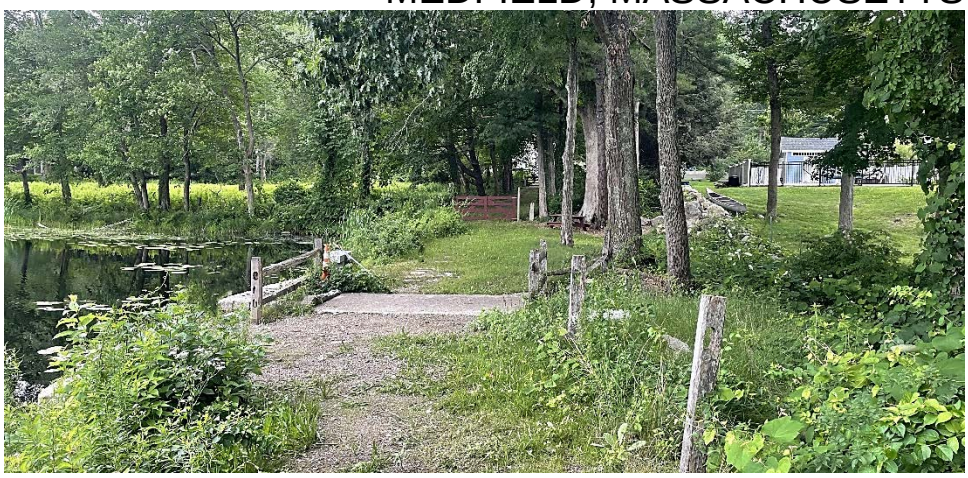
PREPARED FOR:
THE TOWN OF MEDFIELD

CONCEPTUAL DESIGN REPORT
DANIELSON MILL DAM
MA03351
MEDFIELD, MASSACHUSETTS



PREPARED BY:

PARE CORPORATION
10 LINCOLN ROAD SUITE 210
FOXBORO, MASSACHUSETTS 02035

PARE PROJECT NO. 21032.00

OCTOBER 2021

PARE
CORPORATION

DANIELSON MILL DAM

CONCEPTUAL DESIGN REPORT

MEDFIELD, MASSACHUSETTS

OCTOBER 2021

prepared for: Town of Medfield
Department of Public Works
55 North Meadows Road
Medfield, MA 02052

prepared by: Pare Corporation
10 Lincoln Road Suite 210
Foxboro, MA 02035

Authority

The Town of Medfield, Massachusetts has retained Pare Corporation (Pare) to evaluate conditions of the Danielson Mill Dam in Medfield, Massachusetts and to complete evaluations and develop a scope of work to address known deficiencies at the dam. This inspection, report, and evaluations were performed in accordance with MGL Chapter 253, Sections 44-50 of the Massachusetts General Laws.

PREFACE

The assessment of the condition of the dam is based upon available data, visual inspections, subsurface investigations, hydrologic and hydraulic studies, topographic surveys and stability analyses as well as supplemental information developed by others during previous evaluations of the dam.

The assessment of the condition of the dam is based upon available data, visual inspections, subsurface investigation, hydrologic and hydraulics studies, and topographic surveys as well as supplemental information developed during previous evaluations of the dam.

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 and other information collected as part of the evaluation.

It is critical to note that the condition of the dam is evolutionary in nature and depends on numerous and constantly changing internal and external conditions. 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.

Allen R. Orsi, P.E.
Massachusetts License No.: 46904
Vice President
Pare Corporation

TABLE OF CONTENTS

Page No.

PREFACE i
1.0 BACKGROUND / EXISTING CONDITIONS 1
1.1 Danielson Mill Dam ... 1
1.2 Inspections/Current Conditions: ... 2
2.0 EXISTING CONDITIONS REVIEW 4
2.1 Subsurface Exploration Program ... 4
2.2 Wetland Delineation ... 5
2.3 Survey ... 6
3.0 HYDROLOGIC & HYDRAULIC ANALYSIS 7
3.1 Background ... 7
3.2 Previous Analysis ... 7
3.3 Current Analysis ... 7
3.3.1 Rainfall ... 7
3.3.2 Hydrologic Methodology – General ... 8
3.3.3 Hydrologic Parameters – Danielson Mill Dam Watershed ... 8
3.3.4 Hydraulic Parameters – Existing Conditions ... 9
3.3.5 H&H Model Results – Existing Conditions ... 10
3.3.6 Calibration Check ... 12
3.3.7 Proposed Alternatives ... 12
3.3.8 H&H Model Results – Proposed Alternatives ... 12
4.0 SEEPAGE AND SLOPE STABILITY EVALUATIONS 15
4.1 Background ... 15
4.2 Previous Analysis ... 15
4.3 Current Analysis ... 15
4.3.1 Seepage and Slope Stability Analysis (Existing Conditions) ... 16
4.3.2 Seepage and Slope Stability (Conceptual Design) ... 16
5.0 PROPOSED ALTERNATIVES 18
5.1 Project Alternatives Formulation ... 18
5.2 Required Repairs ... 18
5.2.1 Spillway Structural Concerns ... 18
5.2.2 Vegetation Maintenance ... 18
5.2.3 Regrade Dam Crest ... 18
5.2.4 Surface Treatments ... 19
5.3 Remedial Measures & Alternatives ... 19
5.3.1 SDF Compliance ... 19
5.3.2 Upstream Slope Protection ... 21
5.3.3 Downstream Slope Stabilization ... 21
5.3.4 Dam Removal ... 22
5.4 Impractical Alternatives ... 22
5.5 Site Amenities ... 23
5.6 Recommended Approach ... 23
5.7 Property Acquisitions. ... 24
6.0 OPINIONS OF PROBABLE COSTS 25
7.0 PERMITTING 26

7.1 Wetlands Protection Act Order of Conditions 26
7.2 Army Corps of Engineers (ACOE) Approval 26
7.3 Water Quality Certification 27
7.4 Ch. 253 Permit Application 27
7.5 Historic Significance 27
7.6 Massachusetts Environmental Policy Act (MEPA) 28
7.7 Chapter 91 Waterways License 28
7.8 Summary of Potential Permitting Requirements 28

LIST OF TABLES

Table 1-1: Owner/Operator Information 1
Table 1-2: Dam Elevations 2
Table 1-3: Reservoir Properties 2
Table 2-1: Surface Exploration Program Summary 4
Table 2-2: Subsurface Profile Summary 5
Table 3-1: 24-hour Mean Precipitation Frequency Estimates 7
Table 3-2: Owner/Operator Information 8
Table 3-3: Danielson Mill Dam Drainage Areas - Hydrologic Parameters 9
Table 3-4: H&H Model Results – Existing Conditions (No Operations) 10
Table 3-5: H&H Model Results – EC (Full Operations and Drawdown Prior to Storm) 11
Table 3-6: Calibration Summary 12
Table 3-7: H&H Model Results Summary 13
Table 3-8: Increased WSEL in DS Area Under Alternative #3 14
Table 4-1: Soil Properties of Existing and Conceptual Embankment Materials 16
Table 4-2: Existing Condition Slope Stability Factory of Safety (FOS) 16
Table 4-3: Proposed Condition Slope Stability Factor of Safety (FOS) 17
Table 5-1: SDF Compliance Technique Screening 19
Table 5-2: Required Channel Base Width 21
Table 6-1: Conceptual Opinion of Probable Costs 25
Table 7-1: Potential Permitting Requirements 28

FIGURES

Figure 1: Locus Plan
Figure 2: Aerial Plan
Figure 3: Hydrology Map

PHOTOGRAPHS

APPENDICES

A: Conceptual Design Figures
B: Opinions of Probable Costs
C: Wetland Delineation Supporting Information
D: Hydrology and Hydraulics Analyses
E: Seepage and Slope Stability Analyses
F: Previous Reports and References
G: Report Limitations
H: Common Dam Safety Definitions

1.0 BACKGROUND / EXISTING CONDITIONS

1.1 Danielson Mill Dam

Location of the Project: Danielson Mill Dam is located within Norfolk County in the Town of Medfield, Massachusetts. The dam impounds water along the Great Brook. The dam and impoundment are shown on the Medfield, MA USGS quadrangle map near coordinates 42.17054°N / 71.29507°W. The reservoir area and the dam are accessible from High Street. The dam is located at the northwest end of the impoundment as indicated on Figure 1: Locus Plan.

Owner/Operator: The dam is currently owned by the Town of Medfield Conservation Commission. The Medfield Department of Public Works (DPW) primarily completes operations and maintenance at the dam.

Table 1-1: Owner/Operator Information

	Dam Owner	Dam Caretaker
Name	Town of Medfield Conservation Commission	Medfield Department of Public Works
Mailing Address	55 North Meadows Road	55 North Meadows Road
Town	Medfield, MA 02052	Medfield, MA 02052
Daytime Phone	508.906.3003	508.906.3003
Emergency Phone		
Email Address	mgoulet@medfield.net	mgoulet@medfield.net

Purpose of Dam: The dam currently impounds water for recreational purposes. The dam reportedly impounded water to operate a mill during the 18th and 19th centuries.

Description of the Dam: Danielson Mill Dam (National ID MA03351), as shown in Figure 3: Site Sketch, consists of a roughly 225-foot-long earthen embankment dam with a stop log controlled stone masonry spillway channel.

The upstream slope of the dam is boulder lined. Within 15 feet on either side of the spillway, the upstream slope consists of a granite block upstream wing walls. The crest of the embankment is approximately 7 to 20-feet wide and is grass covered. The downstream side of the dam consist of grass slopes from the left abutment to left of the spillway with field stone retaining wall for the remainder of its length.

The primary spillway is 3.8 feet wide and consists of stop log controlled bay atop a stepped weir. Flows from the primary spillway pass under a concrete deck over the spillway channel to the downstream channel. The training walls consist of stone masonry under the concrete slab and then transitions to a concrete training wall. Remnants of a former turbine are located 25 feet downstream of the stop logs near the end of the spillway channel.

Elevations: The following are pertinent elevations of the dam obtained from previous Phase I Reports, as well as the detailed survey completed by the Norfolk County Engineering Department. Elevations presented below reference the NAVD 88 datum.

Table 1-2: Dam Elevations

DAM	
Top of Dam	Average: 147 ± (146.8 – 147.7)
Normal Pool	El. 145.8 ±
Upstream Water during Inspection	El. 145.7
Pond Bottom	El. 140 ±
Downstream Channel	El. 139.5 ±
SPILLWAY	
Type	Controlled Concrete Broad Crested Weir
Width	4 feet
Top of Stoplogs	145.6
Stoplog Invert	142.6
Top of Granite Wall	146.4
DS Channel	Sloping 141 – 139.5

Size Classification: Danielson Mill Dam has a maximum structural height of approximately 7 feet and a top of dam storage capacity of 35 acre-feet. Therefore, in accordance with Department of Conservation and Recreation Office of Dam Safety classification, under Commonwealth of Massachusetts dam safety rules and regulations stated in 302 CMR 10.00, Danielson Mill Dam is a **Small** size structure.

Hazard Potential Classification: Danielson Mill Dam is located upstream of residences and businesses along Homestead Drive and High Street / MA-27. It appears that a failure of the dam at maximum pool may result in loss of life and damage to residential, industrial, and commercial facilities, as well as overtopping at MA-27 High Street. Therefore, in accordance with Department of Conservation and Recreation classification procedures, under Commonwealth of Massachusetts dam safety rules and regulations stated in 302 CMR 10.00, Danielson Mill Dam is classified as a **Class II (Significant)** hazard potential structure.

Reservoir: The following table provides a general overview of impoundment geometric properties.

Table 1-3: Reservoir Properties

	Elevation	Surface Area (acres)	Storage Volume (acre-feet)
Pond Bottom	140 ±	1±	0
Stop Log Invert	142.6	4±	6
Normal Pool	145.8	8±	22
Top of Dam	147.0	10±	35
TOD + 1’	148.0	12±	46
TOD + 2’	149.0	14±	60

1.2 Inspections/Current Conditions:

During recent and previous Phase I and Poor Condition Follow-Up Inspections, Danielson Mill Dam was found to be in **Poor** condition, with the following deficiencies:

1. Overgrown vegetation, including large leaning trees, along the upstream and downstream slopes, and along abutment slopes
2. Cracked mortar, slight stone separation, settling, and voids along the upstream masonry walls
3. Bare areas along the crest
4. Unprotected section of the upstream slope with scarping up to 12-inches deep
5. Areas of previously reported seepage along the downstream toe and downstream area

6. Failed sections of the right downstream masonry wall
7. Voids, up to 48-inches deep, within the downstream left stone wall
8. Significant deterioration of the stone training walls including voids, potential bulge, previously reported leakage, and subsidence of soils behind walls
9. Significant deterioration of the concrete training walls including potential movement, significant deterioration of the timber, and subsidence of soils behind walls
10. Insufficient capacity to pass the SDF
11. No O&M Manual

2.0 EXISTING CONDITIONS REVIEW

The following inspections and data collection tasks were performed at the dam in support of this project:

- A subsurface exploration program was completed on April 19, 2021 along the dam embankment.
- Wetland delineation within the vicinity of the dam was completed on April 12, 2021.
- Detailed survey of the within the vicinity of the dam was completed in Spring of 2021.

2.1 Subsurface Exploration Program

Surficial Geology: According to the Surficial geologic map of the Medfield quadrangle area in northeast Massachusetts, the site consists of Artificial Fill and Swamp Deposits. Artificial Fill are "earth materials and manmade materials that have been artificially emplaced, primarily in highway and railroad embankments and in dams.". Swamp Deposits are "organic muck and peat that contain minor amount of sand, silt, and clay, and are stratified poorly sorted, and occur in swamps, and freshwater marshes, in kettle depressions or in poorly drained areas. Swamp deposits overlie glacial deposits or bedrock."[1]

Bedrock Geology: According to geologic map of Massachusetts, the site is underlain by Dedham Granodiorite. Dedham Granodiorite consist of "light to dark gray, pinkish gray to pink, medium to very coarse-grained granite, granodiorite, quartz monzonite, and rarely tonalite, weathers to dark gray or grayish orange, typically with a "hobnail" surface texture derived from selective weathering of feldspars leaving quartz grains in relief; generally massive, rarely weakly foliated; contains abundant inclusion of diorite and metavolcanic rocks."[2]

Subsurface Program: A subsurface investigation was completed at the dam by Technical Drilling Services, Inc. of Sterling, Massachusetts and observed by Pare personnel on April 19, 2021. The purpose of this subsurface investigation was to explore, confirm, and characterize the subsurface soil and groundwater conditions and to determine engineering soil properties for use within seepage and slope stability models of the existing embankment.

A total of three (3) test borings (B21-1, B21-2, and B21-3) were completed at the dam with one groundwater observation well installed within B21-2. The boring locations are shown on Sheet 4.0: Existing Conditions Plan. Boring logs are included in Appendix E: Seepage and Slope Stability Analysis.

Table 2-1: Surface Exploration Program Summary

Boring ID	Location	Depth (feet)	Surface Elevation (feet)
B21-1	Dam Crest; Downstream side, 10 feet left of the spillway	20.6	147.0
B21-2 (OW)	Dam Crest; Downstream side, 20 feet right of the spillway	16.5	147.2
B21-3	Dam Crest; Downstream side, 50 feet right of the spillway	8	147.1

An observation well was installed in boring B21-2 at a depth of approximately 12.2 feet below the ground surface. The well consists of 10 feet of screen pipe and approximately 2 feet of riser pipe. Sand was placed around the pipe from 12.2 feet deep to 0.5 feet deep, follow by ½ foot of cement and a flush mounted road box.

[1] Surficial Materials Map of the Medfield Quadrangle, Massachusetts, Stone, B.D. and Stone, J.R, 2018.
[2] Bedrock Geologic Map of the Holliston and Medfield Quadrangles, Middlesex, Norfolk, and Worcester, Massachusetts.

Findings: The material at the site generally consisted of TOPSOIL overlying FILL overlying ORGANICS overlying GLACIAL DEPOSITS. The following describes the subsurface soil profile in each boring:

Table 2-2: Subsurface Profile Summary

Stratum	B21-1 (Thickness | Depth Range)		B21-2 (Thickness | Depth Range)		B21-3 (Thickness | Depth Range)	
Topsoil	4 in	0 – 0.3’	2 in	0 – 0.2’	2 in	0 – 0.2’
Embankment Fill	6.3 feet	0.3’ – 7.4’	7.8 feet	0.2’ – 8.0’	5.8 feet	0.2’ – 6.0’
Peat	7 in	7.4’ – 8.0’	Not Encountered		Not Encountered	
Glacial Deposit	*	8.0’ - EOE	*	8.0’ - EOE	*	6.0’ - EOE
Boulders	Not Encountered		1.7 feet	8.8’ – 10.5’	Not Encountered	

* Boring terminated within this stratum
EOE = End of Exploration

TOPSOIL was encountered in all boring. TOPSOIL is generally described as brown, fine to coarse SAND, little fine to coarse gravel, trace roots, trace silt.

EMBANKMENT FILL was encountered in all borings. EMBANKMENT FILL is generally described as brown to tan, fine to coarse SAND, “trace” to “some” amount of fine to coarse gravel, “little” to “and” amount of fine to coarse sand, “trace” silt, and “trace” organics (e.g. roots). SPT within this layer indicates a relative density ranging from loose to medium dense.

GLACIAL DEPOSITS was encountered in all boring. GLACIAL DEPOSITS is generally described as brown to gray, fine to coarse GRAVEL and fine to coarse SAND, “trace” to “and” amount of silt. SPT within this layer indicates a relative density ranging from medium dense to very dense.

2.2 Wetland Delineation

Wetland resource areas in the vicinity of the Danielson Mill Dam were defined and delineated in accordance with the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00, referred to as the WPA Regulations), the methodology specified in the publications entitled Delineating Bordering Vegetated Wetlands under the Massachusetts Wetlands Protection Act (Jackson, 1995) and The Regional Supplement to the Corps of Engineers Wetland Delineation Manual: North Central and Northeast Region (U.S. Army Corps of Engineers, 2012). Inspection and delineation of wetlands at the dam were completed on April 12, 2021.

Danielson Mill Pond is an impoundment located upstream of Homestead Drive in Medfield, Massachusetts. The Dam discharges to an unnamed tributary of Great Brook. According to the May 2021 available MassGIS data, no mapped rare species habitat, certified or potential vernal pools, Outstanding Resource Waters, or Areas of Critical Environmental Concern are located on or in the vicinity of the Dam. According to the FEMA Flood Insurance Rate Map (FIRM) for Norfolk County, Massachusetts (community-panel no. 25021C0166E, effective date July 17, 2012) the entire site is located outside of mapped floodplain.

Pink field flags were placed at appropriate intervals along the wetland/upland borders in the vicinity of the Dam as well as potential staging areas for the project. Primary parameters evaluated in wetland delineation included vegetation, indicators of wetland hydrology, and hydric soil indicators. Banks of Danielson Pond and the Dam’s outlet channel were delineated according to the first observable break in slope. Observed wetland hydrologic indicators and soils are described in the following sections and within the attached Data Forms. Wetland resource areas within the vicinity of the site include the following: **Bordering Vegetated Wetlands, Land Under Water Bodies/Waterways,** and **Bank.** Wetland resource areas are discussed in

the following sections.

A detailed description of the delineation and resource areas are included in Appendix C.

2.3 Survey

A detailed survey of the dam, the impoundment, and the surrounding areas was completed by the Norfolk County Engineering Department in Spring of 2021. Vertical datum reference NAVD 1988, derived from MADOT benchmark 7023, El. 156.83. Horizontal datum references NAD 1983, based upon NOAA's National Geodetic Survey (NGS) National Spatial Reference System (NSRS) OPUS session. This survey was used as the baseline for developing the conceptual design level figures of Appendix A.

