1	1100	111	.10	.04	.06	199.	*	2	0200	261	.00	.00	.00	108.
1	1106	112	.11	.04	.06	212.	*	2	0206	262	.00	.00	.00	103.
1	1112	113	.12	.05	.07	226.	*	2	0212	263	.00	.00	.00	99.
1	1118	114	.13	.05	.08	242.	*	2	0218	264	.00	.00	.00	94.

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        1     1124  115     .15     .05     .09       258.       *        2     0224  265     .00     .00     .00        90.
        1     1130  116     .16     .06     .10       276.       *        2     0230  266     .00     .00     .00        86.
        1     1136  117     .23     .08     .15       297.       *        2     0236  267     .00     .00     .00        83.
        1     1142  118     .35     .11     .24       320.       *        2     0242  268     .00     .00     .00        79.
        1     1148  119     .47     .14     .34       350.       *        2     0248  269     .00     .00     .00        76.
        1     1154  120     .60     .15     .44       389.       *        2     0254  270     .00     .00     .00        72.
        1     1200  121    1.18     .25     .92       444.       *        2     0300  271     .00     .00     .00        69.
        1     1206  122    1.18     .20     .97       524.       *        2     0306  272     .00     .00     .00        66.
        1     1212  123     .60     .09     .51       631.       *        2     0312  273     .00     .00     .00        63.
        1     1218  124     .47     .06     .41       762.       *        2     0318  274     .00     .00     .00        60.
        1     1224  125     .35     .04     .31       914.       *        2     0324  275     .00     .00     .00        58.
        1     1230  126     .23     .03     .20      1082.       *        2     0330  276     .00     .00     .00        55.
        1     1236  127     .16     .02     .14      1257.       *        2     0336  277     .00     .00     .00        53.
        1     1242  128     .15     .02     .13      1433.       *        2     0342  278     .00     .00     .00        51.
        1     1248  129     .13     .02     .12      1601.       *        2     0348  279     .00     .00     .00        48.
        1     1254  130     .12     .01     .11      1751.       *        2     0354  280     .00     .00     .00        46.
        1     1300  131     .11     .01     .10      1878.       *        2     0400  281     .00     .00     .00        44.
        1     1306  132     .10     .01     .09      1978.       *        2     0406  282     .00     .00     .00        42.
        1     1312  133     .10     .01     .09      2047.       *        2     0412  283     .00     .00     .00        40.
        1     1318  134     .09     .01     .08      2084.       *        2     0418  284     .00     .00     .00        39.
        1     1324  135     .09     .01     .08      2091.       *        2     0424  285     .00     .00     .00        37.
        1     1330  136     .09     .01     .08      2079.       *        2     0430  286     .00     .00     .00        35.
        1     1336  137     .08     .01     .08      2056.       *        2     0436  287     .00     .00     .00        34.
        1     1342  138     .08     .01     .07      2026.       *        2     0442  288     .00     .00     .00        32.
        1     1348  139     .08     .01     .07      1991.       *        2     0448  289     .00     .00     .00        31.
        1     1354  140     .07     .01     .07      1955.       *        2     0454  290     .00     .00     .00        29.
        1     1400  141     .07     .01     .06      1918.       *        2     0500  291     .00     .00     .00        28.
        1     1406  142     .07     .01     .06      1880.       *        2     0506  292     .00     .00     .00        27.
        1     1412  143     .07     .01     .06      1841.       *        2     0512  293     .00     .00     .00        26.
        1     1418  144     .06     .01     .06      1803.       *        2     0518  294     .00     .00     .00        25.
        1     1424  145     .06     .01     .06      1765.       *        2     0524  295     .00     .00     .00        23.
        1     1430  146     .06     .01     .06      1727.       *        2     0530  296     .00     .00     .00        22.
        1     1436  147     .06     .01     .05      1690.       *        2     0536  297     .00     .00     .00        21.
        1     1442  148     .06     .01     .05      1653.       *        2     0542  298     .00     .00     .00        20.
        1     1448  149     .06     .01     .05      1616.       *        2     0548  299     .00     .00     .00        20.
        1     1454  150     .05     .00     .05      1580.       *        2     0554  300     .00     .00     .00        19.
                                                                 *
 ************************************************************************************************************************************

     TOTAL RAINFALL =   14.00, TOTAL LOSS =    4.40, TOTAL EXCESS =    9.60

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                           (CFS)
+    2091.     13.40                1369.        489.        393.         393.
                         (INCHES)    6.664       9.522       9.522        9.522
                          (AC-FT)     679.        970.        970.         970.

                          CUMULATIVE AREA =    1.91 SQ MI

 APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

 ************************************************************************************************************************************

                                                HYDROGRAPH AT STATION      A-1
                                                    PLAN 1,   RATIO =   .50
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DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		1500	151	.07	.00	.06	2053.
1		0006	2	.02	.02	.00	0.	1		1506	152	.06	.00	.06	2006.
1		0012	3	.02	.02	.00	0.	1		1512	153	.06	.00	.06	1959.
1		0018	4	.02	.02	.00	0.	1		1518	154	.06	.00	.06	1914.
1		0024	5	.02	.02	.00	0.	1		1524	155	.06	.00	.06	1869.
1		0030	6	.02	.02	.00	0.	1		1530	156	.06	.00	.05	1825.
1		0036	7	.02	.02	.00	0.	1		1536	157	.05	.00	.05	1782.
1		0042	8	.02	.02	.00	0.	1		1542	158	.05	.00	.05	1740.
1		0048	9	.02	.02	.00	0.	1		1548	159	.05	.00	.05	1699.
1		0054	10	.02	.02	.00	0.	1		1554	160	.05	.00	.05	1658.
1		0100	11	.02	.02	.00	0.	1		1600	161	.05	.00	.04	1618.
1		0106	12	.02	.02	.00	0.	1		1606	162	.05	.00	.04	1579.
1		0112	13	.02	.02	.00	0.	1		1612	163	.04	.00	.04	1541.
1		0118	14	.02	.02	.00	0.	1		1618	164	.04	.00	.04	1503.
1		0124	15	.02	.02	.00	0.	1		1624	165	.04	.00	.04	1466.
1		0130	16	.02	.02	.00	0.	1		1630	166	.04	.00	.04	1429.
1		0136	17	.02	.02	.00	0.	1		1636	167	.04	.00	.04	1394.
1		0142	18	.02	.02	.00	0.	1		1642	168	.04	.00	.04	1359.
1		0148	19	.02	.02	.00	0.	1		1648	169	.04	.00	.04	1325.
1		0154	20	.02	.02	.00	0.	1		1654	170	.04	.00	.04	1292.
1		0200	21	.02	.02	.00	0.	1		1700	171	.04	.00	.03	1259.
1		0206	22	.02	.02	.00	0.	1		1706	172	.04	.00	.03	1227.
1		0212	23	.02	.02	.00	0.	1		1712	173	.04	.00	.03	1197.
1		0218	24	.02	.02	.00	0.	1		1718	174	.03	.00	.03	1167.
1		0224	25	.02	.02	.00	0.	1		1724	175	.03	.00	.03	1138.
1		0230	26	.02	.02	.00	0.	1		1730	176	.03	.00	.03	1109.
1		0236	27	.02	.02	.00	0.	1		1736	177	.03	.00	.03	1082.
1		0242	28	.02	.02	.00	0.	1		1742	178	.03	.00	.03	1055.
1		0248	29	.02	.02	.00	0.	1		1748	179	.03	.00	.03	1028.
1		0254	30	.02	.02	.00	0.	1		1754	180	.03	.00	.03	1003.
1		0300	31	.02	.02	.00	0.	1		1800	181	.03	.00	.03	978.
1		0306	32	.02	.02	.00	0.	1		1806	182	.03	.00	.03	954.
1		0312	33	.02	.02	.00	0.	1		1812	183	.03	.00	.03	930.
1		0318	34	.02	.02	.00	0.	1		1818	184	.03	.00	.03	907.
1		0324	35	.02	.02	.00	0.	1		1824	185	.03	.00	.03	884.
1		0330	36	.02	.02	.00	0.	1		1830	186	.03	.00	.03	862.
1		0336	37	.02	.02	.00	0.	1		1836	187	.03	.00	.03	841.
1		0342	38	.02	.02	.00	0.	1		1842	188	.03	.00	.02	820.
1		0348	39	.02	.02	.00	0.	1		1848	189	.03	.00	.02	800.
1		0354	40	.02	.02	.00	0.	1		1854	190	.03	.00	.02	780.
1		0400	41	.02	.02	.00	0.	1		1900	191	.03	.00	.02	761.
1		0406	42	.02	.02	.00	0.	1		1906	192	.02	.00	.02	743.
1		0412	43	.02	.02	.00	0.	1		1912	193	.03	.00	.02	725.
1		0418	44	.02	.02	.00	0.	1		1918	194	.02	.00	.02	708.
1		0424	45	.02	.02	.00	0.	1		1924	195	.02	.00	.02	692.
1		0430	46	.02	.02	.00	0.	1		1930	196	.02	.00	.02	676.
1		0436	47	.02	.02	.00	0.	1		1936	197	.02	.00	.02	660.
1		0442	48	.02	.02	.00	0.	1		1942	198	.02	.00	.02	645.
1		0448	49	.02	.02	.00	0.	1		1948	199	.02	.00	.02	631.
1		0454	50	.03	.02	.00	0.	1		1954	200	.02	.00	.02	617.
1		0500	51	.02	.02	.00	0.	1		2000	201	.02	.00	.02	603.
1		0506	52	.03	.03	.00	0.	1		2006	202	.02	.00	.02	590.
1		0512	53	.03	.02	.00	0.	1		2012	203	.02	.00	.02	577.
1		0518	54	.03	.02	.00	0.	1		2018	204	.02	.00	.02	565.

1	0524	55	.03	.02	.00	0.	*	1	2024	205	.02	.00	.02	553.
1	0530	56	.03	.02	.00	0.	*	1	2030	206	.02	.00	.02	541.
1	0536	57	.03	.02	.00	1.	*	1	2036	207	.02	.00	.02	530.
1	0542	58	.03	.02	.00	1.	*	1	2042	208	.02	.00	.02	519.
1	0548	59	.03	.02	.00	1.	*	1	2048	209	.02	.00	.02	509.
1	0554	60	.03	.02	.00	2.	*	1	2054	210	.02	.00	.02	499.
1	0600	61	.03	.02	.00	3.	*	1	2100	211	.02	.00	.02	489.
1	0606	62	.03	.02	.00	3.	*	1	2106	212	.02	.00	.02	479.
1	0612	63	.03	.03	.00	4.	*	1	2112	213	.02	.00	.02	470.
1	0618	64	.03	.03	.00	5.	*	1	2118	214	.02	.00	.02	461.
1	0624	65	.03	.03	.00	6.	*	1	2124	215	.02	.00	.02	452.
1	0630	66	.03	.03	.01	7.	*	1	2130	216	.02	.00	.02	444.
1	0636	67	.03	.03	.01	9.	*	1	2136	217	.02	.00	.02	435.
1	0642	68	.03	.03	.01	10.	*	1	2142	218	.02	.00	.02	428.
1	0648	69	.03	.03	.01	12.	*	1	2148	219	.02	.00	.02	420.
1	0654	70	.04	.03	.01	14.	*	1	2154	220	.02	.00	.02	412.
1	0700	71	.04	.03	.01	15.	*	1	2200	221	.02	.00	.02	405.
1	0706	72	.04	.03	.01	17.	*	1	2206	222	.02	.00	.02	398.
1	0712	73	.04	.03	.01	20.	*	1	2212	223	.02	.00	.02	391.
1	0718	74	.04	.03	.01	22.	*	1	2218	224	.02	.00	.02	384.
1	0724	75	.04	.03	.01	24.	*	1	2224	225	.02	.00	.02	378.
1	0730	76	.04	.03	.01	27.	*	1	2230	226	.02	.00	.02	371.
1	0736	77	.04	.03	.01	30.	*	1	2236	227	.02	.00	.02	365.
1	0742	78	.04	.03	.01	33.	*	1	2242	228	.02	.00	.02	359.
1	0748	79	.04	.03	.01	36.	*	1	2248	229	.02	.00	.02	353.
1	0754	80	.04	.03	.01	40.	*	1	2254	230	.02	.00	.02	347.
1	0800	81	.04	.03	.01	43.	*	1	2300	231	.02	.00	.02	342.
1	0806	82	.05	.03	.02	47.	*	1	2306	232	.02	.00	.02	336.
1	0812	83	.05	.03	.02	51.	*	1	2312	233	.02	.00	.02	331.
1	0818	84	.05	.03	.02	55.	*	1	2318	234	.02	.00	.02	326.
1	0824	85	.05	.03	.02	59.	*	1	2324	235	.02	.00	.02	321.
1	0830	86	.05	.03	.02	64.	*	1	2330	236	.02	.00	.02	316.
1	0836	87	.06	.03	.02	69.	*	1	2336	237	.02	.00	.01	311.
1	0842	88	.06	.03	.02	74.	*	1	2342	238	.02	.00	.01	306.
1	0848	89	.06	.04	.03	80.	*	1	2348	239	.02	.00	.01	301.
1	0854	90	.06	.04	.03	85.	*	1	2354	240	.02	.00	.01	297.
1	0900	91	.07	.04	.03	92.	*	2	0000	241	.02	.00	.01	292.
1	0906	92	.07	.04	.03	98.	*	2	0006	242	.00	.00	.00	287.
1	0912	93	.07	.04	.03	105.	*	2	0012	243	.00	.00	.00	283.
1	0918	94	.07	.04	.03	113.	*	2	0018	244	.00	.00	.00	278.
1	0924	95	.07	.04	.04	120.	*	2	0024	245	.00	.00	.00	272.
1	0930	96	.07	.04	.04	129.	*	2	0030	246	.00	.00	.00	266.
1	0936	97	.08	.04	.04	138.	*	2	0036	247	.00	.00	.00	259.
1	0942	98	.08	.04	.04	147.	*	2	0042	248	.00	.00	.00	252.
1	0948	99	.08	.04	.04	156.	*	2	0048	249	.00	.00	.00	244.
1	0954	100	.08	.04	.04	167.	*	2	0054	250	.00	.00	.00	236.
1	1000	101	.08	.04	.05	177.	*	2	0100	251	.00	.00	.00	227.
1	1006	102	.09	.04	.05	188.	*	2	0106	252	.00	.00	.00	217.
1	1012	103	.09	.04	.05	200.	*	2	0112	253	.00	.00	.00	207.
1	1018	104	.10	.04	.06	212.	*	2	0118	254	.00	.00	.00	195.
1	1024	105	.10	.04	.06	225.	*	2	0124	255	.00	.00	.00	184.
1	1030	106	.10	.04	.06	238.	*	2	0130	256	.00	.00	.00	175.
1	1036	107	.11	.04	.07	252.	*	2	0136	257	.00	.00	.00	166.
1	1042	108	.11	.04	.07	267.	*	2	0142	258	.00	.00	.00	159.
1	1048	109	.12	.04	.07	283.	*	2	0148	259	.00	.00	.00	151.
1	1054	110	.12	.04	.08	299.	*	2	0154	260	.00	.00	.00	145.
1	1100	111	.13	.04	.08	317.	*	2	0200	261	.00	.00	.00	138.
1	1106	112	.14	.04	.09	335.	*	2	0206	262	.00	.00	.00	132.

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        1     1112  113     .15     .05     .10       355.       *        2     0212  263     .00     .00     .00       126.
        1     1118  114     .17     .05     .12       376.       *        2     0218  264     .00     .00     .00       121.
        1     1124  115     .18     .05     .13       399.       *        2     0224  265     .00     .00     .00       116.
        1     1130  116     .20     .06     .14       424.       *        2     0230  266     .00     .00     .00       111.
        1     1136  117     .29     .08     .21       452.       *        2     0236  267     .00     .00     .00       106.
        1     1142  118     .44     .11     .33       485.       *        2     0242  268     .00     .00     .00       101.
        1     1148  119     .59     .13     .46       526.       *        2     0248  269     .00     .00     .00        97.
        1     1154  120     .75     .15     .60       579.       *        2     0254  270     .00     .00     .00        93.
        1     1200  121    1.47     .24    1.23       653.       *        2     0300  271     .00     .00     .00        89.
        1     1206  122    1.47     .19    1.28       761.       *        2     0306  272     .00     .00     .00        85.
        1     1212  123     .75     .08     .67       904.       *        2     0312  273     .00     .00     .00        81.
        1     1218  124     .59     .06     .54      1080.       *        2     0318  274     .00     .00     .00        77.
        1     1224  125     .44     .04     .40      1282.       *        2     0324  275     .00     .00     .00        74.
        1     1230  126     .29     .02     .26      1504.       *        2     0330  276     .00     .00     .00        71.
        1     1236  127     .20     .02     .18      1736.       *        2     0336  277     .00     .00     .00        68.
        1     1242  128     .18     .02     .17      1968.       *        2     0342  278     .00     .00     .00        65.
        1     1248  129     .17     .01     .15      2187.       *        2     0348  279     .00     .00     .00        62.
        1     1254  130     .15     .01     .14      2383.       *        2     0354  280     .00     .00     .00        59.
        1     1300  131     .14     .01     .13      2548.       *        2     0400  281     .00     .00     .00        57.
        1     1306  132     .13     .01     .12      2676.       *        2     0406  282     .00     .00     .00        54.
        1     1312  133     .12     .01     .11      2764.       *        2     0412  283     .00     .00     .00        52.
        1     1318  134     .12     .01     .11      2808.       *        2     0418  284     .00     .00     .00        49.
        1     1324  135     .11     .01     .10      2814.       *        2     0424  285     .00     .00     .00        47.
        1     1330  136     .11     .01     .10      2794.       *        2     0430  286     .00     .00     .00        45.
        1     1336  137     .10     .01     .10      2760.       *        2     0436  287     .00     .00     .00        43.
        1     1342  138     .10     .01     .09      2716.       *        2     0442  288     .00     .00     .00        41.
        1     1348  139     .10     .01     .09      2668.       *        2     0448  289     .00     .00     .00        39.
        1     1354  140     .09     .01     .09      2617.       *        2     0454  290     .00     .00     .00        38.
        1     1400  141     .09     .01     .08      2565.       *        2     0500  291     .00     .00     .00        36.
        1     1406  142     .08     .01     .08      2513.       *        2     0506  292     .00     .00     .00        34.
        1     1412  143     .08     .01     .08      2460.       *        2     0512  293     .00     .00     .00        33.
        1     1418  144     .08     .01     .08      2407.       *        2     0518  294     .00     .00     .00        31.
        1     1424  145     .08     .01     .07      2355.       *        2     0524  295     .00     .00     .00        30.
        1     1430  146     .08     .01     .07      2303.       *        2     0530  296     .00     .00     .00        29.
        1     1436  147     .07     .00     .07      2252.       *        2     0536  297     .00     .00     .00        27.
        1     1442  148     .07     .00     .07      2201.       *        2     0542  298     .00     .00     .00        26.
        1     1448  149     .07     .00     .07      2151.       *        2     0548  299     .00     .00     .00        25.
        1     1454  150     .07     .00     .06      2102.       *        2     0554  300     .00     .00     .00        24.
                                                                  *
 ************************************************************************************************************************************

     TOTAL RAINFALL =   17.50, TOTAL LOSS =    4.61, TOTAL EXCESS =   12.89

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                             (CFS)
+    2814.     13.40                1829.        657.        527.         527.
                         (INCHES)    8.903      12.792      12.792       12.792
                          (AC-FT)     907.       1303.       1303.        1303.

                          CUMULATIVE AREA =    1.91 SQ MI

 APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

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                                                HYDROGRAPH AT STATION      A-1
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PLAN 1, RATIO = 1.00

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		1500	151	.14	.00	.13	4594.
1		0006	2	.04	.04	.00	0.	1		1506	152	.13	.00	.12	4483.
1		0012	3	.04	.04	.00	0.	1		1512	153	.13	.00	.12	4374.
1		0018	4	.03	.03	.00	0.	1		1518	154	.12	.00	.12	4267.
1		0024	5	.04	.04	.00	0.	1		1524	155	.12	.00	.12	4163.
1		0030	6	.03	.03	.00	0.	1		1530	156	.11	.00	.11	4061.
1		0036	7	.04	.04	.00	0.	1		1536	157	.11	.00	.11	3961.
1		0042	8	.04	.04	.00	0.	1		1542	158	.11	.00	.10	3864.
1		0048	9	.04	.04	.00	0.	1		1548	159	.10	.00	.10	3768.
1		0054	10	.03	.03	.00	0.	1		1554	160	.10	.00	.10	3674.
1		0100	11	.04	.04	.00	0.	1		1600	161	.09	.00	.09	3583.
1		0106	12	.04	.04	.00	0.	1		1606	162	.09	.00	.09	3493.
1		0112	13	.04	.04	.00	0.	1		1612	163	.09	.00	.09	3404.
1		0118	14	.04	.04	.00	0.	1		1618	164	.09	.00	.09	3318.
1		0124	15	.04	.04	.00	0.	1		1624	165	.08	.00	.08	3233.
1		0130	16	.03	.03	.00	0.	1		1630	166	.08	.00	.08	3150.
1		0136	17	.04	.04	.00	0.	1		1636	167	.08	.00	.08	3069.
1		0142	18	.04	.04	.00	0.	1		1642	168	.08	.00	.08	2989.
1		0148	19	.03	.03	.00	0.	1		1648	169	.08	.00	.08	2912.
1		0154	20	.04	.04	.00	0.	1		1654	170	.08	.00	.07	2836.
1		0200	21	.04	.04	.00	0.	1		1700	171	.07	.00	.07	2763.
1		0206	22	.04	.04	.00	0.	1		1706	172	.07	.00	.07	2691.
1		0212	23	.04	.04	.00	0.	1		1712	173	.07	.00	.07	2622.
1		0218	24	.04	.04	.00	0.	1		1718	174	.07	.00	.07	2554.
1		0224	25	.04	.04	.00	0.	1		1724	175	.07	.00	.07	2488.
1		0230	26	.04	.04	.00	0.	1		1730	176	.07	.00	.06	2424.
1		0236	27	.04	.04	.00	0.	1		1736	177	.06	.00	.06	2362.
1		0242	28	.04	.04	.00	0.	1		1742	178	.06	.00	.06	2301.
1		0248	29	.04	.04	.00	0.	1		1748	179	.06	.00	.06	2243.
1		0254	30	.04	.04	.00	0.	1		1754	180	.06	.00	.06	2185.
1		0300	31	.04	.04	.00	0.	1		1800	181	.06	.00	.06	2129.
1		0306	32	.04	.04	.00	0.	1		1806	182	.06	.00	.05	2075.
1		0312	33	.04	.04	.00	0.	1		1812	183	.06	.00	.05	2022.
1		0318	34	.04	.04	.00	1.	1		1818	184	.05	.00	.05	1970.
1		0324	35	.04	.04	.00	1.	1		1824	185	.05	.00	.05	1920.
1		0330	36	.04	.04	.01	2.	1		1830	186	.05	.00	.05	1871.
1		0336	37	.04	.04	.01	3.	1		1836	187	.05	.00	.05	1823.
1		0342	38	.04	.04	.01	4.	1		1842	188	.05	.00	.05	1777.
1		0348	39	.04	.04	.01	5.	1		1848	189	.05	.00	.05	1732.
1		0354	40	.04	.04	.01	7.	1		1854	190	.05	.00	.05	1688.
1		0400	41	.05	.04	.01	9.	1		1900	191	.05	.00	.05	1646.
1		0406	42	.05	.04	.01	11.	1		1906	192	.05	.00	.05	1606.
1		0412	43	.05	.04	.01	13.	1		1912	193	.05	.00	.05	1566.
1		0418	44	.05	.04	.01	16.	1		1918	194	.05	.00	.05	1528.
1		0424	45	.05	.04	.01	19.	1		1924	195	.05	.00	.05	1491.
1		0430	46	.05	.04	.01	22.	1		1930	196	.05	.00	.05	1456.
1		0436	47	.05	.04	.01	25.	1		1936	197	.05	.00	.05	1421.
1		0442	48	.05	.03	.01	29.	1		1942	198	.05	.00	.05	1388.
1		0448	49	.05	.03	.01	33.	1		1948	199	.05	.00	.05	1356.
1		0454	50	.05	.03	.02	37.	1		1954	200	.05	.00	.05	1325.
1		0500	51	.05	.03	.02	41.	1		2000	201	.05	.00	.05	1295.
1		0506	52	.05	.04	.02	46.	1		2006	202	.05	.00	.04	1266.

1	0512	53	.05	.03	.02	50.	*	1	2012	203	.05	.00	.04	1238.
1	0518	54	.05	.03	.02	55.	*	1	2018	204	.04	.00	.04	1210.
1	0524	55	.05	.03	.02	60.	*	1	2024	205	.04	.00	.04	1184.
1	0530	56	.05	.03	.02	66.	*	1	2030	206	.04	.00	.04	1159.
1	0536	57	.05	.03	.02	71.	*	1	2036	207	.04	.00	.04	1134.
1	0542	58	.05	.03	.02	77.	*	1	2042	208	.04	.00	.04	1110.
1	0548	59	.05	.03	.02	82.	*	1	2048	209	.04	.00	.04	1087.
1	0554	60	.06	.03	.02	88.	*	1	2054	210	.04	.00	.04	1064.
1	0600	61	.06	.03	.02	94.	*	1	2100	211	.04	.00	.04	1042.
1	0606	62	.06	.03	.03	100.	*	1	2106	212	.04	.00	.04	1021.
1	0612	63	.06	.03	.03	107.	*	1	2112	213	.04	.00	.04	1001.
1	0618	64	.06	.03	.03	113.	*	1	2118	214	.04	.00	.04	981.
1	0624	65	.06	.03	.03	120.	*	1	2124	215	.04	.00	.04	962.
1	0630	66	.06	.03	.03	127.	*	1	2130	216	.04	.00	.04	943.
1	0636	67	.07	.03	.03	134.	*	1	2136	217	.04	.00	.04	925.
1	0642	68	.07	.03	.03	141.	*	1	2142	218	.04	.00	.04	908.
1	0648	69	.07	.03	.04	149.	*	1	2148	219	.04	.00	.04	891.
1	0654	70	.07	.03	.04	157.	*	1	2154	220	.04	.00	.04	874.
1	0700	71	.07	.03	.04	165.	*	1	2200	221	.04	.00	.04	859.
1	0706	72	.07	.03	.04	174.	*	1	2206	222	.04	.00	.04	843.
1	0712	73	.08	.03	.04	183.	*	1	2212	223	.04	.00	.04	828.
1	0718	74	.08	.03	.04	192.	*	1	2218	224	.04	.00	.04	813.
1	0724	75	.08	.03	.05	202.	*	1	2224	225	.04	.00	.04	799.
1	0730	76	.08	.03	.05	212.	*	1	2230	226	.04	.00	.04	785.
1	0736	77	.08	.03	.05	223.	*	1	2236	227	.04	.00	.04	771.
1	0742	78	.09	.03	.05	234.	*	1	2242	228	.03	.00	.03	758.
1	0748	79	.09	.03	.05	245.	*	1	2248	229	.03	.00	.03	745.
1	0754	80	.09	.03	.05	257.	*	1	2254	230	.03	.00	.03	733.
1	0800	81	.09	.03	.06	269.	*	1	2300	231	.03	.00	.03	721.
1	0806	82	.09	.03	.06	282.	*	1	2306	232	.03	.00	.03	709.
1	0812	83	.10	.03	.06	295.	*	1	2312	233	.03	.00	.03	697.
1	0818	84	.10	.04	.07	308.	*	1	2318	234	.03	.00	.03	685.
1	0824	85	.11	.04	.07	322.	*	1	2324	235	.03	.00	.03	674.
1	0830	86	.11	.04	.07	336.	*	1	2330	236	.03	.00	.03	663.
1	0836	87	.11	.04	.08	351.	*	1	2336	237	.03	.00	.03	653.
1	0842	88	.12	.04	.08	367.	*	1	2342	238	.03	.00	.03	642.
1	0848	89	.12	.04	.08	384.	*	1	2348	239	.03	.00	.03	632.
1	0854	90	.13	.04	.09	401.	*	1	2354	240	.03	.00	.03	622.
1	0900	91	.13	.04	.09	419.	*	2	0000	241	.03	.00	.03	612.
1	0906	92	.13	.04	.10	438.	*	2	0006	242	.00	.00	.00	602.
1	0912	93	.14	.04	.10	459.	*	2	0012	243	.00	.00	.00	592.
1	0918	94	.14	.04	.10	480.	*	2	0018	244	.00	.00	.00	581.
1	0924	95	.15	.04	.11	502.	*	2	0024	245	.00	.00	.00	569.
1	0930	96	.15	.04	.11	525.	*	2	0030	246	.00	.00	.00	556.
1	0936	97	.15	.04	.12	550.	*	2	0036	247	.00	.00	.00	542.
1	0942	98	.16	.04	.12	575.	*	2	0042	248	.00	.00	.00	527.
1	0948	99	.16	.04	.13	601.	*	2	0048	249	.00	.00	.00	510.
1	0954	100	.17	.04	.13	628.	*	2	0054	250	.00	.00	.00	492.
1	1000	101	.17	.04	.13	657.	*	2	0100	251	.00	.00	.00	473.
1	1006	102	.18	.04	.14	686.	*	2	0106	252	.00	.00	.00	453.
1	1012	103	.18	.04	.15	716.	*	2	0112	253	.00	.00	.00	432.
1	1018	104	.19	.04	.16	747.	*	2	0118	254	.00	.00	.00	407.
1	1024	105	.20	.04	.16	779.	*	2	0124	255	.00	.00	.00	383.
1	1030	106	.21	.04	.17	813.	*	2	0130	256	.00	.00	.00	364.
1	1036	107	.22	.04	.18	848.	*	2	0136	257	.00	.00	.00	346.
1	1042	108	.23	.04	.19	885.	*	2	0142	258	.00	.00	.00	330.
1	1048	109	.23	.04	.20	923.	*	2	0148	259	.00	.00	.00	315.
1	1054	110	.24	.04	.21	963.	*	2	0154	260	.00	.00	.00	301.

1	1100	111	.25	.04	.22	1006.	*	2	0200	261	.00	.00	.00	287.
1	1106	112	.27	.04	.23	1050.	*	2	0206	262	.00	.00	.00	275.
1	1112	113	.30	.04	.26	1097.	*	2	0212	263	.00	.00	.00	263.
1	1118	114	.34	.04	.29	1147.	*	2	0218	264	.00	.00	.00	251.
1	1124	115	.37	.04	.32	1202.	*	2	0224	265	.00	.00	.00	240.
1	1130	116	.40	.05	.36	1260.	*	2	0230	266	.00	.00	.00	230.
1	1136	117	.57	.06	.51	1326.	*	2	0236	267	.00	.00	.00	220.
1	1142	118	.88	.08	.79	1402.	*	2	0242	268	.00	.00	.00	210.
1	1148	119	1.19	.10	1.09	1497.	*	2	0248	269	.00	.00	.00	201.
1	1154	120	1.49	.11	1.39	1621.	*	2	0254	270	.00	.00	.00	192.
1	1200	121	2.94	.17	2.77	1792.	*	2	0300	271	.00	.00	.00	184.
1	1206	122	2.94	.13	2.81	2036.	*	2	0306	272	.00	.00	.00	176.
1	1212	123	1.49	.05	1.44	2360.	*	2	0312	273	.00	.00	.00	168.
1	1218	124	1.19	.04	1.15	2753.	*	2	0318	274	.00	.00	.00	161.
1	1224	125	.88	.03	.85	3202.	*	2	0324	275	.00	.00	.00	154.
1	1230	126	.57	.02	.55	3690.	*	2	0330	276	.00	.00	.00	147.
1	1236	127	.40	.01	.39	4199.	*	2	0336	277	.00	.00	.00	141.
1	1242	128	.37	.01	.36	4703.	*	2	0342	278	.00	.00	.00	134.
1	1248	129	.34	.01	.33	5175.	*	2	0348	279	.00	.00	.00	129.
1	1254	130	.30	.01	.30	5593.	*	2	0354	280	.00	.00	.00	123.
1	1300	131	.27	.01	.26	5940.	*	2	0400	281	.00	.00	.00	117.
1	1306	132	.25	.01	.25	6205.	*	2	0406	282	.00	.00	.00	112.
1	1312	133	.24	.01	.24	6378.	*	2	0412	283	.00	.00	.00	107.
1	1318	134	.23	.01	.23	6456.	*	2	0418	284	.00	.00	.00	103.
1	1324	135	.23	.01	.22	6450.	*	2	0424	285	.00	.00	.00	98.
1	1330	136	.22	.00	.21	6389.	*	2	0430	286	.00	.00	.00	94.
1	1336	137	.21	.00	.20	6297.	*	2	0436	287	.00	.00	.00	90.
1	1342	138	.20	.00	.20	6187.	*	2	0442	288	.00	.00	.00	86.
1	1348	139	.19	.00	.19	6066.	*	2	0448	289	.00	.00	.00	82.
1	1354	140	.18	.00	.18	5941.	*	2	0454	290	.00	.00	.00	78.
1	1400	141	.18	.00	.17	5814.	*	2	0500	291	.00	.00	.00	75.
1	1406	142	.17	.00	.17	5687.	*	2	0506	292	.00	.00	.00	71.
1	1412	143	.17	.00	.16	5559.	*	2	0512	293	.00	.00	.00	68.
1	1418	144	.16	.00	.16	5433.	*	2	0518	294	.00	.00	.00	65.
1	1424	145	.16	.00	.15	5308.	*	2	0524	295	.00	.00	.00	62.
1	1430	146	.15	.00	.15	5184.	*	2	0530	296	.00	.00	.00	59.
1	1436	147	.15	.00	.15	5062.	*	2	0536	297	.00	.00	.00	57.
1	1442	148	.15	.00	.14	4942.	*	2	0542	298	.00	.00	.00	54.
1	1448	149	.14	.00	.14	4824.	*	2	0548	299	.00	.00	.00	52.
1	1454	150	.14	.00	.13	4708.	*	2	0554	300	.00	.00	.00	49.
							*							

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TOTAL RAINFALL = 35.00, TOTAL LOSS = 5.08, TOTAL EXCESS = 29.92

	PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
				6-HR	24-HR	72-HR	29.90-HR
+	(CFS)	(HR)					
			(CFS)				
+	6456.	13.30		4142.	1522.	1224.	1224.
			(INCHES)	20.162	29.636	29.696	29.696
			(AC-FT)	2054.	3019.	3025.	3025.

CUMULATIVE AREA = 1.91 SQ MI

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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
  55 KK   *     DAM-1  *     COOPER STREET DAM
          *            *
          **************
                        *** ROUTE FLOW ***
                        *** STAGE-STORAGE-DISCHARGE FROM USGS QUADS ***

             HYDROGRAPH ROUTING DATA

  58 RS        STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        ELEV  TYPE OF INITIAL CONDITION
                    RSVRIC       25.38  INITIAL CONDITION
                         X         .00 WORKING R AND D COEFFICIENT

  59 SA            AREA          .0      19.1      23.4      30.5

  60 SE        ELEVATION       13.20     25.38     30.00     35.00

  61 SQ        DISCHARGE          0.        6.       10.       71.      202.      372.      573.      802.     1056.     1332.
                               1628.     1944.     2278.     2629.     2833.     2996.     3379.     3609.     3689.     3844.

  63 SE        ELEVATION       25.25     25.50     25.60     26.00     26.50     27.00     27.50     28.00     28.50     29.00
                               29.50     30.00     30.50     31.00     31.30     31.50     32.00     32.50     33.00     34.00

  65 ST        TOP OF DAM
                     TOPEL       32.13  ELEVATION AT TOP OF DAM
                    DAMWID         .00  DAM WIDTH
                      COQD        2.60  WEIR COEFFICIENT
                      EXPD        1.50  EXPONENT OF HEAD

     SW        DAM WIDTH         .00     44.40    333.30    417.30    478.40    531.30    582.10    625.50    760.80    800.00
     SE        ELEVATION       32.13     32.16     32.50     33.00     34.00     34.50     35.00     36.00     37.00     38.00


                                                                  ***

                                                   COMPUTED STORAGE-ELEVATION DATA

           STORAGE        .00     78.57    176.59    310.90
         ELEVATION      13.20     25.38     30.00     35.00

                                                 COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

                                                       (INCLUDING FLOW OVER DAM)

           STORAGE        .00     76.10     78.57     80.87     82.80     90.60    100.55    110.73    121.13    131.75
           OUTFLOW        .00       .00      3.22      6.20     10.20     71.40    201.60    371.50    573.30    802.40
         ELEVATION      13.20     25.25     25.38     25.50     25.60     26.00     26.50     27.00     27.50     28.00

           STORAGE     142.61    153.70    165.03    176.59    188.44    200.63    208.11    213.16    226.04    239.28
           OUTFLOW    1056.00   1331.80   1628.30   1943.90   2277.80   2628.80   2832.60   2996.20   3379.30   3703.29
         ELEVATION      28.50     29.00     29.50     30.00     30.50     31.00     31.30     31.50     32.00     32.50
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STORAGE	252.87	281.14	310.90
OUTFLOW	4320.52	6548.80	9902.77
ELEVATION	33.00	34.00	35.00

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HYDROGRAPH AT STATION DAM-1
PLAN 1, RATIO = .30

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	3.	78.6	25.4	1		1000	101	4.	79.3	25.4	1		2000	201	377.	111.0	27.0
1		0006	2	3.	78.5	25.4	1		1006	102	5.	79.6	25.4	1		2006	202	369.	110.6	27.0
1		0012	3	3.	78.5	25.4	1		1012	103	5.	80.0	25.5	1		2012	203	362.	110.1	27.0
1		0018	4	3.	78.5	25.4	1		1018	104	6.	80.3	25.5	1		2018	204	355.	109.7	27.0
1		0024	5	3.	78.5	25.4	1		1024	105	6.	80.8	25.5	1		2024	205	348.	109.3	26.9
1		0030	6	3.	78.4	25.4	1		1030	106	7.	81.2	25.5	1		2030	206	342.	108.9	26.9
1		0036	7	3.	78.4	25.4	1		1036	107	8.	81.7	25.5	1		2036	207	335.	108.5	26.9
1		0042	8	3.	78.4	25.4	1		1042	108	9.	82.2	25.6	1		2042	208	328.	108.1	26.9
1		0048	9	3.	78.4	25.4	1		1048	109	10.	82.8	25.6	1		2048	209	322.	107.7	26.9
1		0054	10	3.	78.3	25.4	1		1054	110	15.	83.4	25.6	1		2054	210	316.	107.4	26.8
1		0100	11	3.	78.3	25.4	1		1100	111	20.	84.0	25.7	1		2100	211	310.	107.0	26.8
1		0106	12	3.	78.3	25.4	1		1106	112	25.	84.7	25.7	1		2106	212	304.	106.6	26.8
1		0112	13	3.	78.3	25.4	1		1112	113	31.	85.4	25.7	1		2112	213	298.	106.3	26.8
1		0118	14	3.	78.3	25.4	1		1118	114	36.	86.1	25.8	1		2118	214	292.	105.9	26.8
1		0124	15	3.	78.2	25.4	1		1124	115	42.	86.8	25.8	1		2124	215	286.	105.6	26.7
1		0130	16	3.	78.2	25.4	1		1130	116	48.	87.6	25.8	1		2130	216	281.	105.3	26.7
1		0136	17	3.	78.2	25.4	1		1136	117	54.	88.4	25.9	1		2136	217	275.	104.9	26.7
1		0142	18	3.	78.2	25.4	1		1142	118	61.	89.3	25.9	1		2142	218	270.	104.6	26.7
1		0148	19	3.	78.1	25.4	1		1148	119	69.	90.3	26.0	1		2148	219	265.	104.3	26.7
1		0154	20	3.	78.1	25.4	1		1154	120	81.	91.3	26.0	1		2154	220	260.	104.0	26.7
1		0200	21	3.	78.1	25.4	1		1200	121	97.	92.5	26.1	1		2200	221	256.	103.8	26.7
1		0206	22	3.	78.1	25.4	1		1206	122	116.	94.0	26.2	1		2206	222	251.	103.5	26.6
1		0212	23	3.	78.1	25.4	1		1212	123	139.	95.7	26.3	1		2212	223	246.	103.2	26.6
1		0218	24	3.	78.0	25.4	1		1218	124	167.	97.9	26.4	1		2218	224	242.	102.9	26.6
1		0224	25	3.	78.0	25.4	1		1224	125	203.	100.6	26.5	1		2224	225	238.	102.7	26.6
1		0230	26	2.	78.0	25.4	1		1230	126	257.	103.8	26.7	1		2230	226	233.	102.4	26.6
1		0236	27	2.	78.0	25.3	1		1236	127	319.	107.6	26.8	1		2236	227	229.	102.2	26.6
1		0242	28	2.	78.0	25.3	1		1242	128	391.	111.7	27.0	1		2242	228	225.	102.0	26.6
1		0248	29	2.	77.9	25.3	1		1248	129	477.	116.1	27.3	1		2248	229	222.	101.7	26.6
1		0254	30	2.	77.9	25.3	1		1254	130	567.	120.8	27.5	1		2254	230	218.	101.5	26.5
1		0300	31	2.	77.9	25.3	1		1300	131	666.	125.4	27.7	1		2300	231	214.	101.3	26.5
1		0306	32	2.	77.9	25.3	1		1306	132	762.	129.9	27.9	1		2306	232	211.	101.1	26.5
1		0312	33	2.	77.9	25.3	1		1312	133	857.	134.1	28.1	1		2312	233	207.	100.9	26.5
1		0318	34	2.	77.8	25.3	1		1318	134	945.	137.8	28.3	1		2318	234	204.	100.7	26.5
1		0324	35	2.	77.8	25.3	1		1324	135	1020.	141.1	28.4	1		2324	235	201.	100.5	26.5
1		0330	36	2.	77.8	25.3	1		1330	136	1085.	143.8	28.6	1		2330	236	198.	100.3	26.5
1		0336	37	2.	77.8	25.3	1		1336	137	1138.	145.9	28.6	1		2336	237	196.	100.1	26.5
1		0342	38	2.	77.8	25.3	1		1342	138	1178.	147.5	28.7	1		2342	238	193.	99.9	26.5
1		0348	39	2.	77.8	25.3	1		1348	139	1207.	148.7	28.8	1		2348	239	191.	99.7	26.5
1		0354	40	2.	77.7	25.3	1		1354	140	1227.	149.5	28.8	1		2354	240	188.	99.5	26.4
1		0400	41	2.	77.7	25.3	1		1400	141	1239.	149.9	28.8	2		0000	241	186.	99.3	26.4
1		0406	42	2.	77.7	25.3	1		1406	142	1244.	150.2	28.8	2		0006	242	183.	99.1	26.4
1		0412	43	2.	77.7	25.3	1		1412	143	1244.	150.2	28.8	2		0012	243	180.	98.9	26.4
1		0418	44	2.	77.7	25.3	1		1418	144	1240.	150.0	28.8	2		0018	244	178.	98.7	26.4
1		0424	45	2.	77.7	25.3	1		1424	145	1232.	149.7	28.8	2		0024	245	175.	98.5	26.4

1	0430	46	2.	77.6	25.3	*	1	1430	146	1221.	149.2	28.8	*	2	0030	246	173.	98.3	26.4
1	0436	47	2.	77.6	25.3	*	1	1436	147	1208.	148.7	28.8	*	2	0036	247	170.	98.1	26.4
1	0442	48	2.	77.6	25.3	*	1	1442	148	1192.	148.1	28.7	*	2	0042	248	167.	97.9	26.4
1	0448	49	2.	77.6	25.3	*	1	1448	149	1176.	147.4	28.7	*	2	0048	249	164.	97.7	26.4
1	0454	50	2.	77.6	25.3	*	1	1454	150	1157.	146.7	28.7	*	2	0054	250	161.	97.4	26.3
1	0500	51	2.	77.6	25.3	*	1	1500	151	1138.	145.9	28.6	*	2	0100	251	158.	97.2	26.3
1	0506	52	2.	77.5	25.3	*	1	1506	152	1119.	145.1	28.6	*	2	0106	252	154.	96.9	26.3
1	0512	53	2.	77.5	25.3	*	1	1512	153	1098.	144.3	28.6	*	2	0112	253	151.	96.6	26.3
1	0518	54	2.	77.5	25.3	*	1	1518	154	1078.	143.5	28.5	*	2	0118	254	147.	96.3	26.3
1	0524	55	2.	77.5	25.3	*	1	1524	155	1057.	142.6	28.5	*	2	0124	255	142.	96.0	26.3
1	0530	56	2.	77.5	25.3	*	1	1530	156	1038.	141.8	28.5	*	2	0130	256	138.	95.7	26.3
1	0536	57	2.	77.5	25.3	*	1	1536	157	1018.	141.0	28.4	*	2	0136	257	134.	95.3	26.2
1	0542	58	2.	77.5	25.3	*	1	1542	158	998.	140.1	28.4	*	2	0142	258	129.	95.0	26.2
1	0548	59	2.	77.4	25.3	*	1	1548	159	978.	139.3	28.3	*	2	0148	259	125.	94.7	26.2
1	0554	60	2.	77.4	25.3	*	1	1554	160	959.	138.4	28.3	*	2	0154	260	121.	94.3	26.2
1	0600	61	2.	77.4	25.3	*	1	1600	161	939.	137.6	28.3	*	2	0200	261	116.	94.0	26.2
1	0606	62	2.	77.4	25.3	*	1	1606	162	919.	136.7	28.2	*	2	0206	262	112.	93.7	26.2
1	0612	63	2.	77.4	25.3	*	1	1612	163	899.	135.9	28.2	*	2	0212	263	108.	93.4	26.1
1	0618	64	2.	77.4	25.3	*	1	1618	164	880.	135.0	28.2	*	2	0218	264	104.	93.1	26.1
1	0624	65	2.	77.4	25.3	*	1	1624	165	860.	134.2	28.1	*	2	0224	265	100.	92.8	26.1
1	0630	66	2.	77.3	25.3	*	1	1630	166	841.	133.4	28.1	*	2	0230	266	96.	92.5	26.1
1	0636	67	2.	77.3	25.3	*	1	1636	167	822.	132.6	28.0	*	2	0236	267	93.	92.2	26.1
1	0642	68	2.	77.3	25.3	*	1	1642	168	803.	131.8	28.0	*	2	0242	268	89.	91.9	26.1
1	0648	69	2.	77.3	25.3	*	1	1648	169	786.	131.0	28.0	*	2	0248	269	86.	91.7	26.1
1	0654	70	2.	77.3	25.3	*	1	1654	170	770.	130.2	27.9	*	2	0254	270	82.	91.4	26.0
1	0700	71	2.	77.3	25.3	*	1	1700	171	753.	129.4	27.9	*	2	0300	271	79.	91.2	26.0
1	0706	72	2.	77.3	25.3	*	1	1706	172	736.	128.7	27.9	*	2	0306	272	76.	90.9	26.0
1	0712	73	2.	77.3	25.3	*	1	1712	173	720.	127.9	27.8	*	2	0312	273	73.	90.7	26.0
1	0718	74	2.	77.2	25.3	*	1	1718	174	703.	127.1	27.8	*	2	0318	274	71.	90.5	26.0
1	0724	75	1.	77.2	25.3	*	1	1724	175	687.	126.4	27.7	*	2	0324	275	69.	90.3	26.0
1	0730	76	1.	77.2	25.3	*	1	1730	176	671.	125.6	27.7	*	2	0330	276	67.	90.0	26.0
1	0736	77	1.	77.2	25.3	*	1	1736	177	656.	124.9	27.7	*	2	0336	277	65.	89.8	26.0
1	0742	78	1.	77.2	25.3	*	1	1742	178	640.	124.2	27.6	*	2	0342	278	64.	89.6	25.9
1	0748	79	1.	77.2	25.3	*	1	1748	179	625.	123.5	27.6	*	2	0348	279	62.	89.4	25.9
1	0754	80	1.	77.2	25.3	*	1	1754	180	610.	122.8	27.6	*	2	0354	280	60.	89.1	25.9
1	0800	81	1.	77.2	25.3	*	1	1800	181	596.	122.2	27.5	*	2	0400	281	58.	88.9	25.9
1	0806	82	1.	77.2	25.3	*	1	1806	182	582.	121.5	27.5	*	2	0406	282	57.	88.7	25.9
1	0812	83	1.	77.2	25.3	*	1	1812	183	569.	120.9	27.5	*	2	0412	283	55.	88.5	25.9
1	0818	84	1.	77.2	25.3	*	1	1818	184	557.	120.3	27.5	*	2	0418	284	53.	88.3	25.9
1	0824	85	1.	77.2	25.3	*	1	1824	185	545.	119.6	27.4	*	2	0424	285	52.	88.1	25.9
1	0830	86	2.	77.2	25.3	*	1	1830	186	533.	119.0	27.4	*	2	0430	286	50.	87.9	25.9
1	0836	87	2.	77.3	25.3	*	1	1836	187	521.	118.4	27.4	*	2	0436	287	48.	87.7	25.8
1	0842	88	2.	77.3	25.3	*	1	1842	188	509.	117.8	27.3	*	2	0442	288	47.	87.5	25.8
1	0848	89	2.	77.4	25.3	*	1	1848	189	498.	117.2	27.3	*	2	0448	289	45.	87.3	25.8
1	0854	90	2.	77.4	25.3	*	1	1854	190	486.	116.6	27.3	*	2	0454	290	44.	87.1	25.8
1	0900	91	2.	77.5	25.3	*	1	1900	191	475.	116.0	27.3	*	2	0500	291	42.	86.9	25.8
1	0906	92	2.	77.6	25.3	*	1	1906	192	464.	115.5	27.2	*	2	0506	292	41.	86.7	25.8
1	0912	93	2.	77.7	25.3	*	1	1912	193	453.	114.9	27.2	*	2	0512	293	40.	86.5	25.8
1	0918	94	2.	77.8	25.3	*	1	1918	194	443.	114.4	27.2	*	2	0518	294	38.	86.4	25.8
1	0924	95	2.	78.0	25.3	*	1	1924	195	433.	113.9	27.2	*	2	0524	295	37.	86.2	25.8
1	0930	96	3.	78.1	25.4	*	1	1930	196	423.	113.3	27.1	*	2	0530	296	36.	86.0	25.8
1	0936	97	3.	78.3	25.4	*	1	1936	197	413.	112.8	27.1	*	2	0536	297	34.	85.9	25.8
1	0942	98	3.	78.5	25.4	*	1	1942	198	404.	112.4	27.1	*	2	0542	298	33.	85.7	25.8
1	0948	99	3.	78.7	25.4	*	1	1948	199	394.	111.9	27.1	*	2	0548	299	32.	85.6	25.7
1	0954	100	4.	79.0	25.4	*	1	1954	200	385.	111.4	27.0	*	2	0554	300	31.	85.4	25.7
						*							*						

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PEAK OUTFLOW IS 1244. AT TIME 14.20 HOURS

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 1244.	14.20		892.	322.	259.	259.
		(INCHES)	4.341	6.279	6.291	6.291
		(AC-FT)	442.	640.	641.	641.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)				
150.	14.10	135.	103.	98.	98.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	29.90-HR
+ (FEET)	(HR)				
28.84	14.20	28.15	26.60	26.36	26.36

CUMULATIVE AREA = 1.91 SQ MI

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HYDROGRAPH AT STATION DAM-1
PLAN 1, RATIO = .40

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	3.	78.6	25.4	1		1000	101	27.	84.9	25.7	1		2000	201	536.	119.2	27.4
1		0006	2	3.	78.5	25.4	1		1006	102	32.	85.5	25.7	1		2006	202	525.	118.6	27.4
1		0012	3	3.	78.5	25.4	1		1012	103	37.	86.2	25.8	1		2012	203	514.	118.0	27.4
1		0018	4	3.	78.5	25.4	1		1018	104	42.	86.8	25.8	1		2018	204	503.	117.5	27.3
1		0024	5	3.	78.5	25.4	1		1024	105	48.	87.5	25.8	1		2024	205	492.	116.9	27.3
1		0030	6	3.	78.4	25.4	1		1030	106	53.	88.3	25.9	1		2030	206	482.	116.4	27.3
1		0036	7	3.	78.4	25.4	1		1036	107	59.	89.0	25.9	1		2036	207	472.	115.9	27.2
1		0042	8	3.	78.4	25.4	1		1042	108	65.	89.8	26.0	1		2042	208	462.	115.4	27.2
1		0048	9	3.	78.4	25.4	1		1048	109	72.	90.7	26.0	1		2048	209	452.	114.9	27.2
1		0054	10	3.	78.3	25.4	1		1054	110	84.	91.5	26.0	1		2054	210	443.	114.4	27.2
1		0100	11	3.	78.3	25.4	1		1100	111	95.	92.4	26.1	1		2100	211	434.	113.9	27.2
1		0106	12	3.	78.3	25.4	1		1106	112	106.	93.2	26.1	1		2106	212	425.	113.4	27.1
1		0112	13	3.	78.3	25.4	1		1112	113	118.	94.1	26.2	1		2112	213	416.	113.0	27.1
1		0118	14	3.	78.3	25.4	1		1118	114	130.	95.0	26.2	1		2118	214	408.	112.6	27.1
1		0124	15	3.	78.2	25.4	1		1124	115	142.	96.0	26.3	1		2124	215	399.	112.2	27.1
1		0130	16	3.	78.2	25.4	1		1130	116	155.	97.0	26.3	1		2130	216	392.	111.7	27.0
1		0136	17	3.	78.2	25.4	1		1136	117	168.	98.0	26.4	1		2136	217	384.	111.4	27.0
1		0142	18	3.	78.2	25.4	1		1142	118	183.	99.1	26.4	1		2142	218	376.	111.0	27.0
1		0148	19	3.	78.1	25.4	1		1148	119	198.	100.3	26.5	1		2148	219	369.	110.6	27.0
1		0154	20	3.	78.1	25.4	1		1154	120	220.	101.6	26.6	1		2154	220	363.	110.2	27.0
1		0200	21	3.	78.1	25.4	1		1200	121	245.	103.1	26.6	1		2200	221	357.	109.9	27.0
1		0206	22	3.	78.1	25.4	1		1206	122	276.	105.0	26.7	1		2206	222	352.	109.5	26.9
1		0212	23	3.	78.1	25.4	1		1212	123	315.	107.3	26.8	1		2212	223	346.	109.2	26.9
1		0218	24	3.	78.0	25.4	1		1218	124	364.	110.3	27.0	1		2218	224	340.	108.8	26.9
1		0224	25	3.	78.0	25.4	1		1224	125	433.	113.9	27.2	1		2224	225	334.	108.5	26.9

1	0230	26	2.	78.0	25.4	*	1	1230	126	517.	118.2	27.4	*	1	2230	226	329.	108.1	26.9
1	0236	27	2.	78.0	25.3	*	1	1236	127	617.	123.1	27.6	*	1	2236	227	323.	107.8	26.9
1	0242	28	2.	78.0	25.3	*	1	1242	128	735.	128.6	27.9	*	1	2242	228	318.	107.5	26.8
1	0248	29	2.	77.9	25.3	*	1	1248	129	867.	134.5	28.1	*	1	2248	229	313.	107.2	26.8
1	0254	30	2.	77.9	25.3	*	1	1254	130	1008.	140.5	28.4	*	1	2254	230	307.	106.9	26.8
1	0300	31	2.	77.9	25.3	*	1	1300	131	1155.	146.6	28.7	*	1	2300	231	302.	106.6	26.8
1	0306	32	2.	77.9	25.3	*	1	1306	132	1298.	152.3	28.9	*	1	2306	232	297.	106.3	26.8
1	0312	33	2.	77.9	25.3	*	1	1312	133	1435.	157.6	29.2	*	1	2312	233	292.	106.0	26.8
1	0318	34	2.	77.8	25.3	*	1	1318	134	1557.	162.3	29.4	*	1	2318	234	288.	105.7	26.8
1	0324	35	2.	77.8	25.3	*	1	1324	135	1661.	166.2	29.6	*	1	2324	235	283.	105.4	26.7
1	0330	36	2.	77.8	25.3	*	1	1330	136	1747.	169.3	29.7	*	1	2330	236	278.	105.1	26.7
1	0336	37	2.	77.8	25.3	*	1	1336	137	1811.	171.7	29.8	*	1	2336	237	274.	104.9	26.7
1	0342	38	2.	77.8	25.3	*	1	1342	138	1857.	173.4	29.9	*	1	2342	238	270.	104.6	26.7
1	0348	39	2.	77.8	25.3	*	1	1348	139	1887.	174.5	29.9	*	1	2348	239	265.	104.3	26.7
1	0354	40	2.	77.7	25.3	*	1	1354	140	1904.	175.1	29.9	*	1	2354	240	261.	104.1	26.7
1	0400	41	2.	77.7	25.3	*	1	1400	141	1910.	175.4	29.9	*	2	0000	241	257.	103.8	26.7
1	0406	42	2.	77.7	25.3	*	1	1406	142	1908.	175.3	29.9	*	2	0006	242	253.	103.6	26.7
1	0412	43	2.	77.7	25.3	*	1	1412	143	1899.	174.9	29.9	*	2	0012	243	249.	103.4	26.6
1	0418	44	2.	77.7	25.3	*	1	1418	144	1884.	174.4	29.9	*	2	0018	244	245.	103.1	26.6
1	0424	45	2.	77.7	25.3	*	1	1424	145	1864.	173.6	29.9	*	2	0024	245	241.	102.9	26.6
1	0430	46	2.	77.6	25.3	*	1	1430	146	1841.	172.8	29.8	*	2	0030	246	237.	102.6	26.6
1	0436	47	2.	77.6	25.3	*	1	1436	147	1814.	171.8	29.8	*	2	0036	247	233.	102.4	26.6
1	0442	48	2.	77.6	25.3	*	1	1442	148	1786.	170.8	29.7	*	2	0042	248	228.	102.1	26.6
1	0448	49	2.	77.6	25.3	*	1	1448	149	1756.	169.7	29.7	*	2	0048	249	224.	101.9	26.6
1	0454	50	2.	77.6	25.3	*	1	1454	150	1724.	168.5	29.7	*	2	0054	250	219.	101.6	26.6
1	0500	51	2.	77.6	25.3	*	1	1500	151	1692.	167.3	29.6	*	2	0100	251	214.	101.3	26.5
1	0506	52	2.	77.5	25.3	*	1	1506	152	1659.	166.1	29.5	*	2	0106	252	209.	101.0	26.5
1	0512	53	2.	77.5	25.3	*	1	1512	153	1625.	164.9	29.5	*	2	0112	253	203.	100.6	26.5
1	0518	54	2.	77.5	25.3	*	1	1518	154	1594.	163.7	29.4	*	2	0118	254	198.	100.3	26.5
1	0524	55	2.	77.5	25.3	*	1	1524	155	1562.	162.5	29.4	*	2	0124	255	193.	99.9	26.5
1	0530	56	2.	77.5	25.3	*	1	1530	156	1529.	161.2	29.3	*	2	0130	256	188.	99.5	26.4
1	0536	57	2.	77.5	25.3	*	1	1536	157	1497.	160.0	29.3	*	2	0136	257	182.	99.0	26.4
1	0542	58	2.	77.5	25.3	*	1	1542	158	1465.	158.8	29.2	*	2	0142	258	176.	98.6	26.4
1	0548	59	2.	77.4	25.3	*	1	1548	159	1433.	157.5	29.2	*	2	0148	259	171.	98.2	26.4
1	0554	60	2.	77.4	25.3	*	1	1554	160	1401.	156.3	29.1	*	2	0154	260	165.	97.7	26.4
1	0600	61	2.	77.4	25.3	*	1	1600	161	1370.	155.1	29.1	*	2	0200	261	160.	97.3	26.3
1	0606	62	2.	77.4	25.3	*	1	1606	162	1339.	154.0	29.0	*	2	0206	262	154.	96.9	26.3
1	0612	63	2.	77.4	25.3	*	1	1612	163	1310.	152.8	29.0	*	2	0212	263	149.	96.5	26.3
1	0618	64	2.	77.4	25.3	*	1	1618	164	1281.	151.6	28.9	*	2	0218	264	143.	96.1	26.3
1	0624	65	2.	77.4	25.3	*	1	1624	165	1253.	150.5	28.9	*	2	0224	265	138.	95.7	26.3
1	0630	66	2.	77.4	25.3	*	1	1630	166	1224.	149.3	28.8	*	2	0230	266	133.	95.3	26.2
1	0636	67	2.	77.3	25.3	*	1	1636	167	1196.	148.2	28.8	*	2	0236	267	128.	94.9	26.2
1	0642	68	2.	77.3	25.3	*	1	1642	168	1168.	147.1	28.7	*	2	0242	268	123.	94.5	26.2
1	0648	69	2.	77.3	25.3	*	1	1648	169	1141.	146.0	28.7	*	2	0248	269	118.	94.2	26.2
1	0654	70	2.	77.3	25.3	*	1	1654	170	1113.	144.9	28.6	*	2	0254	270	114.	93.8	26.2
1	0700	71	2.	77.3	25.3	*	1	1700	171	1087.	143.8	28.6	*	2	0300	271	109.	93.5	26.1
1	0706	72	2.	77.4	25.3	*	1	1706	172	1060.	142.8	28.5	*	2	0306	272	105.	93.2	26.1
1	0712	73	2.	77.4	25.3	*	1	1712	173	1036.	141.8	28.5	*	2	0312	273	101.	92.8	26.1
1	0718	74	2.	77.4	25.3	*	1	1718	174	1013.	140.7	28.4	*	2	0318	274	97.	92.5	26.1
1	0724	75	2.	77.4	25.3	*	1	1724	175	989.	139.7	28.4	*	2	0324	275	93.	92.2	26.1
1	0730	76	2.	77.5	25.3	*	1	1730	176	966.	138.7	28.3	*	2	0330	276	89.	92.0	26.1
1	0736	77	2.	77.5	25.3	*	1	1736	177	943.	137.8	28.3	*	2	0336	277	86.	91.7	26.1
1	0742	78	2.	77.6	25.3	*	1	1742	178	921.	136.8	28.2	*	2	0342	278	82.	91.4	26.0
1	0748	79	2.	77.7	25.3	*	1	1748	179	899.	135.9	28.2	*	2	0348	279	79.	91.2	26.0
1	0754	80	2.	77.8	25.3	*	1	1754	180	877.	134.9	28.1	*	2	0354	280	76.	90.9	26.0
1	0800	81	2.	77.9	25.3	*	1	1800	181	856.	134.0	28.1	*	2	0400	281	73.	90.7	26.0
1	0806	82	2.	78.0	25.3	*	1	1806	182	835.	133.1	28.1	*	2	0406	282	70.	90.5	26.0
1	0812	83	3.	78.1	25.4	*	1	1812	183	815.	132.3	28.0	*	2	0412	283	68.	90.2	26.0

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  1     0818  84       3.     78.3    25.4 *  1     1818 184     796.    131.4    28.0 *  2     0418 284      67.     90.0    26.0
  1     0824  85       3.     78.5    25.4 *  1     1824 185     778.    130.6    27.9 *  2     0424 285      65.     89.8    26.0
  1     0830  86       3.     78.6    25.4 *  1     1830 186     760.    129.8    27.9 *  2     0430 286      63.     89.5    25.9
  1     0836  87       4.     78.9    25.4 *  1     1836 187     743.    129.0    27.9 *  2     0436 287      61.     89.3    25.9
  1     0842  88       4.     79.1    25.4 *  1     1842 188     726.    128.2    27.8 *  2     0442 288      60.     89.1    25.9
  1     0848  89       4.     79.4    25.4 *  1     1848 189     709.    127.4    27.8 *  2     0448 289      58.     88.8    25.9
  1     0854  90       5.     79.7    25.4 *  1     1854 190     692.    126.6    27.8 *  2     0454 290      56.     88.6    25.9
  1     0900  91       5.     80.0    25.5 *  1     1900 191     675.    125.8    27.7 *  2     0500 291      54.     88.4    25.9
  1     0906  92       5.     80.3    25.5 *  1     1906 192     659.    125.1    27.7 *  2     0506 292      53.     88.2    25.9
  1     0912  93       6.     80.7    25.5 *  1     1912 193     644.    124.4    27.7 *  2     0512 293      51.     88.0    25.9
  1     0918  94       7.     81.1    25.5 *  1     1918 194     628.    123.7    27.6 *  2     0518 294      49.     87.8    25.9
  1     0924  95       8.     81.6    25.5 *  1     1924 195     613.    123.0    27.6 *  2     0524 295      48.     87.6    25.8
  1     0930  96       9.     82.0    25.6 *  1     1930 196     599.    122.3    27.6 *  2     0530 296      46.     87.4    25.8
  1     0936  97      10.     82.6    25.6 *  1     1936 197     585.    121.7    27.5 *  2     0536 297      45.     87.2    25.8
  1     0942  98      13.     83.1    25.6 *  1     1942 198     571.    121.0    27.5 *  2     0542 298      43.     87.0    25.8
  1     0948  99      17.     83.7    25.6 *  1     1948 199     560.    120.4    27.5 *  2     0548 299      42.     86.8    25.8
  1     0954 100      22.     84.3    25.7 *  1     1954 200     548.    119.8    27.4 *  2     0554 300      40.     86.6    25.8
                                            *                                             *
*****************************************************************************************************************************************