3.0 HYDROLOGIC & HYDRAULIC ANALYSIS

3.1 Background

The Danielson Mill Dam is currently classified as a **Small** sized, **Significant (Class II)** hazard potential structure; as such, the spillway design flood (SDF) for the site is the 100-year storm event.

3.2 Previous Analysis

As part of the Hazard Potential Classification Review completed in February of 2020, preliminary hydrologic and hydraulic models were developed to review the consequences of failure to the downstream area; models developed as part of that study were utilized to support the development of the December 2020 Emergency Action Plan.

No other H&H analyses are known to exist for the dam or surrounding area.

On December 2, 2020 after heavy rainfall the preceding night, the upstream training walls at the spillway overtopped, resulting in erosion of embankment soils behind the upstream half of the walls; overtopping of the dam embankment crest did not occur. The overtopping event indicates that the dam (with stop logs in place and no operations) has limited capacity and is prone to overtopping during large storm events.

No other information relating to performance of the dam during previous rainstorm events was available during the preparation of this report.

3.3 Current Analysis

As part of the current evaluation, GIS processing, LiDAR mapping, site specific data collection, and previous reports were utilized to perform an updated, detailed H&H analysis for the dam. All elevations reported within this analysis are in NAVD88.

3.3.1 Rainfall

Rainfall: The rainfall depth values and distribution curves for recurrent storm events (1-year through 1,000-year) were obtained from the NOAA Atlas 14 and were imported directly into HydroCAD Version 10.1-5a software. The table below presents the total rainfall depth value for each recurrent storm event.

Table 3-1: 24-hour Mean Precipitation Frequency Estimates

Return Interval	NOAA Atlas 14 (in.)
1-year	2.7
2-year	3.4
5-year	4.5
10-year	5.3
25-year	6.5
50-year	7.4
100-year (SDF)	8.3
200-year	9.5
500-year	11.3
1,000-year	12.8

Note that this rainfall data, although it is believed to be the best available and is consistent with industry standards, does not explicitly take into account any potential future effects of climate change.

3.3.2 Hydrologic Methodology – General

A rainfall-runoff model was developed in HydroCAD (Version 10.10-5a) using TR-55 Curve Number (CN) methodologies, the Soil Conservation Service (SCS) TR-20 runoff method, and the Natural Resources Conservation Service (NRCS) Unit Hydrograph (UH) and time of concentration methodologies.

The NRCS UH method utilizes a best-approximate hydrograph based on the gamma equation (peak rate factor) that is scaled by the time lag to produce the unit hydrograph for the simulation. The lag is defined as the length of time between the centroid precipitation mass and the peak flow of the resulting hydrograph. The lag is a function of the time of concentration Tc, which was calculated for each watershed utilizing the segmental method (i.e. sheet flow, shallow concentrated flow, channel flow, etc.)

The CN represents the portion of the precipitation depth that will lead to runoff, and is a function of soil type (Hydrologic Soil Groups A through D) and land/ground cover (i.e. impervious surfaces (pavement, water, etc.; forests; grass) within the drainage area. An area with a high CN value (e.g., 98 for pavement/water surface, 90 for developed areas in Soil Group D, etc., 80 for forested wetlands in soil groups B) will have low water retention and a high runoff value while a low CN (e.g., 30 for a wooded area with permeable soils) indicates high infiltration and low runoff volume. The composite curve number (CN) used in the model of each watershed is an average CN value weighted by the percent area of each contributing land cover and soil type in the watershed. To develop the CN, ArcGIS software was used to join GIS based NRCS Soil Survey data layers and MassGIS based Land Cover data layers into a single data layer with discrete areas of unique soil groups and land cover data. A CN Look-Up table specific for Massachusetts and references NRCS TR 55 CN values was used to assign a CN value for each unique soil group and land cover area. The composite CN utilized for each a single watershed or sub-watersheds is an area-weighted average of the CN values contained within the limits of the drainage area. The table to the right presents a tabulated explanation of the CN and its meaning:

Table 3-2: Owner/Operator Information

Curve Number (CN) - Tabulated Explanation				
COLOR RAMP	CN Value	Perviousness General Category	Percent of Rainfall Absorbed (Range)	Land Cover (LSG) Type and Subsoil Hydrologic Soil Group (A,B,C,D)
	30-40	Extremely Pervious	75% - 65%	GOOD LC in A Soils;
	40-50	Very Pervious	65% - 55%	FAIR LC in A Soils; GOOD LC in B Soils
	50-60	Pervious	55% - 45%	FAIR-POOR LC in A Soils; 'GOOD-FAIR LC in B Soils
	60-70	Moderately Pervious	45% - 35%	GOOD-FAIR LC in B Soils; GOOD LC in C Soils
	70-80	Less Pervious	35% - 25%	Poor LC in A Soils; 'GOOD LC in C-D Soils
	80-90	Semi-Impervious	25% - 15%	FAIR-POOR LC in C-D Soils; 'GOOD LC in D Soils
	98	Impervious	8%	IMPERVIOUS LC in All Soils
	NOTES:			
	1. ***CN Definition*** : The runoff curve number (RCN), also refereed to as the curve number (CN) is an empirical parameter used in hydrology for predicting direct runoff or infiltration from rainfall excess.			
	2. Table developed utilizing NRCS TR55 Tables 2-2a through 2-2d			
	3. Land Cover Types (LC)			
	GOOD	Forests, Brush, Pasture, Grassed Areas (Golf Course, Lawn); All with good vegetation coverage (>75% ground cover)		
	FAIR	All of GOOD only with Fair (50-75%) or Poor (<50%) Coverage, Residential Districts with lot sizes larger than 1/2 acre, Cultivated Agricultural Fields,		
	POOR	Urban districts, Gravel and Dirt Roads		
	IMPERVIOU	Paved Areas (Roads, Parking Lots, Driveways), Roofs, Surface Water (Ponds, Rivers)		
	4. Hydrologic Soil Groups (HSG's):			
	A	Soils with low runoff potential and high infiltration rates (deep well to excessively drained sands or gravels)		
	B	Soils with moderate infiltration rate (moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures)		
	C	Soils with low infiltration rates (soils with a layer that impedes downward movement of water and soils with moderately fine to fine structure)		
	D	Soils with very low infiltration rates (clay soils with a high swelling potential, soils with a permanent high water table (wetlands), soils with a claypan or clay layer at or near the surface and shallow soils over nearly impervious material)		

3.3.3 Hydrologic Parameters – Danielson Mill Dam Watershed

To complete the hydrologic analysis, the drainage area for the watershed was delineated utilizing USGS StreamStats with manual adjustments made to the drainage area perimeter utilizing LiDAR data and site reconnaissance.

As shown within Figure 3: Hydrology Map, the upstream contributing drainage area to the Danielson impoundment was separated into two subbasins as identified within the table below.

Table 3-3: Danielson Mill Dam Drainage Areas - Hydrologic Parameters

DA ID	Description	Size		% Imper vious	CN	Tc (hrs)	Peak Runoff (cfs)	
		acres	mi^2				10-yr	100-yr
DA 1	Northeast portion of DA leading to the "Upstream Dam"	148	0.23	0.1	47	2.1	15	65
DA 2	Southwest portion of the DA feeding Danielson Mill Pond directly	158	0.25	12.6	57	2.6	51	120
Totals at Danielson Mill Dam		***306***	***0.48***	**-**	**-**	**-**	***61****	***152****

* Note, the total inflow into Danielson Mill Pond were determined from the H&H model and are not additive from DA1 and DA2 due to both timing differences as well as attenuation provided by the Upstream Dam.

3.3.4 Hydraulic Parameters – Existing Conditions

The hydraulic structures that were included within the model included the following from Upstream to Downstream:

1. Upstream Dam (Contributing DA: DA 1): Earthen embankment located in the rear of 11 Wild Holly Lane with a 3-foot wide by 5-foot high stop log bay (currently with all stop logs removed).
    a. Storage Characteristics
        i. Pond Bottom El. 147 0 acre-feet
        ii. Normal Pool El. 149 0.7 acre-feet
        iii. Min Top of Dam El. 153 14 acre-feet
        iv. Max Top of Dam El. 155 35 acre-feet
    b. Hydraulic Structures
        i. Control Elevation El. 148.9 (Relative Survey correlated to LiDAR)
        ii. Top of Dam El. 153 - 155 (Relative Survey correlated to LiDAR)

2. Danielson Mill Dam (Contributing DA: DA 2): Earthen dam embankment with a 3.8-foot wide weir with stop log control.
    a. Storage Characteristics
        i. Pond Bottom El. 137 0 acre-feet
        ii. Normal Pool El. 145.8 22 acre-feet
        iii. Top of Dam El. 147 35 acre-feet
    b. Hydraulic Structures
        i. Control Elevation El. 145.6 (Survey)
        ii. Top of Dam El. 147.0 (Survey)

    Based upon observed conditions at the site and a review of LiDAR terrain data, tailwater at the Danielson Mill Dam appears possible due to several downstream hydraulic restrictions including Homestead Drive, a log dam 100 feet downstream of Homestead Drive, and a trail embankment located 400 feet downstream of Homestead Drive. As such, these structures, as well as High Street, were included in the H&H model to account for this potential tailwater effect.

3. Homestead Drive: Roadway downstream of dam with 4-foot RCP.
    a. Storage Characteristics

i. Pond Bottom El. 136 0 acre-feet
ii. Top of Road El. 151.3 6.5 acre-feet

b. Hydraulic Structures
i. Culvert Invert In El. 136.95 (Survey)
ii. Culvert Invert Out El. 136.8 (Survey)
iii. Top of Road El. 151.3 (Survey)

4. Log Dam: A 1-foot high by 12-foot long timber log weir that spans the stream and sets a tailwater for the Homestead Drive culvert located 100 feet downstream of Homestead Drive
   a. Storage Characteristics
      i. Pond Bottom El. 136.5 0 acre-feet
      ii. Top of Log Dam El. 138.1 0.01 acre-feet
      iii. Right Overbank El. 141 0.2 acre-feet
   b. Hydraulic Structures
      i. Top of Log Dam El. 138.1 (Relative Survey correlated to LiDAR)

5. Trail Embankment: A former trail embankment located 500 feet downstream of Homestead Drive with a 3.5-fot wide by 1.5-foot high stone culvert.
   a. Storage Characteristics
      i. Pond Bottom El. 136 0 acre-feet
      ii. Top of Road Low El. 138.9 1.0 acre-feet
      iii. Top of Road Average El. 139.5 1.4 acre-feet
   b. Hydraulic Structures
      i. Culvert Invert El. 136.9 (Relative Survey correlated to LiDAR)
      ii. Top of Road El. 138.9 (LiDAR)

6. High Street: A roadway embankment with 4-foot diameter RCP.
   a. Storage Characteristics
      i. Pond Bottom El. 126.8 0 acre-feet
      ii. Top of Road El. 133.1 7 acre-feet
   b. Hydraulic Structures
      i. Culvert Invert El. 126.8 (Relative Survey correlated to LiDAR)
      ii. Top of Road El. 133.1 (LiDAR)

3.3.5 H&H Model Results – Existing Conditions

The following table provides the results for the existing dam with no operations of the stop logs.

Table 3-4: H&H Model Results – Existing Conditions (No Operations)

Storm Event	Inflow (CFS)	Outflow (CFS)				
		Total	Spillway	Dam Overtopping	WSEL(FT)	Freeboard (FT)
1-year	13	5	5	-	146.1	0.9
2-year	20	8	8	-	146.4	0.6
5-year	38	17	17	-	146.7	0.3
10-year	61	30	30	<1	147.03	-0.03*
25-year	93	67	41	26	147.3	-0.3*
50-year	121	102	46	56	147.4	-0.4*
100-year	**152**	**140**	**50**	**90**	**147.45**	**-0.45***
500-year	255	238	45	193	147.8	-0.8*
*Negative freeboard indicates overtopping of the dam crest						

Based upon the model results presented within the table above:

- The dam crest is anticipated to experience overtopping during storm events equal to and greater than the 10-year storm.
- Under the SDF event (100-year) the dam crest will experience up to 0.5 feet of overtopping.
- The dam provides attenuation of peak flows during all storm events (evident from the peak outflow from the dam being less than the peak inflow into the impoundment).
- The crossings downstream of the dam (Homestead Drive, Log Dam, Trail Embankment) and the tailwater condition that they create does not impact the capacity of the spillway during storm events up to but not including the 500-year storm event.
    - During the 500-yeart storm event, the tailwater that develops at Homestead Drive (El. 147.6) is above both the stop log elevation (El. 145.6) and the top of dam (El. 147). As such, the restriction caused by the culvert impacts and controls the hydraulic capacity of the dam.
    - With full operations of the stop logs, the tailwater conditions that develops at Homestead Drive starts to impact the flow through the spillway during the 200-year storm event.

Following the overtopping event that occurred in December 2020, the Town has proactively been monitoring forecasts and operating (removing one or two stop logs) the stop logs at the spillway in advance of forecast storm events. With operations, pre-storm operations in particular, the dam can accommodate larger storm events. The following table provides the results of the existing dam with full operations of the stop logs and drawdown of the impoundment prior to the storm.

Table 3-5: H&H Model Results – EC (Full Operations and Drawdown Prior to Storm)

Storm Events	Inflow (CFS)	Outflow (CFS)				
		Total	Spillway	Dam Overtopping	WSEL (FT)	Freeboard (FT)
1-year	13	7	7	-	143.6	3.4
2-year	20	11	11	-	143.9	3.1
5-year	38	23	23	-	144.3	2.7
10-year	61	37	37	-	144.7	2.3
25-year	93	60	60	-	145.3	1.7
50-year	121	78	78	-	145.7	1.3
100-year	**152**	**99**	**99**	**-**	**146.1**	**0.9**
500-year	255	177	152	14	147.6	-0.6*
*Negative freeboard indicates overtopping of the dam crest						

Based upon the model results presented within the table above, with full operations of the stop logs and drawdown of the impoundment prior to the storm:

- The dam crest is anticipated to experience overtopping during storm events equal to and greater than the 500-year storm.
- Under the SDF event (100-year) there is 0.9 feet of freeboard remaining at the dam.
- With full operations, the dam provides greater attenuation of peak flows during all storm events (evident from the peak outflow from the dam being less than the peak inflow into the impoundment).

3.3.6 Calibration Check

No FEMA analyses, detailed H&H analyses, or stream gauge data in the vicinity of the dam was available to use for calibration. As such, the hydrology calibration check was completed utilizing statewide peak flow regression equations[1] that are readily available through the USGS Stream Stats program. The tabulated summary below presents the results of the hydrologic model (peak inflow and outflow into/from the Danielson Mill Dam impoundment) compared with the range of peak flows predicted for a drainage area of this size (and other characteristics) utilizing statewide regression equations.

Table 3-6: Calibration Summary

	10– year (CFS)	50– year (CFS)	100 – year (CFS)	500 – year (CFS)
Model Peak Inflow	61	121	152	255
Model Peak Outflow	30	102	140	238
Regression Range	24-104	38-185	44-228	58-352

Based on a comparison between the model results and the predicted range of peak flows estimated through statewide regression equations, the model is within the predicted range of peak flows for all of the storm events evaluated.

3.3.7 Proposed Alternatives

As discussed in Section 5 of this report, three alternatives were developed to modify the dam to address the dam safety concerns at the dam, including SDF compliance. Design constraints considered in developing the conceptual design approach include maintaining similar peak discharges during storm events, limiting the horizontal extent of the required rehabilitation program, longevity of the modifications and the dam, and limiting the overall cost of the modifications.

Alternative 1 – Natural Channel: This alternative includes the replacement of the existing spillway with a new outlet structure, construction of a rectangular shaped spillway channel at the left abutment, and establishing a dam crest at El. 148.0 (1 foot above existing).

Alternative 2 – Spillway Rehabilitation: This alternative includes replacement of the existing spillway with a U-shaped spillway control section that provides adequate non-operational discharge capacity and has low level outlet capability and establishing a dam crest at El. 148.0 (1 foot above existing).

Alternative 3 – Dam Removal: This alternative includes the removal of the full vertical extent of the dam in the area of the spillway and the establishment of a trapezoidal shaped channel in its place with a 15-foot bottom width and 2H:1V side slopes up to the top of portions of the embankment to remain.

3.3.8 H&H Model Results – Proposed Alternatives

The following table presents the model results at the dam under a variety of storm events for both existing conditions as well as all three proposed alternatives.

[1] Zarriello, P.J., 2017, Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p., https://doi.org/10.3133 /sir20165156

Table 3-7: H&H Model Results Summary

	Existing Conditions	Alternative 1*	Alternative 2*	Alternative 3
Top of Dam (FT)	147.0	148.0	148.0	147.0
10-year event				
Peak Routed Elevation (FT)	147.03	146.6	146.7	142.2
Freeboard (FT)	-0.03	1.4	1.3	4.8
Peak Inflow (CFS)	61			
Peak Outflow (CFS)	30 / 37**	40	40	55
25-year event				
Peak Routed Elevation (FT)	147.3	146.9	147.0	142.6
Freeboard (FT)	-0.3	1.1	1.0	4.4
Peak Inflow (CFS)	93			
Peak Outflow (CFS)	67	67	64	85
50-year event				
Peak Routed Elevation (FT)	147.4	147.1	147.3	143.0
Freeboard (FT)	-0.4	0.9	0.7	4.0
Peak Inflow (CFS)	121			
Peak Outflow (CFS)	102	91	85	103
100-year event				
Peak Routed Elevation (FT)	147.45	147.28	147.56	143.5
Freeboard (FT)	-0.45	0.72	0.44	3.5
Peak Inflow (CFS)	152			
Peak Outflow (CFS)	140	119	110	124
500-year event				
Peak Routed Elevation (FT)	147.8	148.0	148.2	145.4
Freeboard (FT)	-0.8	0.0	-0.2	1.6
Peak Inflow (CFS)	255			
Peak Outflow (CFS)	238	191	215	174
*Alternative #1 and #2 both have optional operation capability to provide additional capacity and complete pre-storm drawdowns; however, such operation is not necessarily required. The results presented within this table assume no operations.				
**Peak outflow with full operations is 37 CFS.				
Text in BLUE identify values (peak flow or pool elevations) that are higher than existing conditions.				

The following provides some general conclusions based upon the model results.

Alternative 1 – Natural Channel:

- This alternative allows the dam to accommodate up to and including the 500-year storm event without experiencing overtopping of the dam crest.
- Aside from some minor increases during the 5- and 10-year storm events, the alternative generally results in the same or lower peak flows being released from the dam and to the downstream area and as such, the alternative will not result in increased flooding downstream.
- The alternative will result in lower peak pool elevations within the impoundment during all storm events up to the 200-year storm event. However, the alternative will result in slightly higher peak pool elevations during storm events greater than the 200-year storm event.
  - 200-year will be 0.1 feet higher
  - 500-year will be 0.2 feet higher

Alternative 2 – Spillway Rehabilitation:

- This alternative allows the dam to accommodate up to but not including the 500-year storm event without experiencing overtopping of the dam crest.
- Aside from some minor increases during the 5- and 10-year storm events, the alternative generally results in the same or lower peak flows being released from the dam and to the downstream area and as such, the alternative will not result in increased flooding downstream.
- The alternative will result in generally the same or lower peak pool levels within the impoundment for storm events up to the 100-year storm event. However, the alternative will result in slightly higher peak pool elevations during storm events greater than the 100-year storm event.
  - 100-year will be 0.2 feet higher
  - 200-year will be 0.3 feet higher
  - 500-year will be 0.4 feet higher

Alternative 3 – Dam Removal:

- This dam removal alternative will result in marginal increases in peak outflow for storm events up to and including the 25-year storm event. The peak outflow from the dam removal is generally the same during the 50-year and slightly less during storm events greater than the 50-year.
  - These higher peak flows during the lower storm events will result in increases in water surface elevations in the downstream area. The following table presents the predicted rises at the two road crossings downstream of the dam (Homestead Drive and High Street) based upon the model results:

Table 3-8: Increased WSEL in DS Area Under Alternative #3

Storm Event	Homestead Drive	High Street
	Increase in WSEL (FT)	
1-year	0.2	0.1
2-year	0.4	0.2
5-year	0.7	0.5
10-year	0.6	0.6
25-year	0.3	0.4
50-year	-0.01	0.1
100-year	-0.6	-0.2

  - Increases of this amount will likely not have a significant impact on the roadway embankments as both still have sufficient freeboard and the roadways do not overtop.
  - Additionally, increases of this amount will likely have little to no affect at any of the residential structures located downstream of the dam. All structures appear to be situated in upland areas out of the floodplain and therefore will not see an impact with these WSEL increases.
- The removal geometry appears to be adequately sized to not “impound water” during storm events; as such, the geometry would meet the requirements for full removal under the Wetlands Protection Act pursuant to a Ecological Restoration project as well as Office of Dam Safety Requirement.

4.0 SEEPAGE AND SLOPE STABILITY EVALUATIONS

4.1 Background

The crest of the dam is variable in elevation and width. The upstream side of the dam is boulder lined slope with a granite block wall within 15 feet of the spillway. The downstream side of the dam consists of an earthen slope with irregular boulder walls. The downstream stone walls have failed in areas, multiple large leaning trees and voids were probed up to 48-inches deep. The downstream toe is a saturated wetland; however, it is not apparent whether or not this wetland is the result of seepage through the dam or natural topography and soils that support a wetland on its own.

4.2 Previous Analysis

No previous seepage and slope stability analyses were available for the Danielson Mill Dam during the review and preparation of this design report.

4.3 Current Analysis

Liquefaction: The liquefaction review completed during the seepage and slope stability analysis considers the soil and groundwater conditions encountered during the subsurface exploration indicated that the in-situ soils do not appear to be susceptible to liquefaction at this time.

Seepage and slope stability analysis were completed for the embankment of the Danielson Mill Dam as part of this project. Site data collection completed as part of this report was used to develop the cross section of the dam embankment that was used for the analyses.

A detailed description of the methodology and results of the calculations performed to evaluate existing conditions as well as proposed alternatives are included within the seepage and slope stability calculation package included within the Appendices E of this report. The following presents a summary of the methodology, results, and recommendations.

Data collected as part of the subsurface exploration program and survey were utilized to develop a worst-case cross section for the dam embankment. GeoStudio Seep/W and Slope/W software was utilized to develop finite element models to assess the seepage and slope stability of the embankment.

The embankment section was taken at approximately 50 feet right of the spillway. Embankment geometry was modeled using the surface develop from the topographic survey performed by the Norfolk County Engineering Department and available LiDAR data.

The dam embankment was analyzed for three loading conditions (Case I: Steady State, Case II: Rapid Drawdown, and Case III: Seismic) as specified within the Commonwealth of Massachusetts dam safety rules and regulations stated in 302 CMR 10.00.

Geotechnical engineering properties for the soil layers were developed in support of the seepage and stability analysis and to assess liquefaction potential of the soil layers. The following table summarizes the soil properties developed based on the subsurface investigation:

Table 4-1: Soil Properties of Existing and Conceptual Embankment Materials

Soil Layer	(N_{ave}) (Blows/ft)	D_r (%)	Angle of Internal Friction (º)	Saturated Unit Weight (pcf)	Saturated Water Content	Saturated Hydraulic Conductivity (ft/sec)	Residual Water Content
Embankment Fill	12	33	31	127	0.25	1.6E-5	0.05
Organics	14	36	28	120	0.31	8.2E-7	0.04
Native Material	52	95	40	136	0.16	1.6E-4	0.02
Riprap	N/A	N/A	43	150	0.15	8.2E-4	0.01
Downstream Wall	N/A	N/A	40	145	0.1	3.0E-2	0.01
Sand Gravel Fill	N/A	N/A	31	126	0.22	1.0E-3	0.02

4.3.1 Seepage and Slope Stability Analysis (Existing Conditions)

The following elevations were utilized in the model:

- Top of dam: Ranging between El. 146.9 ft to El. 147.5 ft (from upstream to downstream)
- Normal pool: El. 145.8 ft
- Maximum pool: El. 146.4 ft

The following table presents the results of the models for the existing dam:

Table 4-2: Existing Condition Slope Stability Factory of Safety (FOS)

Design Case	Pool Level	Required FOS	Upstream Slope FOS	Downstream Slope FOS
Steady State	Normal Pool	1.5	1.6	**0.9**
	Maximum Pool	1.4	Not Applicable	**0.9**
Rapid Drawdown	Normal Pool	1.2	1.5	Not Applicable
	Maximum Pool	1.1	1.5	Not Applicable
Seismic	Normal Pool	>1.0	1.0	**0.8**

Bold values indicate calculated factors of safety lower than the recommended minimum factors of safety.

Based on these results, the upstream slope meets the minimum required factor of safety during normal pool, maximum pool, and earthquake condition. The downstream slope of the dam embankment did not meet the minimum required factors of safety during normal pool, maximum pool, and earthquake conditions. Improvements are necessary to meet the minimum required factor of safety and prevent the dam from failure.

The results of the seepage analysis did not indicate any seepage related concerns.

4.3.2 Seepage and Slope Stability (Conceptual Design)

To evaluate feasible approaches for dam rehabilitation, a seepage and slope stability model was develop to review effectiveness of a repair program at addressing deficient factors of safety. The following elevations were utilized in the conceptual model:

- Top of Dam: El. 148
- Dam Crest Width: 10 feet
- Upstream Slope: 2.5H:1V
- Downstream Slope: 2.5H:1V
- 1.5 feet of riprap on US slope
- Toe drain at El. 141.0
- Normal pool: El. 145.8
- Maximum pool: El.147.5

Raising of the dam crest and flattening of the downstream slope to 2.5H:1V was assumed to be

completed utilizing imported “Engineered Fill” and “Gravel Borrow.

The following table presents the results of the conceptual conditions for the dam:

Table 4-3: Proposed Condition Slope Stability Factor of Safety (FOS)

Design Case	Pool Level	Required FOS	Upstream Slope FOS	Downstream Slope FOS
Steady State	Normal Pool	1.5	1.8	1.7
	Maximum Pool	1.4	Not Applicable	1.6
Rapid Drawdown	Normal Pool	1.2	1.8	Not Applicable
	Maximum Pool	1.1	1.9	Not Applicable
Seismic	Normal Pool	>1.0	1.1	1.2

Based on these results, the proposed embankment improvements would result in all factors of safety for slope stability being met or exceeded.

The results of the seepage analysis did not indicate any seepage related concerns.

5.0 PROPOSED ALTERNATIVES

5.1 Project Alternatives Formulation

For the purpose of this evaluation, potential alternatives for addressing deficiencies were identified and screened for feasibility and completeness. Based upon findings of the completed evaluations, the primary components of the repair program for the dam include:

1. Structural concerns at the spillway as well as seepage and stability concerns of the embankment adjacent to and abutting the spillway components
2. Spillway Design Flood (SDF) compliance
3. Downstream slope stability
4. Maintenance deficiencies and minor repairs including unwanted vegetation, erosion, and irregular surface

5.2 Required Repairs

The following sections present repairs that are recommended to be completed at the dam and the general scope of work to complete those repairs. While variations in design of these repairs may be feasible, no alternatives were identified which significantly impact the scope of these repairs. It should also be noted that the total scope of these repairs may be altered dependent upon the remedial measures and alternative selection. Additionally, should the recommended remedial measures be implemented, cost savings can be realized due to overall project savings in overlapping components of the work, required cofferdams/control of water, temporary controls, environmental requirements, and other project components

5.2.1 Spillway Structural Concerns

Extensive work is required at the spillway to address previous leakage, structural deterioration, and apparent stability concerns (wall displacement). While a repair program could be implemented to prolong the life of the spillway, the repairs would be considered temporary in nature, and a more extensive stabilization project recommended. Given the SDF non-compliance of the existing spillway, reconstruction of the spillway is warranted. As such, specific repairs to the spillway have not been considered as part of this study.

5.2.2 Vegetation Maintenance

Clearing and grubbing of trees and other unwanted vegetation along the length of the dam. Fill resulting holes with suitable materials compacted in lifts. Clearing would extend a minimum of 20 feet beyond the limits of the embankment downstream of the dam as well as into each abutment.

As part of this work, the large diameter white pine trees along the downstream shoulder of the crest will need to be removed. Given the size of the trees, significant disturbance to the embankment is expected in order to adequately remove the stumps and root systems.

5.2.3 Regrade Dam Crest

Regrade the dam crest to a uniform elevation and section. An even crest allows for uniform overtopping of the embankment, which would reduce the potential for erosion in the event that an overtopping event occurs. The elevation of the crest would be determined based upon the SDF Compliance

approach selected.

5.2.4 Surface Treatments

Upon completion of repair and/or rehabilitation, exposed earthen surfaces at the dam should be treated to prevent surface erosion and provide for maintenance and inspection activities. Typically, a healthy stand of grass meets these purposes; however, in areas of concentrated runoff or expected pedestrian use, a more durable surface such as dense grade walking paths or riprap erosion protection may be preferred.

5.3 Remedial Measures & Alternatives

The following remedial measures and associated alternatives are presented based upon a conceptual review of approaches for addressing the observed concerns. Additional studies and or considerations may indicate that some or all of the options presented below are not suitable for the conditions specific to this dam and dam site. Drawdown of the impoundment or installation of temporary cofferdams will likely be necessary during each of the repairs presented below to provide sufficient access to safely complete the work.

5.3.1 SDF Compliance

For the purposes of the alternative analysis, Pare assumed that the desired level of compliance with the SDF would include meeting SDF requirements without the requirement for operation.

A variety of techniques and approaches are available to increase the discharge capacity of an existing dam to meet spillway design flood requirements. These generally include, but are not limited to, increasing the depth of flow through an existing spillway (by either lowering the spillway crest or raising the top of dam), increasing the length of the spillway (by either widening an existing spillway or adding and auxiliary spillway), or provide overtopping protection. Efficient, effective, and complete rehabilitation projects generally include a combination of the available approaches; however, to support the development of remedial measures, preliminary assessments were completed to determine the magnitude of single technique approaches, as presented in Table 5-1 below.

Table 5-1: SDF Compliance Technique Screening

Technique	Magnitude	Screening Notes	Carried Forward
Increase Depth of Flow	2-foot dam raise needed	Assume crest raise only (lowering normal pool not preferred)	Yes - Not a viable alternative on its own solution; combine with other approaches
Increase Spillway Width	50-foot wide spillway required	Assume spillway widening only (dam crest elevation remains as is)	Yes - Not a viable alternative on its own solution; combine with other approaches
Overtopping Protection	Entire Dam	Assume crest elevation stays generally the same as existing	No – Costs higher than other alternatives given need to address spillway structural concern

5.3.1.1 Spillway Replacement

The scope of a spillway replacement project would generally include demolition and removal of the existing spillway control section and associated walls. The control section would be replaced with a cast-in-place concrete control structure. The control structure would include a bay of stoplogs to provide for implementation of seasonal drawdowns as well as to provide additional discharge capacity when required. The control section would also be equipped with a 6-inch

diameter mud drain at the bottom of the spillway to provide means by which to drain the impoundment.

Discharges through the control structure would be passed through a 6-foot diameter RCP pipe within a concrete cradle to allow for backfilling the crest without the need for a bridge or other crossing over the spillway as well as reduce the requirements for downstream walls.

Two options were considered for this alternative:

a) Operations Required

For an "operations required" system (i.e., removal of stoplogs would be required in advance of the storm to accommodate the spillway design flood), the new spillway control section would be very similar to the existing control section and would consist of a concrete wall with a 3.8-foot wide stop log bay; the invert of the stoplog would be lowered roughly 1 foot to El. 142.1 to meet capacity requirements. As part of this work, the crest of the dam would be established at a uniform elevation of El. 147.0, similar to the crest elevation of the existing dam.

While feasible, the Town has indicated a preference to limit the operational requirements at the dam; as such, this option was not considered further.

b) No Operations Required *(Alternative #2)*

To meet discharge requirements without the need for operations, the spillway control section would include a rectangular drop inlet structure extending into the impoundment upstream of the dam crest. The structure would measure 11 feet (left to right) by 7 feet (upstream to downstream) and would consist of the same 3.8-foot wide stop log bay in the upstream wall. The remaining portion of the upstream wall as well as the left and right side walls would be set as a high stage overflow weir at El. 145.9 (0.3 feet above top of stop logs).

5.3.1.2 Nature-Like Channel *(Alternative #1)*

In lieu of a traditional structure spillway, primary discharges from the impoundment could be passed through a trapezoidal channel designed to remain stable during peak spillway design flows while also supporting passage of fish and other wildlife. A grade control weir could be provided at the upstream end to ensure maintenance of the intended normal pool elevation. Based upon site topography and resource areas, the location of the channel would likely be between the existing spillway and the left abutment.

To facilitate mid and low level outlet capability as well as additional high stage capability, a structure capable of all three could be installed in the current location of the spillway. The structure could take the form of a concrete intake structure leading to an outlet pipe.

The geometry of the channel would be dependent upon the selected design freeboard as well as the final top of dam elevation. The following table provides a general summary of required channel widths based upon freeboard and top of dam elevations assuming vertical side slopes (stone training walls) and no operations required:

Table 5-2: Required Channel Base Width

		Freeboard Provided During SDF (100-year)		
		0' Freeboard	**0.5' Freeboard**	**1' Freeboard**
Top of Dam Elevation	**El. 147**	30'	60'	Impractical
	El. 147.5	15'	30'	60'
	El. 148	5'	**15'**	30'

Given the intent to provide a functional outlet system capable of mid and low level outlet operations, significant freeboard is not required; however, some freeboard is recommended to account for inherent uncertainties in the H&H analyses as well as the resiliency of the dam. As such, a 15-foot wide base width channel with top of dam EL. 148.0 was selected for consideration, which would provide 0.5 feet of freeboard for a non-operational condition.

There are a number of benefits to this type of nature-like channel over the stop log controlled spillway of the existing dam and Alternative #2. Specific benefits include that such a spillway is less debris prone, with the addition of some riprap pool and riffles along the discharge channel it will be a much better benefit to the ecosystem, and that arguably the aesthetics of a natural channel are better than the stop log controlled spillway.

5.3.1.3 Overtopping Protection

As the dam consists of an earthen embankment section, it is susceptible to erosion during overtopping or waves breaking over the top of the dam. Therefore, the embankment could be protected against forces associated with overtopping to enable the embankment to act as a weir. This could be accomplished through installation of articulated concrete blocks beneath a sacrificial layer of topsoil and seed along the dam embankment. The area downstream of the dam and downstream channel slope where flow would reenter the stream channel would also need to be protected against flows over the protected embankment.

While technically feasible, given the length of the dam and the availability of other cost-effective approaches, overtopping protection was not considered further.

5.3.2 Upstream Slope Protection

Remove accumulated sediment and debris along the upstream slope and install riprap slope protection inclusive of geotextile fabric, bedding stone, and armor stone. While an upstream wall could be considered as an alternative to traditional dumped riprap, riprap is generally the most cost-effective approach. The current upstream wing walls of the spillway would be removed as part of this work.

5.3.3 Downstream Slope Stabilization

Given the factors of safety not meeting those required by current state dam safety regulations, modifications to the downstream side of the dam are required. Typically, an earthen slope on the order of 2.5H to 3H:1V provide a cost-effective approach that meets stability requirements. While a downstream wall could be considered as an alternative to the earthen slope, the earthen slope in this case appears to the most cost-effective approach.

While seepage analysis completed for the dam indicated adequate seepage performance for the embankment, dam safety practice recommends that an embankment drainage system be provided within an

earthen embankment. As such, it is recommended that downstream slope stabilization measures include a toe drain along the toe of earthen slopes and/or filtered drainage systems behind downstream retaining walls.

5.3.4 Dam Removal

As for all dams, breaching of the dam and river restoration is an alternative for addressing the dam safety concerns at the dam. Danielson Pond currently supports limited recreational activities. No water supply, wells, or other resources supported by the impoundment, or the dam have been identified as part of the current evaluations, however, evaluation of the presence of this type of feature was not included as part of the scope of work.

Prior to fully developing a dam removal design, certain evaluations would need to be completed to identify and address all hydraulic related impacts associated with dam removal. Potential hydraulic impacts include scouring and increased differential hydraulic loading on upstream infrastructure and hydraulic changes to the downstream infrastructure along the river channel including increases in flow rate, flow velocity, and flow depths which in turn could result in a greater lateral extent of inundation. Specific to this dam, screening level review reveals that there does not appear to be any upstream infrastructure that would be negatively impacted. Additionally, the peak flow increases post dam removal that are predicted to occur during storm events less than the 100-year storm event, are relatively small and likely would not result in noticeable negative impacts to the downstream area.

Impoundment area restoration would likely include a natural revegetation program with supplemental planting and bank stabilization measures as deemed necessary during final design activities; should sediment characterization and quantification indicate concerns with in-stream management of sediment, additional measures to either remove and dispose of sediment, stabilize sediment in place, or otherwise remove sediment from the system will need to be implemented. Sediment identified that exceed applicable concentration of contaminants for sediment or soil would need to be removed from the applicable resource areas and disposed of legally offsite.

Should dam removal be identified as a feasible option, the dam removal program would likely consist of complete demolition and removal of the existing spillway and restoration of the channel to a natural-like section. The channel through the former dam location would be designed to resemble natural stretches of the river in the downstream area beyond the limits of past construction activity. Post dam removal, certain monitoring and mitigation activities may be required/recommended such as invasive species.

5.4 Impractical Alternatives

During the evaluation of feasible alternatives for required repairs and remedial measures, several alternatives in addition to those discussed above were considered. However, for varying reasons, each of these alternatives was considered impractical and not further evaluated. These alternatives included, but were not necessarily limited to:

- **Replace Spillway In Kind and No Dam Raise (Operations Required):** This was originally developed and considered to eliminate the need for the 1-foot dam raise. This option, although feasible, would require pre-storm operations of the stop logs and drawdowns of the impoundment. Based upon Pare's understanding, the Town is looking for a system that does not require operations; as such, this concept was not further evaluated.

- **Replace Spillway In Kind and Dam Raise (Operations Not Required):** This option required a 2-foot dam raise to El. 149.0. Alternatives #1 and #2 were determined to represent a more effective and cost efficient approach; as such, this option was not explored further.
- **Widen Spillway to Eliminate Dam Raise (Operations Not Required):** This option required the widening of the spillway weir length to 50 feet. Alternatives #1 and #2 were determined to represent a more effective and cost efficient approach; as such, this option was not explored further. **Overtopping Protection:** Costs for an overtopping protection system would far exceed the costs of the 1-foot dam raise included within Alternatives #1 and #2; as such, this option was not explored further.

5.5 Site Amenities

As part of the dam rehabilitation program, a variety of measures could be considered to improve the recreational function of the site and to promote opportunities for the public to take advantage of the resources created by the presence of the dam. The following concepts have been developed assuming that a dam rehabilitation program is selected; however, the improvement plans could be adapted to provide recreational opportunities for a dam removal program as well. The concepts for site amenities for rehabilitation are presented on Figure 8: Site Amenities Opportunities Plan.