 PEAK OUTFLOW IS     1910. AT TIME  14.00 HOURS


  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                           (CFS)
+    1910.     14.00                  1342.        485.        390.         390.
                         (INCHES)     6.533       9.439       9.450        9.450
                          (AC-FT)      665.        961.        963.         963.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
      175.     14.00                   154.        111.        105.         105.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
     29.95     14.00                  28.98       26.98       26.66        26.66

                          CUMULATIVE AREA =    1.91 SQ MI


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                                                HYDROGRAPH AT STATION    DAM-1
                                                    PLAN 1,   RATIO =   .50

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                                            *                                             *
  DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE
                                            *                                             *
  1     0000   1       3.     78.6    25.4 *  1     1000 101      80.     91.3    26.0 *  1     2000 201     693.    126.6    27.8
  1     0006   2       3.     78.5    25.4 *  1     1006 102      91.     92.1    26.1 *  1     2006 202     677.    125.9    27.7
  1     0012   3       3.     78.5    25.4 *  1     1012 103     102.     92.9    26.1 *  1     2012 203     662.    125.2    27.7
  1     0018   4       3.     78.5    25.4 *  1     1018 104     112.     93.7    26.2 *  1     2018 204     647.    124.5    27.7
  1     0024   5       3.     78.5    25.4 *  1     1024 105     123.     94.5    26.2 *  1     2024 205     633.    123.9    27.6
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1	0030	6	3.	78.4	25.4	*	1	1030	106	134.	95.4	26.2	*	1	2030	206	619.	123.2	27.6
1	0036	7	3.	78.4	25.4	*	1	1036	107	146.	96.3	26.3	*	1	2036	207	606.	122.6	27.6
1	0042	8	3.	78.4	25.4	*	1	1042	108	157.	97.1	26.3	*	1	2042	208	592.	122.0	27.5
1	0048	9	3.	78.4	25.4	*	1	1048	109	169.	98.1	26.4	*	1	2048	209	580.	121.4	27.5
1	0054	10	3.	78.3	25.4	*	1	1054	110	182.	99.0	26.4	*	1	2054	210	568.	120.8	27.5
1	0100	11	3.	78.3	25.4	*	1	1100	111	195.	100.0	26.5	*	1	2100	211	557.	120.3	27.5
1	0106	12	3.	78.3	25.4	*	1	1106	112	210.	101.0	26.5	*	1	2106	212	547.	119.7	27.4
1	0112	13	3.	78.3	25.4	*	1	1112	113	227.	102.1	26.6	*	1	2112	213	536.	119.2	27.4
1	0118	14	3.	78.3	25.4	*	1	1118	114	245.	103.1	26.6	*	1	2118	214	526.	118.7	27.4
1	0124	15	3.	78.2	25.4	*	1	1124	115	263.	104.2	26.7	*	1	2124	215	516.	118.1	27.4
1	0130	16	3.	78.2	25.4	*	1	1130	116	282.	105.3	26.7	*	1	2130	216	506.	117.6	27.3
1	0136	17	3.	78.2	25.4	*	1	1136	117	302.	106.6	26.8	*	1	2136	217	496.	117.1	27.3
1	0142	18	3.	78.2	25.4	*	1	1142	118	324.	107.8	26.9	*	1	2142	218	487.	116.6	27.3
1	0148	19	3.	78.1	25.4	*	1	1148	119	347.	109.2	26.9	*	1	2148	219	478.	116.2	27.3
1	0154	20	3.	78.1	25.4	*	1	1154	120	374.	110.8	27.0	*	1	2154	220	469.	115.7	27.2
1	0200	21	3.	78.1	25.4	*	1	1200	121	410.	112.7	27.1	*	1	2200	221	460.	115.3	27.2
1	0206	22	3.	78.1	25.4	*	1	1206	122	453.	114.9	27.2	*	1	2206	222	451.	114.8	27.2
1	0212	23	3.	78.1	25.4	*	1	1212	123	510.	117.8	27.3	*	1	2212	223	443.	114.4	27.2
1	0218	24	3.	78.0	25.4	*	1	1218	124	582.	121.5	27.5	*	1	2218	224	435.	114.0	27.2
1	0224	25	3.	78.0	25.4	*	1	1224	125	680.	126.0	27.7	*	1	2224	225	427.	113.6	27.1
1	0230	26	2.	78.0	25.4	*	1	1230	126	795.	131.4	28.0	*	1	2230	226	419.	113.2	27.1
1	0236	27	2.	78.0	25.3	*	1	1236	127	939.	137.6	28.3	*	1	2236	227	412.	112.8	27.1
1	0242	28	2.	78.0	25.3	*	1	1242	128	1101.	144.4	28.6	*	1	2242	228	404.	112.4	27.1
1	0248	29	2.	77.9	25.3	*	1	1248	129	1283.	151.7	28.9	*	1	2248	229	397.	112.0	27.1
1	0254	30	2.	77.9	25.3	*	1	1254	130	1476.	159.2	29.2	*	1	2254	230	390.	111.7	27.0
1	0300	31	2.	77.9	25.3	*	1	1300	131	1669.	166.5	29.6	*	1	2300	231	384.	111.3	27.0
1	0306	32	2.	77.9	25.3	*	1	1306	132	1859.	173.5	29.9	*	1	2306	232	377.	111.0	27.0
1	0312	33	2.	77.9	25.3	*	1	1312	133	2035.	179.8	30.1	*	1	2312	233	371.	110.7	27.0
1	0318	34	2.	77.8	25.3	*	1	1318	134	2191.	185.3	30.4	*	1	2318	234	365.	110.4	27.0
1	0324	35	2.	77.8	25.3	*	1	1324	135	2319.	189.9	30.6	*	1	2324	235	360.	110.0	27.0
1	0330	36	2.	77.8	25.3	*	1	1330	136	2422.	193.4	30.7	*	1	2330	236	355.	109.7	27.0
1	0336	37	2.	77.8	25.3	*	1	1336	137	2497.	196.0	30.8	*	1	2336	237	350.	109.4	26.9
1	0342	38	2.	77.8	25.3	*	1	1342	138	2547.	197.8	30.9	*	1	2342	238	344.	109.1	26.9
1	0348	39	2.	77.8	25.3	*	1	1348	139	2578.	198.8	30.9	*	1	2348	239	339.	108.8	26.9
1	0354	40	2.	77.7	25.3	*	1	1354	140	2591.	199.3	30.9	*	1	2354	240	334.	108.5	26.9
1	0400	41	2.	77.7	25.3	*	1	1400	141	2591.	199.3	30.9	*	2	0000	241	329.	108.2	26.9
1	0406	42	2.	77.7	25.3	*	1	1406	142	2580.	198.9	30.9	*	2	0006	242	324.	107.9	26.9
1	0412	43	2.	77.7	25.3	*	1	1412	143	2561.	198.2	30.9	*	2	0012	243	319.	107.6	26.8
1	0418	44	2.	77.7	25.3	*	1	1418	144	2534.	197.3	30.9	*	2	0018	244	314.	107.3	26.8
1	0424	45	2.	77.7	25.3	*	1	1424	145	2502.	196.2	30.8	*	2	0024	245	309.	107.0	26.8
1	0430	46	2.	77.6	25.3	*	1	1430	146	2466.	194.9	30.8	*	2	0030	246	304.	106.7	26.8
1	0436	47	2.	77.6	25.3	*	1	1436	147	2426.	193.6	30.7	*	2	0036	247	299.	106.4	26.8
1	0442	48	2.	77.6	25.3	*	1	1442	148	2384.	192.1	30.7	*	2	0042	248	293.	106.0	26.8
1	0448	49	2.	77.6	25.3	*	1	1448	149	2340.	190.6	30.6	*	2	0048	249	288.	105.7	26.8
1	0454	50	2.	77.6	25.3	*	1	1454	150	2295.	189.0	30.5	*	2	0054	250	282.	105.3	26.7
1	0500	51	2.	77.6	25.3	*	1	1500	151	2250.	187.4	30.5	*	2	0100	251	275.	104.9	26.7
1	0506	52	2.	77.5	25.3	*	1	1506	152	2205.	185.8	30.4	*	2	0106	252	268.	104.5	26.7
1	0512	53	2.	77.5	25.3	*	1	1512	153	2160.	184.2	30.3	*	2	0112	253	261.	104.1	26.7
1	0518	54	2.	77.5	25.3	*	1	1518	154	2114.	182.6	30.3	*	2	0118	254	254.	103.6	26.7
1	0524	55	2.	77.5	25.3	*	1	1524	155	2068.	181.0	30.2	*	2	0124	255	245.	103.2	26.6
1	0530	56	2.	77.5	25.3	*	1	1530	156	2023.	179.4	30.1	*	2	0130	256	237.	102.6	26.6
1	0536	57	2.	77.5	25.3	*	1	1536	157	1977.	177.8	30.1	*	2	0136	257	228.	102.1	26.6
1	0542	58	2.	77.5	25.3	*	1	1542	158	1933.	176.2	30.0	*	2	0142	258	220.	101.6	26.6
1	0548	59	2.	77.5	25.3	*	1	1548	159	1891.	174.6	29.9	*	2	0148	259	211.	101.1	26.5
1	0554	60	2.	77.5	25.3	*	1	1554	160	1849.	173.1	29.8	*	2	0154	260	203.	100.6	26.5
1	0600	61	2.	77.5	25.3	*	1	1600	161	1807.	171.5	29.8	*	2	0200	261	197.	100.2	26.5
1	0606	62	2.	77.5	25.3	*	1	1606	162	1765.	170.0	29.7	*	2	0206	262	190.	99.7	26.5
1	0612	63	2.	77.5	25.3	*	1	1612	163	1724.	168.5	29.7	*	2	0212	263	184.	99.2	26.4

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   1     0618  64       2.     77.5    25.3 *  1     1618 164    1683.    167.0    29.6 *  2     0218 264     178.     98.7    26.4
   1     0624  65       2.     77.5    25.3 *  1     1624 165    1643.    165.6    29.5 *  2     0224 265     172.     98.3    26.4
   1     0630  66       2.     77.6    25.3 *  1     1630 166    1605.    164.1    29.5 *  2     0230 266     166.     97.8    26.4
   1     0636  67       2.     77.6    25.3 *  1     1636 167    1568.    162.7    29.4 *  2     0236 267     160.     97.3    26.3
   1     0642  68       2.     77.7    25.3 *  1     1642 168    1532.    161.3    29.3 *  2     0242 268     154.     96.9    26.3
   1     0648  69       2.     77.8    25.3 *  1     1648 169    1495.    159.9    29.3 *  2     0248 269     149.     96.5    26.3
   1     0654  70       2.     77.9    25.3 *  1     1654 170    1459.    158.5    29.2 *  2     0254 270     143.     96.0    26.3
   1     0700  71       2.     77.9    25.3 *  1     1700 171    1424.    157.2    29.2 *  2     0300 271     138.     95.6    26.3
   1     0706  72       3.     78.1    25.4 *  1     1706 172    1389.    155.9    29.1 *  2     0306 272     132.     95.2    26.2
   1     0712  73       3.     78.2    25.4 *  1     1712 173    1354.    154.6    29.0 *  2     0312 273     127.     94.8    26.2
   1     0718  74       3.     78.3    25.4 *  1     1718 174    1321.    153.3    29.0 *  2     0318 274     122.     94.5    26.2
   1     0724  75       3.     78.5    25.4 *  1     1724 175    1291.    152.0    28.9 *  2     0324 275     118.     94.1    26.2
   1     0730  76       3.     78.7    25.4 *  1     1730 176    1260.    150.8    28.9 *  2     0330 276     113.     93.8    26.2
   1     0736  77       4.     78.9    25.4 *  1     1736 177    1230.    149.6    28.8 *  2     0336 277     108.     93.4    26.1
   1     0742  78       4.     79.1    25.4 *  1     1742 178    1200.    148.4    28.8 *  2     0342 278     104.     93.1    26.1
   1     0748  79       4.     79.4    25.4 *  1     1748 179    1171.    147.2    28.7 *  2     0348 279     100.     92.8    26.1
   1     0754  80       5.     79.7    25.4 *  1     1754 180    1142.    146.1    28.7 *  2     0354 280      96.     92.4    26.1
   1     0800  81       5.     80.0    25.5 *  1     1800 181    1114.    144.9    28.6 *  2     0400 281      92.     92.2    26.1
   1     0806  82       5.     80.3    25.5 *  1     1806 182    1087.    143.8    28.6 *  2     0406 282      88.     91.9    26.1
   1     0812  83       6.     80.6    25.5 *  1     1812 183    1060.    142.8    28.5 *  2     0412 283      85.     91.6    26.1
   1     0818  84       7.     81.0    25.5 *  1     1818 184    1035.    141.7    28.5 *  2     0418 284      81.     91.3    26.0
   1     0824  85       7.     81.4    25.5 *  1     1824 185    1011.    140.7    28.4 *  2     0424 285      78.     91.1    26.0
   1     0830  86       8.     81.9    25.6 *  1     1830 186     988.    139.7    28.4 *  2     0430 286      75.     90.8    26.0
   1     0836  87       9.     82.4    25.6 *  1     1836 187     964.    138.6    28.3 *  2     0436 287      71.     90.6    26.0
   1     0842  88      11.     82.9    25.6 *  1     1842 188     941.    137.7    28.3 *  2     0442 288      70.     90.4    26.0
   1     0848  89      15.     83.4    25.6 *  1     1848 189     918.    136.7    28.2 *  2     0448 289      68.     90.1    26.0
   1     0854  90      19.     83.9    25.7 *  1     1854 190     896.    135.7    28.2 *  2     0454 290      66.     89.9    26.0
   1     0900  91      24.     84.5    25.7 *  1     1900 191     874.    134.8    28.1 *  2     0500 291      64.     89.7    26.0
   1     0906  92      28.     85.1    25.7 *  1     1906 192     853.    133.9    28.1 *  2     0506 292      62.     89.4    25.9
   1     0912  93      33.     85.6    25.7 *  1     1912 193     832.    133.0    28.1 *  2     0512 293      61.     89.2    25.9
   1     0918  94      37.     86.3    25.8 *  1     1918 194     812.    132.2    28.0 *  2     0518 294      59.     89.0    25.9
   1     0924  95      42.     86.9    25.8 *  1     1924 195     793.    131.3    28.0 *  2     0524 295      57.     88.8    25.9
   1     0930  96      48.     87.5    25.8 *  1     1930 196     776.    130.5    27.9 *  2     0530 296      55.     88.5    25.9
   1     0936  97      53.     88.2    25.9 *  1     1936 197     759.    129.7    27.9 *  2     0536 297      54.     88.3    25.9
   1     0942  98      59.     88.9    25.9 *  1     1942 198     742.    128.9    27.9 *  2     0542 298      52.     88.1    25.9
   1     0948  99      64.     89.7    26.0 *  1     1948 199     725.    128.1    27.8 *  2     0548 299      50.     87.9    25.9
   1     0954 100      70.     90.5    26.0 *  1     1954 200     709.    127.4    27.8 *  2     0554 300      49.     87.7    25.9
                                             *                                             *
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 PEAK OUTFLOW IS     2591. AT TIME  14.00 HOURS


  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                            (CFS)
+    2591.     14.00                1801.        652.        524.         524.
                        (INCHES)    8.765      12.701      12.712       12.712
                         (AC-FT)     893.       1294.       1295.        1295.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
      199.     13.90                 171.        119.        111.         111.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     29.90-HR
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+   (FEET)      (HR)
     30.95     14.00                 29.73       27.34       26.94        26.94

                        CUMULATIVE AREA =    1.91 SQ MI
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HYDROGRAPH AT STATION DAM-1
PLAN 1, RATIO = 1.00

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	3.	78.6	25.4	1		1000	101	505.	117.6	27.3	1		2000	201	1455.	158.4	29.2
1		0006	2	3.	78.5	25.4	1		1006	102	529.	118.8	27.4	1		2006	202	1422.	157.1	29.2
1		0012	3	3.	78.5	25.4	1		1012	103	554.	120.1	27.5	1		2012	203	1389.	155.9	29.1
1		0018	4	3.	78.5	25.4	1		1018	104	581.	121.5	27.5	1		2018	204	1357.	154.6	29.0
1		0024	5	3.	78.5	25.4	1		1024	105	610.	122.8	27.6	1		2024	205	1326.	153.5	29.0
1		0030	6	3.	78.4	25.4	1		1030	106	641.	124.2	27.6	1		2030	206	1298.	152.3	28.9
1		0036	7	3.	78.4	25.4	1		1036	107	671.	125.7	27.7	1		2036	207	1270.	151.2	28.9
1		0042	8	3.	78.4	25.4	1		1042	108	703.	127.1	27.8	1		2042	208	1243.	150.1	28.8
1		0048	9	3.	78.4	25.4	1		1048	109	735.	128.6	27.9	1		2048	209	1217.	149.0	28.8
1		0054	10	3.	78.3	25.4	1		1054	110	769.	130.2	27.9	1		2054	210	1191.	148.0	28.7
1		0100	11	3.	78.3	25.4	1		1100	111	803.	131.8	28.0	1		2100	211	1165.	147.0	28.7
1		0106	12	3.	78.3	25.4	1		1106	112	843.	133.5	28.1	1		2106	212	1141.	146.0	28.7
1		0112	13	3.	78.3	25.4	1		1112	113	883.	135.2	28.2	1		2112	213	1117.	145.0	28.6
1		0118	14	3.	78.3	25.4	1		1118	114	925.	137.0	28.2	1		2118	214	1094.	144.1	28.6
1		0124	15	3.	78.2	25.4	1		1124	115	968.	138.8	28.3	1		2124	215	1071.	143.2	28.5
1		0130	16	3.	78.2	25.4	1		1130	116	1014.	140.8	28.4	1		2130	216	1049.	142.3	28.5
1		0136	17	3.	78.2	25.4	1		1136	117	1062.	142.9	28.5	1		2136	217	1030.	141.5	28.4
1		0142	18	3.	78.2	25.4	1		1142	118	1118.	145.1	28.6	1		2142	218	1010.	140.6	28.4
1		0148	19	3.	78.1	25.4	1		1148	119	1180.	147.6	28.7	1		2148	219	991.	139.8	28.4
1		0154	20	3.	78.1	25.4	1		1154	120	1250.	150.4	28.9	1		2154	220	972.	139.0	28.3
1		0200	21	3.	78.1	25.4	1		1200	121	1333.	153.8	29.0	1		2200	221	954.	138.2	28.3
1		0206	22	3.	78.1	25.4	1		1206	122	1447.	158.1	29.2	1		2206	222	936.	137.5	28.3
1		0212	23	3.	78.1	25.4	1		1212	123	1592.	163.6	29.4	1		2212	223	919.	136.7	28.2
1		0218	24	3.	78.0	25.4	1		1218	124	1786.	170.8	29.7	1		2218	224	902.	136.0	28.2
1		0224	25	3.	78.0	25.4	1		1224	125	2029.	179.6	30.1	1		2224	225	885.	135.3	28.2
1		0230	26	2.	78.0	25.4	1		1230	126	2324.	190.0	30.6	1		2230	226	869.	134.6	28.1
1		0236	27	2.	78.0	25.3	1		1236	127	2667.	202.0	31.1	1		2236	227	853.	133.9	28.1
1		0242	28	2.	78.0	25.3	1		1242	128	3056.	215.2	31.6	1		2242	228	838.	133.2	28.1
1		0248	29	2.	77.9	25.3	1		1248	129	3433.	229.1	32.1	1		2248	229	823.	132.6	28.0
1		0254	30	2.	77.9	25.3	1		1254	130	3856.	243.6	32.7	1		2254	230	808.	132.0	28.0
1		0300	31	2.	77.9	25.3	1		1300	131	4544.	256.5	33.1	1		2300	231	794.	131.4	28.0
1		0306	32	2.	77.9	25.3	1		1306	132	5235.	266.1	33.5	1		2306	232	782.	130.8	28.0
1		0312	33	2.	77.9	25.3	1		1312	133	5760.	272.5	33.7	1		2312	233	769.	130.2	27.9
1		0318	34	2.	77.9	25.3	1		1318	134	6102.	276.3	33.8	1		2318	234	757.	129.6	27.9
1		0324	35	2.	77.8	25.3	1		1324	135	6289.	278.4	33.9	1		2324	235	744.	129.0	27.9
1		0330	36	2.	77.8	25.3	1		1330	136	6359.	279.1	33.9	1		2330	236	732.	128.5	27.8
1		0336	37	2.	77.8	25.3	1		1336	137	6350.	279.0	33.9	1		2336	237	720.	127.9	27.8
1		0342	38	2.	77.8	25.3	1		1342	138	6293.	278.4	33.9	1		2342	238	709.	127.4	27.8
1		0348	39	2.	77.9	25.3	1		1348	139	6204.	277.5	33.9	1		2348	239	697.	126.8	27.8
1		0354	40	2.	77.9	25.3	1		1354	140	6099.	276.3	33.8	1		2354	240	686.	126.3	27.7
1		0400	41	2.	77.9	25.3	1		1400	141	5984.	275.0	33.8	2		0000	241	675.	125.8	27.7
1		0406	42	2.	78.0	25.4	1		1406	142	5864.	273.7	33.7	2		0006	242	664.	125.3	27.7
1		0412	43	3.	78.1	25.4	1		1412	143	5742.	272.3	33.7	2		0012	243	653.	124.8	27.7

1	0418	44	3.	78.2	25.4	*	1	1418	144	5619.	270.8	33.6	*	2	0018	244	642.	124.3	27.7
1	0424	45	3.	78.3	25.4	*	1	1424	145	5497.	269.3	33.6	*	2	0024	245	631.	123.8	27.6
1	0430	46	3.	78.4	25.4	*	1	1430	146	5376.	267.9	33.5	*	2	0030	246	620.	123.3	27.6
1	0436	47	3.	78.6	25.4	*	1	1436	147	5256.	266.4	33.5	*	2	0036	247	609.	122.8	27.6
1	0442	48	4.	78.8	25.4	*	1	1442	148	5138.	264.8	33.4	*	2	0042	248	597.	122.2	27.6
1	0448	49	4.	79.0	25.4	*	1	1448	149	5021.	263.3	33.4	*	2	0048	249	584.	121.6	27.5
1	0454	50	4.	79.3	25.4	*	1	1454	150	4907.	261.7	33.3	*	2	0054	250	571.	121.0	27.5
1	0500	51	5.	79.6	25.4	*	1	1500	151	4796.	260.2	33.3	*	2	0100	251	558.	120.3	27.5
1	0506	52	5.	79.9	25.4	*	1	1506	152	4686.	258.6	33.2	*	2	0106	252	544.	119.6	27.4
1	0512	53	5.	80.2	25.5	*	1	1512	153	4579.	257.0	33.2	*	2	0112	253	530.	118.8	27.4
1	0518	54	6.	80.6	25.5	*	1	1518	154	4476.	255.4	33.1	*	2	0118	254	514.	118.0	27.4
1	0524	55	7.	81.1	25.5	*	1	1524	155	4375.	253.8	33.0	*	2	0124	255	496.	117.1	27.3
1	0530	56	8.	81.5	25.5	*	1	1530	156	4278.	252.1	33.0	*	2	0130	256	478.	116.2	27.3
1	0536	57	9.	82.0	25.6	*	1	1536	157	4183.	250.4	32.9	*	2	0136	257	460.	115.2	27.2
1	0542	58	10.	82.5	25.6	*	1	1542	158	4092.	248.7	32.8	*	2	0142	258	441.	114.3	27.2
1	0548	59	13.	83.1	25.6	*	1	1548	159	4004.	246.9	32.8	*	2	0148	259	424.	113.4	27.1
1	0554	60	17.	83.7	25.6	*	1	1554	160	3919.	245.1	32.7	*	2	0154	260	406.	112.5	27.1
1	0600	61	22.	84.3	25.7	*	1	1600	161	3834.	243.0	32.6	*	2	0200	261	390.	111.7	27.0
1	0606	62	27.	84.9	25.7	*	1	1606	162	3755.	240.9	32.6	*	2	0206	262	374.	110.8	27.0
1	0612	63	32.	85.5	25.7	*	1	1612	163	3680.	238.7	32.5	*	2	0212	263	360.	110.0	27.0
1	0618	64	36.	86.1	25.8	*	1	1618	164	3604.	236.5	32.4	*	2	0218	264	347.	109.2	26.9
1	0624	65	42.	86.8	25.8	*	1	1624	165	3535.	234.1	32.3	*	2	0224	265	334.	108.4	26.9
1	0630	66	47.	87.4	25.8	*	1	1630	166	3477.	231.5	32.2	*	2	0230	266	321.	107.7	26.9
1	0636	67	52.	88.1	25.9	*	1	1636	167	3425.	228.6	32.1	*	2	0236	267	309.	106.9	26.8
1	0642	68	57.	88.8	25.9	*	1	1642	168	3367.	225.6	32.0	*	2	0242	268	297.	106.2	26.8
1	0648	69	63.	89.5	25.9	*	1	1648	169	3276.	222.5	31.9	*	2	0248	269	285.	105.5	26.7
1	0654	70	68.	90.2	26.0	*	1	1654	170	3188.	219.6	31.7	*	2	0254	270	274.	104.8	26.7
1	0700	71	76.	90.9	26.0	*	1	1700	171	3102.	216.7	31.6	*	2	0300	271	262.	104.2	26.7
1	0706	72	86.	91.7	26.1	*	1	1706	172	3019.	213.9	31.5	*	2	0306	272	252.	103.5	26.6
1	0712	73	95.	92.4	26.1	*	1	1712	173	2936.	211.3	31.4	*	2	0312	273	241.	102.9	26.6
1	0718	74	105.	93.1	26.1	*	1	1718	174	2854.	208.8	31.3	*	2	0318	274	231.	102.3	26.6
1	0724	75	114.	93.9	26.2	*	1	1724	175	2786.	206.4	31.2	*	2	0324	275	222.	101.7	26.6
1	0730	76	124.	94.6	26.2	*	1	1730	176	2721.	204.0	31.1	*	2	0330	276	212.	101.2	26.5
1	0736	77	133.	95.3	26.2	*	1	1736	177	2656.	201.6	31.0	*	2	0336	277	204.	100.7	26.5
1	0742	78	143.	96.1	26.3	*	1	1742	178	2590.	199.3	30.9	*	2	0342	278	196.	100.1	26.5
1	0748	79	153.	96.8	26.3	*	1	1748	179	2524.	197.0	30.9	*	2	0348	279	190.	99.6	26.5
1	0754	80	163.	97.6	26.4	*	1	1754	180	2459.	194.7	30.8	*	2	0354	280	183.	99.1	26.4
1	0800	81	173.	98.4	26.4	*	1	1800	181	2396.	192.5	30.7	*	2	0400	281	177.	98.6	26.4
1	0806	82	184.	99.2	26.4	*	1	1806	182	2334.	190.4	30.6	*	2	0406	282	171.	98.2	26.4
1	0812	83	194.	100.0	26.5	*	1	1812	183	2273.	188.3	30.5	*	2	0412	283	164.	97.7	26.4
1	0818	84	206.	100.8	26.5	*	1	1818	184	2217.	186.3	30.4	*	2	0418	284	158.	97.2	26.3
1	0824	85	220.	101.7	26.6	*	1	1824	185	2162.	184.3	30.3	*	2	0424	285	152.	96.8	26.3
1	0830	86	234.	102.5	26.6	*	1	1830	186	2107.	182.4	30.2	*	2	0430	286	147.	96.3	26.3
1	0836	87	248.	103.3	26.6	*	1	1836	187	2054.	180.5	30.2	*	2	0436	287	141.	95.9	26.3
1	0842	88	262.	104.2	26.7	*	1	1842	188	2001.	178.6	30.1	*	2	0442	288	135.	95.5	26.2
1	0848	89	277.	105.0	26.7	*	1	1848	189	1950.	176.8	30.0	*	2	0448	289	130.	95.1	26.2
1	0854	90	292.	105.9	26.8	*	1	1854	190	1903.	175.1	29.9	*	2	0454	290	125.	94.7	26.2
1	0900	91	307.	106.8	26.8	*	1	1900	191	1856.	173.3	29.9	*	2	0500	291	120.	94.3	26.2
1	0906	92	322.	107.7	26.9	*	1	1906	192	1810.	171.7	29.8	*	2	0506	292	115.	93.9	26.2
1	0912	93	338.	108.7	26.9	*	1	1912	193	1765.	170.0	29.7	*	2	0512	293	110.	93.6	26.2
1	0918	94	355.	109.7	27.0	*	1	1918	194	1722.	168.4	29.6	*	2	0518	294	106.	93.2	26.1
1	0924	95	372.	110.8	27.0	*	1	1924	195	1679.	166.9	29.6	*	2	0524	295	102.	92.9	26.1
1	0930	96	393.	111.8	27.1	*	1	1930	196	1638.	165.4	29.5	*	2	0530	296	97.	92.6	26.1
1	0936	97	415.	112.9	27.1	*	1	1936	197	1599.	163.9	29.5	*	2	0536	297	93.	92.3	26.1
1	0942	98	436.	114.0	27.2	*	1	1942	198	1562.	162.5	29.4	*	2	0542	298	89.	92.0	26.1
1	0948	99	459.	115.2	27.2	*	1	1948	199	1526.	161.1	29.3	*	2	0548	299	86.	91.7	26.1
1	0954	100	482.	116.4	27.3	*	1	1954	200	1490.	159.7	29.3	*	2	0554	300	82.	91.4	26.0
					*							*							

```
*****************************************************************************************************************************

 PEAK OUTFLOW IS     6359. AT TIME  13.50 HOURS


  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+    6359.     13.50                4108.       1519.       1220.        1220.
                        (INCHES)    19.996      29.578      29.595       29.595
                         (AC-FT)     2037.       3013.       3015.        3015.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
      279.     13.50                  239.        151.        137.         137.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
     33.93     13.50                 32.46       28.75       28.08        28.08

                         CUMULATIVE AREA =    1.91 SQ MI

1

                PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                  FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                                TIME TO PEAK IN HOURS


                                                          RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN            RATIO 1  RATIO 2  RATIO 3  RATIO 4
                                                        .30      .40      .50     1.00

 HYDROGRAPH AT
+                   A-1      1.91     1   FLOW        1383.    2091.    2814.    6456.
                                          TIME        13.40    13.40    13.40    13.30

 ROUTED TO
+                 DAM-1      1.91     1   FLOW        1244.    1910.    2591.    6359.
                                          TIME        14.20    14.00    14.00    13.50

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       28.84    29.95    30.95    33.93
                                          TIME        14.20    14.00    14.00    13.50
1                                 SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION    DAM-1
                              (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)


      PLAN  1 ..............                 INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                                ELEVATION          25.38              32.13            32.13
                                STORAGE              79.               229.             229.
                                OUTFLOW               3.              3439.            3439.


                       RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
```

OF PMF	RESERVOIR W.S.ELEV	DEPTH OVER DAM	STORAGE AC-FT	OUTFLOW CFS	OVER TOP HOURS	MAX OUTFLOW HOURS	FAILURE HOURS
.30	28.84	.00	150.	1244.	.00	14.20	.00
.40	29.95	.00	175.	1910.	.00	14.00	.00
.50	30.95	.00	199.	2591.	.00	14.00	.00
1.00	33.93	1.80	279.	6359.	3.70	13.50	.00

*** NORMAL END OF HEC-1 ***

```
1****************************************                                                    ****************************************
 *                                      *                                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                                                    *          609 SECOND STREET           *
 *                                      *                                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   26AUG19  TIME  09:44:32  *                                                    *           (916) 756-1104             *
 *                                      *                                                    *                                      *
 ****************************************                                                    ****************************************


                                                X     X  XXXXXXX   XXXXX           X
                                                X     X  X        X     X         XX
                                                X     X  X        X                X
                                                XXXXXXX  XXXX     X        XXXXX   X
                                                X     X  X        X                X
                                                X     X  X        X     X          X
                                                X     X  XXXXXXX   XXXXX          XXX


            THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

            THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
            THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
            NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
            DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
            KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


1                                                   HEC-1 INPUT                                                PAGE  1

           LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              1          ID    PREPARED BY FRENCH & PARRELLO ASSOCIATES
              2          ID    ALMONESSON LAKE DAM
              3          ID    FPA PROJECT NO. 13633.001
              4          ID    DEPTFORD TOWNSHIP, GLOUCESTER COUNTY, NEW JERSEY
              5          ID
              6          ID    DATE PREPARED: AUGUST 2019
              7          ID    HYDROLOGIC AND HYDRAULIC REPORT
              8          ID
              9          ID    VERTICAL DATUM IS NAVD88
             10          ID    100% PMP STORM EVENTS
             11          ID    HMR-51 - ALL SEASON PMP FOR 24-HOUR 10 SQMI
             12          ID
             13          ID  ALMONESSON LAKE DAM
             14          ID  STORAGE INFORMATION AND RATING CURVE DEVELOPED BY FPA
             15          ID  DRAINAGE AREA DERIVED FROM USGS TOPOGRAPHIC QUADRANGLES USING STREAMSTATS
             16          ID
             17          ID  FULL PMP BREACH EVENT
             18          ID  PROPOSED CONDITION
             19          ID
                         *DIAGRAM
```

```
  20          IT       6       0       0     300
  21          IO       0       2
  22          JP       2
  23          JR    PREC       1

  24          KK     A-1SUB-AREA 1 TO COOPER STREET
  25          KM  *** COMPUTE HYDROGRAPH-RUNOFF TO COOPER STREET  ***
  26          IN       6
  27          PB      35
  28          PC  0.0000 0.00100 0.00200 0.00300 0.00400 0.00500 0.00600 0.00700 0.00800 0.00900
  29          PC  0.0100 0.01100 0.01200 0.01300 0.01400 0.01500 0.01600 0.01700 0.01800 0.01900
  30          PC  0.0200 0.02101 0.02203 0.02307 0.02412 0.02519 0.02627 0.02737 0.02848 0.02961
  31          PC  0.0308 0.03191 0.03308 0.03427 0.03547 0.03669 0.03792 0.03917 0.04043 0.04171
  32          PC  0.0430 0.04431 0.04563 0.04697 0.04832 0.04969 0.05107 0.05247 0.05388 0.05531
  33          PC  0.0567 0.05821 0.05968 0.06117 0.06267 0.06419 0.06572 0.06727 0.06883 0.07041
  34          PC  0.0720 0.07363 0.07530 0.07703 0.07880 0.08063 0.08250 0.08443 0.08640 0.08843
  35          PC  0.0905 0.09263 0.09480 0.09703 0.09930 0.10163 0.10400 0.10643 0.10890 0.11143
  36          PC  0.1140 0.11666 0.11943 0.12232 0.12532 0.12844 0.13167 0.13502 0.13848 0.14206
  37          PC  0.1458 0.14956 0.15348 0.15752 0.16167 0.16594 0.17032 0.17482 0.17943 0.18416
  38          PC  0.1890 0.19402 0.19928 0.20478 0.21052 0.21650 0.22272 0.22918 0.23588 0.24282
  39          PC  0.2500 0.25776 0.26644 0.27604 0.28656 0.29800 0.31430 0.33940 0.37330 0.41600
  40          PC  0.5000 0.58400 0.62670 0.66060 0.68570 0.70200 0.71344 0.72396 0.73356 0.74224
  41          PC  0.7500 0.75718 0.76412 0.77082 0.77728 0.78350 0.78948 0.79522 0.80072 0.80598
  42          PC  0.8110 0.81584 0.82057 0.82518 0.82968 0.83406 0.83833 0.84248 0.84652 0.85044
  43          PC  0.8543 0.85794 0.86152 0.86498 0.86833 0.87156 0.87468 0.87768 0.88057 0.88334
  44          PC  0.8860 0.88858 0.89110 0.89358 0.89600 0.89838 0.90070 0.90298 0.90520 0.90738
  45          PC  0.9095 0.91158 0.91360 0.91558 0.91750 0.91938 0.92120 0.92298 0.92470 0.92638
  46          PC  0.9280 0.92959 0.93117 0.93273 0.93428 0.93581 0.93733 0.93883 0.94032 0.94179
  47          PC  0.9433 0.94469 0.94612 0.94753 0.94893 0.95031 0.95168 0.95303 0.95437 0.95569
  48          PC  0.9570 0.95829 0.95958 0.96085 0.96211 0.96336 0.96460 0.96582 0.96704 0.96824
  49          PC  0.9694 0.97062 0.97179 0.97295 0.97410 0.97523 0.97636 0.97747 0.97858 0.97967
  50          PC  0.9808 0.98182 0.98288 0.98392 0.98496 0.98598 0.98700 0.98800 0.98899 0.98997
  51          PC  0.9909 0.99189 0.99284 0.99377 0.99470 0.99561 0.99651 0.99740 0.99828 0.99914
  52          PC  1.0000 1.00000 1.00000 1.00000 1.00000
  53          BA    1.91
1                                          HEC-1 INPUT                                          PAGE  2

 LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  54          LS       0      68
  55          US    1.27     0.4

  56          KK   DAM-1COOPER STREET DAM
  57          KM  *** ROUTE FLOW ***
  58          KM  *** STAGE-STORAGE-DISCHARGE FROM USGS QUADS ***
  59          RS       1    ELEV   25.38
  60          SA  0.0023  19.139  23.366  30.516
  61          SE    13.2   25.38      30      35
  62          SQ       0     6.2    10.2    71.4   201.6   371.5   573.3   802.4    1056  1331.8
  63          SQ  1628.3  1943.9  2277.8  2628.8  2832.6  2996.2  3379.3  3608.5  3688.6  3843.7
  64          SE   25.25    25.5    25.6      26    26.5      27    27.5      28    28.5      29
  65          SE    29.5      30    30.5      31    31.3    31.5      32    32.5      33      34
  66          ST   32.13       0     2.6     1.5
  67          SW       0    44.4   333.3   417.3   478.4   531.3   582.1   625.5   760.8     800
  68          SE   32.13   32.16    32.5      33      34    34.5      35      36      37      38
  69          KP       2
  70          SB    13.2   45.75     0.5     0.3   33.91
  71          RC     0.1   0.045     0.1    4180   0.002
```

```
            72          RX       0  262.61  480.76  487.56  517.82  529.44  733.09    1000
            73          RY   39.82   34.18    16.3   13.46   13.81   15.75   32.19   41.15
            74          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    24         A-1
                V
                V
    56       DAM-1

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                                          ****************************************
 *                                      *                                          *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                          *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                                          *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                *                                          *          609 SECOND STREET           *
 *                                      *                                          *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   26AUG19  TIME  09:44:32  *                                          *           (916) 756-1104             *
 *                                      *                                          *                                      *
 ****************************************                                          ****************************************
```

PREPARED BY FRENCH & PARRELLO ASSOCIATES
ALMONESSON LAKE DAM
FPA PROJECT NO. 13633.001
DEPTFORD TOWNSHIP, GLOUCESTER COUNTY, NEW JERSEY

DATE PREPARED: AUGUST 2019
HYDROLOGIC AND HYDRAULIC REPORT

VERTICAL DATUM IS NAVD88
100% PMP STORM EVENTS
HMR-51 - ALL SEASON PMP FOR 24-HOUR 10 SQMI

ALMONESSON LAKE DAM
STORAGE INFORMATION AND RATING CURVE DEVELOPED BY FPA
DRAINAGE AREA DERIVED FROM USGS TOPOGRAPHIC QUADRANGLES USING STREAMSTATS