- ***Improved Vehicular Access and Parking:*** Improve the site entrance to provide sufficient driveway width and site distances for passenger vehicle use. Provide a wider gravel driveway able to accommodate two directional traffic. Along the north side of the driveway, incorporate up to 5 parking spaces (including an ADA accessible parking space). While additional parking spaces could be considered, limiting parking to 5 spaces is anticipated to avoid the need to clear any mature trees. The driveway could also include a turnaround at the end to assist with vehicular movement into and out of the site.
- ***Walking Path:*** Provide a dense grade walkway along the crest of the dam and the upstream left abutment to provide access to the shoreline. Supplement the path with benches and shoreline access points to improve recreational function. Paths and any required bridges would be ADA accessible. While not considered as part of this scope, the path could be extended to provide an approximately ½ a mile long loop path around the impoundment; however, easements and/or land rights would need to be obtained to support this option.
- ***Fishing/Viewing Platforms:*** Incorporate stone steps and slabs within the upstream slope protection to function as platforms for use by fishermen. To improve access to the water, a peninsula, constructed of excess fill and boulders from earthwork operations at the dam, could be constructed into the pond.
- ***Interpretative Monument and Signage:*** Reset salvageable components of the former mill machinery from the downstream channel at the spillway upon a slab in an area viewable by visitors to the site. The monument could be accompanied by signage providing visitors with a history of the site as well as serve to memorialize the configuration of the dam prior to implementation of the rehabilitation program.

5.6 Recommended Approach

Based upon the findings of this study and the alternatives considered, if preservation of the dam is identified as the preferred approach, Pare recommends implementing a rehabilitation program including the following.

- Complete Alternative #1 (5.3.1.2) for SDF compliance, which includes:

  - Demolish and remove the existing spillway complete
  - Install of a multi stage outlet structure leading to a 30-inch diameter outlet pipe at the location of the existing spillway.
  - Construct of a 15-foot wide nature-like channel to function as the primary spillway; provide a bridge spanning the spillway channel to promote access for recreation, operations, and maintenance.
  - Raise the crest of the embankment to El. 148.0 through placement of earthen fill material.
- Regrade the upstream slope and provide dumped riprap slope protection.
- Remove the existing downstream boulder wall; install a maintainable earthen slope with toe drain system.
- Install additional site amenities as desired by the Town.

5.7 Property Acquisitions.

Alternatives #1 and #2 have certain components that extend onto the abutting parcels. As such, some land takings and/or permanent easements will likely be required. Specifically:

- A dam raise would require extension of the dam into private property on the right abutment; land taking, acquisition, or permanent easement would be required.
- Construction operations and/or installation of the nature-like channel may encroach upon private property downstream left of the dam. Temporary and/or permanent easements/land acquisition may be required.

6.0 OPINIONS OF PROBABLE COSTS

The following conceptual opinions of probable cost have been developed for the recommended alternative noted above. The costs shown herein are based on a limited investigation and are provided for conceptual design information only. This should not be considered an engineer's estimate, as actual construction costs may be somewhat less or considerably more than indicated.

Table 6-1: Conceptual Opinion of Probable Costs

	Alternative #1: Natural Channel	**Alternative 2: Spillway Rehab**	**Alternative 3: Dam Removal**
General Requirements	$ 43,000	Same as Alt #1	$ 15,000
Mob & Demob	$ 30,000	Same as Alt #1	$ 30,000
Clear and Grub	$ 22,000	Same as Alt #1	
Erosion Control	$ 8,000	Same as Alt #1	$ 8,000
Control of Water	$100,000	Same as Alt #1	$ 45,000
Spillway / Outlet Improvements	$169,000	$141,000	
Embankment Work			
Upstream Slope	$40,000[1]	Same as Alt #1	
Crest	$38,000	Same as Alt #1	
Downstream Slope	$46,000[2]	Same as Alt #1	
Breach Construction			$ 45,000
Sediment Handling and Disposal*			$169,000
Invasive Species Management*			$100,000
Subtotal	***$496,000***	***$482,000***	***$414,000***
Contract Bonds	$ 5,000	$ 5,000	$ 5,000
Design Contingency	$126,000	$122,000	$147,000
Opinion of Probable Construction Cost	**$627,000**	**$609,000**	**$566,000**
Engineering and Permitting	$ 96,000	$ 91,000	$236,000
Construction Administration	$ 85,000	$ 85,000	$ 35,000
Opinion of Probable Engineering Cost	**$181,000**	**$176,000**	**$271,000**
Total Opinion of Probable Cost	**$808,000**	**$785,000**	**$837,000**
Additional Contingencies			$500,000[3*]

1) Costs provided are for a riprap slope. The cost of the wall alternative is $150,000.
2) Costs provided are for an earthen slope. The cost of the wall alternative is $120,000.
3) $500,000 contingency is for the additional costs that could be incurred should the sediment have contaminants in it that requires special handling.
4) Costs for site amenities are not included in the above table; the cost of the amenities was estimated to be on the order of $75,000.
5) Costs do not include current market volatility contingencies; actual construction costs may be higher. Costs should be considered suitable for relative cost comparisons.
* Cost based upon conservative assumptions as to the scope of the work; additional feasibility studies would be required to refine opinions of cost.

7.0 PERMITTING

The following sections describe the potential environmental permits that may be necessary to undertake the alternative approaches. The required permitting may vary from that identified below based upon the final design of the selected alternative.

7.1 Wetlands Protection Act Order of Conditions

The dam is located within regulated wetland areas and/or buffer zones, and maintenance and repair activities are subject to jurisdiction under the Massachusetts Wetlands Protection Act and Regulations. Therefore, an Order of Conditions from the Medfield Conservation Commission will be required. Resource areas anticipated to be affected include Bank, Land Under Water, Bordering Vegetated Wetlands, and Riverfront Area. Dam repair and rehabilitation work is expected to qualify as a "limited project" under 310 CMR 10.53(3)(i); however, these provisions may not apply to the removal alternative. The project will be subject to the Notice of Intent (NOI) Filing fees under the Wetlands Protection Act as well as additional filing fees under the Medfield Wetlands Bylaw. The potential loss of vegetated wetlands may require on-site replication.

The Dam Removal alternative is expected to qualify as an Ecological Restoration project eligible for a Restoration Order of Conditions, given that the project complies with the criteria set forth in 310 CMR 10.00. Ecological Restoration projects may result in temporary or permanent loss of resource areas and/or conversion of one resource area to another when such loss/conversion is necessary to the achievement of the project's ecological restoration goals.

The project may exceed one or more thresholds requiring a Wildlife Habitat Evaluation under the Wetlands Protection Act. The magnitude of bank impacts required to complete the work may impact at least 50 linear feet of bank and require a Simplified Wildlife Habitat Evaluation (Form A). If more than twice this threshold is exceeded (i.e., greater than 100 linear feet of bank is impacted), a Detailed Wildlife Habitat Evaluation (Form B) may be required. It should be noted that if the Dam Removal alternative meets the criteria of an Ecological Restoration project, it would be exempt from the Wildlife Habitat Evaluation requirement.

As part of the permitting process, the project will be required to be presented at a public hearing to review the project impacts. The Medfield Conservation Commission may require peer review, at the expense of the applicant.

7.2 Army Corps of Engineers (ACOE) Approval

Any project that involves the discharge of dredge or fill material to a Water of the United States, including wetlands at dams, requires approval from the ACOE under Section 404 of the Clean Water Act. For minimal impact activities (e.g., impact areas less than 5,000 square feet of wetlands, including all secondary impacts), as well as repair and maintenance of currently-serviceable, authorized fill structures with no expansion or change in use, ACOE approval is typically covered as a Self Verification (SV) activity under the General Permits for Massachusetts (the GPs) and does not require a formal application if the project otherwise meets the conditions of the GPs. Any expansion, replacement, or change in use of a fill, or creation of a new wetland fill where cumulative permanent and temporary wetland impacts exceed 5,000 square feet requires the submission of an application to ACOE as either a Pre-Construction Notification (PCN) to be authorized under the applicable GPs, or as an Individual Permit (IP) for activities proposing a scope of impacts that exceeds the thresholds outlined in the GPs.

Based upon preliminary review, it appears that all alternatives would require either a PCN or IP application with ACOE, as summarized below.

- GP 1: Maintenance: PCN required for minor deviations that result in expansions of structures, or new permanent or temporary impacts (i.e. outside of previously authorized footprint) in waters of the US; for Dam and flood control or levee repair, rehabilitation, or replacement involves: (a) a change in the flood elevation or permanent water surface elevation of the impoundment; or (b) drawdown of impoundment for construction exceeding one growing season; or (c) any modification that changes the character, scope, or size of the original fill design. An IP is required for permanent impacts exceeding 1 acre (all alternatives).

- GP 14: Temporary Construction, Access, and Dewatering: A PCN required for over 5,000 sf of impacts (all alternatives)

- GP 23: Aquatic Habitat Restoration, Enhancement, and Establishment Activities: A PCN required for Dam Removal (Dam Removal alternative)

7.3 Water Quality Certification

Projects involving fill in Waters of the United States require a Water Quality Certification (WQC) issued by the Massachusetts Department of Environmental Protection. In general, projects that qualify for coverage as Self Verification (SV) activities under the ACOE GP or have received an Order of Conditions and do not exceed 5,000 square feet of permanent wetland impacts, receive administrative WQC approval and a separate application is not required.

An Individual WQC is required for projects that result in a loss of greater than 5,000 square feet of impacts and/or dredging greater than 100 cubic yards, and/or in other limited situations. The repair and rehabilitation alternatives are expected to exceed the 100 CY of dredge criteria and will therefore require an individual WQC. The removal alternative is also expected to require an individual WQC as the permanent lowering of the pond will affect greater that 5,000 square feet of resource area (land under water). While the Dam Removal alternative may result in the loss or conversion of greater than 5,000 square feet of a resource area, it is expected to qualify as an “Ecological Restoration Project” which is not subject to the WQC requirement per 314 CMR 9.03(8).

7.4 Ch. 253 Permit Application

Modifications to the dam structure will require issuance of a Chapter 253 Permit from the MADCR Office of Dam Safety. The application is submitted at final design after receipt of all other environmental permits.

7.5 Historic Significance

According to the Massachusetts Historical Commission (MHC) MACRIS interactive map, the dam is not located within a historic district, however, is adjacent to a historic structure. Coordination with the MHC, the Medfield Historical Commission, the Massachusetts Board of Underwater Archaeological Resources, and any affected Tribal Historic Preservation Officers is recommended to ensure that no known historical and archaeological resources are impacted by the project.

7.6 Massachusetts Environmental Policy Act (MEPA)

Due to the nature of the work and the potential square footage of regulated wetlands to be affected, the project may exceed one or more MEPA review thresholds requiring the filing of an Environmental Notification Form (ENF) and/or an Environmental Impact Report (EIR) under the Massachusetts Environmental Policy Act. An Expanded ENF (EENF) seeking an EIR Waiver may be filed for projects exceeding one or more EIR thresholds if preparation of an EIR would (a) result in an undue hardship for the Proponent, unless based on delay in compliance by the Proponent; and (b) not serve to avoid or minimize Damage to the Environment. One or more of the project alternatives considered may exceed the following review thresholds:

- Structural alteration of an existing dam that causes an Expansion of 20% or any decrease in impoundment capacity (ENF and Mandatory EIR). Preliminary calculations indicate that the Decommission/Storage alternative would result in a loss of approximately 30% of the impoundment's storage volume and is therefore likely to require the filing of an EIR. The Dam Removal alternative also triggers the EIR threshold; however in Pare's previous experience with dam removal projects, MEPA has granted a waiver of the EIR requirement.

- Alteration of ½ or more acres of "any other wetlands" (includes Land Under Water) (ENF). The temporary drawdown is anticipated to exceed this threshold and may trigger the filing of an ENF. The Dam Removal alternative may result in the loss or alteration of greater than ½ acre of Land Under Water and is expected to trigger this threshold.

7.7 Chapter 91 Waterways License

A License under Chapter 91, the Public Waterfront Act, is required for work on "Any non-tidal river or stream on which public funds have been expended for stream clearance, channel improvement, or any form of flood control or prevention work, either upstream or downstream within the river basin, except for any portion of any such river or stream which is not normally navigable during any season, by any vessel including canoe, kayak, raft, or rowboat". For the purpose of this Report it is assumed that the dam's outlet is not normally navigable. Should the brook be found to be navigable then the work would likely qualify as a "maintenance, repair, and minor project modification for which are activities not requiring a License or Permit pursuant to 310 CMR 9.05(3).

7.8 Summary of Potential Permitting Requirements

The following table presents the potential permitting requirements for each of the alternatives considered. Depending upon the final scope of work, the required permitting may vary from that set forth below.

Table 7-1: Potential Permitting Requirements

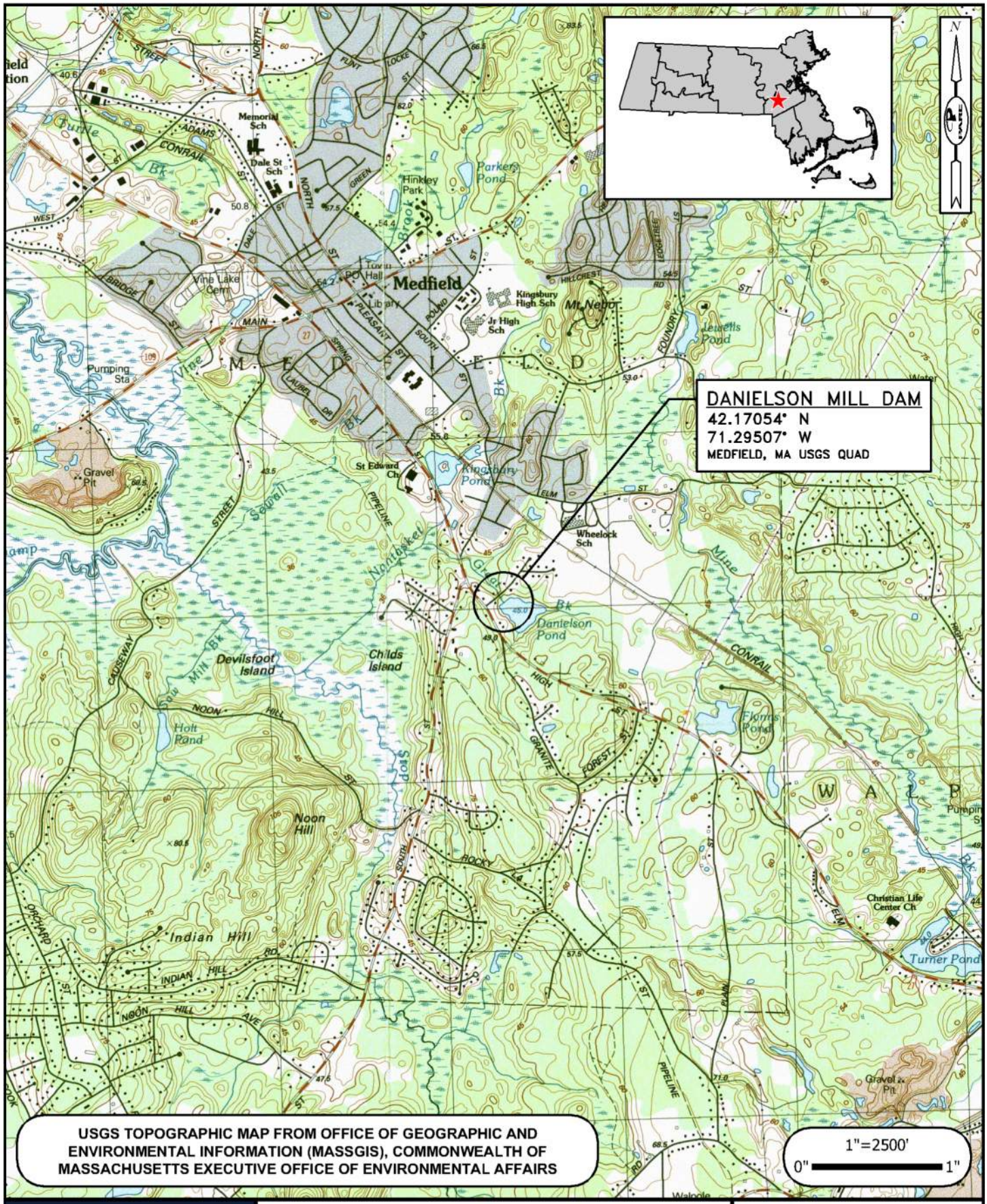
	Alternative		
	#1 Natural Channel	**#2 Spillway Rehab**	**#3 Removal**
NOI	Yes	Yes	Yes (Ecological Restoration OoC)
MEPA	ENF/EENF	ENF/EENF	EENF
ACOE GP	PCN	PCN	PCN
DCR Dam Safety	Part A & B	Part A & B	Part A & B
WQC	YES	YES	Yes

* **ENF** anticipated only if cumulative impacts within Land Under Water/Floodplain/Riverfront Area exceed ½ acre, or if the MEPA Secretary determines that project represents an "expansion or change in use" of the existing fill structure. **ENF and Mandatory EIR** anticipated only if the Secretary determines that the project will result in structural alteration that causes an Expansion of 20% or any decrease in impoundment capacity.
**Mitigation due to the loss of jurisdictional resource areas around the impoundment may be required.