FULL PMP BREACH EVENT
PROPOSED CONDITION

```
   21 IO          OUTPUT CONTROL VARIABLES
                        IPRNT           0  PRINT CONTROL
                        IPLOT           2  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

      IT          HYDROGRAPH TIME DATA
                         NMIN           6  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1    0  STARTING DATE
```

```
                    ITIME        0000  STARTING TIME
                       NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE      2    0  ENDING DATE
                   NDTIME        0554  ENDING TIME
                   ICENT           19  CENTURY MARK

                COMPUTATION INTERVAL     .10 HOURS
                     TOTAL TIME BASE   29.90 HOURS

          ENGLISH UNITS
               DRAINAGE AREA         SQUARE MILES
               PRECIPITATION DEPTH   INCHES
               LENGTH, ELEVATION     FEET
               FLOW                  CUBIC FEET PER SECOND
               STORAGE VOLUME        ACRE-FEET
               SURFACE AREA          ACRES
               TEMPERATURE           DEGREES FAHRENHEIT

     JP          MULTI-PLAN OPTION
                    NPLAN           2  NUMBER OF PLANS

     JR          MULTI-RATIO OPTION
                     RATIOS OF PRECIPITATION
                   1.00


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  24 KK     *       A-1  *     SUB-AREA 1 TO COOPER STREET
            *            *
            **************
                          *** COMPUTE HYDROGRAPH-RUNOFF TO COOPER STREET  ***

  26 IN          TIME DATA FOR INPUT TIME SERIES
                    JXMIN           6  TIME INTERVAL IN MINUTES
                   JXDATE      1    0  STARTING DATE
                   JXTIME           0  STARTING TIME

               SUBBASIN RUNOFF DATA

  53 BA          SUBBASIN CHARACTERISTICS
                    TAREA        1.91  SUBBASIN AREA

                 PRECIPITATION DATA

  27 PB             STORM       35.00  BASIN TOTAL PRECIPITATION

  28 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .01      .01      .01      .01      .01      .01      .01      .01      .01      .01
      .01      .01      .01      .01      .01      .02      .03      .03      .04      .08
      .08      .04      .03      .03      .02      .01      .01      .01      .01      .01
      .01      .01      .01      .01      .01      .01      .01      .01      .01      .01
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00

 54 LS          SCS LOSS RATE
                     STRTL         .94  INITIAL ABSTRACTION
                    CRVNBR       68.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

 55 US          SNYDER UNITGRAPH
                        TP        1.27  LAG
                        CP         .40  PEAKING COEFFICIENT

                SYNTHETIC ACCUMULATED-AREA VS. TIME CURVE WILL BE USED

                                                          ***
APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

                                                UNIT HYDROGRAPH PARAMETERS
                                          CLARK   TC=  1.30 HR,       R=  2.38 HR
                                         SNYDER   TP=  1.27 HR,      CP=   .40

                                                     UNIT HYDROGRAPH
                                                133 END-OF-PERIOD ORDINATES
              8.       29.       60.       97.      138.      184.      231.      277.      317.      350.
            375.      392.      398.      389.      373.      358.      343.      329.      316.      303.
            290.      278.      267.      256.      245.      235.      226.      216.      207.      199.
            191.      183.      175.      168.      161.      155.      148.      142.      136.      131.
            125.      120.      115.      111.      106.      102.       97.       93.       90.       86.
             82.       79.       76.       73.       70.       67.       64.       61.       59.       56.
             54.       52.       50.       48.       46.       44.       42.       40.       39.       37.
             36.       34.       33.       31.       30.       29.       28.       27.       25.       24.
             23.       22.       22.       21.       20.       19.       18.       17.       17.       16.
             15.       15.       14.       14.       13.       12.       12.       11.       11.       11.
             10.       10.        9.        9.        9.        8.        8.        8.        7.        7.
              7.        6.        6.        6.        6.        5.        5.        5.        5.        5.
              4.        4.        4.        4.        4.        4.        3.        3.        3.        3.
              3.        3.        3.
*****************************************************************************************************************

                                          HYDROGRAPH AT STATION      A-1
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DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		1500	151	.14	.00	.13	4594.
1		0006	2	.04	.04	.00	0.	1		1506	152	.13	.00	.12	4483.
1		0012	3	.04	.04	.00	0.	1		1512	153	.13	.00	.12	4374.
1		0018	4	.03	.03	.00	0.	1		1518	154	.12	.00	.12	4267.
1		0024	5	.04	.04	.00	0.	1		1524	155	.12	.00	.12	4163.
1		0030	6	.03	.03	.00	0.	1		1530	156	.11	.00	.11	4061.
1		0036	7	.04	.04	.00	0.	1		1536	157	.11	.00	.11	3961.
1		0042	8	.04	.04	.00	0.	1		1542	158	.11	.00	.10	3864.
1		0048	9	.04	.04	.00	0.	1		1548	159	.10	.00	.10	3768.
1		0054	10	.03	.03	.00	0.	1		1554	160	.10	.00	.10	3674.
1		0100	11	.04	.04	.00	0.	1		1600	161	.09	.00	.09	3583.
1		0106	12	.04	.04	.00	0.	1		1606	162	.09	.00	.09	3493.
1		0112	13	.04	.04	.00	0.	1		1612	163	.09	.00	.09	3404.
1		0118	14	.04	.04	.00	0.	1		1618	164	.09	.00	.09	3318.
1		0124	15	.04	.04	.00	0.	1		1624	165	.08	.00	.08	3233.
1		0130	16	.03	.03	.00	0.	1		1630	166	.08	.00	.08	3150.
1		0136	17	.04	.04	.00	0.	1		1636	167	.08	.00	.08	3069.
1		0142	18	.04	.04	.00	0.	1		1642	168	.08	.00	.08	2989.
1		0148	19	.03	.03	.00	0.	1		1648	169	.08	.00	.08	2912.
1		0154	20	.04	.04	.00	0.	1		1654	170	.08	.00	.07	2836.
1		0200	21	.04	.04	.00	0.	1		1700	171	.07	.00	.07	2763.
1		0206	22	.04	.04	.00	0.	1		1706	172	.07	.00	.07	2691.
1		0212	23	.04	.04	.00	0.	1		1712	173	.07	.00	.07	2622.
1		0218	24	.04	.04	.00	0.	1		1718	174	.07	.00	.07	2554.
1		0224	25	.04	.04	.00	0.	1		1724	175	.07	.00	.07	2488.
1		0230	26	.04	.04	.00	0.	1		1730	176	.07	.00	.06	2424.
1		0236	27	.04	.04	.00	0.	1		1736	177	.06	.00	.06	2362.
1		0242	28	.04	.04	.00	0.	1		1742	178	.06	.00	.06	2301.
1		0248	29	.04	.04	.00	0.	1		1748	179	.06	.00	.06	2243.
1		0254	30	.04	.04	.00	0.	1		1754	180	.06	.00	.06	2185.
1		0300	31	.04	.04	.00	0.	1		1800	181	.06	.00	.06	2129.
1		0306	32	.04	.04	.00	0.	1		1806	182	.06	.00	.05	2075.
1		0312	33	.04	.04	.00	0.	1		1812	183	.06	.00	.05	2022.
1		0318	34	.04	.04	.00	1.	1		1818	184	.05	.00	.05	1970.
1		0324	35	.04	.04	.00	1.	1		1824	185	.05	.00	.05	1920.
1		0330	36	.04	.04	.01	2.	1		1830	186	.05	.00	.05	1871.
1		0336	37	.04	.04	.01	3.	1		1836	187	.05	.00	.05	1823.
1		0342	38	.04	.04	.01	4.	1		1842	188	.05	.00	.05	1777.
1		0348	39	.04	.04	.01	5.	1		1848	189	.05	.00	.05	1732.
1		0354	40	.04	.04	.01	7.	1		1854	190	.05	.00	.05	1688.
1		0400	41	.05	.04	.01	9.	1		1900	191	.05	.00	.05	1646.
1		0406	42	.05	.04	.01	11.	1		1906	192	.05	.00	.05	1606.
1		0412	43	.05	.04	.01	13.	1		1912	193	.05	.00	.05	1566.
1		0418	44	.05	.04	.01	16.	1		1918	194	.05	.00	.05	1528.
1		0424	45	.05	.04	.01	19.	1		1924	195	.05	.00	.05	1491.
1		0430	46	.05	.04	.01	22.	1		1930	196	.05	.00	.05	1456.
1		0436	47	.05	.04	.01	25.	1		1936	197	.05	.00	.05	1421.
1		0442	48	.05	.03	.01	29.	1		1942	198	.05	.00	.05	1388.
1		0448	49	.05	.03	.01	33.	1		1948	199	.05	.00	.05	1356.
1		0454	50	.05	.03	.02	37.	1		1954	200	.05	.00	.05	1325.
1		0500	51	.05	.03	.02	41.	1		2000	201	.05	.00	.05	1295.
1		0506	52	.05	.04	.02	46.	1		2006	202	.05	.00	.04	1266.
1		0512	53	.05	.03	.02	50.	1		2012	203	.05	.00	.04	1238.
1		0518	54	.05	.03	.02	55.	1		2018	204	.04	.00	.04	1210.

1	0524	55	.05	.03	.02	60.	*	1	2024	205	.04	.00	.04	1184.
1	0530	56	.05	.03	.02	66.	*	1	2030	206	.04	.00	.04	1159.
1	0536	57	.05	.03	.02	71.	*	1	2036	207	.04	.00	.04	1134.
1	0542	58	.05	.03	.02	77.	*	1	2042	208	.04	.00	.04	1110.
1	0548	59	.05	.03	.02	82.	*	1	2048	209	.04	.00	.04	1087.
1	0554	60	.06	.03	.02	88.	*	1	2054	210	.04	.00	.04	1064.
1	0600	61	.06	.03	.02	94.	*	1	2100	211	.04	.00	.04	1042.
1	0606	62	.06	.03	.03	100.	*	1	2106	212	.04	.00	.04	1021.
1	0612	63	.06	.03	.03	107.	*	1	2112	213	.04	.00	.04	1001.
1	0618	64	.06	.03	.03	113.	*	1	2118	214	.04	.00	.04	981.
1	0624	65	.06	.03	.03	120.	*	1	2124	215	.04	.00	.04	962.
1	0630	66	.06	.03	.03	127.	*	1	2130	216	.04	.00	.04	943.
1	0636	67	.07	.03	.03	134.	*	1	2136	217	.04	.00	.04	925.
1	0642	68	.07	.03	.03	141.	*	1	2142	218	.04	.00	.04	908.
1	0648	69	.07	.03	.04	149.	*	1	2148	219	.04	.00	.04	891.
1	0654	70	.07	.03	.04	157.	*	1	2154	220	.04	.00	.04	874.
1	0700	71	.07	.03	.04	165.	*	1	2200	221	.04	.00	.04	859.
1	0706	72	.07	.03	.04	174.	*	1	2206	222	.04	.00	.04	843.
1	0712	73	.08	.03	.04	183.	*	1	2212	223	.04	.00	.04	828.
1	0718	74	.08	.03	.04	192.	*	1	2218	224	.04	.00	.04	813.
1	0724	75	.08	.03	.05	202.	*	1	2224	225	.04	.00	.04	799.
1	0730	76	.08	.03	.05	212.	*	1	2230	226	.04	.00	.04	785.
1	0736	77	.08	.03	.05	223.	*	1	2236	227	.04	.00	.04	771.
1	0742	78	.09	.03	.05	234.	*	1	2242	228	.03	.00	.03	758.
1	0748	79	.09	.03	.05	245.	*	1	2248	229	.03	.00	.03	745.
1	0754	80	.09	.03	.05	257.	*	1	2254	230	.03	.00	.03	733.
1	0800	81	.09	.03	.06	269.	*	1	2300	231	.03	.00	.03	721.
1	0806	82	.09	.03	.06	282.	*	1	2306	232	.03	.00	.03	709.
1	0812	83	.10	.03	.06	295.	*	1	2312	233	.03	.00	.03	697.
1	0818	84	.10	.04	.07	308.	*	1	2318	234	.03	.00	.03	685.
1	0824	85	.11	.04	.07	322.	*	1	2324	235	.03	.00	.03	674.
1	0830	86	.11	.04	.07	336.	*	1	2330	236	.03	.00	.03	663.
1	0836	87	.11	.04	.08	351.	*	1	2336	237	.03	.00	.03	653.
1	0842	88	.12	.04	.08	367.	*	1	2342	238	.03	.00	.03	642.
1	0848	89	.12	.04	.08	384.	*	1	2348	239	.03	.00	.03	632.
1	0854	90	.13	.04	.09	401.	*	1	2354	240	.03	.00	.03	622.
1	0900	91	.13	.04	.09	419.	*	2	0000	241	.03	.00	.03	612.
1	0906	92	.13	.04	.10	438.	*	2	0006	242	.00	.00	.00	602.
1	0912	93	.14	.04	.10	459.	*	2	0012	243	.00	.00	.00	592.
1	0918	94	.14	.04	.10	480.	*	2	0018	244	.00	.00	.00	581.
1	0924	95	.15	.04	.11	502.	*	2	0024	245	.00	.00	.00	569.
1	0930	96	.15	.04	.11	525.	*	2	0030	246	.00	.00	.00	556.
1	0936	97	.15	.04	.12	550.	*	2	0036	247	.00	.00	.00	542.
1	0942	98	.16	.04	.12	575.	*	2	0042	248	.00	.00	.00	527.
1	0948	99	.16	.04	.13	601.	*	2	0048	249	.00	.00	.00	510.
1	0954	100	.17	.04	.13	628.	*	2	0054	250	.00	.00	.00	492.
1	1000	101	.17	.04	.13	657.	*	2	0100	251	.00	.00	.00	473.
1	1006	102	.18	.04	.14	686.	*	2	0106	252	.00	.00	.00	453.
1	1012	103	.18	.04	.15	716.	*	2	0112	253	.00	.00	.00	432.
1	1018	104	.19	.04	.16	747.	*	2	0118	254	.00	.00	.00	407.
1	1024	105	.20	.04	.16	779.	*	2	0124	255	.00	.00	.00	383.
1	1030	106	.21	.04	.17	813.	*	2	0130	256	.00	.00	.00	364.
1	1036	107	.22	.04	.18	848.	*	2	0136	257	.00	.00	.00	346.
1	1042	108	.23	.04	.19	885.	*	2	0142	258	.00	.00	.00	330.
1	1048	109	.23	.04	.20	923.	*	2	0148	259	.00	.00	.00	315.
1	1054	110	.24	.04	.21	963.	*	2	0154	260	.00	.00	.00	301.
1	1100	111	.25	.04	.22	1006.	*	2	0200	261	.00	.00	.00	287.
1	1106	112	.27	.04	.23	1050.	*	2	0206	262	.00	.00	.00	275.

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        1     1112  113     .30     .04     .26      1097.       *        2     0212  263     .00     .00     .00       263.
        1     1118  114     .34     .04     .29      1147.       *        2     0218  264     .00     .00     .00       251.
        1     1124  115     .37     .04     .32      1202.       *        2     0224  265     .00     .00     .00       240.
        1     1130  116     .40     .05     .36      1260.       *        2     0230  266     .00     .00     .00       230.
        1     1136  117     .57     .06     .51      1326.       *        2     0236  267     .00     .00     .00       220.
        1     1142  118     .88     .08     .79      1402.       *        2     0242  268     .00     .00     .00       210.
        1     1148  119    1.19     .10    1.09      1497.       *        2     0248  269     .00     .00     .00       201.
        1     1154  120    1.49     .11    1.39      1621.       *        2     0254  270     .00     .00     .00       192.
        1     1200  121    2.94     .17    2.77      1792.       *        2     0300  271     .00     .00     .00       184.
        1     1206  122    2.94     .13    2.81      2036.       *        2     0306  272     .00     .00     .00       176.
        1     1212  123    1.49     .05    1.44      2360.       *        2     0312  273     .00     .00     .00       168.
        1     1218  124    1.19     .04    1.15      2753.       *        2     0318  274     .00     .00     .00       161.
        1     1224  125     .88     .03     .85      3202.       *        2     0324  275     .00     .00     .00       154.
        1     1230  126     .57     .02     .55      3690.       *        2     0330  276     .00     .00     .00       147.
        1     1236  127     .40     .01     .39      4199.       *        2     0336  277     .00     .00     .00       141.
        1     1242  128     .37     .01     .36      4703.       *        2     0342  278     .00     .00     .00       134.
        1     1248  129     .34     .01     .33      5175.       *        2     0348  279     .00     .00     .00       129.
        1     1254  130     .30     .01     .30      5593.       *        2     0354  280     .00     .00     .00       123.
        1     1300  131     .27     .01     .26      5940.       *        2     0400  281     .00     .00     .00       117.
        1     1306  132     .25     .01     .25      6205.       *        2     0406  282     .00     .00     .00       112.
        1     1312  133     .24     .01     .24      6378.       *        2     0412  283     .00     .00     .00       107.
        1     1318  134     .23     .01     .23      6456.       *        2     0418  284     .00     .00     .00       103.
        1     1324  135     .23     .01     .22      6450.       *        2     0424  285     .00     .00     .00        98.
        1     1330  136     .22     .00     .21      6389.       *        2     0430  286     .00     .00     .00        94.
        1     1336  137     .21     .00     .20      6297.       *        2     0436  287     .00     .00     .00        90.
        1     1342  138     .20     .00     .20      6187.       *        2     0442  288     .00     .00     .00        86.
        1     1348  139     .19     .00     .19      6066.       *        2     0448  289     .00     .00     .00        82.
        1     1354  140     .18     .00     .18      5941.       *        2     0454  290     .00     .00     .00        78.
        1     1400  141     .18     .00     .17      5814.       *        2     0500  291     .00     .00     .00        75.
        1     1406  142     .17     .00     .17      5687.       *        2     0506  292     .00     .00     .00        71.
        1     1412  143     .17     .00     .16      5559.       *        2     0512  293     .00     .00     .00        68.
        1     1418  144     .16     .00     .16      5433.       *        2     0518  294     .00     .00     .00        65.
        1     1424  145     .16     .00     .15      5308.       *        2     0524  295     .00     .00     .00        62.
        1     1430  146     .15     .00     .15      5184.       *        2     0530  296     .00     .00     .00        59.
        1     1436  147     .15     .00     .15      5062.       *        2     0536  297     .00     .00     .00        57.
        1     1442  148     .15     .00     .14      4942.       *        2     0542  298     .00     .00     .00        54.
        1     1448  149     .14     .00     .14      4824.       *        2     0548  299     .00     .00     .00        52.
        1     1454  150     .14     .00     .13      4708.       *        2     0554  300     .00     .00     .00        49.
                                                                  *
 ************************************************************************************************************************************

     TOTAL RAINFALL =   35.00, TOTAL LOSS =    5.08, TOTAL EXCESS =   29.92

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                              (CFS)
+    6456.     13.30                4142.       1522.       1224.        1224.
                         (INCHES)   20.162      29.636      29.696       29.696
                          (AC-FT)    2054.       3019.       3025.        3025.

                          CUMULATIVE AREA =    1.91 SQ MI

 APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.30 AND R= 2.38 INTERVALS

 ************************************************************************************************************************************

                                                HYDROGRAPH AT STATION      A-1
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PLAN 1, RATIO = 1.00

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		1500	151	.14	.00	.13	4594.
1		0006	2	.04	.04	.00	0.	1		1506	152	.13	.00	.12	4483.
1		0012	3	.04	.04	.00	0.	1		1512	153	.13	.00	.12	4374.
1		0018	4	.03	.03	.00	0.	1		1518	154	.12	.00	.12	4267.
1		0024	5	.04	.04	.00	0.	1		1524	155	.12	.00	.12	4163.
1		0030	6	.03	.03	.00	0.	1		1530	156	.11	.00	.11	4061.
1		0036	7	.04	.04	.00	0.	1		1536	157	.11	.00	.11	3961.
1		0042	8	.04	.04	.00	0.	1		1542	158	.11	.00	.10	3864.
1		0048	9	.04	.04	.00	0.	1		1548	159	.10	.00	.10	3768.
1		0054	10	.03	.03	.00	0.	1		1554	160	.10	.00	.10	3674.
1		0100	11	.04	.04	.00	0.	1		1600	161	.09	.00	.09	3583.
1		0106	12	.04	.04	.00	0.	1		1606	162	.09	.00	.09	3493.
1		0112	13	.04	.04	.00	0.	1		1612	163	.09	.00	.09	3404.
1		0118	14	.04	.04	.00	0.	1		1618	164	.09	.00	.09	3318.
1		0124	15	.04	.04	.00	0.	1		1624	165	.08	.00	.08	3233.
1		0130	16	.03	.03	.00	0.	1		1630	166	.08	.00	.08	3150.
1		0136	17	.04	.04	.00	0.	1		1636	167	.08	.00	.08	3069.
1		0142	18	.04	.04	.00	0.	1		1642	168	.08	.00	.08	2989.
1		0148	19	.03	.03	.00	0.	1		1648	169	.08	.00	.08	2912.
1		0154	20	.04	.04	.00	0.	1		1654	170	.08	.00	.07	2836.
1		0200	21	.04	.04	.00	0.	1		1700	171	.07	.00	.07	2763.
1		0206	22	.04	.04	.00	0.	1		1706	172	.07	.00	.07	2691.
1		0212	23	.04	.04	.00	0.	1		1712	173	.07	.00	.07	2622.
1		0218	24	.04	.04	.00	0.	1		1718	174	.07	.00	.07	2554.
1		0224	25	.04	.04	.00	0.	1		1724	175	.07	.00	.07	2488.
1		0230	26	.04	.04	.00	0.	1		1730	176	.07	.00	.06	2424.
1		0236	27	.04	.04	.00	0.	1		1736	177	.06	.00	.06	2362.
1		0242	28	.04	.04	.00	0.	1		1742	178	.06	.00	.06	2301.
1		0248	29	.04	.04	.00	0.	1		1748	179	.06	.00	.06	2243.
1		0254	30	.04	.04	.00	0.	1		1754	180	.06	.00	.06	2185.
1		0300	31	.04	.04	.00	0.	1		1800	181	.06	.00	.06	2129.
1		0306	32	.04	.04	.00	0.	1		1806	182	.06	.00	.05	2075.
1		0312	33	.04	.04	.00	0.	1		1812	183	.06	.00	.05	2022.
1		0318	34	.04	.04	.00	1.	1		1818	184	.05	.00	.05	1970.
1		0324	35	.04	.04	.00	1.	1		1824	185	.05	.00	.05	1920.
1		0330	36	.04	.04	.01	2.	1		1830	186	.05	.00	.05	1871.
1		0336	37	.04	.04	.01	3.	1		1836	187	.05	.00	.05	1823.
1		0342	38	.04	.04	.01	4.	1		1842	188	.05	.00	.05	1777.
1		0348	39	.04	.04	.01	5.	1		1848	189	.05	.00	.05	1732.
1		0354	40	.04	.04	.01	7.	1		1854	190	.05	.00	.05	1688.
1		0400	41	.05	.04	.01	9.	1		1900	191	.05	.00	.05	1646.
1		0406	42	.05	.04	.01	11.	1		1906	192	.05	.00	.05	1606.
1		0412	43	.05	.04	.01	13.	1		1912	193	.05	.00	.05	1566.
1		0418	44	.05	.04	.01	16.	1		1918	194	.05	.00	.05	1528.
1		0424	45	.05	.04	.01	19.	1		1924	195	.05	.00	.05	1491.
1		0430	46	.05	.04	.01	22.	1		1930	196	.05	.00	.05	1456.
1		0436	47	.05	.04	.01	25.	1		1936	197	.05	.00	.05	1421.
1		0442	48	.05	.03	.01	29.	1		1942	198	.05	.00	.05	1388.
1		0448	49	.05	.03	.01	33.	1		1948	199	.05	.00	.05	1356.
1		0454	50	.05	.03	.02	37.	1		1954	200	.05	.00	.05	1325.
1		0500	51	.05	.03	.02	41.	1		2000	201	.05	.00	.05	1295.
1		0506	52	.05	.04	.02	46.	1		2006	202	.05	.00	.04	1266.

1	0512	53	.05	.03	.02	50.	*	1	2012	203	.05	.00	.04	1238.
1	0518	54	.05	.03	.02	55.	*	1	2018	204	.04	.00	.04	1210.
1	0524	55	.05	.03	.02	60.	*	1	2024	205	.04	.00	.04	1184.
1	0530	56	.05	.03	.02	66.	*	1	2030	206	.04	.00	.04	1159.
1	0536	57	.05	.03	.02	71.	*	1	2036	207	.04	.00	.04	1134.
1	0542	58	.05	.03	.02	77.	*	1	2042	208	.04	.00	.04	1110.
1	0548	59	.05	.03	.02	82.	*	1	2048	209	.04	.00	.04	1087.
1	0554	60	.06	.03	.02	88.	*	1	2054	210	.04	.00	.04	1064.
1	0600	61	.06	.03	.02	94.	*	1	2100	211	.04	.00	.04	1042.
1	0606	62	.06	.03	.03	100.	*	1	2106	212	.04	.00	.04	1021.
1	0612	63	.06	.03	.03	107.	*	1	2112	213	.04	.00	.04	1001.
1	0618	64	.06	.03	.03	113.	*	1	2118	214	.04	.00	.04	981.
1	0624	65	.06	.03	.03	120.	*	1	2124	215	.04	.00	.04	962.
1	0630	66	.06	.03	.03	127.	*	1	2130	216	.04	.00	.04	943.
1	0636	67	.07	.03	.03	134.	*	1	2136	217	.04	.00	.04	925.
1	0642	68	.07	.03	.03	141.	*	1	2142	218	.04	.00	.04	908.
1	0648	69	.07	.03	.04	149.	*	1	2148	219	.04	.00	.04	891.
1	0654	70	.07	.03	.04	157.	*	1	2154	220	.04	.00	.04	874.
1	0700	71	.07	.03	.04	165.	*	1	2200	221	.04	.00	.04	859.
1	0706	72	.07	.03	.04	174.	*	1	2206	222	.04	.00	.04	843.
1	0712	73	.08	.03	.04	183.	*	1	2212	223	.04	.00	.04	828.
1	0718	74	.08	.03	.04	192.	*	1	2218	224	.04	.00	.04	813.
1	0724	75	.08	.03	.05	202.	*	1	2224	225	.04	.00	.04	799.
1	0730	76	.08	.03	.05	212.	*	1	2230	226	.04	.00	.04	785.
1	0736	77	.08	.03	.05	223.	*	1	2236	227	.04	.00	.04	771.
1	0742	78	.09	.03	.05	234.	*	1	2242	228	.03	.00	.03	758.
1	0748	79	.09	.03	.05	245.	*	1	2248	229	.03	.00	.03	745.
1	0754	80	.09	.03	.05	257.	*	1	2254	230	.03	.00	.03	733.
1	0800	81	.09	.03	.06	269.	*	1	2300	231	.03	.00	.03	721.
1	0806	82	.09	.03	.06	282.	*	1	2306	232	.03	.00	.03	709.
1	0812	83	.10	.03	.06	295.	*	1	2312	233	.03	.00	.03	697.
1	0818	84	.10	.04	.07	308.	*	1	2318	234	.03	.00	.03	685.
1	0824	85	.11	.04	.07	322.	*	1	2324	235	.03	.00	.03	674.
1	0830	86	.11	.04	.07	336.	*	1	2330	236	.03	.00	.03	663.
1	0836	87	.11	.04	.08	351.	*	1	2336	237	.03	.00	.03	653.
1	0842	88	.12	.04	.08	367.	*	1	2342	238	.03	.00	.03	642.
1	0848	89	.12	.04	.08	384.	*	1	2348	239	.03	.00	.03	632.
1	0854	90	.13	.04	.09	401.	*	1	2354	240	.03	.00	.03	622.
1	0900	91	.13	.04	.09	419.	*	2	0000	241	.03	.00	.03	612.
1	0906	92	.13	.04	.10	438.	*	2	0006	242	.00	.00	.00	602.
1	0912	93	.14	.04	.10	459.	*	2	0012	243	.00	.00	.00	592.
1	0918	94	.14	.04	.10	480.	*	2	0018	244	.00	.00	.00	581.
1	0924	95	.15	.04	.11	502.	*	2	0024	245	.00	.00	.00	569.
1	0930	96	.15	.04	.11	525.	*	2	0030	246	.00	.00	.00	556.
1	0936	97	.15	.04	.12	550.	*	2	0036	247	.00	.00	.00	542.
1	0942	98	.16	.04	.12	575.	*	2	0042	248	.00	.00	.00	527.
1	0948	99	.16	.04	.13	601.	*	2	0048	249	.00	.00	.00	510.
1	0954	100	.17	.04	.13	628.	*	2	0054	250	.00	.00	.00	492.
1	1000	101	.17	.04	.13	657.	*	2	0100	251	.00	.00	.00	473.
1	1006	102	.18	.04	.14	686.	*	2	0106	252	.00	.00	.00	453.
1	1012	103	.18	.04	.15	716.	*	2	0112	253	.00	.00	.00	432.
1	1018	104	.19	.04	.16	747.	*	2	0118	254	.00	.00	.00	407.
1	1024	105	.20	.04	.16	779.	*	2	0124	255	.00	.00	.00	383.
1	1030	106	.21	.04	.17	813.	*	2	0130	256	.00	.00	.00	364.
1	1036	107	.22	.04	.18	848.	*	2	0136	257	.00	.00	.00	346.
1	1042	108	.23	.04	.19	885.	*	2	0142	258	.00	.00	.00	330.
1	1048	109	.23	.04	.20	923.	*	2	0148	259	.00	.00	.00	315.
1	1054	110	.24	.04	.21	963.	*	2	0154	260	.00	.00	.00	301.

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        1     1100  111     .25     .04     .22      1006.       *        2     0200  261     .00     .00     .00       287.
        1     1106  112     .27     .04     .23      1050.       *        2     0206  262     .00     .00     .00       275.
        1     1112  113     .30     .04     .26      1097.       *        2     0212  263     .00     .00     .00       263.
        1     1118  114     .34     .04     .29      1147.       *        2     0218  264     .00     .00     .00       251.
        1     1124  115     .37     .04     .32      1202.       *        2     0224  265     .00     .00     .00       240.
        1     1130  116     .40     .05     .36      1260.       *        2     0230  266     .00     .00     .00       230.
        1     1136  117     .57     .06     .51      1326.       *        2     0236  267     .00     .00     .00       220.
        1     1142  118     .88     .08     .79      1402.       *        2     0242  268     .00     .00     .00       210.
        1     1148  119    1.19     .10    1.09      1497.       *        2     0248  269     .00     .00     .00       201.
        1     1154  120    1.49     .11    1.39      1621.       *        2     0254  270     .00     .00     .00       192.
        1     1200  121    2.94     .17    2.77      1792.       *        2     0300  271     .00     .00     .00       184.
        1     1206  122    2.94     .13    2.81      2036.       *        2     0306  272     .00     .00     .00       176.
        1     1212  123    1.49     .05    1.44      2360.       *        2     0312  273     .00     .00     .00       168.
        1     1218  124    1.19     .04    1.15      2753.       *        2     0318  274     .00     .00     .00       161.
        1     1224  125     .88     .03     .85      3202.       *        2     0324  275     .00     .00     .00       154.
        1     1230  126     .57     .02     .55      3690.       *        2     0330  276     .00     .00     .00       147.
        1     1236  127     .40     .01     .39      4199.       *        2     0336  277     .00     .00     .00       141.
        1     1242  128     .37     .01     .36      4703.       *        2     0342  278     .00     .00     .00       134.
        1     1248  129     .34     .01     .33      5175.       *        2     0348  279     .00     .00     .00       129.
        1     1254  130     .30     .01     .30      5593.       *        2     0354  280     .00     .00     .00       123.
        1     1300  131     .27     .01     .26      5940.       *        2     0400  281     .00     .00     .00       117.
        1     1306  132     .25     .01     .25      6205.       *        2     0406  282     .00     .00     .00       112.
        1     1312  133     .24     .01     .24      6378.       *        2     0412  283     .00     .00     .00       107.
        1     1318  134     .23     .01     .23      6456.       *        2     0418  284     .00     .00     .00       103.
        1     1324  135     .23     .01     .22      6450.       *        2     0424  285     .00     .00     .00        98.
        1     1330  136     .22     .00     .21      6389.       *        2     0430  286     .00     .00     .00        94.
        1     1336  137     .21     .00     .20      6297.       *        2     0436  287     .00     .00     .00        90.
        1     1342  138     .20     .00     .20      6187.       *        2     0442  288     .00     .00     .00        86.
        1     1348  139     .19     .00     .19      6066.       *        2     0448  289     .00     .00     .00        82.
        1     1354  140     .18     .00     .18      5941.       *        2     0454  290     .00     .00     .00        78.
        1     1400  141     .18     .00     .17      5814.       *        2     0500  291     .00     .00     .00        75.
        1     1406  142     .17     .00     .17      5687.       *        2     0506  292     .00     .00     .00        71.
        1     1412  143     .17     .00     .16      5559.       *        2     0512  293     .00     .00     .00        68.
        1     1418  144     .16     .00     .16      5433.       *        2     0518  294     .00     .00     .00        65.
        1     1424  145     .16     .00     .15      5308.       *        2     0524  295     .00     .00     .00        62.
        1     1430  146     .15     .00     .15      5184.       *        2     0530  296     .00     .00     .00        59.
        1     1436  147     .15     .00     .15      5062.       *        2     0536  297     .00     .00     .00        57.
        1     1442  148     .15     .00     .14      4942.       *        2     0542  298     .00     .00     .00        54.
        1     1448  149     .14     .00     .14      4824.       *        2     0548  299     .00     .00     .00        52.
        1     1454  150     .14     .00     .13      4708.       *        2     0554  300     .00     .00     .00        49.
                                                                  *
 ************************************************************************************************************************************

     TOTAL RAINFALL =   35.00, TOTAL LOSS =    5.08, TOTAL EXCESS =   29.92

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+    6456.     13.30                4142.       1522.       1224.        1224.
                        (INCHES)   20.162      29.636      29.696       29.696
                         (AC-FT)    2054.       3019.       3025.        3025.

                         CUMULATIVE AREA =    1.91 SQ MI

1                                                        STATION      A-1

                          (O) OUTFLOW
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          0.     1000.     2000.     3000.     4000.     5000.     6000.     7000.        0.        0.        0.        0.        0.
                                                                                                     (L) PRECIP,   (X) EXCESS
          0.        0.        0.        0.        0.        0.        0.        0.        0.        3.        2.        1.        0.
 DAHRMN PER
  10000   1O---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
  10006   2O         .         .         .         .         .         .         .         .         .         .         .         .
  10012   3O         .         .         .         .         .         .         .         .         .         .         .         .
  10018   4O         .         .         .         .         .         .         .         .         .         .         .         .
  10024   5O         .         .         .         .         .         .         .         .         .         .         .         .
  10030   6O         .         .         .         .         .         .         .         .         .         .         .         .
  10036   7O         .         .         .         .         .         .         .         .         .         .         .         .
  10042   8O         .         .         .         .         .         .         .         .         .         .         .         .
  10048   9O         .         .         .         .         .         .         .         .         .         .         .         .
  10054  10O         .         .         .         .         .         .         .         .         .         .         .         .
  10100  11O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10106  12O         .         .         .         .         .         .         .         .         .         .         .         .
  10112  13O         .         .         .         .         .         .         .         .         .         .         .         .
  10118  14O         .         .         .         .         .         .         .         .         .         .         .         .
  10124  15O         .         .         .         .         .         .         .         .         .         .         .         .
  10130  16O         .         .         .         .         .         .         .         .         .         .         .         .
  10136  17O         .         .         .         .         .         .         .         .         .         .         .         .
  10142  18O         .         .         .         .         .         .         .         .         .         .         .         .
  10148  19O         .         .         .         .         .         .         .         .         .         .         .         .
  10154  20O         .         .         .         .         .         .         .         .         .         .         .         .
  10200  21O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10206  22O         .         .         .         .         .         .         .         .         .         .         .         .
  10212  23O         .         .         .         .         .         .         .         .         .         .         .         .
  10218  24O         .         .         .         .         .         .         .         .         .         .         .         .
  10224  25O         .         .         .         .         .         .         .         .         .         .         .         .
  10230  26O         .         .         .         .         .         .         .         .         .         .         .         .
  10236  27O         .         .         .         .         .         .         .         .         .         .         .         .
  10242  28O         .         .         .         .         .         .         .         .         .         .         .         .
  10248  29O         .         .         .         .         .         .         .         .         .         .         .         .
  10254  30O         .         .         .         .         .         .         .         .         .         .         .         .
  10300  31O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10306  32O         .         .         .         .         .         .         .         .         .         .         .         .
  10312  33O         .         .         .         .         .         .         .         .         .         .         .         .
  10318  34O         .         .         .         .         .         .         .         .         .         .         .         .
  10324  35O         .         .         .         .         .         .         .         .         .         .         .         .
  10330  36O         .         .         .         .         .         .         .         .         .         .         .         .
  10336  37O         .         .         .         .         .         .         .         .         .         .         .         .
  10342  38O         .         .         .         .         .         .         .         .         .         .         .         .
  10348  39O         .         .         .         .         .         .         .         .         .         .         .         .
  10354  40O         .         .         .         .         .         .         .         .         .         .         .         .
  10400  41O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10406  42O         .         .         .         .         .         .         .         .         .         .         .         .
  10412  43O         .         .         .         .         .         .         .         .         .         .         .         .
  10418  44O         .         .         .         .         .         .         .         .         .         .         .         .
  10424  45O         .         .         .         .         .         .         .         .         .         .         .         .
  10430  46O         .         .         .         .         .         .         .         .         .         .         .         .
  10436  47O         .         .         .         .         .         .         .         .         .         .         .         .
  10442  48O         .         .         .         .         .         .         .         .         .         .         .         .
  10448  49O         .         .         .         .         .         .         .         .         .         .         .         .
  10454  50O         .         .         .         .         .         .         .         .         .         .         .         L.
  10500  51O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10506  52O         .         .         .         .         .         .         .         .         .         .         .         L.
  10512  53.O        .         .         .         .         .         .         .         .         .         .         .         L.
  10518  54.O        .         .         .         .         .         .         .         .         .         .         .         L.
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10524  55.O        .         .         .         .         .         .         .         .         .         .         .         L.
10530  56.O        .         .         .         .         .         .         .         .         .         .         .         L.
10536  57.O        .         .         .         .         .         .         .         .         .         .         .         L.
10542  58.O        .         .         .         .         .         .         .         .         .         .         .         L.
10548  59.O        .         .         .         .         .         .         .         .         .         .         .         L.
10554  60.O        .         .         .         .         .         .         .         .         .         .         .         L.
10600  61.O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .L.
10606  62.O        .         .         .         .         .         .         .         .         .         .         .         L.
10612  63.O        .         .         .         .         .         .         .         .         .         .         .         L.
10618  64.O        .         .         .         .         .         .         .         .         .         .         .         L.
10624  65.O        .         .         .         .         .         .         .         .         .         .         .         L.
10630  66.O        .         .         .         .         .         .         .         .         .         .         .         L.
10636  67.O        .         .         .         .         .         .         .         .         .         .         .         L.
10642  68.O        .         .         .         .         .         .         .         .         .         .         .         L.
10648  69.O        .         .         .         .         .         .         .         .         .         .         .         L.
10654  70. O       .         .         .         .         .         .         .         .         .         .         .         L.
10700  71. O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .L.
10706  72. O       .         .         .         .         .         .         .         .         .         .         .         L.
10712  73. O       .         .         .         .         .         .         .         .         .         .         .         L.
10718  74. O       .         .         .         .         .         .         .         .         .         .         .         L.
10724  75. O       .         .         .         .         .         .         .         .         .         .         .         L.
10730  76. O       .         .         .         .         .         .         .         .         .         .         .         L.
10736  77. O       .         .         .         .         .         .         .         .         .         .         .         L.
10742  78. O       .         .         .         .         .         .         .         .         .         .         .         X.
10748  79. O       .         .         .         .         .         .         .         .         .         .         .         X.
10754  80.  O      .         .         .         .         .         .         .         .         .         .         .         X.
10800  81. .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
10806  82.  O      .         .         .         .         .         .         .         .         .         .         .         X.
10812  83.  O      .         .         .         .         .         .         .         .         .         .         .         X.
10818  84.  O      .         .         .         .         .         .         .         .         .         .         .         X.
10824  85.  O      .         .         .         .         .         .         .         .         .         .         .         X.
10830  86.  O      .         .         .         .         .         .         .         .         .         .         .         X.
10836  87.   O     .         .         .         .         .         .         .         .         .         .         .         X.
10842  88.   O     .         .         .         .         .         .         .         .         .         .         .         X.
10848  89.   O     .         .         .         .         .         .         .         .         .         .         .         X.
10854  90.   O     .         .         .         .         .         .         .         .         .         .         .         X.
10900  91. . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
10906  92.   O     .         .         .         .         .         .         .         .         .         .         .         X.
10912  93.    O    .         .         .         .         .         .         .         .         .         .         .         X.
10918  94.    O    .         .         .         .         .         .         .         .         .         .         .         X.
10924  95.    O    .         .         .         .         .         .         .         .         .         .         .         X.
10930  96.    O    .         .         .         .         .         .         .         .         .         .         .         X.
10936  97.    O    .         .         .         .         .         .         .         .         .         .         .        LX.
10942  98.     O   .         .         .         .         .         .         .         .         .         .         .        LX.
10948  99.     O   .         .         .         .         .         .         .         .         .         .         .        LX.
10954 100.     O   .         .         .         .         .         .         .         .         .         .         .        LX.
11000 101. . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . LX.
11006 102.      O  .         .         .         .         .         .         .         .         .         .         .        LX.
11012 103.      O  .         .         .         .         .         .         .         .         .         .         .        LX.
11018 104.      O  .         .         .         .         .         .         .         .         .         .         .        XX.
11024 105.       O .         .         .         .         .         .         .         .         .         .         .        XX.
11030 106.       O .         .         .         .         .         .         .         .         .         .         .        XX.
11036 107.       O .         .         .         .         .         .         .         .         .         .         .        XX.
11042 108.        O.         .         .         .         .         .         .         .         .         .         .        XX.
11048 109.        O.         .         .         .         .         .         .         .         .         .         .        XX.
11054 110.         O         .         .         .         .         .         .         .         .         .         .        XX.
11100 111. . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .LXX.
11106 112.         .O        .         .         .         .         .         .         .         .         .         .       LXX.
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11112 113.         .O        .         .         .         .         .         .         .         .         .         .      XXX.
11118 114.         .O        .         .         .         .         .         .         .         .         .         .      XXX.
11124 115.         . O       .         .         .         .         .         .         .         .         .         .     LXXX.
11130 116.         .  O      .         .         .         .         .         .         .         .         .         .     XXXX.
11136 117.         .  O      .         .         .         .         .         .         .         .         .         .   LXXXXX.
11142 118.         .   O     .         .         .         .         .         .         .         .         .         .LXXXXXXXX.
11148 119.         .    O    .         .         .         .         .         .         .         .         .       LXXXXXXXXXXX.
11154 120.         .     O   .         .         .         .         .         .         .         .         .    LXXXXXXXXXXXXXX.
11200 121. . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .LXXXXXXXXXXXXXXXXXXXXXXXXXXX.
11206 122.         .         O         .         .         .         .         .         .         .         .LXXXXXXXXXXXXXXXXXXXXXXXXXXX.
11212 123.         .         .   O     .         .         .         .         .         .         .         .         .    LXXXXXXXXXXXXXX.
11218 124.         .         .      O .         .         .         .         .         .         .         .       LXXXXXXXXXXXX.
11224 125.         .         .         . O       .         .         .         .         .         .         .         .XXXXXXXXX.
11230 126.         .         .         .     O   .         .         .         .         .         .         .         .   XXXXXX.
11236 127.         .         .         .         . O       .         .         .         .         .         .         .     XXXX.
11242 128.         .         .         .         .     O   .         .         .         .         .         .         .     XXXX.
11248 129.         .         .         .         .       O .         .         .         .         .         .         .      XXX.
11254 130.         .         .         .         .         .    O    .         .         .         .         .         .      XXX.
11300 131. . . . . . . . . . . . . . . . . . . . . . . . . . . . . O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .XXX.
11306 132.         .         .         .         .         .         . O       .         .         .         .         .      LXX.
11312 133.         .         .         .         .         .         .   O     .         .         .         .         .       XX.
11318 134.         .         .         .         .         .         .    O    .         .         .         .         .       XX.
11324 135.         .         .         .         .         .         .   O     .         .         .         .         .       XX.
11330 136.         .         .         .         .         .         .   O     .         .         .         .         .       XX.
11336 137.         .         .         .         .         .         .  O      .         .         .         .         .       XX.
11342 138.         .         .         .         .         .         . O       .         .         .         .         .       XX.
11348 139.         .         .         .         .         .         .O        .         .         .         .         .       XX.
11354 140.         .         .         .         .         .        O.         .         .         .         .         .       XX.
11400 141. . . . . . . . . . . . . . . . . . . . . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . XX.
11406 142.         .         .         .         .         .      O  .         .         .         .         .         .       XX.
11412 143.         .         .         .         .         .    O   .         .         .         .         .         .       XX.
11418 144.         .         .         .         .         .   O    .         .         .         .         .         .       XX.
11424 145.         .         .         .         .         .  O     .         .         .         .         .         .       XX.
11430 146.         .         .         .         .         . O      .         .         .         .         .         .       XX.
11436 147.         .         .         .         .         .O       .         .         .         .         .         .        X.
11442 148.         .         .         .         .        O.        .         .         .         .         .         .        X.
11448 149.         .         .         .         .       O .        .         .         .         .         .         .        X.
11454 150.         .         .         .         .      O  .        .         .         .         .         .         .        X.
11500 151. . . . . . . . . . . . . . . . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
11506 152.         .         .         .         .    O   .        .         .         .         .         .         .        X.
11512 153.         .         .         .         .   O    .        .         .         .         .         .         .        X.
11518 154.         .         .         .         .  O     .        .         .         .         .         .         .        X.
11524 155.         .         .         .         . O      .        .         .         .         .         .         .        X.
11530 156.         .         .         .         .O       .        .         .         .         .         .         .        X.
11536 157.         .         .         .         O        .        .         .         .         .         .         .        X.
11542 158.         .         .         .        O.        .        .         .         .         .         .         .        X.
11548 159.         .         .         .       O .        .        .         .         .         .         .         .        X.
11554 160.         .         .         .      O  .        .        .         .         .         .         .         .        X.
11600 161. . . . . . . . . . . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
11606 162.         .         .         .    O   .        .        .         .         .         .         .         .        X.
11612 163.         .         .         .   O    .        .        .         .         .         .         .         .        X.
11618 164.         .         .         .  O     .        .        .         .         .         .         .         .        X.
11624 165.         .         .         . O      .        .        .         .         .         .         .         .        X.
11630 166.         .         .         . O      .        .        .         .         .         .         .         .        X.
11636 167.         .         .         .O       .        .        .         .         .         .         .         .        X.
11642 168.         .         .         O        .        .        .         .         .         .         .         .        X.
11648 169.         .         .        O.        .        .        .         .         .         .         .         .        X.
11654 170.         .         .      O .         .        .        .         .         .         .         .         .        X.
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11700 171. . . . . . . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
11706 172.         .         .      O  .         .         .         .         .         .         .         .         .        X.
11712 173.         .         .     O   .         .         .         .         .         .         .         .         .        X.
11718 174.         .         .     O   .         .         .         .         .         .         .         .         .        X.
11724 175.         .         .    O    .         .         .         .         .         .         .         .         .        X.
11730 176.         .         .   O     .         .         .         .         .         .         .         .         .        X.
11736 177.         .         .   O     .         .         .         .         .         .         .         .         .        X.
11742 178.         .         .  O      .         .         .         .         .         .         .         .         .        X.
11748 179.         .         . O       .         .         .         .         .         .         .         .         .        X.
11754 180.         .         . O       .         .         .         .         .         .         .         .         .        X.
11800 181. . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
11806 182.         .         .O        .         .         .         .         .         .         .         .         .        X.
11812 183.         .         O         .         .         .         .         .         .         .         .         .        X.
11818 184.         .         O         .         .         .         .         .         .         .         .         .        X.
11824 185.         .        O.         .         .         .         .         .         .         .         .         .        X.
11830 186.         .        O.         .         .         .         .         .         .         .         .         .        X.
11836 187.         .       O .         .         .         .         .         .         .         .         .         .        X.
11842 188.         .       O .         .         .         .         .         .         .         .         .         .        X.
11848 189.         .      O  .         .         .         .         .         .         .         .         .         .        X.
11854 190.         .      O  .         .         .         .         .         .         .         .         .         .        X.
11900 191. . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
11906 192.         .     O   .         .         .         .         .         .         .         .         .         .         .
11912 193.         .     O   .         .         .         .         .         .         .         .         .         .        L.
11918 194.         .    O    .         .         .         .         .         .         .         .         .         .         .
11924 195.         .    O    .         .         .         .         .         .         .         .         .         .         .
11930 196.         .    O    .         .         .         .         .         .         .         .         .         .         .
11936 197.         .   O     .         .         .         .         .         .         .         .         .         .         .
11942 198.         .   O     .         .         .         .         .         .         .         .         .         .         .
11948 199.         .   O     .         .         .         .         .         .         .         .         .         .         .
11954 200.         .  O      .         .         .         .         .         .         .         .         .         .         .
12000 201. . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
12006 202.         .  O      .         .         .         .         .         .         .         .         .         .         .
12012 203.         . O       .         .         .         .         .         .         .         .         .         .         .
12018 204.         . O       .         .         .         .         .         .         .         .         .         .         .
12024 205.         . O       .         .         .         .         .         .         .         .         .         .         .
12030 206.         . O       .         .         .         .         .         .         .         .         .         .         .
12036 207.         .O        .         .         .         .         .         .         .         .         .         .         .
12042 208.         .O        .         .         .         .         .         .         .         .         .         .         .
12048 209.         .O        .         .         .         .         .         .         .         .         .         .         .
12054 210.         .O        .         .         .         .         .         .         .         .         .         .         .
12100 211. . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
12106 212.         O         .         .         .         .         .         .         .         .         .         .         .
12112 213.         O         .         .         .         .         .         .         .         .         .         .         .
12118 214.         O         .         .         .         .         .         .         .         .         .         .         .
12124 215.         O         .         .         .         .         .         .         .         .         .         .         .
12130 216.        O.         .         .         .         .         .         .         .         .         .         .         .
12136 217.        O.         .         .         .         .         .         .         .         .         .         .         .
12142 218.        O.         .         .         .         .         .         .         .         .         .         .         .
12148 219.        O.         .         .         .         .         .         .         .         .         .         .         .
12154 220.        O.         .         .         .         .         .         .         .         .         .         .         .
12200 221. . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
12206 222.       O .         .         .         .         .         .         .         .         .         .         .         .
12212 223.       O .         .         .         .         .         .         .         .         .         .         .         .
12218 224.       O .         .         .         .         .         .         .         .         .         .         .         .
12224 225.       O .         .         .         .         .         .         .         .         .         .         .         .
12230 226.       O .         .         .         .         .         .         .         .         .         .         .         .
12236 227.       O .         .         .         .         .         .         .         .         .         .         .         .
12242 228.       O .         .         .         .         .         .         .         .         .         .         .         .
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12248 229.      O  .         .         .         .         .         .         .         .         .         .         .         .
12254 230.      O  .         .         .         .         .         .         .         .         .         .         .         .
12300 231. . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
12306 232.      O  .         .         .         .         .         .         .         .         .         .         .         .
12312 233.      O  .         .         .         .         .         .         .         .         .         .         .         .
12318 234.      O  .         .         .         .         .         .         .         .         .         .         .         .
12324 235.      O  .         .         .         .         .         .         .         .         .         .         .         .
12330 236.      O  .         .         .         .         .         .         .         .         .         .         .         .
12336 237.      O  .         .         .         .         .         .         .         .         .         .         .         .
12342 238.     O   .         .         .         .         .         .         .         .         .         .         .         .
12348 239.     O   .         .         .         .         .         .         .         .         .         .         .         .
12354 240.     O   .         .         .         .         .         .         .         .         .         .         .         .
20000 241. . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20006 242.     O   .         .         .         .         .         .         .         .         .         .         .         .
20012 243.     O   .         .         .         .         .         .         .         .         .         .         .         .
20018 244.     O   .         .         .         .         .         .         .         .         .         .         .         .
20024 245.     O   .         .         .         .         .         .         .         .         .         .         .         .
20030 246.     O   .         .         .         .         .         .         .         .         .         .         .         .
20036 247.    O    .         .         .         .         .         .         .         .         .         .         .         .
20042 248.    O    .         .         .         .         .         .         .         .         .         .         .         .
20048 249.    O    .         .         .         .         .         .         .         .         .         .         .         .
20054 250.    O    .         .         .         .         .         .         .         .         .         .         .         .
20100 251. . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20106 252.    O    .         .         .         .         .         .         .         .         .         .         .         .
20112 253.   O     .         .         .         .         .         .         .         .         .         .         .         .
20118 254.   O     .         .         .         .         .         .         .         .         .         .         .         .
20124 255.   O     .         .         .         .         .         .         .         .         .         .         .         .
20130 256.   O     .         .         .         .         .         .         .         .         .         .         .         .
20136 257.  O      .         .         .         .         .         .         .         .         .         .         .         .
20142 258.  O      .         .         .         .         .         .         .         .         .         .         .         .
20148 259.  O      .         .         .         .         .         .         .         .         .         .         .         .
20154 260.  O      .         .         .         .         .         .         .         .         .         .         .         .
20200 261. .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20206 262.  O      .         .         .         .         .         .         .         .         .         .         .         .
20212 263.  O      .         .         .         .         .         .         .         .         .         .         .         .
20218 264.  O      .         .         .         .         .         .         .         .         .         .         .         .
20224 265. O       .         .         .         .         .         .         .         .         .         .         .         .
20230 266. O       .         .         .         .         .         .         .         .         .         .         .         .
20236 267. O       .         .         .         .         .         .         .         .         .         .         .         .
20242 268. O       .         .         .         .         .         .         .         .         .         .         .         .
20248 269. O       .         .         .         .         .         .         .         .         .         .         .         .
20254 270. O       .         .         .         .         .         .         .         .         .         .         .         .
20300 271. O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20306 272. O       .         .         .         .         .         .         .         .         .         .         .         .
20312 273. O       .         .         .         .         .         .         .         .         .         .         .         .
20318 274. O       .         .         .         .         .         .         .         .         .         .         .         .
20324 275. O       .         .         .         .         .         .         .         .         .         .         .         .
20330 276.O        .         .         .         .         .         .         .         .         .         .         .         .
20336 277.O        .         .         .         .         .         .         .         .         .         .         .         .
20342 278.O        .         .         .         .         .         .         .         .         .         .         .         .
20348 279.O        .         .         .         .         .         .         .         .         .         .         .         .
20354 280.O        .         .         .         .         .         .         .         .         .         .         .         .
20400 281.O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20406 282.O        .         .         .         .         .         .         .         .         .         .         .         .
20412 283.O        .         .         .         .         .         .         .         .         .         .         .         .
20418 284.O        .         .         .         .         .         .         .         .         .         .         .         .
20424 285.O        .         .         .         .         .         .         .         .         .         .         .         .
20430 286.O        .         .         .         .         .         .         .         .         .         .         .         .
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  20436 287.O        .         .         .         .         .         .         .         .         .         .         .         .
  20442 288.O        .         .         .         .         .         .         .         .         .         .         .         .
  20448 289.O        .         .         .         .         .         .         .         .         .         .         .         .
  20454 290.O        .         .         .         .         .         .         .         .         .         .         .         .
  20500 291.O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  20506 292.O        .         .         .         .         .         .         .         .         .         .         .         .
  20512 293.O        .         .         .         .         .         .         .         .         .         .         .         .
  20518 294.O        .         .         .         .         .         .         .         .         .         .         .         .
  20524 295.O        .         .         .         .         .         .         .         .         .         .         .         .
  20530 296.O        .         .         .         .         .         .         .         .         .         .         .         .
  20536 297.O        .         .         .         .         .         .         .         .         .         .         .         .
  20542 298.O        .         .         .         .         .         .         .         .         .         .         .         .
  20548 299.O        .         .         .         .         .         .         .         .         .         .         .         .
  20554 300O---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
1


 ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  2 INPUT DATA FOR STATION      A-1 ARE SAME AS FOR PLAN  1


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


             **************
             *            *
   56 KK     *     DAM-1  *     COOPER STREET DAM
             *            *
             **************
                           *** ROUTE FLOW ***
                           *** STAGE-STORAGE-DISCHARGE FROM USGS QUADS ***

                HYDROGRAPH ROUTING DATA

   59 RS          STORAGE ROUTING
                        NSTPS           1  NUMBER OF SUBREACHES
                         ITYP        ELEV  TYPE OF INITIAL CONDITION
                       RSVRIC       25.38  INITIAL CONDITION
                            X         .00 WORKING R AND D COEFFICIENT

   60 SA               AREA          .0      19.1      23.4      30.5

   61 SE          ELEVATION       13.20     25.38     30.00     35.00

   62 SQ          DISCHARGE          0.        6.       10.       71.      202.      372.      573.      802.     1056.     1332.
                                  1628.     1944.     2278.     2629.     2833.     2996.     3379.     3609.     3689.     3844.

   64 SE          ELEVATION       25.25     25.50     25.60     26.00     26.50     27.00     27.50     28.00     28.50     29.00
                                  29.50     30.00     30.50     31.00     31.30     31.50     32.00     32.50     33.00     34.00

   66 ST          TOP OF DAM
                        TOPEL       32.13  ELEVATION AT TOP OF DAM
                       DAMWID         .00  DAM WIDTH
                         COQD        2.60  WEIR COEFFICIENT
                         EXPD        1.50  EXPONENT OF HEAD
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SW	DAM WIDTH	.00	44.40	333.30	417.30	478.40	531.30	582.10	625.50	760.80	800.00
SE	ELEVATION	32.13	32.16	32.50	33.00	34.00	34.50	35.00	36.00	37.00	38.00

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COMPUTED STORAGE-ELEVATION DATA

STORAGE	.00	78.57	176.59	310.90
ELEVATION	13.20	25.38	30.00	35.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

(INCLUDING FLOW OVER DAM)

STORAGE	.00	76.10	78.57	80.87	82.80	90.60	100.55	110.73	121.13	131.75
OUTFLOW	.00	.00	3.22	6.20	10.20	71.40	201.60	371.50	573.30	802.40
ELEVATION	13.20	25.25	25.38	25.50	25.60	26.00	26.50	27.00	27.50	28.00
STORAGE	142.61	153.70	165.03	176.59	188.44	200.63	208.11	213.16	226.04	239.28
OUTFLOW	1056.00	1331.80	1628.30	1943.90	2277.80	2628.80	2832.60	2996.20	3379.30	3703.29
ELEVATION	28.50	29.00	29.50	30.00	30.50	31.00	31.30	31.50	32.00	32.50
STORAGE	252.87	281.14	310.90							
OUTFLOW	4320.52	6548.80	9902.77							
ELEVATION	33.00	34.00	35.00							

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HYDROGRAPH AT STATION DAM-1
PLAN 1, RATIO = 1.00

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	3.	78.6	25.4	1		1000	101	505.	117.6	27.3	1		2000	201	1455.	158.4	29.2
1		0006	2	3.	78.5	25.4	1		1006	102	529.	118.8	27.4	1		2006	202	1422.	157.1	29.2
1		0012	3	3.	78.5	25.4	1		1012	103	554.	120.1	27.5	1		2012	203	1389.	155.9	29.1
1		0018	4	3.	78.5	25.4	1		1018	104	581.	121.5	27.5	1		2018	204	1357.	154.6	29.0
1		0024	5	3.	78.5	25.4	1		1024	105	610.	122.8	27.6	1		2024	205	1326.	153.5	29.0
1		0030	6	3.	78.4	25.4	1		1030	106	641.	124.2	27.6	1		2030	206	1298.	152.3	28.9
1		0036	7	3.	78.4	25.4	1		1036	107	671.	125.7	27.7	1		2036	207	1270.	151.2	28.9
1		0042	8	3.	78.4	25.4	1		1042	108	703.	127.1	27.8	1		2042	208	1243.	150.1	28.8
1		0048	9	3.	78.4	25.4	1		1048	109	735.	128.6	27.9	1		2048	209	1217.	149.0	28.8
1		0054	10	3.	78.3	25.4	1		1054	110	769.	130.2	27.9	1		2054	210	1191.	148.0	28.7
1		0100	11	3.	78.3	25.4	1		1100	111	803.	131.8	28.0	1		2100	211	1165.	147.0	28.7
1		0106	12	3.	78.3	25.4	1		1106	112	843.	133.5	28.1	1		2106	212	1141.	146.0	28.7
1		0112	13	3.	78.3	25.4	1		1112	113	883.	135.2	28.2	1		2112	213	1117.	145.0	28.6
1		0118	14	3.	78.3	25.4	1		1118	114	925.	137.0	28.2	1		2118	214	1094.	144.1	28.6
1		0124	15	3.	78.2	25.4	1		1124	115	968.	138.8	28.3	1		2124	215	1071.	143.2	28.5
1		0130	16	3.	78.2	25.4	1		1130	116	1014.	140.8	28.4	1		2130	216	1049.	142.3	28.5
1		0136	17	3.	78.2	25.4	1		1136	117	1062.	142.9	28.5	1		2136	217	1030.	141.5	28.4
1		0142	18	3.	78.2	25.4	1		1142	118	1118.	145.1	28.6	1		2142	218	1010.	140.6	28.4
1		0148	19	3.	78.1	25.4	1		1148	119	1180.	147.6	28.7	1		2148	219	991.	139.8	28.4
1		0154	20	3.	78.1	25.4	1		1154	120	1250.	150.4	28.9	1		2154	220	972.	139.0	28.3
1		0200	21	3.	78.1	25.4	1		1200	121	1333.	153.8	29.0	1		2200	221	954.	138.2	28.3
1		0206	22	3.	78.1	25.4	1		1206	122	1447.	158.1	29.2	1		2206	222	936.	137.5	28.3

1	0212	23	3.	78.1	25.4	*	1	1212	123	1592.	163.6	29.4	*	1	2212	223	919.	136.7	28.2
1	0218	24	3.	78.0	25.4	*	1	1218	124	1786.	170.8	29.7	*	1	2218	224	902.	136.0	28.2
1	0224	25	3.	78.0	25.4	*	1	1224	125	2029.	179.6	30.1	*	1	2224	225	885.	135.3	28.2
1	0230	26	2.	78.0	25.4	*	1	1230	126	2324.	190.0	30.6	*	1	2230	226	869.	134.6	28.1
1	0236	27	2.	78.0	25.3	*	1	1236	127	2667.	202.0	31.1	*	1	2236	227	853.	133.9	28.1
1	0242	28	2.	78.0	25.3	*	1	1242	128	3056.	215.2	31.6	*	1	2242	228	838.	133.2	28.1
1	0248	29	2.	77.9	25.3	*	1	1248	129	3433.	229.1	32.1	*	1	2248	229	823.	132.6	28.0
1	0254	30	2.	77.9	25.3	*	1	1254	130	3856.	243.6	32.7	*	1	2254	230	808.	132.0	28.0
1	0300	31	2.	77.9	25.3	*	1	1300	131	4544.	256.5	33.1	*	1	2300	231	794.	131.4	28.0
1	0306	32	2.	77.9	25.3	*	1	1306	132	5235.	266.1	33.5	*	1	2306	232	782.	130.8	28.0
1	0312	33	2.	77.9	25.3	*	1	1312	133	5760.	272.5	33.7	*	1	2312	233	769.	130.2	27.9
1	0318	34	2.	77.9	25.3	*	1	1318	134	6102.	276.3	33.8	*	1	2318	234	757.	129.6	27.9
1	0324	35	2.	77.8	25.3	*	1	1324	135	6289.	278.4	33.9	*	1	2324	235	744.	129.0	27.9
1	0330	36	2.	77.8	25.3	*	1	1330	136	6359.	279.1	33.9	*	1	2330	236	732.	128.5	27.8
1	0336	37	2.	77.8	25.3	*	1	1336	137	6350.	279.0	33.9	*	1	2336	237	720.	127.9	27.8
1	0342	38	2.	77.8	25.3	*	1	1342	138	6293.	278.4	33.9	*	1	2342	238	709.	127.4	27.8
1	0348	39	2.	77.9	25.3	*	1	1348	139	6204.	277.5	33.9	*	1	2348	239	697.	126.8	27.8
1	0354	40	2.	77.9	25.3	*	1	1354	140	6099.	276.3	33.8	*	1	2354	240	686.	126.3	27.7
1	0400	41	2.	77.9	25.3	*	1	1400	141	5984.	275.0	33.8	*	2	0000	241	675.	125.8	27.7
1	0406	42	2.	78.0	25.4	*	1	1406	142	5864.	273.7	33.7	*	2	0006	242	664.	125.3	27.7
1	0412	43	3.	78.1	25.4	*	1	1412	143	5742.	272.3	33.7	*	2	0012	243	653.	124.8	27.7
1	0418	44	3.	78.2	25.4	*	1	1418	144	5619.	270.8	33.6	*	2	0018	244	642.	124.3	27.7
1	0424	45	3.	78.3	25.4	*	1	1424	145	5497.	269.3	33.6	*	2	0024	245	631.	123.8	27.6
1	0430	46	3.	78.4	25.4	*	1	1430	146	5376.	267.9	33.5	*	2	0030	246	620.	123.3	27.6
1	0436	47	3.	78.6	25.4	*	1	1436	147	5256.	266.4	33.5	*	2	0036	247	609.	122.8	27.6
1	0442	48	4.	78.8	25.4	*	1	1442	148	5138.	264.8	33.4	*	2	0042	248	597.	122.2	27.6
1	0448	49	4.	79.0	25.4	*	1	1448	149	5021.	263.3	33.4	*	2	0048	249	584.	121.6	27.5
1	0454	50	4.	79.3	25.4	*	1	1454	150	4907.	261.7	33.3	*	2	0054	250	571.	121.0	27.5
1	0500	51	5.	79.6	25.4	*	1	1500	151	4796.	260.2	33.3	*	2	0100	251	558.	120.3	27.5
1	0506	52	5.	79.9	25.4	*	1	1506	152	4686.	258.6	33.2	*	2	0106	252	544.	119.6	27.4
1	0512	53	5.	80.2	25.5	*	1	1512	153	4579.	257.0	33.2	*	2	0112	253	530.	118.8	27.4
1	0518	54	6.	80.6	25.5	*	1	1518	154	4476.	255.4	33.1	*	2	0118	254	514.	118.0	27.4
1	0524	55	7.	81.1	25.5	*	1	1524	155	4375.	253.8	33.0	*	2	0124	255	496.	117.1	27.3
1	0530	56	8.	81.5	25.5	*	1	1530	156	4278.	252.1	33.0	*	2	0130	256	478.	116.2	27.3
1	0536	57	9.	82.0	25.6	*	1	1536	157	4183.	250.4	32.9	*	2	0136	257	460.	115.2	27.2
1	0542	58	10.	82.5	25.6	*	1	1542	158	4092.	248.7	32.8	*	2	0142	258	441.	114.3	27.2
1	0548	59	13.	83.1	25.6	*	1	1548	159	4004.	246.9	32.8	*	2	0148	259	424.	113.4	27.1
1	0554	60	17.	83.7	25.6	*	1	1554	160	3919.	245.1	32.7	*	2	0154	260	406.	112.5	27.1
1	0600	61	22.	84.3	25.7	*	1	1600	161	3834.	243.0	32.6	*	2	0200	261	390.	111.7	27.0
1	0606	62	27.	84.9	25.7	*	1	1606	162	3755.	240.9	32.6	*	2	0206	262	374.	110.8	27.0
1	0612	63	32.	85.5	25.7	*	1	1612	163	3680.	238.7	32.5	*	2	0212	263	360.	110.0	27.0
1	0618	64	36.	86.1	25.8	*	1	1618	164	3604.	236.5	32.4	*	2	0218	264	347.	109.2	26.9
1	0624	65	42.	86.8	25.8	*	1	1624	165	3535.	234.1	32.3	*	2	0224	265	334.	108.4	26.9
1	0630	66	47.	87.4	25.8	*	1	1630	166	3477.	231.5	32.2	*	2	0230	266	321.	107.7	26.9
1	0636	67	52.	88.1	25.9	*	1	1636	167	3425.	228.6	32.1	*	2	0236	267	309.	106.9	26.8
1	0642	68	57.	88.8	25.9	*	1	1642	168	3367.	225.6	32.0	*	2	0242	268	297.	106.2	26.8
1	0648	69	63.	89.5	25.9	*	1	1648	169	3276.	222.5	31.9	*	2	0248	269	285.	105.5	26.7
1	0654	70	68.	90.2	26.0	*	1	1654	170	3188.	219.6	31.7	*	2	0254	270	274.	104.8	26.7
1	0700	71	76.	90.9	26.0	*	1	1700	171	3102.	216.7	31.6	*	2	0300	271	262.	104.2	26.7
1	0706	72	86.	91.7	26.1	*	1	1706	172	3019.	213.9	31.5	*	2	0306	272	252.	103.5	26.6
1	0712	73	95.	92.4	26.1	*	1	1712	173	2936.	211.3	31.4	*	2	0312	273	241.	102.9	26.6
1	0718	74	105.	93.1	26.1	*	1	1718	174	2854.	208.8	31.3	*	2	0318	274	231.	102.3	26.6
1	0724	75	114.	93.9	26.2	*	1	1724	175	2786.	206.4	31.2	*	2	0324	275	222.	101.7	26.6
1	0730	76	124.	94.6	26.2	*	1	1730	176	2721.	204.0	31.1	*	2	0330	276	212.	101.2	26.5
1	0736	77	133.	95.3	26.2	*	1	1736	177	2656.	201.6	31.0	*	2	0336	277	204.	100.7	26.5
1	0742	78	143.	96.1	26.3	*	1	1742	178	2590.	199.3	30.9	*	2	0342	278	196.	100.1	26.5
1	0748	79	153.	96.8	26.3	*	1	1748	179	2524.	197.0	30.9	*	2	0348	279	190.	99.6	26.5
1	0754	80	163.	97.6	26.4	*	1	1754	180	2459.	194.7	30.8	*	2	0354	280	183.	99.1	26.4

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   1     0800  81     173.     98.4    26.4 *  1     1800 181    2396.    192.5    30.7 *  2     0400 281     177.     98.6    26.4
   1     0806  82     184.     99.2    26.4 *  1     1806 182    2334.    190.4    30.6 *  2     0406 282     171.     98.2    26.4
   1     0812  83     194.    100.0    26.5 *  1     1812 183    2273.    188.3    30.5 *  2     0412 283     164.     97.7    26.4
   1     0818  84     206.    100.8    26.5 *  1     1818 184    2217.    186.3    30.4 *  2     0418 284     158.     97.2    26.3
   1     0824  85     220.    101.7    26.6 *  1     1824 185    2162.    184.3    30.3 *  2     0424 285     152.     96.8    26.3
   1     0830  86     234.    102.5    26.6 *  1     1830 186    2107.    182.4    30.2 *  2     0430 286     147.     96.3    26.3
   1     0836  87     248.    103.3    26.6 *  1     1836 187    2054.    180.5    30.2 *  2     0436 287     141.     95.9    26.3
   1     0842  88     262.    104.2    26.7 *  1     1842 188    2001.    178.6    30.1 *  2     0442 288     135.     95.5    26.2
   1     0848  89     277.    105.0    26.7 *  1     1848 189    1950.    176.8    30.0 *  2     0448 289     130.     95.1    26.2
   1     0854  90     292.    105.9    26.8 *  1     1854 190    1903.    175.1    29.9 *  2     0454 290     125.     94.7    26.2
   1     0900  91     307.    106.8    26.8 *  1     1900 191    1856.    173.3    29.9 *  2     0500 291     120.     94.3    26.2
   1     0906  92     322.    107.7    26.9 *  1     1906 192    1810.    171.7    29.8 *  2     0506 292     115.     93.9    26.2
   1     0912  93     338.    108.7    26.9 *  1     1912 193    1765.    170.0    29.7 *  2     0512 293     110.     93.6    26.2
   1     0918  94     355.    109.7    27.0 *  1     1918 194    1722.    168.4    29.6 *  2     0518 294     106.     93.2    26.1
   1     0924  95     372.    110.8    27.0 *  1     1924 195    1679.    166.9    29.6 *  2     0524 295     102.     92.9    26.1
   1     0930  96     393.    111.8    27.1 *  1     1930 196    1638.    165.4    29.5 *  2     0530 296      97.     92.6    26.1
   1     0936  97     415.    112.9    27.1 *  1     1936 197    1599.    163.9    29.5 *  2     0536 297      93.     92.3    26.1
   1     0942  98     436.    114.0    27.2 *  1     1942 198    1562.    162.5    29.4 *  2     0542 298      89.     92.0    26.1
   1     0948  99     459.    115.2    27.2 *  1     1948 199    1526.    161.1    29.3 *  2     0548 299      86.     91.7    26.1
   1     0954 100     482.    116.4    27.3 *  1     1954 200    1490.    159.7    29.3 *  2     0554 300      82.     91.4    26.0
                                               *                                            *
*****************************************************************************************************************************************

 PEAK OUTFLOW IS     6359. AT TIME  13.50 HOURS


  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                           (CFS)
+    6359.     13.50                4108.       1519.       1220.        1220.
                        (INCHES)   19.996      29.578      29.595       29.595
                         (AC-FT)    2037.       3013.       3015.        3015.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
      279.     13.50                 239.        151.        137.         137.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
     33.93     13.50                32.46       28.75       28.08        28.08

                         CUMULATIVE AREA =    1.91 SQ MI

1                                                        STATION    DAM-1

                         (I) INFLOW,   (O) OUTFLOW
          0.     1000.     2000.     3000.     4000.     5000.     6000.     7000.        0.        0.        0.        0.        0.
                                                                                      (S) STORAGE
          0.        0.        0.        0.        0.        0.        0.      100.      200.      300.        0.        0.        0.
 DAHRMN PER
  10000   1I---------.---------.---------.---------.---------.---------.-------S-.---------.---------.---------.---------.---------.
  10006   2I         .         .         .         .         .         .       S .         .         .         .         .         .
  10012   3I         .         .         .         .         .         .       S .         .         .         .         .         .
  10018   4I         .         .         .         .         .         .       S .         .         .         .         .         .
  10024   5I         .         .         .         .         .         .       S .         .         .         .         .         .
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10030   6I         .         .         .         .         .         .      S .         .         .         .         .         .
10036   7I         .         .         .         .         .         .      S .         .         .         .         .         .
10042   8I         .         .         .         .         .         .      S .         .         .         .         .         .
10048   9I         .         .         .         .         .         .      S .         .         .         .         .         .
10054  10I         .         .         .         .         .         .      S .         .         .         .         .         .
10100  11I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10106  12I         .         .         .         .         .         .      S .         .         .         .         .         .
10112  13I         .         .         .         .         .         .      S .         .         .         .         .         .
10118  14I         .         .         .         .         .         .      S .         .         .         .         .         .
10124  15I         .         .         .         .         .         .      S .         .         .         .         .         .
10130  16I         .         .         .         .         .         .      S .         .         .         .         .         .
10136  17I         .         .         .         .         .         .      S .         .         .         .         .         .
10142  18I         .         .         .         .         .         .      S .         .         .         .         .         .
10148  19I         .         .         .         .         .         .      S .         .         .         .         .         .
10154  20I         .         .         .         .         .         .      S .         .         .         .         .         .
10200  21I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10206  22I         .         .         .         .         .         .      S .         .         .         .         .         .
10212  23I         .         .         .         .         .         .      S .         .         .         .         .         .
10218  24I         .         .         .         .         .         .      S .         .         .         .         .         .
10224  25I         .         .         .         .         .         .      S .         .         .         .         .         .
10230  26I         .         .         .         .         .         .      S .         .         .         .         .         .
10236  27I         .         .         .         .         .         .      S .         .         .         .         .         .
10242  28I         .         .         .         .         .         .      S .         .         .         .         .         .
10248  29I         .         .         .         .         .         .      S .         .         .         .         .         .
10254  30I         .         .         .         .         .         .      S .         .         .         .         .         .
10300  31I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10306  32I         .         .         .         .         .         .      S .         .         .         .         .         .
10312  33I         .         .         .         .         .         .      S .         .         .         .         .         .
10318  34I         .         .         .         .         .         .      S .         .         .         .         .         .
10324  35I         .         .         .         .         .         .      S .         .         .         .         .         .
10330  36I         .         .         .         .         .         .      S .         .         .         .         .         .
10336  37I         .         .         .         .         .         .      S .         .         .         .         .         .
10342  38I         .         .         .         .         .         .      S .         .         .         .         .         .
10348  39I         .         .         .         .         .         .      S .         .         .         .         .         .
10354  40I         .         .         .         .         .         .      S .         .         .         .         .         .
10400  41I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10406  42I         .         .         .         .         .         .      S .         .         .         .         .         .
10412  43I         .         .         .         .         .         .      S .         .         .         .         .         .
10418  44I         .         .         .         .         .         .      S .         .         .         .         .         .
10424  45I         .         .         .         .         .         .      S .         .         .         .         .         .
10430  46I         .         .         .         .         .         .      S .         .         .         .         .         .
10436  47I         .         .         .         .         .         .      S .         .         .         .         .         .
10442  48I         .         .         .         .         .         .      S .         .         .         .         .         .
10448  49I         .         .         .         .         .         .      S .         .         .         .         .         .
10454  50I         .         .         .         .         .         .      S .         .         .         .         .         .
10500  51I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10506  52I         .         .         .         .         .         .      S .         .         .         .         .         .
10512  53OI        .         .         .         .         .         .      S .         .         .         .         .         .
10518  54OI        .         .         .         .         .         .      S .         .         .         .         .         .
10524  55OI        .         .         .         .         .         .      S .         .         .         .         .         .
10530  56OI        .         .         .         .         .         .      S .         .         .         .         .         .
10536  57OI        .         .         .         .         .         .      S .         .         .         .         .         .
10542  58OI        .         .         .         .         .         .      S .         .         .         .         .         .
10548  59OI        .         .         .         .         .         .      S .         .         .         .         .         .
10554  60OI        .         .         .         .         .         .      S .         .         .         .         .         .
10600  61OI. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10606  62OI        .         .         .         .         .         .      S .         .         .         .         .         .
10612  63OI        .         .         .         .         .         .       S.         .         .         .         .         .
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10618  64OI        .         .         .         .         .         .        S.         .         .         .         .         .
10624  65OI        .         .         .         .         .         .        S.         .         .         .         .         .
10630  66OI        .         .         .         .         .         .        S.         .         .         .         .         .
10636  67.I        .         .         .         .         .         .        S.         .         .         .         .         .
10642  68.I        .         .         .         .         .         .        S.         .         .         .         .         .
10648  69.I        .         .         .         .         .         .        S.         .         .         .         .         .
10654  70.OI       .         .         .         .         .         .        S.         .         .         .         .         .
10700  71.OI . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
10706  72.OI       .         .         .         .         .         .        S.         .         .         .         .         .
10712  73.OI       .         .         .         .         .         .        S.         .         .         .         .         .
10718  74.OI       .         .         .         .         .         .        S.         .         .         .         .         .
10724  75.OI       .         .         .         .         .         .        S.         .         .         .         .         .
10730  76.OI       .         .         .         .         .         .        S.         .         .         .         .         .
10736  77.OI       .         .         .         .         .         .         S         .         .         .         .         .
10742  78.OI       .         .         .         .         .         .         S         .         .         .         .         .
10748  79. I       .         .         .         .         .         .         S         .         .         .         .         .
10754  80. OI      .         .         .         .         .         .         S         .         .         .         .         .
10800  81. OI. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10806  82. OI      .         .         .         .         .         .         S         .         .         .         .         .
10812  83. OI      .         .         .         .         .         .         S         .         .         .         .         .
10818  84. OI      .         .         .         .         .         .         S         .         .         .         .         .
10824  85. OI      .         .         .         .         .         .         S         .         .         .         .         .
10830  86. OI      .         .         .         .         .         .         S         .         .         .         .         .
10836  87. O I     .         .         .         .         .         .         S         .         .         .         .         .
10842  88.  OI     .         .         .         .         .         .         S         .         .         .         .         .
10848  89.  OI     .         .         .         .         .         .         .S        .         .         .         .         .
10854  90.  OI     .         .         .         .         .         .         .S        .         .         .         .         .
10900  91. .OI . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
10906  92.  OI     .         .         .         .         .         .         .S        .         .         .         .         .
10912  93.  O I    .         .         .         .         .         .         .S        .         .         .         .         .
10918  94.   OI    .         .         .         .         .         .         .S        .         .         .         .         .
10924  95.   OI    .         .         .         .         .         .         .S        .         .         .         .         .
10930  96.   OI    .         .         .         .         .         .         .S        .         .         .         .         .
10936  97.   OI    .         .         .         .         .         .         .S        .         .         .         .         .
10942  98.   O I   .         .         .         .         .         .         .S        .         .         .         .         .
10948  99.    OI   .         .         .         .         .         .         . S       .         .         .         .         .
10954 100.    OI   .         .         .         .         .         .         . S       .         .         .         .         .
11000 101. . .O.I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . .
11006 102.    O I  .         .         .         .         .         .         . S       .         .         .         .         .
11012 103.     OI  .         .         .         .         .         .         . S       .         .         .         .         .
11018 104.     OI  .         .         .         .         .         .         . S       .         .         .         .         .
11024 105.     O I .         .         .         .         .         .         . S       .         .         .         .         .
11030 106.     O I .         .         .         .         .         .         . S       .         .         .         .         .
11036 107.      OI .         .         .         .         .         .         .  S      .         .         .         .         .
11042 108.      O I.         .         .         .         .         .         .  S      .         .         .         .         .
11048 109.      O I.         .         .         .         .         .         .  S      .         .         .         .         .
11054 110.       O I         .         .         .         .         .         .  S      .         .         .         .         .
11100 111. . . . O I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
11106 112.       O .I        .         .         .         .         .         .  S      .         .         .         .         .
11112 113.        O.I        .         .         .         .         .         .   S     .         .         .         .         .
11118 114.        O.I        .         .         .         .         .         .   S     .         .         .         .         .
11124 115.         O I       .         .         .         .         .         .   S     .         .         .         .         .
11130 116.         O  I      .         .         .         .         .         .   S     .         .         .         .         .
11136 117.         .O I      .         .         .         .         .         .   S     .         .         .         .         .
11142 118.         .O  I     .         .         .         .         .         .    S    .         .         .         .         .
11148 119.         . O  I    .         .         .         .         .         .    S    .         .         .         .         .
11154 120.         . O   I   .         .         .         .         .         .    S    .         .         .         .         .
11200 121. . . . . .O. . I . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
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11206 122.         .   O    I        .        .        .        .        .    S   .        .        .        .        .
11212 123.         .    O   .   I    .        .        .        .        .    S   .        .        .        .        .
11218 124.         .      O .      I .        .        .        .        .     S  .        .        .        .        .
11224 125.         .        O        . I      .        .        .        .      S .        .        .        .        .
11230 126.         .        .  O     .     I  .        .        .        .       S.        .        .        .        .
11236 127.         .        .     O  .        . I      .        .        .        S        .        .        .        .
11242 128.         .        .        .O       .     I  .        .        .        . S      .        .        .        .
11248 129.         .        .        .   O    .        . I      .        .        .  S     .        .        .        .
11254 130.         .        .        .       O.        .    I   .        .        .   S    .        .        .        .
11300 131. . . . . . . . . . . . . . . . . . . . . . .O. . . . . .I. . . . . . . . . . . . . . S . . . . . . . . . . . . . . . .
11306 132.         .        .        .        .        . O      . I      .        .     S  .        .        .        .
11312 133.         .        .        .        .        .      O .   I    .        .     S  .        .        .        .
11318 134.         .        .        .        .        .        .O   I   .        .      S .        .        .        .
11324 135.         .        .        .        .        .        .  OI    .        .      S .        .        .        .
11330 136.         .        .        .        .        .        .   I    .        .      S .        .        .        .
11336 137.         .        .        .        .        .        .  IO    .        .      S .        .        .        .
11342 138.         .        .        .        .        .        . IO     .        .      S .        .        .        .
11348 139.         .        .        .        .        .        .IO      .        .      S .        .        .        .
11354 140.         .        .        .        .        .       I.O       .        .      S .        .        .        .
11400 141. . . . . . . . . . . . . . . . . . . . . . . . . . . . I O . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . .
11406 142.         .        .        .        .        .     I O.       .        .     S  .        .        .        .
11412 143.         .        .        .        .        .    IO  .       .        .     S  .        .        .        .
11418 144.         .        .        .        .        .   I O  .       .        .     S  .        .        .        .
11424 145.         .        .        .        .        .  I O   .       .        .     S  .        .        .        .
11430 146.         .        .        .        .        . I O    .       .        .     S  .        .        .        .
11436 147.         .        .        .        .        .I O     .       .        .     S  .        .        .        .
11442 148.         .        .        .        .       I.O       .       .        .    S   .        .        .        .
11448 149.         .        .        .        .      I O        .       .        .    S   .        .        .        .
11454 150.         .        .        .        .     I O.        .       .        .    S   .        .        .        .
11500 151. . . . . . . . . . . . . . . . . . . . . . I O . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . .
11506 152.         .        .        .        .    I O  .       .       .        .    S   .        .        .        .
11512 153.         .        .        .        .   I O   .       .       .        .    S   .        .        .        .
11518 154.         .        .        .        .  I O    .       .       .        .    S   .        .        .        .
11524 155.         .        .        .        . I O     .       .       .        .   S    .        .        .        .
11530 156.         .        .        .        .I O      .       .       .        .   S    .        .        .        .
11536 157.         .        .        .        I O       .       .       .        .   S    .        .        .        .
11542 158.         .        .        .       I.O        .       .       .        .   S    .        .        .        .
11548 159.         .        .        .      I O         .       .       .        .   S    .        .        .        .
11554 160.         .        .        .     I O.         .       .       .        .   S    .        .        .        .
11600 161. . . . . . . . . . . . . . . . . I O . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . .
11606 162.         .        .        .    I  O .       .       .       .        .   S    .        .        .        .
11612 163.         .        .        .   I  O  .       .       .       .        .   S    .        .        .        .
11618 164.         .        .        .  I  O   .       .       .       .        .   S    .        .        .        .
11624 165.         .        .        . I  O    .       .       .       .        . S      .        .        .        .
11630 166.         .        .        . I  O    .       .       .       .        . S      .        .        .        .
11636 167.         .        .        .I  O     .       .       .       .        . S      .        .        .        .
11642 168.         .        .        I   O     .       .       .       .        . S      .        .        .        .
11648 169.         .        .       I.  O      .       .       .       .        . S      .        .        .        .
11654 170.         .        .      I . O       .       .       .       .        . S      .        .        .        .
11700 171. . . . . . . . . . . . . I .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . .
11706 172.         .        .     I  O        .       .       .       .        .S       .        .        .        .
11712 173.         .        .    I  O.        .       .       .       .        .S       .        .        .        .
11718 174.         .        .    I  O.        .       .       .       .        .S       .        .        .        .
11724 175.         .        .   I  O .        .       .       .       .        .S       .        .        .        .
11730 176.         .        .  I  O  .        .       .       .       .        S        .        .        .        .
11736 177.         .        .  I  O  .        .       .       .       .        S        .        .        .        .
11742 178.         .        . I  O   .        .       .       .       .        S        .        .        .        .
11748 179.         .        . I  O   .        .       .       .       .        S        .        .        .        .
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11754 180.         .         . I  O    .         .         .         .         .        S.         .         .         .         .
11800 181. . . . . . . . . . .I. O . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . .
11806 182.         .         .I O      .         .         .         .         .        S.         .         .         .         .
11812 183.         .         I  O      .         .         .         .         .        S.         .         .         .         .
11818 184.         .         I O       .         .         .         .         .        S.         .         .         .         .
11824 185.         .        I. O       .         .         .         .         .       S .         .         .         .         .
11830 186.         .        I.O        .         .         .         .         .       S .         .         .         .         .
11836 187.         .       I .O        .         .         .         .         .       S .         .         .         .         .
11842 188.         .       I O         .         .         .         .         .       S .         .         .         .         .
11848 189.         .      I  O         .         .         .         .         .       S .         .         .         .         .
11854 190.         .      I O.         .         .         .         .         .       S .         .         .         .         .
11900 191. . . . . . . . I .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . .
11906 192.         .     I O .         .         .         .         .         .      S  .         .         .         .         .
11912 193.         .     I O .         .         .         .         .         .      S  .         .         .         .         .
11918 194.         .    I O  .         .         .         .         .         .      S  .         .         .         .         .
11924 195.         .    I O  .         .         .         .         .         .      S  .         .         .         .         .
11930 196.         .    IO   .         .         .         .         .         .      S  .         .         .         .         .
11936 197.         .   I O   .         .         .         .         .         .     S   .         .         .         .         .
11942 198.         .   I O   .         .         .         .         .         .     S   .         .         .         .         .
11948 199.         .   IO    .         .         .         .         .         .     S   .         .         .         .         .
11954 200.         .  I O    .         .         .         .         .         .     S   .         .         .         .         .
12000 201. . . . . . . .I.O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . .
12006 202.         .  IO     .         .         .         .         .         .     S   .         .         .         .         .
12012 203.         . I O     .         .         .         .         .         .     S   .         .         .         .         .
12018 204.         . I O     .         .         .         .         .         .    S    .         .         .         .         .
12024 205.         . IO      .         .         .         .         .         .    S    .         .         .         .         .
12030 206.         . IO      .         .         .         .         .         .    S    .         .         .         .         .
12036 207.         .I O      .         .         .         .         .         .    S    .         .         .         .         .
12042 208.         .IO       .         .         .         .         .         .    S    .         .         .         .         .
12048 209.         .IO       .         .         .         .         .         .    S    .         .         .         .         .
12054 210.         .IO       .         .         .         .         .         .    S    .         .         .         .         .
12100 211. . . . . I O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . .
12106 212.         IO        .         .         .         .         .         .    S    .         .         .         .         .
12112 213.         IO        .         .         .         .         .         .    S    .         .         .         .         .
12118 214.         IO        .         .         .         .         .         .   S     .         .         .         .         .
12124 215.         IO        .         .         .         .         .         .   S     .         .         .         .         .
12130 216.        IO         .         .         .         .         .         .   S     .         .         .         .         .
12136 217.        IO         .         .         .         .         .         .   S     .         .         .         .         .
12142 218.        IO         .         .         .         .         .         .   S     .         .         .         .         .
12148 219.        IO         .         .         .         .         .         .   S     .         .         .         .         .
12154 220.        IO         .         .         .         .         .         .   S     .         .         .         .         .
12200 221. . . . .IO . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . .
12206 222.       IO.         .         .         .         .         .         .   S     .         .         .         .         .
12212 223.       IO.         .         .         .         .         .         .   S     .         .         .         .         .
12218 224.       IO.         .         .         .         .         .         .   S     .         .         .         .         .
12224 225.       IO.         .         .         .         .         .         .   S     .         .         .         .         .
12230 226.       IO.         .         .         .         .         .         .  S      .         .         .         .         .
12236 227.       IO.         .         .         .         .         .         .  S      .         .         .         .         .
12242 228.       I .         .         .         .         .         .         .  S      .         .         .         .         .
12248 229.      IO .         .         .         .         .         .         .  S      .         .         .         .         .
12254 230.      IO .         .         .         .         .         .         .  S      .         .         .         .         .
12300 231. . . .IO . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . .
12306 232.      IO .         .         .         .         .         .         .  S      .         .         .         .         .
12312 233.      IO .         .         .         .         .         .         .  S      .         .         .         .         .
12318 234.      IO .         .         .         .         .         .         .  S      .         .         .         .         .
12324 235.      I  .         .         .         .         .         .         .  S      .         .         .         .         .
12330 236.      I  .         .         .         .         .         .         .  S      .         .         .         .         .
12336 237.      I  .         .         .         .         .         .         .  S      .         .         .         .         .
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12342 238.     IO  .         .         .         .         .         .         .  S      .         .         .         .         .
12348 239.     IO  .         .         .         .         .         .         .  S      .         .         .         .         .
12354 240.     IO  .         .         .         .         .         .         .  S      .         .         .         .         .
20000 241. . . IO. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . .
20006 242.     IO  .         .         .         .         .         .         .  S      .         .         .         .         .
20012 243.     IO  .         .         .         .         .         .         . S       .         .         .         .         .
20018 244.     I   .         .         .         .         .         .         . S       .         .         .         .         .
20024 245.     I   .         .         .         .         .         .         . S       .         .         .         .         .
20030 246.     I   .         .         .         .         .         .         . S       .         .         .         .         .
20036 247.    IO   .         .         .         .         .         .         . S       .         .         .         .         .
20042 248.    IO   .         .         .         .         .         .         . S       .         .         .         .         .
20048 249.    IO   .         .         .         .         .         .         . S       .         .         .         .         .
20054 250.    IO   .         .         .         .         .         .         . S       .         .         .         .         .
20100 251. . .IO . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . .
20106 252.    I    .         .         .         .         .         .         . S       .         .         .         .         .
20112 253.   IO    .         .         .         .         .         .         . S       .         .         .         .         .
20118 254.   IO    .         .         .         .         .         .         . S       .         .         .         .         .
20124 255.   IO    .         .         .         .         .         .         . S       .         .         .         .         .
20130 256.   IO    .         .         .         .         .         .         . S       .         .         .         .         .
20136 257.  I O    .         .         .         .         .         .         . S       .         .         .         .         .
20142 258.  IO     .         .         .         .         .         .         .S        .         .         .         .         .
20148 259.  IO     .         .         .         .         .         .         .S        .         .         .         .         .
20154 260.  IO     .         .         .         .         .         .         .S        .         .         .         .         .
20200 261. .IO . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . .
20206 262.  IO     .         .         .         .         .         .         .S        .         .         .         .         .
20212 263.  IO     .         .         .         .         .         .         .S        .         .         .         .         .
20218 264.  I      .         .         .         .         .         .         .S        .         .         .         .         .
20224 265. IO      .         .         .         .         .         .         .S        .         .         .         .         .
20230 266. IO      .         .         .         .         .         .         .S        .         .         .         .         .
20236 267. IO      .         .         .         .         .         .         .S        .         .         .         .         .
20242 268. IO      .         .         .         .         .         .         .S        .         .         .         .         .
20248 269. IO      .         .         .         .         .         .         .S        .         .         .         .         .
20254 270. IO      .         .         .         .         .         .         S         .         .         .         .         .
20300 271. IO. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . .
20306 272. IO      .         .         .         .         .         .         S         .         .         .         .         .
20312 273. I       .         .         .         .         .         .         S         .         .         .         .         .
20318 274. I       .         .         .         .         .         .         S         .         .         .         .         .
20324 275. I       .         .         .         .         .         .         S         .         .         .         .         .
20330 276.IO       .         .         .         .         .         .         S         .         .         .         .         .
20336 277.IO       .         .         .         .         .         .         S         .         .         .         .         .
20342 278.IO       .         .         .         .         .         .         S         .         .         .         .         .
20348 279.IO       .         .         .         .         .         .         S         .         .         .         .         .
20354 280.IO       .         .         .         .         .         .         S         .         .         .         .         .
20400 281.IO . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . .
20406 282.IO       .         .         .         .         .         .         S         .         .         .         .         .
20412 283.IO       .         .         .         .         .         .         S         .         .         .         .         .
20418 284.IO       .         .         .         .         .         .         S         .         .         .         .         .
20424 285.IO       .         .         .         .         .         .         S         .         .         .         .         .
20430 286.I        .         .         .         .         .         .         S         .         .         .         .         .
20436 287.I        .         .         .         .         .         .         S         .         .         .         .         .
20442 288.I        .         .         .         .         .         .         S         .         .         .         .         .
20448 289.I        .         .         .         .         .         .         S         .         .         .         .         .
20454 290.I        .         .         .         .         .         .        S.         .         .         .         .         .
20500 291.I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . .
20506 292.I        .         .         .         .         .         .        S.         .         .         .         .         .
20512 293.I        .         .         .         .         .         .        S.         .         .         .         .         .
20518 294.I        .         .         .         .         .         .        S.         .         .         .         .         .
20524 295.I        .         .         .         .         .         .        S.         .         .         .         .         .
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  20530 296.I        .         .         .         .         .         .        S.         .         .         .         .         .
  20536 297.I        .         .         .         .         .         .        S.         .         .         .         .         .
  20542 298.I        .         .         .         .         .         .        S.         .         .         .         .         .
  20548 299.I        .         .         .         .         .         .        S.         .         .         .         .         .
  20554 300IO--------.---------.---------.---------.---------.---------.--------S.---------.---------.---------.---------.---------.
1


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

   69 KP        PLAN  2 FOR STATION    DAM-1          COOPER STREET DAM

                HYDROGRAPH ROUTING DATA

   59 RS          STORAGE ROUTING
                        NSTPS           1  NUMBER OF SUBREACHES
                         ITYP        ELEV  TYPE OF INITIAL CONDITION
                       RSVRIC       25.38  INITIAL CONDITION
                            X         .00 WORKING R AND D COEFFICIENT

   71 RC          NORMAL DEPTH CHANNEL
                          ANL        .100  LEFT OVERBANK N-VALUE
                         ANCH        .045  MAIN CHANNEL N-VALUE
                          ANR        .100  RIGHT OVERBANK N-VALUE
                        RLNTH       4180.  REACH LENGTH
                          SEL       .0020  ENERGY SLOPE
                        ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                            CROSS-SECTION DATA
                            --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
   73 RY        ELEVATION     39.82     34.18     16.30     13.46     13.81     15.75     32.19     41.15
   72 RX        DISTANCE        .00    262.61    480.76    487.56    517.82    529.44    733.09   1000.00

   60 SA               AREA       .0      19.1      23.4      30.5

   61 SE          ELEVATION      13.20     25.38     30.00     35.00

   73 SQ          DISCHARGE         0.        6.       10.       71.      202.      372.      573.      802.     1056.     1332.
                                 1628.     1944.     2278.     2629.     2833.     2996.     3379.     3609.     3689.     3844.

   64 SE          ELEVATION      25.25     25.50     25.60     26.00     26.50     27.00     27.50     28.00     28.50     29.00
                                 29.50     30.00     30.50     31.00     31.30     31.50     32.00     32.50     33.00     34.00

   66 ST          TOP OF DAM
                       TOPEL       32.13  ELEVATION AT TOP OF DAM
                      DAMWID         .00  DAM WIDTH
                        COQD        2.60  WEIR COEFFICIENT
                        EXPD        1.50  EXPONENT OF HEAD

      SW          DAM WIDTH         .00     44.40    333.30    417.30    478.40    531.30    582.10    625.50    760.80    800.00
      SE          ELEVATION       32.13     32.16     32.50     33.00     34.00     34.50     35.00     36.00     37.00     38.00


   70 SB          BREACH DATA
                        ELBM       13.20  ELEVATION AT BOTTOM OF BREACH
                       BRWID       45.75  WIDTH OF BREACH BOTTOM
                           Z         .50  BREACH SIDE SLOPE
                       TFAIL         .30  TIME FOR BREACH TO DEVELOP
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                    FAILEL       33.91  W.S. ELEVATION TO TRIGGER FAILURE

                                                          ***

                                                COMPUTED TAILWATER RATING DATA

           OUTFLOW        .00     71.22    285.21    672.28   1239.39   2010.48   3007.78   4252.49   5764.96   7564.81
         ELEVATION      13.46     14.92     16.37     17.83     19.29     20.75     22.20     23.66     25.12     26.58

           OUTFLOW    9671.05  12102.13  14876.01  17956.16  21173.65  24353.45  28184.96  32826.60  38296.47  45498.80
         ELEVATION      28.03     29.49     30.95     32.41     33.86     35.32     36.78     38.24     39.69     41.15


                                                COMPUTED STORAGE-ELEVATION DATA

           STORAGE        .00     78.57    176.59    310.90
         ELEVATION      13.20     25.38     30.00     35.00

                                              COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

                                                    (INCLUDING FLOW OVER DAM)

           STORAGE        .00     76.10     78.57     80.87     82.80     90.60    100.55    110.73    121.13    131.75
           OUTFLOW        .00       .00      3.22      6.20     10.20     71.40    201.60    371.50    573.30    802.40
         ELEVATION      13.20     25.25     25.38     25.50     25.60     26.00     26.50     27.00     27.50     28.00

           STORAGE     142.61    153.70    165.03    176.59    188.44    200.63    208.11    213.16    226.04    239.28
           OUTFLOW    1056.00   1331.80   1628.30   1943.90   2277.80   2628.80   2832.60   2996.20   3379.30   3703.29
         ELEVATION      28.50     29.00     29.50     30.00     30.50     31.00     31.30     31.50     32.00     32.50

           STORAGE     252.87    281.14    310.90
           OUTFLOW    4320.52   6548.80   9902.77
         ELEVATION      33.00     34.00     35.00

BEGIN DAM FAILURE AT 13.50 HOURS
INTERATIVE SOLUTION DID NOT CONVERGE.
    NEQN= 1   X1= 1.49299000E+01   Y1= 1.19119300E+00
              X2= 1.49300000E+01   Y2= 1.37843800E+00
              X3= 1.49292600E+01   Y3= 8.74055900E+00   TOL= 1.00E+00

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                                                HYDROGRAPH AT STATION    DAM-1
                                                    PLAN 2,   RATIO =  1.00

*************************************************************************************************************************************
                                          *                                                  *
 DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE
                                          *                                                  *
  1     0000   1       3.     78.6    25.4 *  1     1000 101     505.    117.6    27.3 *  1     2000 201    1351.     13.9    20.0
  1     0006   2       3.     78.5    25.4 *  1     1006 102     529.    118.8    27.4 *  1     2006 202    1319.     13.4    19.9
  1     0012   3       3.     78.5    25.4 *  1     1012 103     554.    120.1    27.5 *  1     2012 203    1288.     13.1    19.8
  1     0018   4       3.     78.5    25.4 *  1     1018 104     581.    121.5    27.5 *  1     2018 204    1258.     12.7    19.8
  1     0024   5       3.     78.5    25.4 *  1     1024 105     610.    122.8    27.6 *  1     2024 205    1233.     12.3    19.7
  1     0030   6       3.     78.4    25.4 *  1     1030 106     641.    124.2    27.6 *  1     2030 206    1208.     11.9    19.6
  1     0036   7       3.     78.4    25.4 *  1     1036 107     671.    125.7    27.7 *  1     2036 207    1183.     11.6    19.6
  1     0042   8       3.     78.4    25.4 *  1     1042 108     703.    127.1    27.8 *  1     2042 208    1158.     11.2    19.5
  1     0048   9       3.     78.4    25.4 *  1     1048 109     735.    128.6    27.9 *  1     2048 209    1133.     10.8    19.4
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1	0054	10	3.	78.3	25.4	*	1	1054	110	769.	130.2	27.9	*	1	2054	210	1114.	10.5	19.4
1	0100	11	3.	78.3	25.4	*	1	1100	111	803.	131.8	28.0	*	1	2100	211	1087.	10.1	19.3
1	0106	12	3.	78.3	25.4	*	1	1106	112	843.	133.5	28.1	*	1	2106	212	1063.	9.8	19.2
1	0112	13	3.	78.3	25.4	*	1	1112	113	883.	135.2	28.2	*	1	2112	213	1040.	9.5	19.1
1	0118	14	3.	78.3	25.4	*	1	1118	114	925.	137.0	28.2	*	1	2118	214	1018.	9.2	19.1
1	0124	15	3.	78.2	25.4	*	1	1124	115	968.	138.8	28.3	*	1	2124	215	997.	8.9	19.0
1	0130	16	3.	78.2	25.4	*	1	1130	116	1014.	140.8	28.4	*	1	2130	216	976.	8.6	19.0
1	0136	17	3.	78.2	25.4	*	1	1136	117	1062.	142.9	28.5	*	1	2136	217	957.	8.4	18.9
1	0142	18	3.	78.2	25.4	*	1	1142	118	1118.	145.1	28.6	*	1	2142	218	938.	8.2	18.9
1	0148	19	3.	78.1	25.4	*	1	1148	119	1180.	147.6	28.7	*	1	2148	219	919.	7.9	18.8
1	0154	20	3.	78.1	25.4	*	1	1154	120	1250.	150.4	28.9	*	1	2154	220	901.	7.7	18.8
1	0200	21	3.	78.1	25.4	*	1	1200	121	1333.	153.8	29.0	*	1	2200	221	884.	7.5	18.7
1	0206	22	3.	78.1	25.4	*	1	1206	122	1447.	158.1	29.2	*	1	2206	222	868.	7.3	18.7
1	0212	23	3.	78.1	25.4	*	1	1212	123	1592.	163.6	29.4	*	1	2212	223	851.	7.2	18.6
1	0218	24	3.	78.0	25.4	*	1	1218	124	1786.	170.8	29.7	*	1	2218	224	836.	7.0	18.6
1	0224	25	3.	78.0	25.4	*	1	1224	125	2029.	179.6	30.1	*	1	2224	225	820.	6.8	18.5
1	0230	26	2.	78.0	25.4	*	1	1230	126	2324.	190.0	30.6	*	1	2230	226	806.	6.7	18.5
1	0236	27	2.	78.0	25.3	*	1	1236	127	2667.	202.0	31.1	*	1	2236	227	791.	6.5	18.4
1	0242	28	2.	78.0	25.3	*	1	1242	128	3056.	215.2	31.6	*	1	2242	228	777.	6.4	18.4
1	0248	29	2.	77.9	25.3	*	1	1248	129	3433.	229.1	32.1	*	1	2248	229	764.	6.2	18.4
1	0254	30	2.	77.9	25.3	*	1	1254	130	3856.	243.6	32.7	*	1	2254	230	750.	6.1	18.3
1	0300	31	2.	77.9	25.3	*	1	1300	131	4544.	256.5	33.1	*	1	2300	231	737.	6.0	18.3
1	0306	32	2.	77.9	25.3	*	1	1306	132	5235.	266.1	33.5	*	1	2306	232	725.	5.8	18.2
1	0312	33	2.	77.9	25.3	*	1	1312	133	5760.	272.5	33.7	*	1	2312	233	713.	5.7	18.2
1	0318	34	2.	77.9	25.3	*	1	1318	134	6102.	276.3	33.8	*	1	2318	234	701.	5.6	18.2
1	0324	35	2.	77.8	25.3	*	1	1324	135	6289.	278.4	33.9	*	1	2324	235	689.	5.5	18.1
1	0330	36	2.	77.8	25.3	*	1	1330	136	6359.	279.1	33.9	*	1	2330	236	679.	5.4	18.1
1	0336	37	2.	77.8	25.3	*	1	1336	137	7264.	276.6	33.8	*	1	2336	237	669.	5.3	18.1
1	0342	38	2.	77.8	25.3	*	1	1342	138	10087.	257.9	33.2	*	1	2342	238	659.	5.1	18.0
1	0348	39	2.	77.9	25.3	*	1	1348	139	12050.	213.0	31.5	*	1	2348	239	649.	5.0	18.0
1	0354	40	2.	77.9	25.3	*	1	1354	140	9653.	173.7	29.9	*	1	2354	240	638.	4.9	17.9
1	0400	41	2.	77.9	25.3	*	1	1400	141	8224.	148.8	28.8	*	2	0000	241	628.	4.8	17.9
1	0406	42	2.	78.0	25.4	*	1	1406	142	7315.	132.6	28.0	*	2	0006	242	618.	4.7	17.9
1	0412	43	3.	78.1	25.4	*	1	1412	143	6723.	121.4	27.5	*	2	0012	243	608.	4.5	17.8
1	0418	44	3.	78.2	25.4	*	1	1418	144	6293.	113.2	27.1	*	2	0018	244	597.	4.4	17.8
1	0424	45	3.	78.3	25.4	*	1	1424	145	5971.	107.0	26.8	*	2	0024	245	586.	4.3	17.7
1	0430	46	3.	78.4	25.4	*	1	1430	146	5723.	102.2	26.6	*	2	0030	246	575.	4.2	17.7
1	0436	47	3.	78.6	25.4	*	1	1436	147	5533.	98.1	26.4	*	2	0036	247	562.	4.0	17.6
1	0442	48	4.	78.8	25.4	*	1	1442	148	5366.	94.4	26.2	*	2	0042	248	547.	3.9	17.6
1	0448	49	4.	79.0	25.4	*	1	1448	149	5212.	91.1	26.0	*	2	0048	249	532.	3.7	17.5
1	0454	50	4.	79.3	25.4	*	1	1454	150	5074.	88.0	25.9	*	2	0054	250	515.	3.6	17.5
1	0500	51	5.	79.6	25.4	*	1	1500	151	4942.	85.1	25.7	*	2	0100	251	496.	3.4	17.4
1	0506	52	5.	79.9	25.4	*	1	1506	152	4821.	82.3	25.6	*	2	0106	252	476.	3.2	17.3
1	0512	53	5.	80.2	25.5	*	1	1512	153	4702.	79.6	25.4	*	2	0112	253	455.	3.0	17.2
1	0518	54	6.	80.6	25.5	*	1	1518	154	4587.	77.0	25.3	*	2	0118	254	432.	2.8	17.1
1	0524	55	7.	81.1	25.5	*	1	1524	155	4475.	74.4	25.2	*	2	0124	255	407.	2.6	17.0
1	0530	56	8.	81.5	25.5	*	1	1530	156	4364.	72.0	25.0	*	2	0130	256	384.	2.4	16.9
1	0536	57	9.	82.0	25.6	*	1	1536	157	4253.	69.6	24.9	*	2	0136	257	366.	2.2	16.8
1	0542	58	10.	82.5	25.6	*	1	1542	158	4162.	67.3	24.8	*	2	0142	258	345.	2.1	16.7
1	0548	59	13.	83.1	25.6	*	1	1548	159	4063.	64.9	24.6	*	2	0148	259	328.	2.0	16.7
1	0554	60	17.	83.7	25.6	*	1	1554	160	3964.	62.6	24.5	*	2	0154	260	312.	1.8	16.6
1	0600	61	22.	84.3	25.7	*	1	1600	161	3865.	60.3	24.3	*	2	0200	261	299.	1.8	16.5
1	0606	62	27.	84.9	25.7	*	1	1606	162	3767.	58.1	24.2	*	2	0206	262	288.	1.7	16.5
1	0612	63	32.	85.5	25.7	*	1	1612	163	3669.	56.0	24.1	*	2	0212	263	275.	1.6	16.4
1	0618	64	36.	86.1	25.8	*	1	1618	164	3573.	53.9	23.9	*	2	0218	264	264.	1.5	16.3
1	0624	65	42.	86.8	25.8	*	1	1624	165	3479.	52.0	23.8	*	2	0224	265	253.	1.3	16.2
1	0630	66	47.	87.4	25.8	*	1	1630	166	3386.	50.1	23.7	*	2	0230	266	241.	1.3	16.2
1	0636	67	52.	88.1	25.9	*	1	1636	167	3295.	48.3	23.5	*	2	0236	267	230.	1.2	16.1

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  1     0642  68      57.     88.8    25.9 *  1     1642 168    3206.     46.5    23.4 *  2     0242 268     220.      1.1    16.0
  1     0648  69      63.     89.5    25.9 *  1     1648 169    3119.     44.9    23.3 *  2     0248 269     210.      1.0    15.9
  1     0654  70      68.     90.2    26.0 *  1     1654 170    3034.     43.3    23.2 *  2     0254 270     200.       .9    15.9
  1     0700  71      76.     90.9    26.0 *  1     1700 171    2960.     41.7    23.0 *  2     0300 271     191.       .9    15.8
  1     0706  72      86.     91.7    26.1 *  1     1706 172    2887.     40.2    22.9 *  2     0306 272     182.       .8    15.8
  1     0712  73      95.     92.4    26.1 *  1     1712 173    2813.     38.7    22.8 *  2     0312 273     174.       .8    15.7
  1     0718  74     105.     93.1    26.1 *  1     1718 174    2739.     37.2    22.7 *  2     0318 274     166.       .7    15.6
  1     0724  75     114.     93.9    26.2 *  1     1724 175    2667.     35.8    22.5 *  2     0324 275     159.       .7    15.6
  1     0730  76     124.     94.6    26.2 *  1     1730 176    2600.     34.4    22.4 *  2     0330 276     152.       .6    15.5
  1     0736  77     133.     95.3    26.2 *  1     1736 177    2528.     33.0    22.3 *  2     0336 277     145.       .6    15.5
  1     0742  78     143.     96.1    26.3 *  1     1742 178    2458.     31.8    22.2 *  2     0342 278     138.       .6    15.4
  1     0748  79     153.     96.8    26.3 *  1     1748 179    2391.     30.6    22.1 *  2     0348 279     132.       .5    15.4
  1     0754  80     163.     97.6    26.4 *  1     1754 180    2326.     29.5    21.9 *  2     0354 280     126.       .5    15.4
  1     0800  81     173.     98.4    26.4 *  1     1800 181    2263.     28.4    21.8 *  2     0400 281     121.       .5    15.3
  1     0806  82     184.     99.2    26.4 *  1     1806 182    2202.     27.4    21.7 *  2     0406 282     115.       .5    15.3
  1     0812  83     194.    100.0    26.5 *  1     1812 183    2142.     26.4    21.6 *  2     0412 283     110.       .4    15.2
  1     0818  84     206.    100.8    26.5 *  1     1818 184    2085.     25.5    21.5 *  2     0418 284     105.       .4    15.2
  1     0824  85     220.    101.7    26.6 *  1     1824 185    2030.     24.6    21.4 *  2     0424 285     100.       .4    15.2
  1     0830  86     234.    102.5    26.6 *  1     1830 186    1982.     23.8    21.3 *  2     0430 286      96.       .4    15.1
  1     0836  87     248.    103.3    26.6 *  1     1836 187    1934.     22.9    21.2 *  2     0436 287      92.       .4    15.1
  1     0842  88     262.    104.2    26.7 *  1     1842 188    1886.     22.0    21.1 *  2     0442 288      88.       .3    15.1
  1     0848  89     277.    105.0    26.7 *  1     1848 189    1837.     21.2    21.0 *  2     0448 289      84.       .3    15.0
  1     0854  90     292.    105.9    26.8 *  1     1854 190    1790.     20.4    20.9 *  2     0454 290      80.       .3    15.0
  1     0900  91     307.    106.8    26.8 *  1     1900 191    1743.     19.6    20.8 *  2     0500 291      77.       .3    15.0
  1     0906  92     322.    107.7    26.9 *  1     1906 192    1698.     18.9    20.7 *  2     0506 292      73.       .3    15.0
  1     0912  93     338.    108.7    26.9 *  1     1912 193    1654.     18.2    20.6 *  2     0512 293      79.       .3    14.9
  1     0918  94     355.    109.7    27.0 *  1     1918 194    1611.     17.6    20.5 *  2     0518 294      70.       .2    14.8
  1     0924  95     372.    110.8    27.0 *  1     1924 195    1570.     16.9    20.4 *  2     0524 295      65.       .2    14.7
  1     0930  96     393.    111.8    27.1 *  1     1930 196    1530.     16.3    20.4 *  2     0530 296      62.       .2    14.6
  1     0936  97     415.    112.9    27.1 *  1     1936 197    1491.     15.8    20.3 *  2     0536 297      59.       .1    14.6
  1     0942  98     436.    114.0    27.2 *  1     1942 198    1454.     15.3    20.2 *  2     0542 298      56.       .1    14.5
  1     0948  99     459.    115.2    27.2 *  1     1948 199    1419.     14.8    20.1 *  2     0548 299      54.       .1    14.5
  1     0954 100     482.    116.4    27.3 *  1     1954 200    1384.     14.3    20.0 *  2     0554 300      51.       .1    14.4
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 PEAK OUTFLOW IS    12143. AT TIME  13.78 HOURS

1THE DAM BREACH HYDROGRAPH WAS DEVELOPED USING A TIME INTERVAL OF  .006 HOURS DURING BREACH FORMATION.
 DOWNSTREAM CALCULATIONS WILL USE A TIME INTERVAL OF   .100 HOURS.
 THIS TABLE COMPARES THE HYDROGRAPH FOR DOWNSTREAM CALCULATIONS WITH THE COMPUTED BREACH HYDROGRAPH.
 INTERMEDIATE FLOWS ARE INTERPOLATED FROM END-OF-PERIOD VALUES.

                                 TIME FROM  INTERPOLATED      COMPUTED
                     TIME        BEGINNING     BREACH     -    BREACH    =  ERROR  ACCUMULATED  ACCUMULATED
                                 OF BREACH   HYDROGRAPH      HYDROGRAPH               ERROR        ERROR
                   (HOURS)       (HOURS)       (CFS)           (CFS)        (CFS)     (CFS)       (AC-FT)

                   13.500         .000         6359.           6359.          0.        0.           0.
                   13.506         .006         6412.           6368.         44.       44.           0.
                   13.512         .012         6465.           6376.         89.      133.           0.
                   13.518         .018         6519.           6390.        128.      262.           0.
                   13.524         .024         6572.           6410.        161.      423.           0.
                   13.529         .029         6625.           6436.        189.      612.           0.
                   13.535         .035         6678.           6469.        210.      821.           0.
                   13.541         .041         6732.           6507.        224.     1046.           1.
                   13.547         .047         6785.           6553.        232.     1278.           1.
                   13.553         .053         6838.           6605.        234.     1511.           1.
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13.559	.059	6891.	6663.	228.	1739.	1.
13.565	.065	6945.	6729.	216.	1956.	1.
13.571	.071	6998.	6801.	197.	2153.	1.
13.576	.076	7051.	6880.	171.	2324.	1.
13.582	.082	7104.	6966.	139.	2463.	1.
13.588	.088	7158.	7058.	99.	2562.	1.
13.594	.094	7211.	7158.	53.	2615.	1.
13.600	.100	7264.	7264.	0.	2615.	1.
13.606	.106	7430.	7377.	53.	2668.	1.
13.612	.112	7596.	7497.	99.	2767.	1.
13.618	.118	7762.	7623.	139.	2906.	1.
13.624	.124	7928.	7756.	172.	3078.	1.
13.629	.129	8094.	7896.	198.	3277.	2.
13.635	.135	8260.	8042.	218.	3495.	2.
13.641	.141	8426.	8195.	231.	3727.	2.
13.647	.147	8592.	8353.	239.	3966.	2.
13.653	.153	8758.	8518.	241.	4207.	2.
13.659	.159	8924.	8689.	235.	4442.	2.
13.665	.165	9091.	8867.	223.	4666.	2.
13.671	.171	9257.	9052.	204.	4870.	2.
13.676	.176	9423.	9244.	178.	5048.	2.
13.682	.182	9589.	9443.	145.	5194.	3.
13.688	.188	9755.	9650.	105.	5298.	3.
13.694	.194	9921.	9864.	56.	5355.	3.
13.700	.200	10087.	10087.	0.	5355.	3.
13.706	.206	10202.	10318.	-116.	5239.	3.
13.712	.212	10318.	10558.	-240.	4999.	2.
13.718	.218	10433.	10800.	-367.	4632.	2.
13.724	.224	10549.	11035.	-486.	4146.	2.
13.729	.229	10664.	11252.	-588.	3557.	2.
13.735	.235	10780.	11449.	-669.	2888.	1.
13.741	.241	10895.	11623.	-728.	2160.	1.
13.747	.247	11010.	11774.	-763.	1397.	1.
13.753	.253	11126.	11890.	-764.	633.	0.
13.759	.259	11241.	11986.	-744.	-111.	0.
13.765	.265	11357.	12064.	-707.	-818.	0.
13.771	.271	11472.	12120.	-648.	-1466.	-1.
13.776	.276	11588.	12143.	-556.	-2022.	-1.
13.782	.282	11703.	12143.	-439.	-2461.	-1.
13.788	.288	11819.	12122.	-304.	-2764.	-1.
13.794	.294	11934.	12094.	-159.	-2924.	-1.
13.800	.300	12050.	12050.	0.	-2924.	-1.

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1                                                   STATION    DAM-1
 TIME                      (O) INTERPOLATED BREACH HYDROGRAPH          (*) POINTS AT NORMAL TIME INTERVAL
 (HRS)                     (B) COMPUTED BREACH HYDROGRAPH
       6000.     7000.     8000.     9000.    10000.    11000.    12000.    13000.        0.        0.        0.        0.        0.
 13.50   1 .---*-----.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
 13.51   2 .   B     .         .         .         .         .         .         .         .         .         .         .         .
 13.51   3 .   BO    .         .         .         .         .         .         .         .         .         .         .         .
 13.52   4 .   BO    .         .         .         .         .         .         .         .         .         .         .         .
 13.52   5 .   B O   .         .         .         .         .         .         .         .         .         .         .         .
 13.53   6 .   B O   .         .         .         .         .         .         .         .         .         .         .         .
 13.54   7 .    B O  .         .         .         .         .         .         .         .         .         .         .         .
 13.54   8 .    B O  .         .         .         .         .         .         .         .         .         .         .         .
 13.55   9 .     B O .         .         .         .         .         .         .         .         .         .         .         .
 13.55  10 .     B O .         .         .         .         .         .         .         .         .         .         .         .
 13.56  11 . . . .B.O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 13.56  12 .      B O.         .         .         .         .         .         .         .         .         .         .         .
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 13.57  13 .       B O         .         .         .         .         .         .         .         .         .         .         .
 13.58  14 .        B.O        .         .         .         .         .         .         .         .         .         .         .
 13.58  15 .         BO        .         .         .         .         .         .         .         .         .         .         .
 13.59  16 .         .BO       .         .         .         .         .         .         .         .         .         .         .
 13.59  17 .         . B       .         .         .         .         .         .         .         .         .         .         .
 13.60  18 .         .  *      .         .         .         .         .         .         .         .         .         .         .
 13.61  19 .         .   B     .         .         .         .         .         .         .         .         .         .         .
 13.61  20 .         .    BO   .         .         .         .         .         .         .         .         .         .         .
 13.62  21 . . . . . . . . B O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 13.62  22 .         .       BO.         .         .         .         .         .         .         .         .         .         .
 13.63  23 .         .        B.O        .         .         .         .         .         .         .         .         .         .
 13.64  24 .         .         B  O      .         .         .         .         .         .         .         .         .         .
 13.64  25 .         .         . B O     .         .         .         .         .         .         .         .         .         .
 13.65  26 .         .         .   B O   .         .         .         .         .         .         .         .         .         .
 13.65  27 .         .         .    B  O .         .         .         .         .         .         .         .         .         .
 13.66  28 .         .         .      B O.         .         .         .         .         .         .         .         .         .
 13.66  29 .         .         .        B.O        .         .         .         .         .         .         .         .         .
 13.67  30 .         .         .         .B O      .         .         .         .         .         .         .         .         .
 13.68  31 . . . . . . . . . . . . . . . . B O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 13.68  32 .         .         .         .   B O   .         .         .         .         .         .         .         .         .
 13.69  33 .         .         .         .     B O .         .         .         .         .         .         .         .         .
 13.69  34 .         .         .         .        B.         .         .         .         .         .         .         .         .
 13.70  35 .         .         .         .         .*        .         .         .         .         .         .         .         .
 13.71  36 .         .         .         .         . OB      .         .         .         .         .         .         .         .
 13.71  37 .         .         .         .         .  O  B   .         .         .         .         .         .         .         .
 13.72  38 .         .         .         .         .   O   B .         .         .         .         .         .         .         .
 13.72  39 .         .         .         .         .    O    B         .         .         .         .         .         .         .
 13.73  40 .         .         .         .         .      O  .  B      .         .         .         .         .         .         .
 13.74  41 . . . . . . . . . . . . . . . . . . . . . . . . O . . B . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 13.74  42 .         .         .         .         .       O.     B   .         .         .         .         .         .         .
 13.75  43 .         .         .         .         .        O      B .         .         .         .         .         .         .
 13.75  44 .         .         .         .         .        .O      B.         .         .         .         .         .         .
 13.76  45 .         .         .         .         .        . O      B         .         .         .         .         .         .
 13.76  46 .         .         .         .         .        .   O     .B        .         .         .         .         .         .
 13.77  47 .         .         .         .         .        .    O    .B        .         .         .         .         .         .
 13.78  48 .         .         .         .         .        .     O   .B        .         .         .         .         .         .
 13.78  49 .         .         .         .         .        .      O  .B        .         .         .         .         .         .
 13.79  50 .         .         .         .         .        .       O .B        .         .         .         .         .         .
 13.79  51 . . . . . . . . . . . . . . . . . . . . . . . . . . . . .O.B. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 13.80  52 .         .         .         .         .         .        *         .         .         .         .         .         .
1

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                           (CFS)
+   12050.     13.80                4432.       1566.       1258.        1258.
                        (INCHES)   21.575      30.492      30.509       30.509
                         (AC-FT)    2198.       3106.       3108.        3108.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
      279.     13.51                 156.         80.         64.          64.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
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     33.93     13.51                28.97       24.69       22.98        22.98

                        CUMULATIVE AREA =    1.91 SQ MI

1                                                        STATION    DAM-1

                        (I) INFLOW,   (O) OUTFLOW
         0.     2000.     4000.     6000.     8000.    10000.    12000.    14000.        0.        0.        0.        0.        0.
                                                                                  (S) STORAGE
         0.        0.        0.        0.        0.        0.        0.      100.      200.      300.        0.        0.        0.
 DAHRMN PER
  10000   1I---------.---------.---------.---------.---------.---------.-------S-.---------.---------.---------.---------.---------.
  10006   2I         .         .         .         .         .         .       S .         .         .         .         .         .
  10012   3I         .         .         .         .         .         .       S .         .         .         .         .         .
  10018   4I         .         .         .         .         .         .       S .         .         .         .         .         .
  10024   5I         .         .         .         .         .         .       S .         .         .         .         .         .
  10030   6I         .         .         .         .         .         .       S .         .         .         .         .         .
  10036   7I         .         .         .         .         .         .       S .         .         .         .         .         .
  10042   8I         .         .         .         .         .         .       S .         .         .         .         .         .
  10048   9I         .         .         .         .         .         .       S .         .         .         .         .         .
  10054  10I         .         .         .         .         .         .       S .         .         .         .         .         .
  10100  11I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10106  12I         .         .         .         .         .         .       S .         .         .         .         .         .
  10112  13I         .         .         .         .         .         .       S .         .         .         .         .         .
  10118  14I         .         .         .         .         .         .       S .         .         .         .         .         .
  10124  15I         .         .         .         .         .         .       S .         .         .         .         .         .
  10130  16I         .         .         .         .         .         .       S .         .         .         .         .         .
  10136  17I         .         .         .         .         .         .       S .         .         .         .         .         .
  10142  18I         .         .         .         .         .         .       S .         .         .         .         .         .
  10148  19I         .         .         .         .         .         .       S .         .         .         .         .         .
  10154  20I         .         .         .         .         .         .       S .         .         .         .         .         .
  10200  21I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10206  22I         .         .         .         .         .         .       S .         .         .         .         .         .
  10212  23I         .         .         .         .         .         .       S .         .         .         .         .         .
  10218  24I         .         .         .         .         .         .       S .         .         .         .         .         .
  10224  25I         .         .         .         .         .         .       S .         .         .         .         .         .
  10230  26I         .         .         .         .         .         .       S .         .         .         .         .         .
  10236  27I         .         .         .         .         .         .       S .         .         .         .         .         .
  10242  28I         .         .         .         .         .         .       S .         .         .         .         .         .
  10248  29I         .         .         .         .         .         .       S .         .         .         .         .         .
  10254  30I         .         .         .         .         .         .       S .         .         .         .         .         .
  10300  31I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10306  32I         .         .         .         .         .         .       S .         .         .         .         .         .
  10312  33I         .         .         .         .         .         .       S .         .         .         .         .         .
  10318  34I         .         .         .         .         .         .       S .         .         .         .         .         .
  10324  35I         .         .         .         .         .         .       S .         .         .         .         .         .
  10330  36I         .         .         .         .         .         .       S .         .         .         .         .         .
  10336  37I         .         .         .         .         .         .       S .         .         .         .         .         .
  10342  38I         .         .         .         .         .         .       S .         .         .         .         .         .
  10348  39I         .         .         .         .         .         .       S .         .         .         .         .         .
  10354  40I         .         .         .         .         .         .       S .         .         .         .         .         .
  10400  41I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10406  42I         .         .         .         .         .         .       S .         .         .         .         .         .
  10412  43I         .         .         .         .         .         .       S .         .         .         .         .         .
  10418  44I         .         .         .         .         .         .       S .         .         .         .         .         .
  10424  45I         .         .         .         .         .         .       S .         .         .         .         .         .
  10430  46I         .         .         .         .         .         .       S .         .         .         .         .         .
  10436  47I         .         .         .         .         .         .       S .         .         .         .         .         .
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10442  48I          .         .         .         .         .         .      S .         .         .         .         .         .
10448  49I          .         .         .         .         .         .      S .         .         .         .         .         .
10454  50I          .         .         .         .         .         .      S .         .         .         .         .         .
10500  51I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10506  52I          .         .         .         .         .         .      S .         .         .         .         .         .
10512  53I          .         .         .         .         .         .      S .         .         .         .         .         .
10518  54I          .         .         .         .         .         .      S .         .         .         .         .         .
10524  55I          .         .         .         .         .         .      S .         .         .         .         .         .
10530  56I          .         .         .         .         .         .      S .         .         .         .         .         .
10536  57I          .         .         .         .         .         .      S .         .         .         .         .         .
10542  58I          .         .         .         .         .         .      S .         .         .         .         .         .
10548  59I          .         .         .         .         .         .      S .         .         .         .         .         .
10554  60I          .         .         .         .         .         .      S .         .         .         .         .         .
10600  61I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10606  62OI         .         .         .         .         .         .      S .         .         .         .         .         .
10612  63OI         .         .         .         .         .         .       S.         .         .         .         .         .
10618  64OI         .         .         .         .         .         .       S.         .         .         .         .         .
10624  65OI         .         .         .         .         .         .       S.         .         .         .         .         .
10630  66OI         .         .         .         .         .         .       S.         .         .         .         .         .
10636  67OI         .         .         .         .         .         .       S.         .         .         .         .         .
10642  68OI         .         .         .         .         .         .       S.         .         .         .         .         .
10648  69OI         .         .         .         .         .         .       S.         .         .         .         .         .
10654  70OI         .         .         .         .         .         .       S.         .         .         .         .         .
10700  71OI. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10706  72OI         .         .         .         .         .         .       S.         .         .         .         .         .
10712  73OI         .         .         .         .         .         .       S.         .         .         .         .         .
10718  74.I         .         .         .         .         .         .       S.         .         .         .         .         .
10724  75.I         .         .         .         .         .         .       S.         .         .         .         .         .
10730  76.I         .         .         .         .         .         .       S.         .         .         .         .         .
10736  77.I         .         .         .         .         .         .        S         .         .         .         .         .
10742  78.I         .         .         .         .         .         .        S         .         .         .         .         .
10748  79.I         .         .         .         .         .         .        S         .         .         .         .         .
10754  80.I         .         .         .         .         .         .        S         .         .         .         .         .
10800  81.I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10806  82.I         .         .         .         .         .         .        S         .         .         .         .         .
10812  83.I         .         .         .         .         .         .        S         .         .         .         .         .
10818  84.OI        .         .         .         .         .         .        S         .         .         .         .         .
10824  85.OI        .         .         .         .         .         .        S         .         .         .         .         .
10830  86.OI        .         .         .         .         .         .        S         .         .         .         .         .
10836  87.OI        .         .         .         .         .         .        S         .         .         .         .         .
10842  88.OI        .         .         .         .         .         .        S         .         .         .         .         .
10848  89.OI        .         .         .         .         .         .        .S        .         .         .         .         .
10854  90.OI        .         .         .         .         .         .        .S        .         .         .         .         .
10900  91. I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10906  92. I        .         .         .         .         .         .        .S        .         .         .         .         .
10912  93. I        .         .         .         .         .         .        .S        .         .         .         .         .
10918  94. I        .         .         .         .         .         .        .S        .         .         .         .         .
10924  95. OI       .         .         .         .         .         .        .S        .         .         .         .         .
10930  96. OI       .         .         .         .         .         .        .S        .         .         .         .         .
10936  97. OI       .         .         .         .         .         .        .S        .         .         .         .         .
10942  98. OI       .         .         .         .         .         .        .S        .         .         .         .         .
10948  99. OI       .         .         .         .         .         .        . S       .         .         .         .         .
10954 100. OI       .         .         .         .         .         .        . S       .         .         .         .         .
11000 101. .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
11006 102.  I       .         .         .         .         .         .        . S       .         .         .         .         .
11012 103.  OI      .         .         .         .         .         .        . S       .         .         .         .         .
11018 104.  OI      .         .         .         .         .         .        . S       .         .         .         .         .
11024 105.  OI      .         .         .         .         .         .        . S       .         .         .         .         .
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11030 106.  OI     .         .         .         .         .         .         . S       .         .         .         .         .
11036 107.  OI     .         .         .         .         .         .         .  S      .         .         .         .         .
11042 108.   I     .         .         .         .         .         .         .  S      .         .         .         .         .
11048 109.   OI    .         .         .         .         .         .         .  S      .         .         .         .         .
11054 110.   OI    .         .         .         .         .         .         .  S      .         .         .         .         .
11100 111. . OI. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . .
11106 112.   OI    .         .         .         .         .         .         .  S      .         .         .         .         .
11112 113.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11118 114.    OI   .         .         .         .         .         .         .   S     .         .         .         .         .
11124 115.    OI   .         .         .         .         .         .         .   S     .         .         .         .         .
11130 116.    OI   .         .         .         .         .         .         .   S     .         .         .         .         .
11136 117.    O I  .         .         .         .         .         .         .   S     .         .         .         .         .
11142 118.     OI  .         .         .         .         .         .         .    S    .         .         .         .         .
11148 119.     OI  .         .         .         .         .         .         .    S    .         .         .         .         .
11154 120.     O I .         .         .         .         .         .         .    S    .         .         .         .         .
11200 121. . . .O.I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
11206 122.      O  I         .         .         .         .         .         .     S   .         .         .         .         .
11212 123.       O . I       .         .         .         .         .         .     S   .         .         .         .         .
11218 124.        O.   I     .         .         .         .         .         .      S  .         .         .         .         .
11224 125.         O     I   .         .         .         .         .         .       S .         .         .         .         .
11230 126.         . O     I .         .         .         .         .         .        S.         .         .         .         .
11236 127.         .  O      .I        .         .         .         .         .         S         .         .         .         .
11242 128.         .    O    .   I     .         .         .         .         .         . S       .         .         .         .
11248 129.         .      O  .     I   .         .         .         .         .         .  S      .         .         .         .
11254 130.         .        O.       I .         .         .         .         .         .   S     .         .         .         .
11300 131. . . . . . . . . . . O. . .I . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . .
11306 132.         .         .     O   .I        .         .         .         .         .      S  .         .         .         .
11312 133.         .         .        O. I       .         .         .         .         .      S  .         .         .         .
11318 134.         .         .         .OI       .         .         .         .         .       S .         .         .         .
11324 135.         .         .         .OI       .         .         .         .         .       S .         .         .         .
11330 136.         .         .         . I       .         .         .         .         .       S .         .         .         .
11336 137.         .         .         .I    O   .         .         .         .         .       S .         .         .         .
11342 138.         .         .         .I        .         O         .         .         .     S   .         .         .         .
11348 139.         .         .         I         .         .         O         .         .S        .         .         .         .
11354 140.         .         .         I         .       O .         .         .      S  .         .         .         .         .
11400 141. . . . . . . . . . . . . . .I. . . . . . O. . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
11406 142.         .         .       I .      O  .         .         .         .  S      .         .         .         .         .
11412 143.         .         .       I .   O     .         .         .         . S       .         .         .         .         .
11418 144.         .         .      I  .O        .         .         .         .S        .         .         .         .         .
11424 145.         .         .      I  O         .         .         .         .S        .         .         .         .         .
11430 146.         .         .     I  O.         .         .         .         S         .         .         .         .         .
11436 147.         .         .    I  O .         .         .         .         S         .         .         .         .         .
11442 148.         .         .    I O  .         .         .         .        S.         .         .         .         .         .
11448 149.         .         .   I O   .         .         .         .        S.         .         .         .         .         .
11454 150.         .         .   IO    .         .         .         .        S.         .         .         .         .         .
11500 151. . . . . . . . . . .I.O. . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . .
11506 152.         .         . I O     .         .         .         .       S .         .         .         .         .         .
11512 153.         .         . I O     .         .         .         .       S .         .         .         .         .         .
11518 154.         .         .I O      .         .         .         .       S .         .         .         .         .         .
11524 155.         .         .IO       .         .         .         .      S  .         .         .         .         .         .
11530 156.         .         I O       .         .         .         .      S  .         .         .         .         .         .
11536 157.         .         IO        .         .         .         .      S  .         .         .         .         .         .
11542 158.         .        I.O        .         .         .         .      S  .         .         .         .         .         .
11548 159.         .        IO         .         .         .         .     S   .         .         .         .         .         .
11554 160.         .       I O         .         .         .         .     S   .         .         .         .         .         .
11600 161. . . . . . . . IO. . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . .
11606 162.         .      I O.         .         .         .         .     S   .         .         .         .         .         .
11612 163.         .      IO .         .         .         .         .     S   .         .         .         .         .         .
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11618 164.         .      IO .         .         .         .         .    S    .         .         .         .         .         .
11624 165.         .     IO  .         .         .         .         .    S    .         .         .         .         .         .
11630 166.         .     IO  .         .         .         .         .    S    .         .         .         .         .         .
11636 167.         .    IO   .         .         .         .         .    S    .         .         .         .         .         .
11642 168.         .    IO   .         .         .         .         .    S    .         .         .         .         .         .
11648 169.         .    IO   .         .         .         .         .   S     .         .         .         .         .         .
11654 170.         .   IO    .         .         .         .         .   S     .         .         .         .         .         .
11700 171. . . . . . . IO. . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . .
11706 172.         .  IO     .         .         .         .         .   S     .         .         .         .         .         .
11712 173.         .  IO     .         .         .         .         .   S     .         .         .         .         .         .
11718 174.         .  IO     .         .         .         .         .   S     .         .         .         .         .         .
11724 175.         . IO      .         .         .         .         .   S     .         .         .         .         .         .
11730 176.         . IO      .         .         .         .         .  S      .         .         .         .         .         .
11736 177.         . IO      .         .         .         .         .  S      .         .         .         .         .         .
11742 178.         . I       .         .         .         .         .  S      .         .         .         .         .         .
11748 179.         .IO       .         .         .         .         .  S      .         .         .         .         .         .
11754 180.         .IO       .         .         .         .         .  S      .         .         .         .         .         .
11800 181. . . . . .I. . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
11806 182.         IO        .         .         .         .         .  S      .         .         .         .         .         .
11812 183.         IO        .         .         .         .         .  S      .         .         .         .         .         .
11818 184.         I         .         .         .         .         .  S      .         .         .         .         .         .
11824 185.         I         .         .         .         .         . S       .         .         .         .         .         .
11830 186.        IO         .         .         .         .         . S       .         .         .         .         .         .
11836 187.        IO         .         .         .         .         . S       .         .         .         .         .         .
11842 188.        I.         .         .         .         .         . S       .         .         .         .         .         .
11848 189.        I.         .         .         .         .         . S       .         .         .         .         .         .
11854 190.       IO.         .         .         .         .         . S       .         .         .         .         .         .
11900 191. . . . IO. . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
11906 192.       I .         .         .         .         .         . S       .         .         .         .         .         .
11912 193.       I .         .         .         .         .         . S       .         .         .         .         .         .
11918 194.       I .         .         .         .         .         . S       .         .         .         .         .         .
11924 195.      IO .         .         .         .         .         . S       .         .         .         .         .         .
11930 196.      IO .         .         .         .         .         . S       .         .         .         .         .         .
11936 197.      I  .         .         .         .         .         . S       .         .         .         .         .         .
11942 198.      I  .         .         .         .         .         . S       .         .         .         .         .         .
11948 199.      I  .         .         .         .         .         .S        .         .         .         .         .         .
11954 200.      I  .         .         .         .         .         .S        .         .         .         .         .         .
12000 201. . . IO. . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
12006 202.     IO  .         .         .         .         .         .S        .         .         .         .         .         .
12012 203.     I   .         .         .         .         .         .S        .         .         .         .         .         .
12018 204.     I   .         .         .         .         .         .S        .         .         .         .         .         .
12024 205.     I   .         .         .         .         .         .S        .         .         .         .         .         .
12030 206.     I   .         .         .         .         .         .S        .         .         .         .         .         .
12036 207.     I   .         .         .         .         .         .S        .         .         .         .         .         .
12042 208.     I   .         .         .         .         .         .S        .         .         .         .         .         .
12048 209.    IO   .         .         .         .         .         .S        .         .         .         .         .         .
12054 210.    IO   .         .         .         .         .         .S        .         .         .         .         .         .
12100 211. . .I. . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
12106 212.    I    .         .         .         .         .         .S        .         .         .         .         .         .
12112 213.    I    .         .         .         .         .         .S        .         .         .         .         .         .
12118 214.    I    .         .         .         .         .         .S        .         .         .         .         .         .
12124 215.    I    .         .         .         .         .         .S        .         .         .         .         .         .
12130 216.    I    .         .         .         .         .         .S        .         .         .         .         .         .
12136 217.    I    .         .         .         .         .         .S        .         .         .         .         .         .
12142 218.    I    .         .         .         .         .         .S        .         .         .         .         .         .
12148 219.   IO    .         .         .         .         .         .S        .         .         .         .         .         .
12154 220.   IO    .         .         .         .         .         .S        .         .         .         .         .         .
12200 221. . I . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
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12206 222.   I     .         .         .         .         .         .S        .         .         .         .         .         .
12212 223.   I     .         .         .         .         .         .S        .         .         .         .         .         .
12218 224.   I     .         .         .         .         .         .S        .         .         .         .         .         .
12224 225.   I     .         .         .         .         .         .S        .         .         .         .         .         .
12230 226.   I     .         .         .         .         .         .S        .         .         .         .         .         .
12236 227.   I     .         .         .         .         .         .S        .         .         .         .         .         .
12242 228.   I     .         .         .         .         .         .S        .         .         .         .         .         .
12248 229.   I     .         .         .         .         .         .S        .         .         .         .         .         .
12254 230.   I     .         .         .         .         .         .S        .         .         .         .         .         .
12300 231. . I . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
12306 232.   I     .         .         .         .         .         .S        .         .         .         .         .         .
12312 233.  IO     .         .         .         .         .         .S        .         .         .         .         .         .
12318 234.  IO     .         .         .         .         .         .S        .         .         .         .         .         .
12324 235.  I      .         .         .         .         .         .S        .         .         .         .         .         .
12330 236.  I      .         .         .         .         .         .S        .         .         .         .         .         .
12336 237.  I      .         .         .         .         .         .S        .         .         .         .         .         .
12342 238.  I      .         .         .         .         .         .S        .         .         .         .         .         .
12348 239.  I      .         .         .         .         .         .S        .         .         .         .         .         .
12354 240.  I      .         .         .         .         .         S         .         .         .         .         .         .
20000 241. .I. . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20006 242.  I      .         .         .         .         .         S         .         .         .         .         .         .
20012 243.  I      .         .         .         .         .         S         .         .         .         .         .         .
20018 244.  I      .         .         .         .         .         S         .         .         .         .         .         .
20024 245.  I      .         .         .         .         .         S         .         .         .         .         .         .
20030 246.  I      .         .         .         .         .         S         .         .         .         .         .         .
20036 247.  I      .         .         .         .         .         S         .         .         .         .         .         .
20042 248.  I      .         .         .         .         .         S         .         .         .         .         .         .
20048 249.  I      .         .         .         .         .         S         .         .         .         .         .         .
20054 250. IO      .         .         .         .         .         S         .         .         .         .         .         .
20100 251. I . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20106 252. I       .         .         .         .         .         S         .         .         .         .         .         .
20112 253. I       .         .         .         .         .         S         .         .         .         .         .         .
20118 254. I       .         .         .         .         .         S         .         .         .         .         .         .
20124 255. I       .         .         .         .         .         S         .         .         .         .         .         .
20130 256. I       .         .         .         .         .         S         .         .         .         .         .         .
20136 257. I       .         .         .         .         .         S         .         .         .         .         .         .
20142 258. I       .         .         .         .         .         S         .         .         .         .         .         .
20148 259. I       .         .         .         .         .         S         .         .         .         .         .         .
20154 260. I       .         .         .         .         .         S         .         .         .         .         .         .
20200 261.I. . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20206 262.I        .         .         .         .         .         S         .         .         .         .         .         .
20212 263.I        .         .         .         .         .         S         .         .         .         .         .         .
20218 264.I        .         .         .         .         .         S         .         .         .         .         .         .
20224 265.I        .         .         .         .         .         S         .         .         .         .         .         .
20230 266.I        .         .         .         .         .         S         .         .         .         .         .         .
20236 267.I        .         .         .         .         .         S         .         .         .         .         .         .
20242 268.I        .         .         .         .         .         S         .         .         .         .         .         .
20248 269.I        .         .         .         .         .         S         .         .         .         .         .         .
20254 270.I        .         .         .         .         .         S         .         .         .         .         .         .
20300 271.I. . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20306 272.I        .         .         .         .         .         S         .         .         .         .         .         .
20312 273.I        .         .         .         .         .         S         .         .         .         .         .         .
20318 274.I        .         .         .         .         .         S         .         .         .         .         .         .
20324 275.I        .         .         .         .         .         S         .         .         .         .         .         .
20330 276.I        .         .         .         .         .         S         .         .         .         .         .         .
20336 277.I        .         .         .         .         .         S         .         .         .         .         .         .
20342 278.I        .         .         .         .         .         S         .         .         .         .         .         .
20348 279.I        .         .         .         .         .         S         .         .         .         .         .         .
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  20354 280.I        .         .         .         .         .         S         .         .         .         .         .         .
  20400 281.I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  20406 282.I        .         .         .         .         .         S         .         .         .         .         .         .
  20412 283.I        .         .         .         .         .         S         .         .         .         .         .         .
  20418 284.I        .         .         .         .         .         S         .         .         .         .         .         .
  20424 285IO        .         .         .         .         .         S         .         .         .         .         .         .
  20430 286I         .         .         .         .         .         S         .         .         .         .         .         .
  20436 287I         .         .         .         .         .         S         .         .         .         .         .         .
  20442 288I         .         .         .         .         .         S         .         .         .         .         .         .
  20448 289I         .         .         .         .         .         S         .         .         .         .         .         .
  20454 290I         .         .         .         .         .         S         .         .         .         .         .         .
  20500 291I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  20506 292I         .         .         .         .         .         S         .         .         .         .         .         .
  20512 293I         .         .         .         .         .         S         .         .         .         .         .         .
  20518 294I         .         .         .         .         .         S         .         .         .         .         .         .
  20524 295I         .         .         .         .         .         S         .         .         .         .         .         .
  20530 296I         .         .         .         .         .         S         .         .         .         .         .         .
  20536 297I         .         .         .         .         .         S         .         .         .         .         .         .
  20542 298I         .         .         .         .         .         S         .         .         .         .         .         .
  20548 299I         .         .         .         .         .         S         .         .         .         .         .         .
  20554 300I---------.---------.---------.---------.---------.---------S---------.---------.---------.---------.---------.---------.
1
1

                PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                   FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                                TIME TO PEAK IN HOURS


                                                                  RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN            RATIO 1
                                                        1.00

 HYDROGRAPH AT
+                    A-1      1.91     1   FLOW        6456.
                                           TIME        13.30
                                         2   FLOW        6456.
                                           TIME        13.30

 ROUTED TO
+                  DAM-1      1.91     1   FLOW        6359.
                                           TIME        13.50
                                         2   FLOW       12050.
                                           TIME        13.80

                                         ** PEAK STAGES IN FEET **
                                         1   STAGE       33.93
                                           TIME        13.50
                                         2   STAGE       33.93
                                           TIME        13.51
1                                   SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION    DAM-1
                               (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)


      PLAN  1 ...............                  INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                                   ELEVATION          25.38              32.13            32.13
                                   STORAGE              79.               229.             229.
                                   OUTFLOW               3.              3439.            3439.
```