FIGURES

Danielson Mill Dam

Medfield, Massachusetts



USGS TOPOGRAPHIC MAP FROM OFFICE OF GEOGRAPHIC AND ENVIRONMENTAL INFORMATION (MASSGIS), COMMONWEALTH OF MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS

PARE CORPORATION

DANIELSON MILL DAM

MA03351

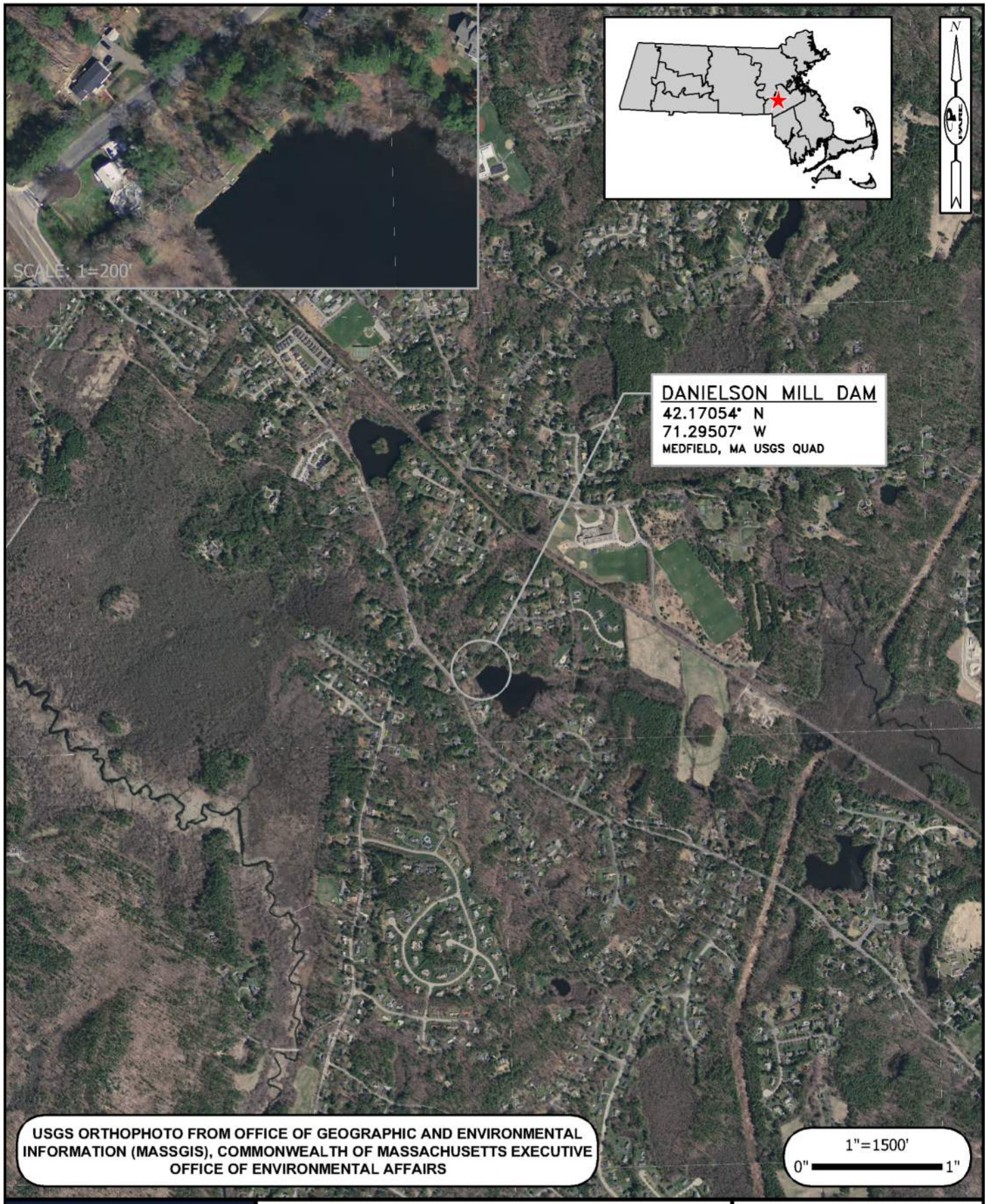
MEDFIELD, MASSACHUSETTS

OWNER : TOWN OF MEDFIELD

LOCUS PLAN

SEPTEMBER 2021

FIGURE 1



PARE CORPORATION

DANIELSON MILL DAM

MA03351

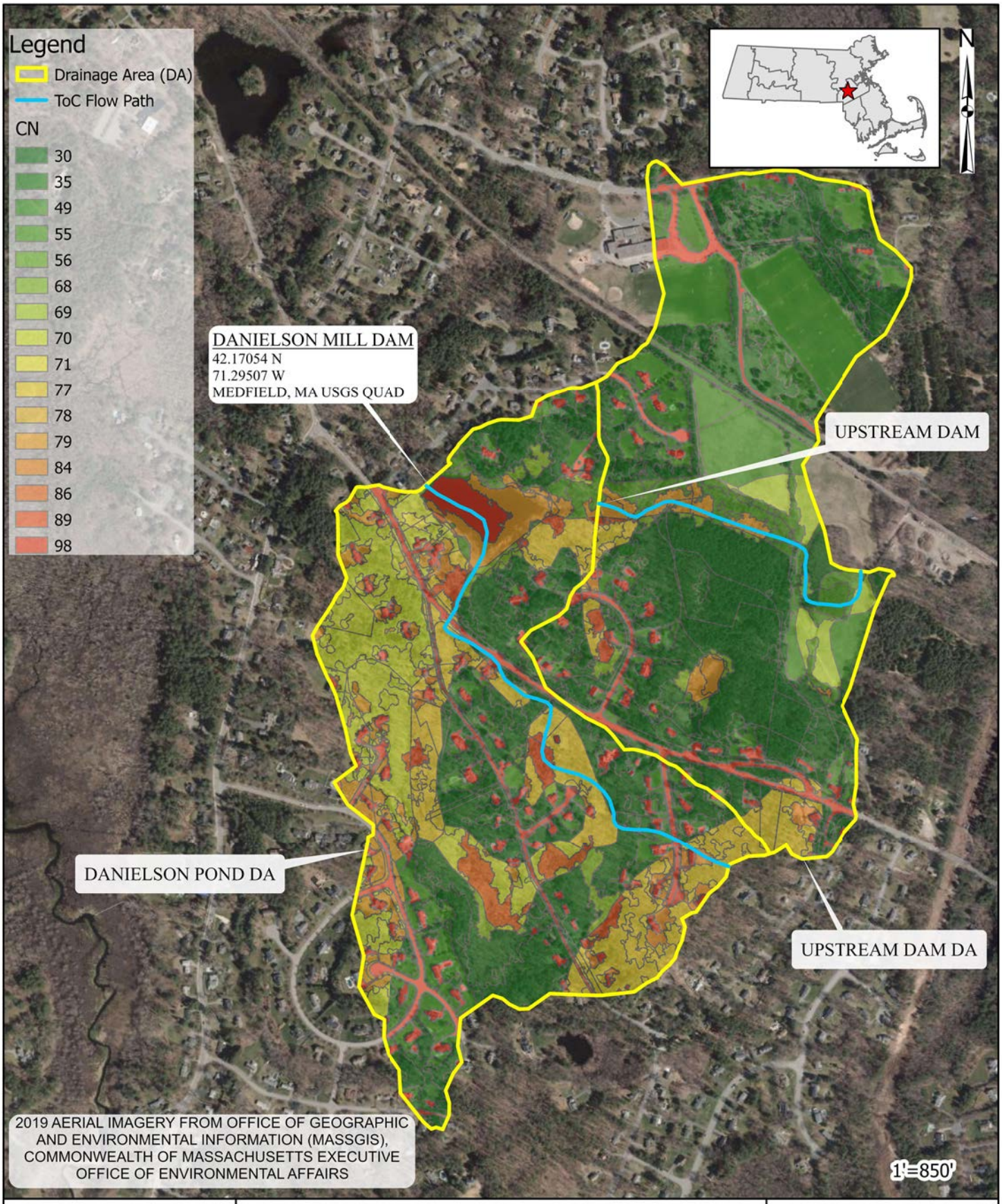
MEDFIELD, MASSACHUSETTS

OWNER : TOWN OF MEDFIELD

AERIAL PLAN

SEPTEMBER 2021

FIGURE 2



PARE CORPORATION
CELEBRATING 50 YEARS

DANIELSON MILL DAM

MA03351
MEDFIELD, MASSACHUSETTS

TOWN OF MEDFIELD

HYDROLOGY MAP

AUGUST 2021

FIGURE 3

PHOTOGRAPHS

Danielson Mill Dam

Medfield, Massachusetts

Photo No. 1.: Overview of the impoundment.

Photo No. 2.: Downstream channel.

Photo No. 3.: Upstream slope from the left abutment looking right.

Photo No. 4.: Upstream slope right of the spillway.

Photo No. 5.: Upstream slope from near the right abutment looking left.

Photo No. 6.: Crest left of the spillway looking left.

Photo No. 7.: Crest right of the spillway looking left.

Photo No. 8.: Crest right of the spillway looking right.

Photo No. 9.: Downstream slope from near the left abutment looking right.

Photo No. 10.: Downstream slope near Sta. 3+50 looking left. Note the brush and trees growth along the slope.

Photo No. 11.: Downstream slope near Sta. 3+50 looking right. Note large tress growing at top of slope and fallen tree over the stone wall.

Photo No. 12.: Overview of spillway weir and spillway approach.

Photo No. 13.: Upstream wall left of the spillway.

Photo No. 14.: Upstream wall right of the spillway. Note the sinkhole downstream of the wall and voids within the wall.

Photo No. 15.: Downstream face of the stop logs. Note the leakage between the stop logs and debris in the downstream channel.

Photo No. 16.: Left downstream stone training wall. Note voids between the stones.

Photo No. 17.: Right downstream stone training wall.

Photo No. 18.: Downstream channel from upstream end looking downstream.

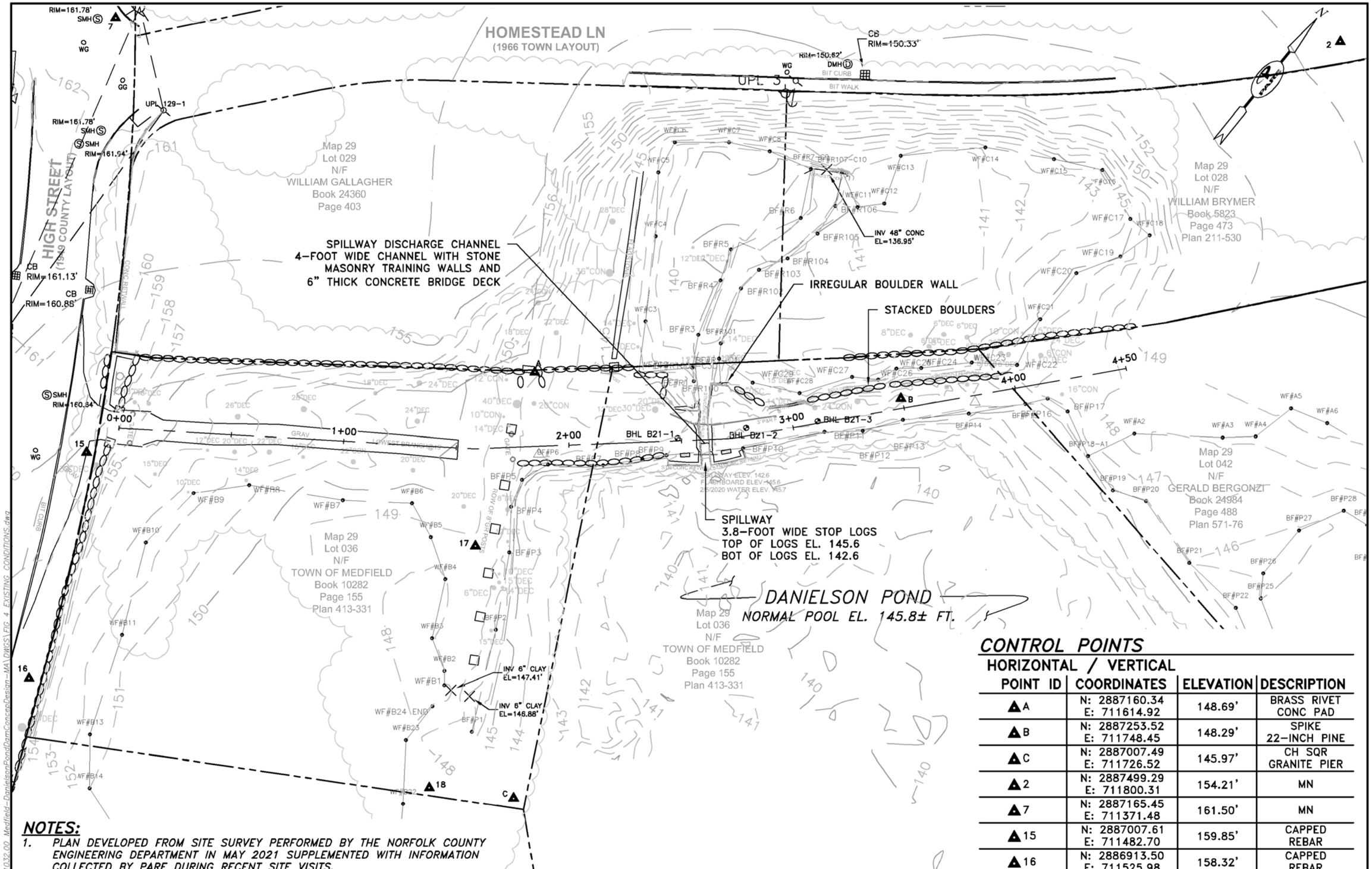
Photo No. 19.: Downstream stone wall left of the spillway. Note the large voids between the stones

Photo No. 20.: Downstream stone wall right of the spillway.

Photo No. 21.: Downstream channel after the storm in 2020. Noted the seepage through the stone walls (taken on 12/2/2020, provided by Town).

Photo No. 22.: Flow overtopping the spillway training wall during the storm in 2020 (taken on 11/30/2020; provided by Town).

APPENDIX A
Conceptual Design Level Figures
Danielson Mill Dam
Medfield, Massachusetts



NOTES:

1. PLAN DEVELOPED FROM SITE SURVEY PERFORMED BY THE NORFOLK COUNTY ENGINEERING DEPARTMENT IN MAY 2021 SUPPLEMENTED WITH INFORMATION COLLECTED BY PARE DURING RECENT SITE VISITS.
2. RESOURSE AREA DELINEATIONS WERE COMPLETE BY PARE ON APRIL 12, 2021.
3. SUBSURFACE EXPLORATION WAS COMPLETE BY TDS AND OBSERVED BY PARE ON APRIL 19, 2021.
4. HORIZONTAL DATUM IS MA STATE PLANE NAD 83 US FEET.
5. VERTICAL DATUM IS NAVD 88 FEET.

EXISTING CONDITIONS PLAN

SCALE: 1"=40'±

CONTROL POINTS

HORIZONTAL / VERTICAL

POINT ID	COORDINATES	ELEVATION	DESCRIPTION
▲A	N: 2887160.34 E: 711614.92	148.69'	BRASS RIVET CONC PAD
▲B	N: 2887253.52 E: 711748.45	148.29'	SPIKE 22-INCH PINE
▲C	N: 2887007.49 E: 711726.52	145.97'	CH SQR GRANITE PIER
▲2	N: 2887499.29 E: 711800.31	154.21'	MN
▲7	N: 2887165.45 E: 711371.48	161.50'	MN
▲15	N: 2887007.61 E: 711482.70	159.85'	CAPPED REBAR
▲16	N: 2886913.50 E: 711525.98	158.32'	CAPPED REBAR
▲17	N: 2887083.84 E: 711642.93	148.84'	CAPPED REBAR

CONCEPTUAL DESIGN
NOT FOR CONSTRUCTION

PARE
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10 LINCOLN ROAD, SUITE 210
FOXBORO, MA 02035
508-543-1755

SCALE ADJUSTMENT GUIDE
0" 1"
BAR IS ONE INCH ON ORIGINAL DRAWING.

DANIELSON MILL DAM
CONCEPTUAL DESIGN

MA03351
MEDFIELD, MASSACHUSETTS
OWNER : TOWN OF MEDFIELD

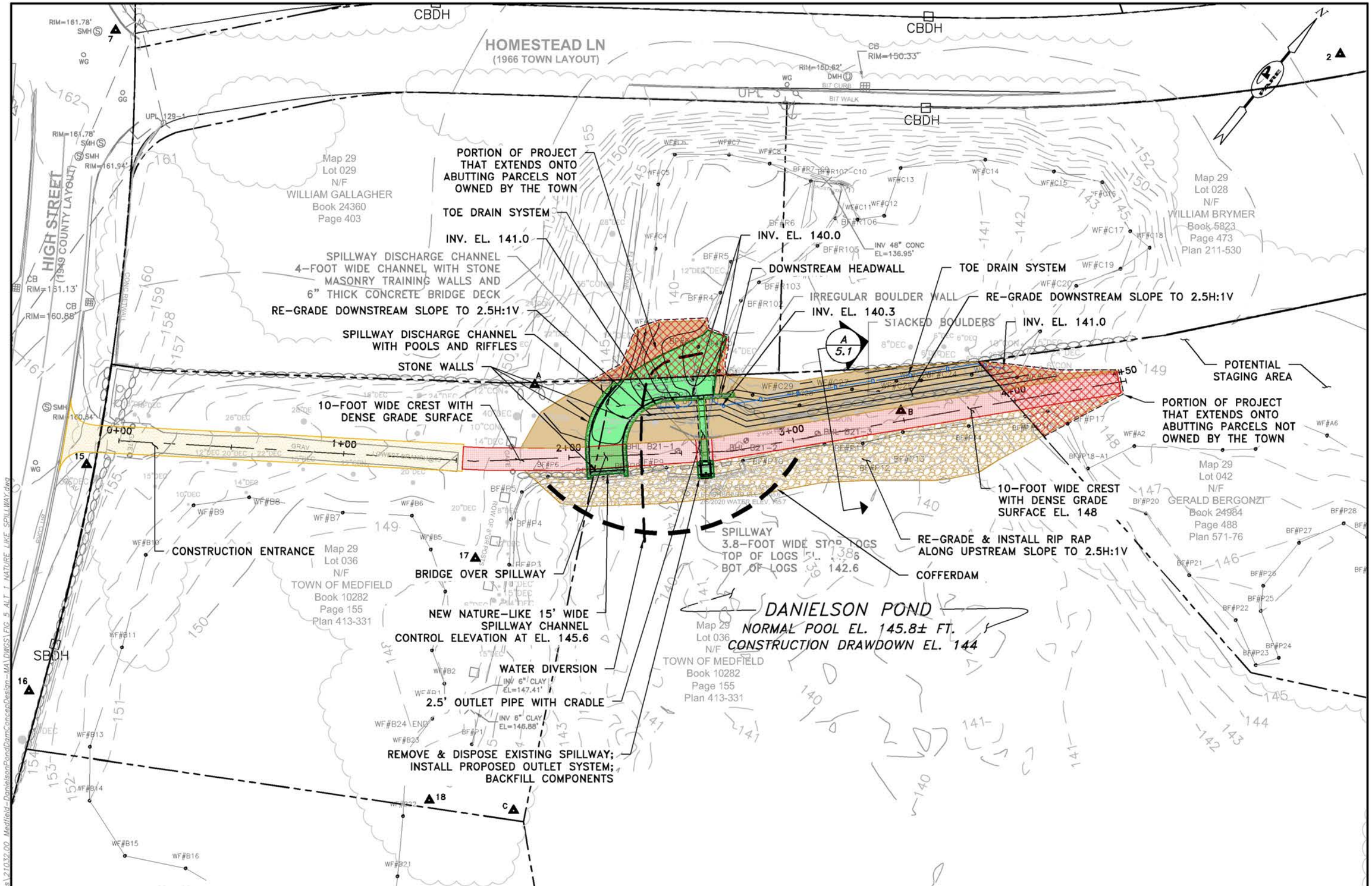
REVISIONS:

PROJECT NO.:	21032.00
DATE:	SEPTEMBER 2021
SCALE:	AS NOTED
DESIGNED BY:	MLP
CHECKED BY:	MED
DRAWN BY:	LMC
APPROVED BY:	ARO

EXISTING CONDITIONS PLAN

FIGURE NO.: 4

X:\JOBS\21 Jobs\21032.00 Medfield-DanielsonPondDamConceptDesign-MA\DWGS\FIG 4 EXISTING CONDITIONS.dwg



ALTERNATIVE – NATURE-LIKE SPILLWAY CHANNEL

SCALE: 1"=40'±

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SCALE ADJUSTMENT GUIDE
0" 1"
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DANIELSON MILL DAM CONCEPTUAL DESIGN

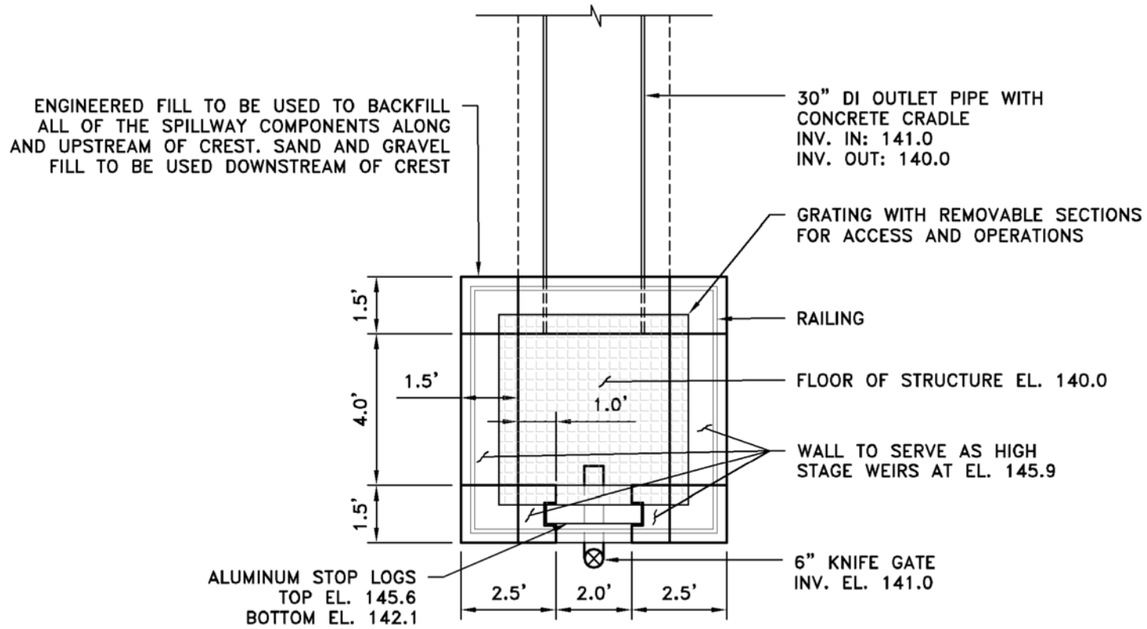
MA03351
MEDFIELD, MASSACHUSETTS
OWNER : TOWN OF MEDFIELD

REVISIONS:

PROJECT NO.:	21032.00
DATE:	SEPTEMBER 2021
SCALE:	AS NOTED
DESIGNED BY:	MLP
CHECKED BY:	MED
DRAWN BY:	LMC
APPROVED BY:	ARO

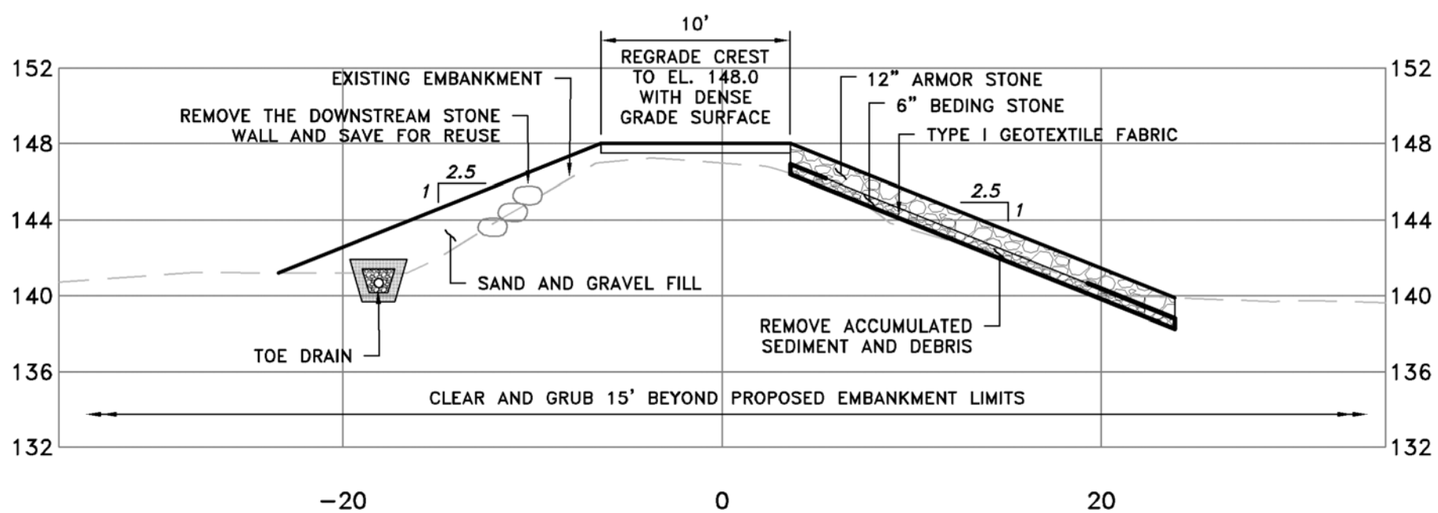
ALTERNATIVE 1
NATURE-LIKE SPILLWAY CHANNEL

FIGURE NO.: 5



PROPOSED OUTLET STRUCTURE PLAN

SCALE: 1"=4'



NOTE:
ALTERNATIVE TO THE 2.5H:1V UPSTREAM AND DOWNSTREAM SLOPES, STONE MASONRY WALLS COULD BE INSTALLED

A 5.0 **SECTION A**

SCALE: 1"=8'

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SCALE ADJUSTMENT GUIDE
0" 1"
BAR IS ONE INCH ON ORIGINAL DRAWING.

DANIELSON MILL DAM
CONCEPTUAL DESIGN
MA03351
MEDFIELD, MASSACHUSETTS
OWNER : TOWN OF MEDFIELD

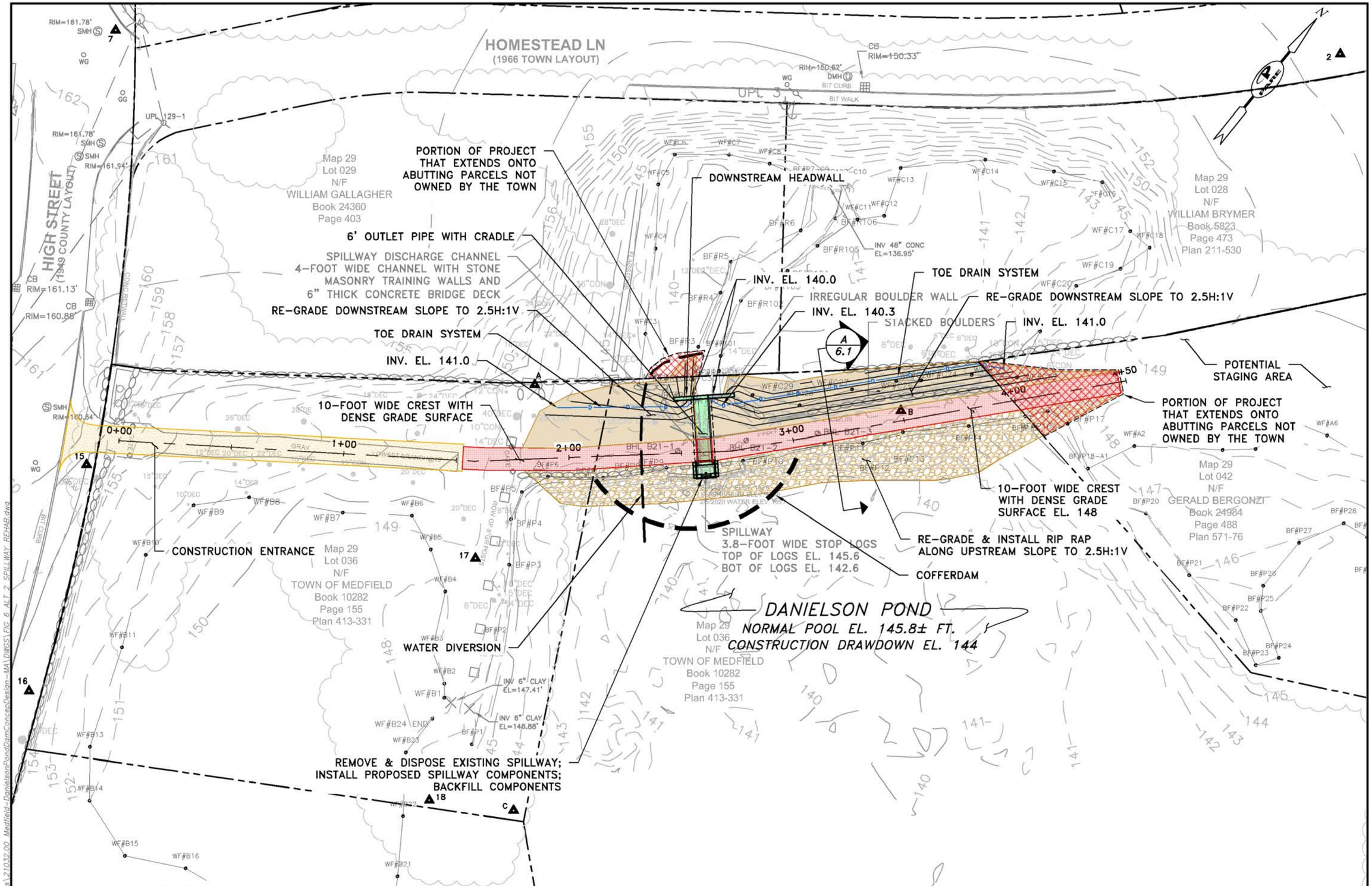
REVISIONS:

PROJECT NO.:	21032.00
DATE:	SEPTEMBER 2021
SCALE:	AS NOTED
DESIGNED BY:	MLP
CHECKED BY:	MED
DRAWN BY:	LMC
APPROVED BY:	ARO

ALTERNATIVE 1
NATURE-LIKE SPILLWAY CHANNEL

FIGURE NO.: 5.1

Y:\JOBS\21 Jobs\21032.00 Medfield-DanielsonPondDamConceptDesign-MA\DWGS\FIG 5.1 ALT 1 SECTIONS.dwg



ALTERNATIVE 2 – SPILLWAY REHABILITATION

SCALE: 1"=40'±

CONCEPTUAL DESIGN
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SCALE ADJUSTMENT GUIDE
0" 1"
BAR IS ONE INCH ON ORIGINAL DRAWING.

DANIELSON MILL DAM
CONCEPTUAL DESIGN

MA03351
MEDFIELD, MASSACHUSETTS
OWNER : TOWN OF MEDFIELD

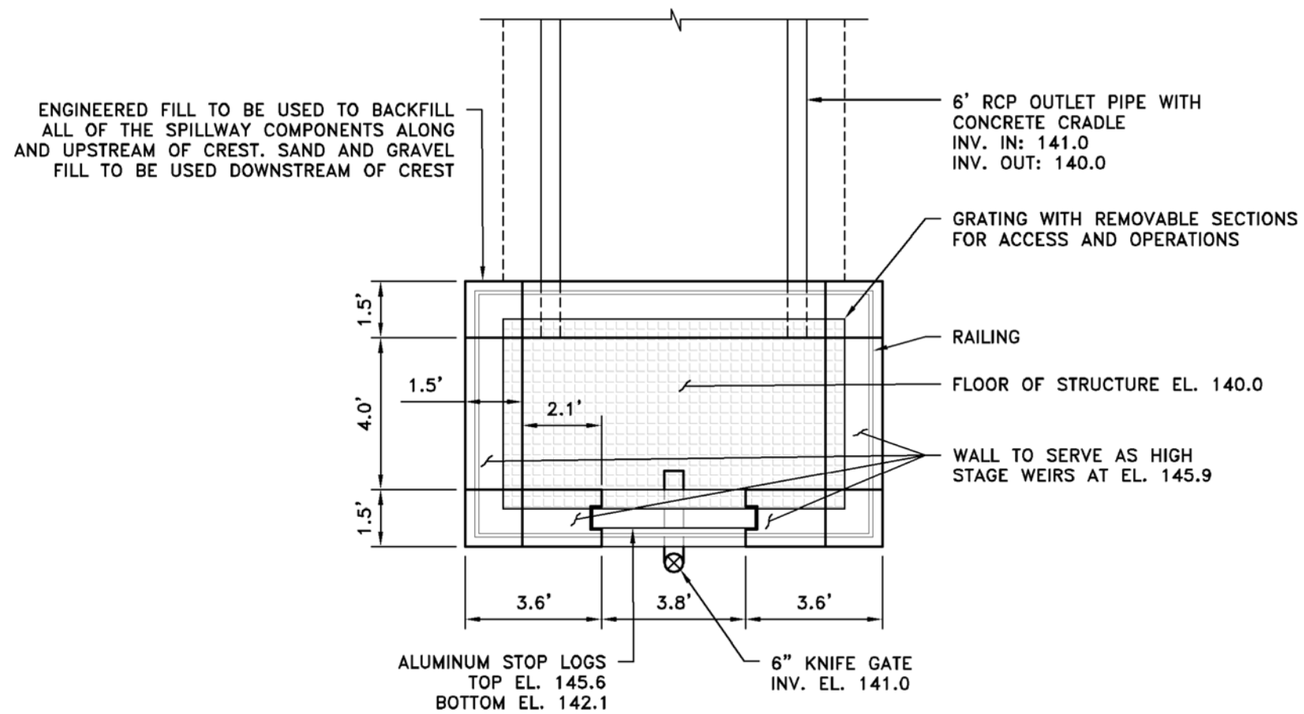
REVISIONS:

PROJECT NO.:	21032.00
DATE:	SEPTEMBER 2021
SCALE:	AS NOTED
DESIGNED BY:	MLP
CHECKED BY:	MED
DRAWN BY:	LMC
APPROVED BY:	ARO

ALTERNATIVE 2
SPILLWAY REHABILITATION

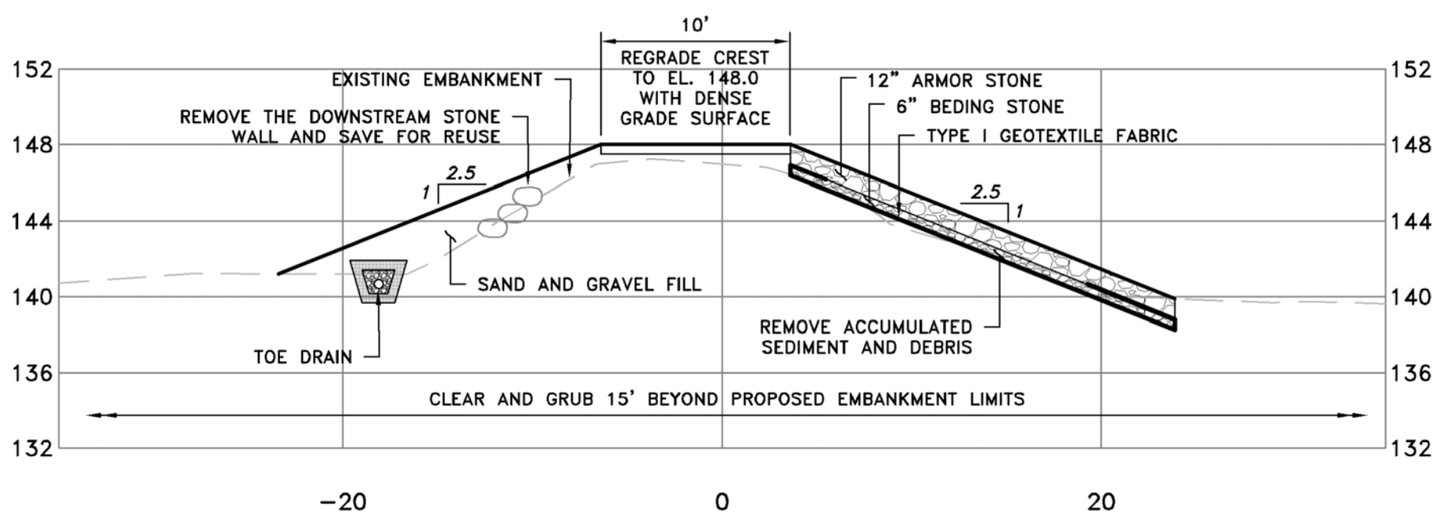
FIGURE NO.: 6

Y:\JOBS\21 Jobs\21032.00 Medfield-DanielsonPondDamConceptDesign-MA\DWGS\FIG 6 ALT 2 SPILLWAY REHAB.dwg



PROPOSED OUTLET STRUCTURE PLAN

SCALE: 1"=4'



NOTE:
ALTERNATIVE TO THE 2.5H:1V UPSTREAM AND DOWNSTREAM SLOPES, STONE MASONRY WALLS COULD BE INSTALLED

A / 6.0 **SECTION A**

SCALE: 1"=8'

CONCEPTUAL DESIGN
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MEDFIELD, MASSACHUSETTS
OWNER : TOWN OF MEDFIELD

REVISIONS:

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DATE:	SEPTEMBER 2021
SCALE:	AS NOTED
DESIGNED BY:	MLP
CHECKED BY:	MED
DRAWN BY:	LMC
APPROVED BY:	ARO

ALTERNATIVE 2
SPILLWAY REHABILITATION

FIGURE NO.: 6.1

Y:\JOBS\21 Jobs\21032.00 Medfield-DanielsonPondDamConceptDesign-MA\DWGS\FIG 6.1 ALT 2 SECTIONS.dwg

HOMESTEAD LN
(1966 TOWN LAYOUT)

HIGH STREET
(1949 COUNTY LAYOUT)

Map 29
Lot 029
N/F
WILLIAM GALLAGHER
Book 24360
Page 403

Map 29
Lot 028
N/F
WILLIAM BRYMER
Book 5823
Page 473
Plan 211-530

Map 29
Lot 042
N/F
GERALD BERGONZI
Book 24984
Page 488
Plan 571-76

Map 29
Lot 036
N/F
TOWN OF MEDFIELD
Book 10282
Page 155
Plan 413-331

SPILLWAY DISCHARGE CHANNEL
4-FOOT WIDE CHANNEL WITH STONE
MASONRY TRAINING WALLS AND
6" THICK CONCRETE BRIDGE DECK

IRREGULAR BOULDER WALL

STACKED BOULDERS

INV 48" CONC
EL=136.95'

POTENTIAL
STAGING AREA

STABILIZE / MANAGE / REMOVE
SEDIMENT AS NECESSARY

REMOVE & DISPOSE SPILLWAY

SPILLWAY
3.8-FOOT WIDE STOP LOGS
TOP OF LOGS EL. 145.6
BOT OF LOGS EL. 142.6

POTENTIAL FUTURE
STREAM ALIGNMENT

DANIELSON POND
NORMAL POOL EL. 145.8± FT.

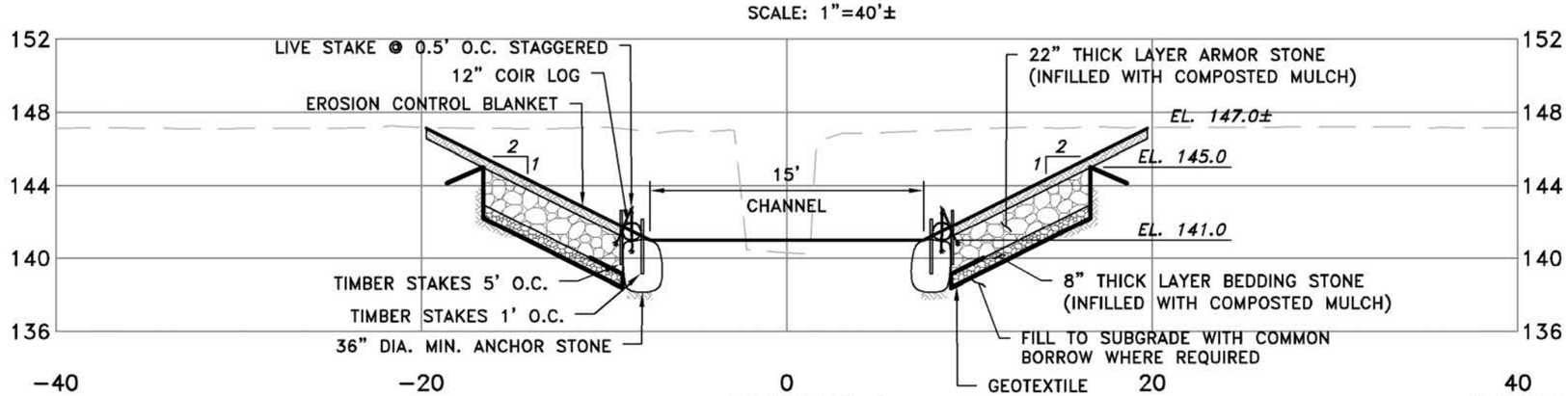
CONSTRUCTION ENTRANCE

0+00 1+00 2+00 3+00 4+00 4+50

A 7.0

ALTERNATIVE 3 – DAM REMOVAL

SCALE: 1"=40'±



A 7.0 SECTION A
SCALE: 1"=8'

CONCEPTUAL DESIGN
NOT FOR CONSTRUCTION

PARE
PARE CORPORATION
ENGINEERS • SCIENTISTS • PLANNERS
10 LINCOLN ROAD, SUITE 210
FOXBORO, MA 02035
508-543-1255

SCALE ADJUSTMENT GUIDE
0" 1"
BAR IS ONE INCH ON ORIGINAL DRAWING

DANIELSON MILL DAM
CONCEPTUAL DESIGN
MA03351
MEDFIELD, MASSACHUSETTS
OWNER : TOWN OF MEDFIELD

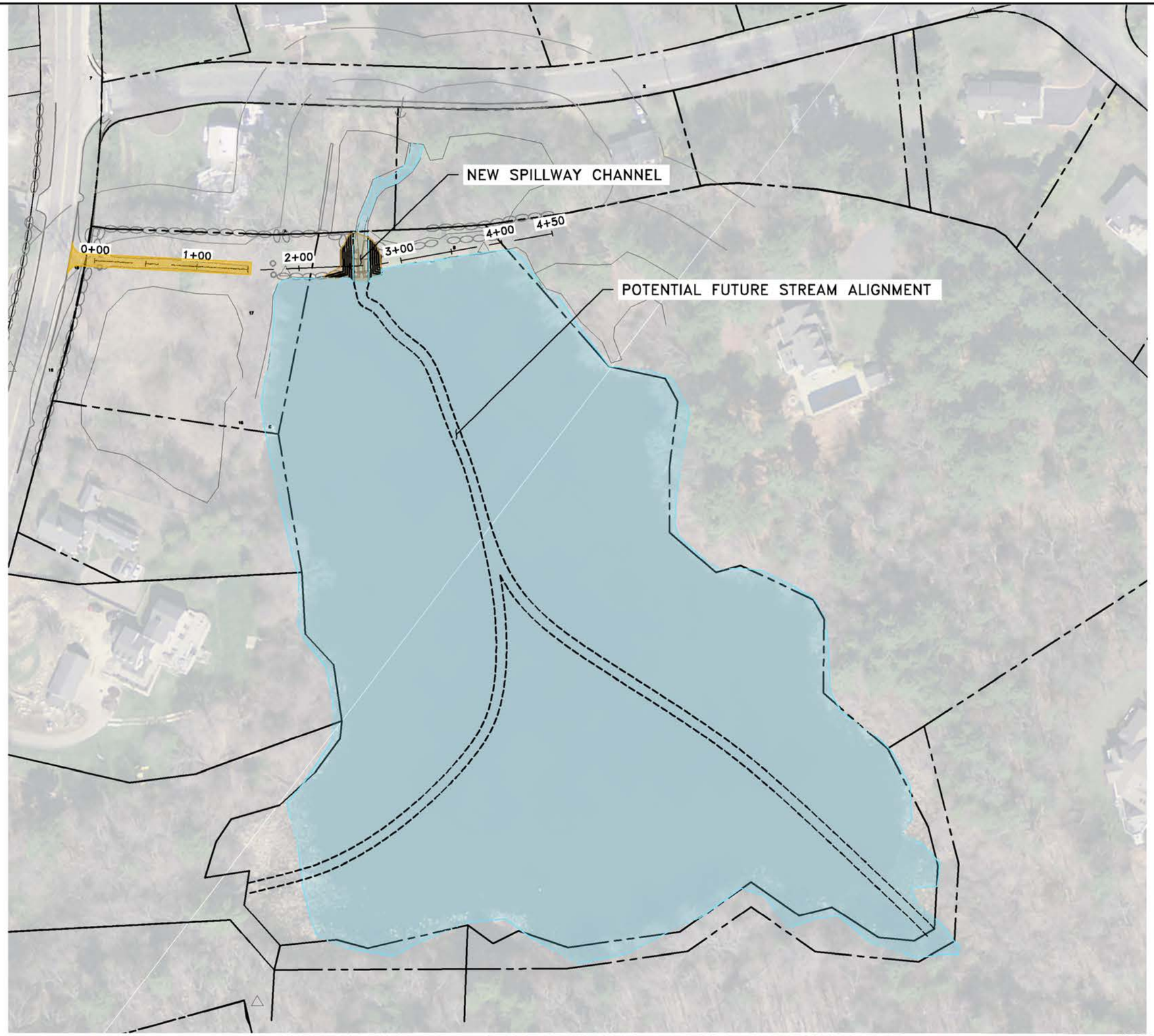
REVISIONS

PROJECT NO.:	21032.00
DATE:	SEPTEMBER 2021
SCALE:	AS NOTED
DESIGNED BY:	MLP
CHECKED BY:	MED
DRAWN BY:	LMC
APPROVED BY:	ARO

ALTERNATIVE 3
DAM REMOVAL

FIGURE NO.: 7

X:\JOBS\21 jobs\21032.00 Medfield-DanielsonPondDamConceptDesign-MA\DWGS\FIG 7 ALT 3 DAM REMOVAL.dwg



ALTERNATIVE 3 – DAM REMOVAL – FULL IMPOUNDMENT

SCALE: 1"=100'±

CONCEPTUAL DESIGN
NOT FOR CONSTRUCTION

PARE
PARE CORPORATION
ENGINEERS • SCIENTISTS • PLANNERS
10 LINCOLN ROAD, SUITE 210
FOXBORO, MA 02035
508-543-1255

SCALE ADJUSTMENT GUIDE
0" 1"
BAR IS ONE INCH ON ORIGINAL DRAWING.

DANIELSON MILL DAM
CONCEPTUAL DESIGN

MA03351
MEDFIELD, MASSACHUSETTS
OWNER : TOWN OF MEDFIELD

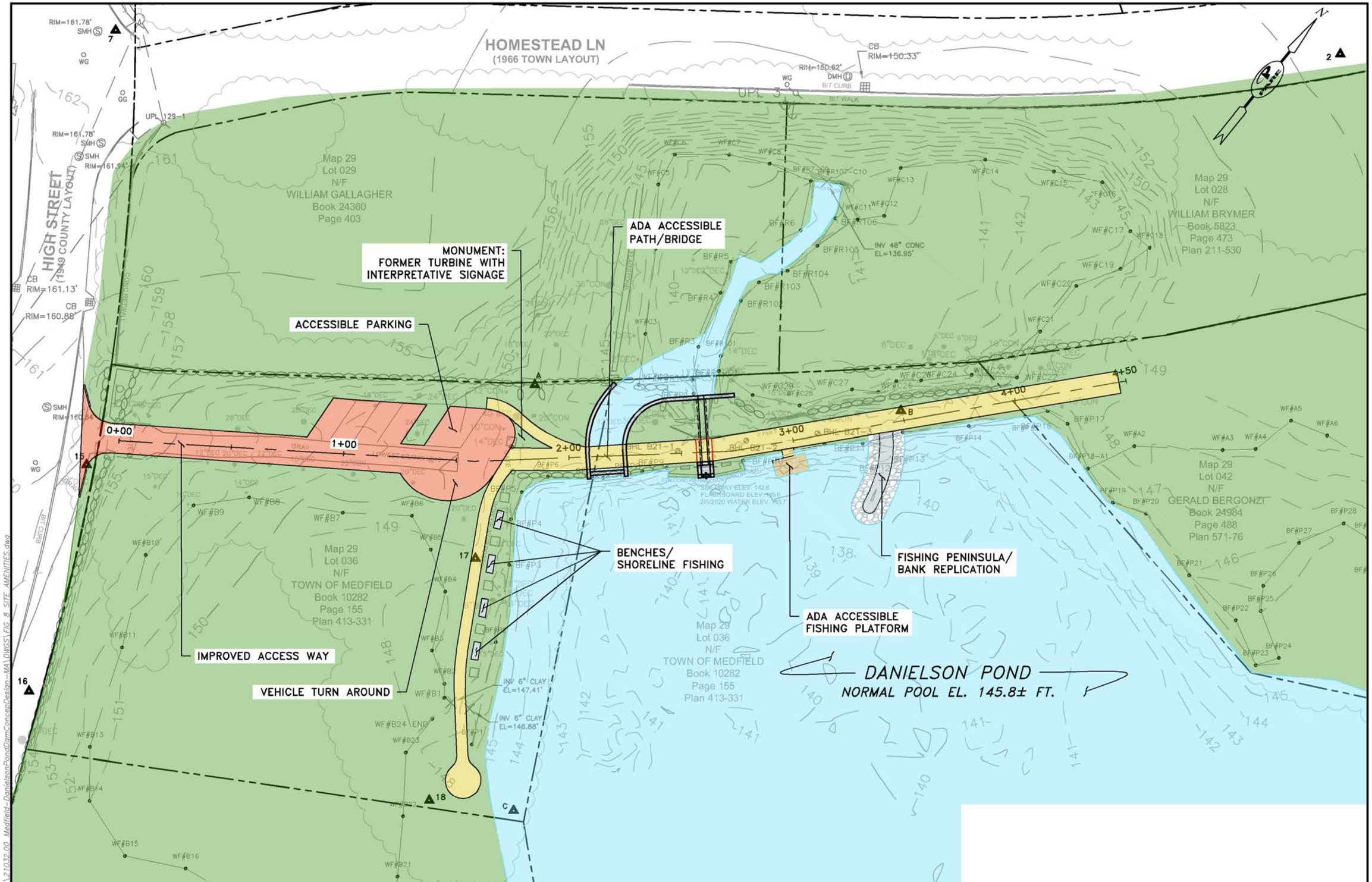
REVISIONS:

PROJECT NO.:	21032.00
DATE:	SEPTEMBER 2021
SCALE:	AS NOTED
DESIGNED BY:	MLP
CHECKED BY:	MED
DRAWN BY:	LMC
APPROVED BY:	ARO

ALTERNATIVE 3
DAM REMOVAL
FULL IMPOUNDMENT

FIGURE NO.: 7.1

Y:\JOBS\21 Jobs\21032.00 Medfield-DanielsonPondDamConceptDesign-MA\DWGS\FIG 7.1 ALT 3 DAM REMOVAL FULL IMPOUNDMENT.dwg



SITE AMENITIES OPPORTUNITIES PLAN

SCALE: 1"=40'±

CONCEPTUAL DESIGN
NOT FOR CONSTRUCTION

PARE
PARE CORPORATION
ENGINEERS • SCIENTISTS • PLANNERS
10 LINCOLN ROAD, SUITE 210
FOXBORO, MA 02035
508-543-1755

SCALE ADJUSTMENT GUIDE
0" 1"
BAR IS ONE INCH ON ORIGINAL DRAWING.

DANIELSON MILL DAM
CONCEPTUAL DESIGN
MA03351
MEDFIELD, MASSACHUSETTS
OWNER : TOWN OF MEDFIELD

REVISIONS:

PROJECT NO.:	21032.00
DATE:	SEPTEMBER 2021
SCALE:	AS NOTED
DESIGNED BY:	MLP
CHECKED BY:	MED
DRAWN BY:	LMC
APPROVED BY:	ARO

SITE AMENITIES OPPORTUNITIES PLAN

FIGURE NO.: 8

Y:\JOBS\21 Jobs\21032.00 Medfield-DanielsonPondDamConceptDesign-MA\DWGS\FIG 8 SITE AMENITIES.dwg

APPENDIX B
Conceptual Design Level Opinions of Probable Costs
Danielson Mill Dam
Medfield, Massachusetts

PROJECT:	DANIELSON MILL DAM	PROJECT NUMBER: 21032.00
SUBJECT:	Alternative II	
COMPUTATION:	MLP	DATE: September 2021
CHECK BY:	MED	DATE: September 2021

CONCEPTUAL DESIGN LEVEL OPINION OF PROBABLE COST

Alternative I: Natural Channel

Item	Quantity	Unit	Unit Price	Total	Source	Notes
General Bid Items						
Construction Trailer and Utilities	0	MON	$ 2,700.00	$ -		
Project Superintendent	3	MON	$ 8,200.00	$ 24,600.00		
QC Plans	6	HR	$ 150.00	$ 900.00	Additional for Winter	
Submittals	30	HR	$ 150.00	$ 4,500.00		
Schedules	8	HR	$ 150.00	$ 1,200.00		
Meetings	16	EA	$ 150.00	$ 2,400.00		Assume 2hrs each @ $150/hr
Project Sign	1	LS	$ 900.00	$ 900.00	Recent project bids	
Proctor Tests	4	TEST	$ 225.00	$ 900.00	Laboratory Quote plus markup	
Sieve Analyses	5	EA	$ 100.00	$ 500.00	Laboratory Quote plus markup	
Concrete Sampling/Testing	5	EA	$ 400.00	$ 2,000.00	Recent project bids	
Concrete Compression Tests	25	EA	$ 30.00	$ 750.00	Laboratory Quote plus markup	
Field Density Testing	10	DAY	$ 250.00	$ 2,500.00	Recent project bids	
Chemical Soil Tests	1	EA	$ 1,000.00	$ 1,000.00	Recent project bids	
Subtotal				**$ 43,000.00**		
Mobilization & Demolition						
Mobilization	1	LS	$ 10,000.00	$ 10,000.00	Engineers Judgment	
Demobilization	1	LS	$ 5,000.00	$ 5,000.00	Engineers Judgment	
Establish Access and Staging	1	LS	$ 15,000.00	$ 15,000.00		
Subtotal				**$ 30,000.00**		

PROJECT:	DANIELSON MILL DAM	PROJECT NUMBER: 21032.00
SUBJECT:	Alternative II	
COMPUTATION:	MLP	DATE: September 2021
CHECK BY:	MED	DATE: September 2021

CONCEPTUAL DESIGN LEVEL OPINION OF PROBABLE COST

Alternative I: Natural Channel

Item	Quantity	Unit	Unit Price	Total	Source	Notes
Clear and Grub						
Clear Work Area	1670	SY	$ 3.50	$ 5,845.00	Means 31 11 10.10 0300 Clear Only	
Grub Work Area	1670	SY	$ 2.00	$ 3,340.00	Means 31 11 10.10 0350 Grub	
Clear Trees Larger Than 8 inch	15	EA	$ 700.00	$ 10,500.00	RSMeans 31 11 10 10 71 20	Estimated Value
Engineered Fill Imported	60	TN	$ 20.00	$ 1,200.00	Recent Project Costs	
Engineered Fill Placed	30	CY	$ 30.00	$ 900.00	Recent Project Costs	Assumed value
Subtotal				**$ 22,000.00**		
Erosion Control						
Hay bales	150	LF	$ 7.00	$ 1,050.00	Recent project bids	
Silt Fence	260	LF	$ 5.00	$ 1,300.00	Recent project bids	
Maintenance and Removal	1	LS	$ 3,500.00	$ 3,500.00	Engineer's Judgment	
Turbidity Barrier	70	LF	$ 30.00	$ 2,100.00	Recent project bids	
Subtotal				**$ 8,000.00**		
Control of Water / Water Diversion						
Cofferdams	1	LS	$ 60,000.00	$ 60,000.00	Engineer's Judgment	
Diversion	1	LS	$ 35,000.00	$ 35,000.00	Engineer's Judgment	one 8" base; two 12" for storms
Dewatering	30	DAY	$ 150.00	$ 4,500.00	Engineer's Judgment	
Subtotal				**$ 100,000.00**		

PROJECT:	DANIELSON MILL DAM	PROJECT NUMBER: 21032.00
SUBJECT:	Alternative II	
COMPUTATION:	MLP	DATE: September 2021
CHECK BY:	MED	DATE: September 2021

CONCEPTUAL DESIGN LEVEL OPINION OF PROBABLE COST
Alternative I: Natural Channel

Item	Quantity	Unit	Unit Price	Total	Source	Notes
SPILLWAY						
Preparation of Areas						
Remove Debris	1	LS	$ 1,500.00	$ 1,500.00	Engineers Judgment	
Excavation for Removal	250	CY	$ 25.00	$ 6,250.00	Recent Project Costs	
Spillway Removal	20	CY	$ 150.00	$ 3,000.00	Engineers Judgment	
Subgrade Prep	1	LS	$ 5,000.00	$ 5,000.00	Engineers Judgment	
Over excavation and Replacement	18	CY	$ 350.00	$ 6,300.00	Recent Project Costs	
Subtotal				**$ 23,000.00**		
New Outlet System Components						
New Intake	10	CY	$ 1,500.00	$ 15,000.00	Recent Project Costs	
Outlet Pipe	30	LF	$ 300.00	$ 9,000.00	RS Means Plus Install Cost	$200/LF Material + $100/LF install
Outelt Pipe Cradle	5	CY	$ 450.00	$ 2,250.00	Recent Project Costs	Pipe
DS Head Wall	5	CY	$ 1,500.00	$ 7,500.00	Recent Project Costs	
Stop Logs	1	LS	$ 10,000.00	$ 10,000.00	Recent Project Costs	
Mud Drain	1	LS	$ 10,000.00	$ 10,000.00	Recent Project Costs	
Operator Platform	1	LS	$ 10,000.00	$ 10,000.00	Recent Project Costs	
Engineered Fill Imported	500	TN	$ 20.00	$ 10,000.00	Recent Project Costs	
Engineered Fill Placed	250	CY	$ 30.00	$ 7,500.00	Recent Project Costs	
Subtotal				**$ 82,000.00**		
Nature Like Spillway Channel						
Excavation	186	CY	$ 30.00	$ 5,580.00	Recent Project Costs	
Stone Walls	30	CY	$ 750.00	$ 22,500.00	Engineer's Judgment	2-3' high stone walls
Control Weir	5	CY	$ 850.00	$ 4,250.00	Recent Project Costs	Mortard Stone Masonry
Stream Bed	45	CY	$ 75.00	$ 3,375.00	Engineer's Judgment	Sand to Boulders
Pool and Riffles	3	EA	$ 1,750.00	$ 5,250.00	Engineer's Judgment	Boulder Riffles
Bridge	1	LS	$ 17,500.00	$ 17,500.00	Engineer's Judgment	
Engineered Fill Imported	150	TN	$ 20.00	$ 3,000.00	Recent Project Costs	
Engineered Fill Placed	75	CY	$ 30.00	$ 2,250.00	Recent Project Costs	
Subtotal				**$ 64,000.00**		

PROJECT:	DANIELSON MILL DAM	PROJECT NUMBER: 21032.00
SUBJECT:	Alternative II	
COMPUTATION:	MLP	DATE: September 2021
CHECK BY:	MED	DATE: September 2021

CONCEPTUAL DESIGN LEVEL OPINION OF PROBABLE COST
Alternative I: Natural Channel

Item	Quantity	Unit	Unit Price	Total	Source	Notes
DAM EMBANKMENT						
US Slope						
Prep for US Slope Work	1	LS	$ 2,500.00	$ 2,500.00	Engineer's Judgment	
Sediment & Debris removal	150	CY	$ 25.00	$ 3,750.00	Recent Project Costs	
Geotextile fabric	450	SY	$ 5.00	$ 2,250.00	Recent Project Costs	
Upstream Slope Riprap Install	450	SY	$ 35.00	$ 15,750.00	Recent Project Costs	
Import Riprap	510	TN	$ 30.00	$ 15,300.00	Recent Project Costs	
Subtotal				**$ 40,000.00**		
DS Slope						
Prep for DS Slope Work	1	LS	$ 3,500.00	$ 3,500.00	Engineer's Judgment	
Excavation	50	CY	$ 35.00	$ 1,750.00	10 Means 31 23 0010	
Imported Backfill	620	TN	$ 25.00	$ 15,500.00	Recent Project Costs	
Install Backfill	310	CY	$ 35.00	$ 10,850.00	Recent Project Costs	
Import Filter Diaphragm	40	TN	$ 20.00	$ 800.00	Recent Project Costs	
Place FD	20	CY	$ 25.00	$ 500.00	Recent Project Costs	
Geotextile	100	SY	$ 5.00	$ 500.00	Recent Project Costs	
Crushed stone	10	CY	$ 35.00	$ 350.00	Recent Project Costs	
Toe Drain Pipe	150	LF	$ 3.00	$ 450.00	10 Means 33 46 16.35 0041	
F&I Cleanout	4	EA	$ 500.00	$ 2,000.00	Engineer's Judgment	
Loam and Seed	670	SY	$ 6.00	$ 4,020.00	Recent Project Costs	
Imported loam	170	CY	$ 30.00	$ 5,100.00	Recent Project Costs	
Subtotal				**$ 46,000.00**		
Crest						
Install Dense Grade	400	CY	$ 25.00	$ 10,000.00	Recent Project Costs	
Import Dense Grade	800	TN	$ 35.00	$ 28,000.00	Recent Project Costs	
Subtotal				**$ 38,000.00**		