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	33.93	1.80	279.	6359.	3.70	13.50	.00

PLAN 2 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	25.38	32.13	32.13
STORAGE	79.	229.	229.
OUTFLOW	3.	3439.	3439.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	33.93	1.80	279.	12143.	.96	13.78	13.50

*** NORMAL END OF HEC-1 ***

APPENDIX D

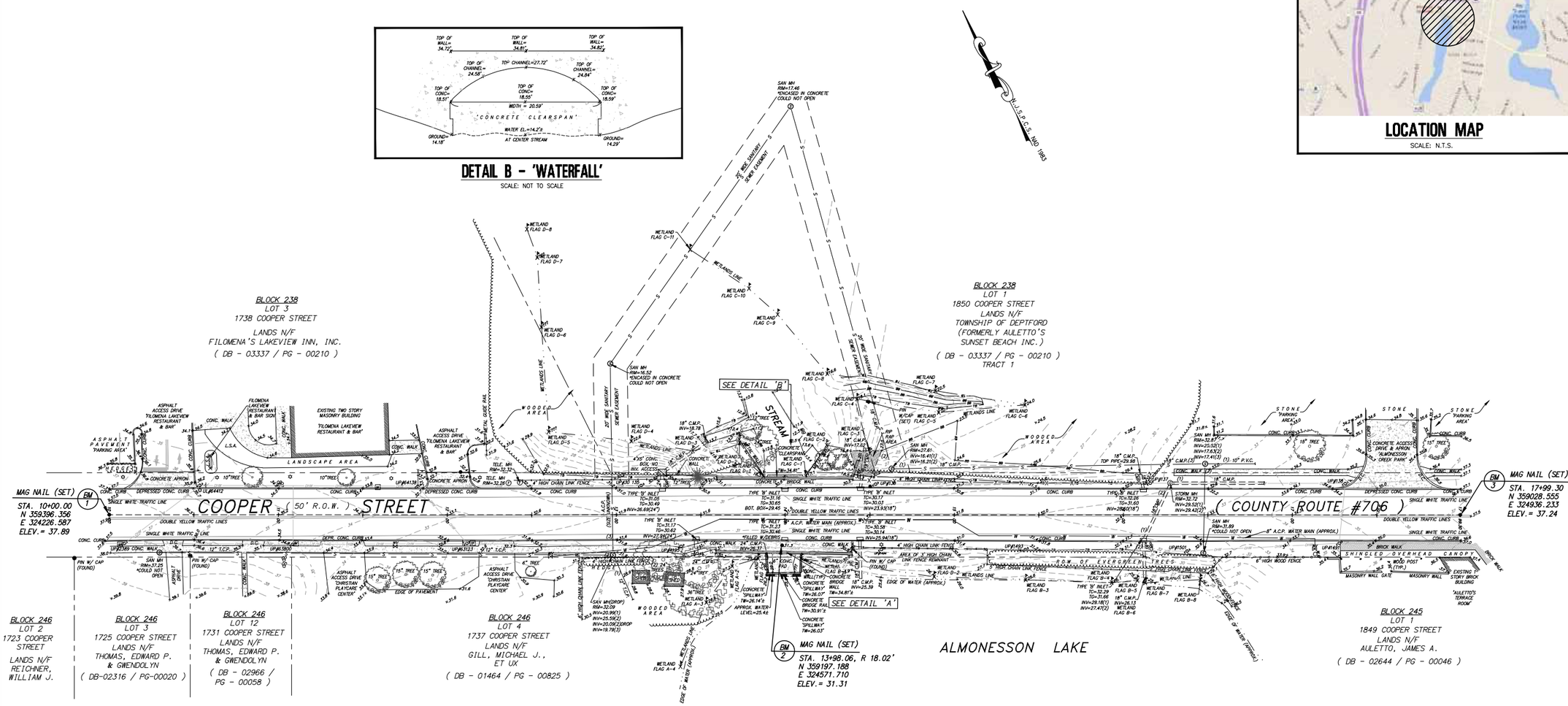
EXISTING TOPOGRAPHIC CONDITIONS

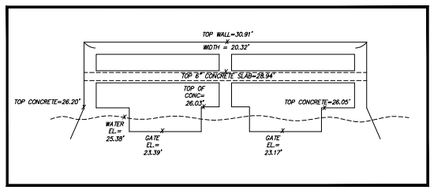
DETAIL B - 'WATERFALL'

SCALE: NOT TO SCALE

LOCATION MAP

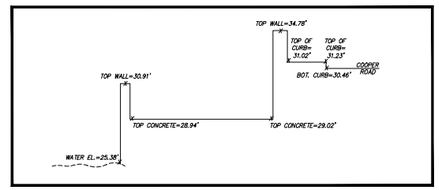
SCALE: N.T.S.





DETAIL A - 'BRIDGE RAIL'

SCALE: NOT TO SCALE



DETAIL A - 'CONCRETE PROFILE'

SCALE: NOT TO SCALE

SURVEY NOTES & REFERENCES:

1. THE HORIZONTAL DATUM IS BASED ON THE NEW JERSEY STATE PLANE COORDINATE SYSTEM (NAD-1983) AND THE VERTICAL DATUM IS BASED ON NAVD-1988 - 2012B ADJ. (ADD 1.18 FEET TO THESE ELEVATIONS TO CONVERT TO NGVD-1929 DATUM)
2. PROPERTY AND RIGHT-OF-WAY LINES SHOWN ON THESE PLANS ARE APPROXIMATE LOCATIONS BASED ON THE CURRENT TAX MAPS OF THE TOWNSHIP OF DEPTFORD, GLOUCESTER COUNTY, NEW JERSEY. PROPERTY AND RIGHT-OF-WAY LINES ARE SHOWN FOR GRAPHICAL INFORMATION ONLY AND HAVE NOT BEEN FIELD VERIFIED.
3. EXISTING TOPOGRAPHIC CONDITIONS WERE SURVEYED BY REMINGTON & VERNICK ENGINEERS UNDER THE SUPERVISION OF CHARLES E. ADAMSON, NJPLS LICENSE NO. 42627. THE SURVEY WORK WAS COMPLETED ON JANUARY 25, 2019.
4. REFERENCE PLAN ENTITLED, 'PLAN OF LOTS OF LAKEVIEW HEIGHTS SITUATE AT ALMONESSON - DEPT. TWP.'

GRAPHIC SCALE

30 0 15 30

(IN FEET)
1 inch = 30 ft.

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HADDONFIELD, NJ 08033
(856) 795-9595, FAX (856) 795-1882
WEB SITE ADDRESS : WWW.RVE.COM
Certification of Authorization: 24 GA 28003300
~ENGINEERING EXCELLENCE~

DATE:

CHARLES E. ADAMSON
NJ PROFESSIONAL LAND SURVEYOR LIC. No. 42627

PLANS WHICH DO NOT BEAR AN EMBOSSED SEAL ARE NOT VALID.

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No.	REVISION	DATE	BY	CHK

EXISTING TOPOGRAPHIC CONDITIONS

GLOUCESTER COUNTY LOCAL DEVELOPMENT STUDY

COOPER STREET (COUNTY ROUTE 706) BRIDGE OVER ALMONESSON CREEK (BRIDGE 3-K-3)

TOWNSHIP OF DEPTFORD GLOUCESTER COUNTY NEW JERSEY

DRAWN BY:	DESIGN BY:	CHECKED BY:	SCALE:
JS		CEA	NOTED
DATE: 1		SHEET No.: 1 of 1	
JOB No.: 3949 X 001			

© Survey Projects/New Jersey/Gloucester County/Deptford Township/3949001 - ALMONESSON BRIDGE 3-K-3/CAD/Dwg/3949 - ALMONESSON BRIDGE 3-K-3 (DET CONC).dwg 3/12/2019 11:41:46 PM