PROJECT:	DANIELSON MILL DAM	PROJECT NUMBER: 21032.00
SUBJECT:	Alternative II	
COMPUTATION:	MLP	DATE: September 2021
CHECK BY:	MED	DATE: September 2021

CONCEPTUAL DESIGN LEVEL OPINION OF PROBABLE COST

Alternative I: Natural Channel

Item	Quantity	Unit	Unit Price	Total	Source	Notes
SUBTOTAL			$	496,000.00		
Contract Bonds			$	5,000.00	Recent Project Costs (1%)	
Design Contingency			$	126,000.00	25%	
OPINION OF PROBABLE CONSTRUCTION COST			**$**	**627,000.00**		
Final Design and Permitting			$	90,000.00		
Bid Phase			$	6,000.00		
Construction Administration			$	85,000.00		
Opinion of Probable Engineering Cost			**$**	**181,000.00**		

PROJECT:	DANIELSON MILL DAM	PROJECT NUMBER: 21032.00
SUBJECT:	Alternative II	
COMPUTATION:	MLP	DATE: September 2021
CHECK BY:	MED	DATE: September 2021

CONCEPTUAL DESIGN LEVEL OPINION OF PROBABLE COST
Alternative II: Spillway Rehab

Item	Quantity	Unit	Unit Price	Total	Source	Notes
General Bid Items						
Construction Trailer and Utilities	0	MON	$ 2,700.00	$ -		
Project Superintendent	3	MON	$ 8,200.00	$ 24,600.00		
QC Plans	6	HR	$ 150.00	$ 900.00	Additional for Winter	
Submittals	30	HR	$ 150.00	$ 4,500.00		
Schedules	8	HR	$ 150.00	$ 1,200.00		
Meetings	16	EA	$ 150.00	$ 2,400.00		Assume 2hrs each @ $150/hr
Project Sign	1	LS	$ 900.00	$ 900.00	Recent project bids	
Proctor Tests	4	TEST	$ 225.00	$ 900.00	Laboratory Quote plus markup	
Sieve Analyses	5	EA	$ 100.00	$ 500.00	Laboratory Quote plus markup	
Concrete Sampling/Testing	5	EA	$ 400.00	$ 2,000.00	Recent project bids	
Concrete Compression Tests	25	EA	$ 30.00	$ 750.00	Laboratory Quote plus markup	
Field Density Testing	10	DAY	$ 250.00	$ 2,500.00	Recent project bids	
Chemical Soil Tests	1	EA	$ 1,000.00	$ 1,000.00	Recent project bids	
Subtotal				**$ 43,000.00**		
Mobilization & Demolition						
Mobilization	1	LS	$ 10,000.00	$ 10,000.00	Engineers Judgment	
Demobilization	1	LS	$ 5,000.00	$ 5,000.00	Engineers Judgment	
Establish Access and Staging	1	LS	$ 15,000.00	$ 15,000.00		
Subtotal				**$ 30,000.00**		

PROJECT:	DANIELSON MILL DAM	PROJECT NUMBER: 21032.00
SUBJECT:	Alternative II	
COMPUTATION:	MLP	DATE: September 2021
CHECK BY:	MED	DATE: September 2021

CONCEPTUAL DESIGN LEVEL OPINION OF PROBABLE COST
Alternative II: Spillway Rehab

Item	Quantity	Unit	Unit Price	Total	Source	Notes
Clear and Grub						
Clear Work Area	1670	SY	$ 3.50	$ 5,845.00	Means 31 11 10.10 0300 Clear Only	
Grub Work Area	1670	SY	$ 2.00	$ 3,340.00	Means 31 11 10.10 0350 Grub	
Clear Trees Larger Than 8 inch	15	EA	$ 700.00	$ 10,500.00	RSMeans 31 11 10 10 71 20	Estimated Value
Engineered Fill Imported	60	TN	$ 20.00	$ 1,200.00	Recent Project Costs	
Engineered Fill Placed	30	CY	$ 30.00	$ 900.00	Recent Project Costs	Assumed value
Subtotal				**$ 22,000.00**		
Erosion Control						
Hay bales	150	LF	$ 7.00	$ 1,050.00	Recent project bids	
Silt Fence	260	LF	$ 5.00	$ 1,300.00	Recent project bids	
Maintenance and Removal	1	LS	$ 3,500.00	$ 3,500.00	Engineer's Judgment	
Turbidity Barrier	70	LF	$ 30.00	$ 2,100.00	Recent project bids	
Subtotal				**$ 8,000.00**		
Control of Water / Water Diversion						
Cofferdams	1	LS	$ 60,000.00	$ 60,000.00	Engineer's Judgment	
Diversion	1	LS	$ 35,000.00	$ 35,000.00	Engineer's Judgment	one 8" base; two 12" for storms
Dewatering	30	DAY	$ 150.00	$ 4,500.00	Engineer's Judgment	
Subtotal				**$ 100,000.00**		

PROJECT:	DANIELSON MILL DAM	PROJECT NUMBER: 21032.00
SUBJECT:	Alternative II	
COMPUTATION:	MLP	DATE: September 2021
CHECK BY:	MED	DATE: September 2021

CONCEPTUAL DESIGN LEVEL OPINION OF PROBABLE COST
Alternative II: Spillway Rehab

Item	Quantity	Unit	Unit Price	Total	Source	Notes
SPILLWAY						
Preparation of Areas						
Remove Debris	1	LS	$ 1,500.00	$ 1,500.00	Engineers Judgment	
Excavation for Removal	350	CY	$ 25.00	$ 8,750.00	Recent Project Costs	
Spillway Removal	20	CY	$ 150.00	$ 3,000.00	Engineers Judgment	
Subgrade Prep	1	LS	$ 5,000.00	$ 5,000.00	Engineers Judgment	
Over excavation and Replacement	27	CY	$ 350.00	$ 9,450.00	Recent Project Costs	
Subtotal				**$ 28,000.00**		
New Spillway Components						
New Intake	12	CY	$ 1,500.00	$ 18,000.00	Recent Project Costs	
Outlet Pipe	30	LF	$ 600.00	$ 18,000.00	RS Means Plus Install Cost	$450/LF Material + $150/LF install
Outelt Pipe Cradle	19	CY	$ 450.00	$ 8,550.00	Recent Project Costs	Pipe
DS Head Wall	4	CY	$ 1,500.00	$ 6,000.00	Recent Project Costs	
Stop Logs	1	LS	$ 15,000.00	$ 15,000.00	Recent Project Costs	
Mud Drain	1	LS	$ 10,000.00	$ 10,000.00	Recent Project Costs	
Operator Platform	1	LS	$ 12,500.00	$ 12,500.00	Recent Project Costs	
Engineered Fill Imported	700	TN	$ 20.00	$ 14,000.00	Recent Project Costs	
Engineered Fill Placed	350	CY	$ 30.00	$ 10,500.00	Recent Project Costs	
Subtotal				**$ 113,000.00**		

PROJECT:	DANIELSON MILL DAM	PROJECT NUMBER: 21032.00	
SUBJECT:	Alternative II		
COMPUTATION:	MLP	DATE: September 2021	
CHECK BY:	MED	DATE: September 2021	

CONCEPTUAL DESIGN LEVEL OPINION OF PROBABLE COST
Alternative II: Spillway Rehab

Item	Quantity	Unit	Unit Price	Total	Source	Notes
DAM EMBANKMENT						
US Slope						
Prep for US Slope Work	1	LS	$ 2,500.00	$ 2,500.00	Engineer's Judgment	
Sediment & Debris removal	170	CY	$ 25.00	$ 4,250.00	Recent Project Costs	
Geotextile fabric	490	SY	$ 5.00	$ 2,450.00	Recent Project Costs	
Upstream Slope Riprap Install	490	SY	$ 35.00	$ 17,150.00	Recent Project Costs	
Import Riprap	550	TN	$ 30.00	$ 16,500.00	Recent Project Costs	
Subtotal				**$ 43,000.00**		
DS Slope						
Prep for DS Slope Work	1	LS	$ 3,500.00	$ 3,500.00	Engineer's Judgment	
Excavation	58	CY	$ 35.00	$ 2,030.00	10 Means 31 23 0010	
Imported Backfill	820	TN	$ 25.00	$ 20,500.00	Recent Project Costs	
Install Backfill	410	CY	$ 35.00	$ 14,350.00	Recent Project Costs	
Import Filter Diaphragm	60	TN	$ 20.00	$ 1,200.00	Recent Project Costs	
Place FD	30	CY	$ 25.00	$ 750.00	Recent Project Costs	
Geotextile	140	SY	$ 5.00	$ 700.00	Recent Project Costs	
Crushed stone	10	CY	$ 35.00	$ 350.00	Recent Project Costs	
Toe Drain Pipe	200	LF	$ 3.00	$ 600.00	10 Means 33 46 16.35 0041	
F&I Cleanout	4	EA	$ 500.00	$ 2,000.00	Engineer's Judgment	
Loam and Seed	780	SY	$ 6.00	$ 4,680.00	Recent Project Costs	
Imported loam	200	CY	$ 30.00	$ 6,000.00	Recent Project Costs	
Subtotal				**$ 57,000.00**		
Crest						
Install Dense Grade	400	CY	$ 25.00	$ 10,000.00	Recent Project Costs	
Import Dense Grade	800	TN	$ 35.00	$ 28,000.00	Recent Project Costs	
Subtotal				**$ 38,000.00**		

PROJECT:	DANIELSON MILL DAM	PROJECT NUMBER: 21032.00
SUBJECT:	Alternative II	
COMPUTATION:	MLP	DATE: September 2021
CHECK BY:	MED	DATE: September 2021

CONCEPTUAL DESIGN LEVEL OPINION OF PROBABLE COST

Alternative II: Spillway Rehab

Item	Quantity	Unit	Unit Price	Total	Source	Notes
SUBTOTAL			$	482,000.00		
Contract Bonds			$	5,000.00	Recent Project Costs (1%)	
Design Contingency			$	122,000.00	25%	
OPINION OF PROBABLE CONSTRUCTION COST			**$**	**609,000.00**		
Final Design and Permitting			$	85,000.00		
Bid Phase			$	6,000.00		
Construction Administration			$	85,000.00		
Opinion of Probable Engineering Cost			**$**	**176,000.00**		

PROJECT:	DANIELSON MILL DAM	PROJECT NUMBER: 21032.00
SUBJECT:	Alternative III - Dam Removal	
COMPUTATION:	MLP	DATE: September 2021
CHECK BY:	MED	DATE: September 2021

CONCEPTUAL DESIGN LEVEL OPINION OF PROBABLE COST

Alternate III: Dam Removal

Item	Quantity	Unit	Unit Price	Total	Source	Notes
General Bid Items						
Construction Trailer and Utilities	0	MON	$ 2,700.00	$ -		
Project Superintendent	1	MON	$ 8,200.00	$ 8,200.00		
QC Plans	2	HR	$ 150.00	$ 300.00	Additional for Winter	
Submittals	15	HR	$ 150.00	$ 2,250.00		
Schedules	8	HR	$ 150.00	$ 1,200.00		
Meetings	2	EA	$ 150.00	$ 300.00		Assume 2hrs each @ $150/hr
Project Sign	1	LS	$ 900.00	$ 900.00	Recent project bids	
Proctor Tests	0	TEST	$ 225.00	$ -	Laboratory Quote plus markup	
Sieve Analyses	1	EA	$ 100.00	$ 100.00	Laboratory Quote plus markup	
Concrete Sampling/Testing	0	EA	$ 400.00	$ -	Recent project bids	
Concrete Compression Tests	0	EA	$ 30.00	$ -	Laboratory Quote plus markup	
Field Density Testing	0	DAY	$ 250.00	$ -	Recent project bids	
Chemical Soil Tests	1	EA	$ 1,000.00	$ 1,000.00	Recent project bids	
Subtotal				**$ 15,000.00**		
Mobilization & Demolition						
Mobilization	1	LS	$ 10,000.00	$ 10,000.00	Engineers Judgment	
Demobilization	1	LS	$ 5,000.00	$ 5,000.00	Engineers Judgment	
Establish Access and Staging	1	LS	$ 15,000.00	$ 15,000.00		
Subtotal				**$ 30,000.00**		
Erosion Control						
Hay bales	150	LF	$ 7.00	$ 1,050.00	Recent project bids	
Silt Fence	260	LF	$ 5.00	$ 1,300.00	Recent project bids	
Maintenance and Removal	1	LS	$ 3,500.00	$ 3,500.00	Engineer's Judgment	
Turbidity Barrier	70	LF	$ 30.00	$ 2,100.00	Recent project bids	
Subtotal				**$ 8,000.00**		

PROJECT:	DANIELSON MILL DAM	PROJECT NUMBER: 21032.00	
SUBJECT:	Alternative III - Dam Removal		
COMPUTATION:	MLP	DATE: September 2021	
CHECK BY:	MED	DATE: September 2021	

CONCEPTUAL DESIGN LEVEL OPINION OF PROBABLE COST

Alternate III: Dam Removal

Item	Quantity	Unit	Unit Price	Total	Source	Notes
Control of Water / Water Diversion						
Cofferdams	1	LS	$ 25,000.00	$ 25,000.00	Engineer's Judgment	
Diversion	1	LS	$ 15,000.00	$ 15,000.00	Engineer's Judgment	one 8" base; two 12" for storms
Dewatering	30	DAY	$ 150.00	$ 4,500.00	Engineer's Judgment	
Subtotal				**$ 45,000.00**		
Remove Dam - Entire Extent						
Excavation	350	CY	$ 50.00	$ 17,500.00	Engineer's Judgment	
Spillway Removal	20	CY	$ 350.00	$ 7,000.00	Engineer's Judgment	
Install Stream Bank Protection	110	SY	$ 200.00	$ 22,000.00	Recent Project Costs	
Import Riprap for Stream Bank Protection	170	TN	$ 50.00	$ 8,500.00	Recent Project Costs	
Subtotal				**$ 55,000.00**		
Impoundment Sediment						
Install Sediment Trap	1	LS	30000	$ 30,000.00	Engineers Judgment	Riprap Berm with Pump
Maitnain Sediment Trap	2	MO	10000	$ 20,000.00	Engineers Judgment	Daily checking; weekly removal
Handling and Disposal Of Sediment	1500	CY	50	$ 75,000.00	Engineers Judgment	
Seeding of Impoundment	35600	SY	1	$ 35,600.00	Engineers Judgment	
Subtotal				**$ 161,000.00**		
Invasive Species Management						
Invasive Species Management	1	LS	$ 100,000.00	$ 100,000.00	Recent Project Estimates	
Subtotal				**$ 100,000.00**		

PROJECT:	DANIELSON MILL DAM	PROJECT NUMBER: 21032.00
SUBJECT:	Alternative III - Dam Removal	
COMPUTATION:	MLP	DATE: September 2021
CHECK BY:	MED	DATE: September 2021

CONCEPTUAL DESIGN LEVEL OPINION OF PROBABLE COST

Alternate III: Dam Removal

Item	Quantity	Unit	Unit Price		Total	Source	Notes
SUBTOTAL				$	414,000.00		
Contract Bonds				$	5,000.00	Recent Project Costs (1%)	
Design Contingency				$	147,000.00	35%	
OPINION OF PROBABLE CONSTRUCTION COST				**$**	**566,000.00**		
Final Design and Permitting				$	230,000.00		
Bid Phase				$	6,000.00		
Construction Administration				$	35,000.00		
Opinion of Probable Engineering Cost				**$**	**271,000.00**		
Contaminated Sediment Contingency				**$**	**500,000.00**		

APPENDIX C
Wetland Delineation Supporting Information

Danielson Mill Dam

Medfield, Massachusetts

WETLAND FIELD REPORT

PROJECT TITLE: Danielson Pond Dam

PARE JOB NO.: 21032.00

LOCATION: Medfield, Massachusetts

DELINEATION DATE: 4/12/21

WEATHER: Overcast, 45 degrees

REPORT DATE: 5/27/21

PERFORMED BY: Erika Klinkhammer

DISCUSSIONS AND COMMENTS

Wetland resource areas in the vicinity of the proposed repairs to Danielson Pond Dam were defined and delineated in accordance with the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00, referred to as the WPA Regulations), the methodology specified in the publications entitled Delineating Bordering Vegetated Wetlands under the Massachusetts Wetlands Protection Act (Jackson, 1995) and The Regional Supplement to the Corps of Engineers Wetland Delineation Manual: North Central and Northeast Region (U.S. Army Corps of Engineers, 2012). Inspection and delineation of wetlands at the dam were completed on April 12, 2021.

Danielson Pond is an impoundment located upstream of Homestead Drive in Medfield, Massachusetts. The Dam discharges to an unnamed tributary of Great Brook. According to the most recent available MassGIS data, no mapped rare species habitat, certified or potential vernal pools, Outstanding Resource Waters, or Areas of Critical Environmental Concern are located on or in the vicinity of the Dam. According to the FEMA Flood Insurance Rate Map (FIRM) for Norfolk County, Massachusetts (community-panel no. 25021C0166E, effective date July 17, 2012) the entire site is located outside of mapped floodplain.

Pink field flags were placed at appropriate intervals along the wetland/upland borders in the vicinity of the Dam as well as potential staging areas for the project. Primary parameters evaluated in wetland delineation included vegetation, indicators of wetland hydrology, and hydric soil indicators. Banks of Danielson Pond and the Dam's outlet channel were delineated according to the first observable break in slope. Observed wetland hydrologic indicators and soils are described in the following sections and within the attached Data Forms. Wetland resource areas within the vicinity of the site include the following: **Bordering Vegetated Wetlands, Land Under Water Bodies/Waterways,** and **Bank.** Wetland resource areas are discussed in the following sections.

WETLAND DESCRIPTIONS

Danielson Pond

Danielson Pond is an approximately 8-acre impoundment located along a tributary of Great Brook in Medfield. The northwestern edges of the impoundment were delineated in the vicinity of the Dam. The edges of the pond are defined in section 10.54 of the WPA Regulations as **Bank,** which have an associated **100-foot Buffer Zone**, as well as a **50-foot No Disturb Zone** under the Medfield Wetlands Protection Bylaw (the Bylaw).

Flag series P-1 to P-30 defines the Bank of the pond in the vicinity of the dam. The series begins along the west side of the pond along a moderate slope leading from the dam crest to the wooded edge. The pond edge contains large boulders from flags P-5 to P-9, then corresponds with the block training walls to the mouth of

the outlet. Flag P-9 corresponds to the western end of the Dam's upstream training wall. From the eastern side of the outlet to flag P-15, the pond edge follows the top of a maintained slope along the linear dam crest. The edge becomes wooded near P-16 along a moderate slope until P-20 where the pond edge becomes more gradual and less defined. The remainder of the series has poorly defined edges and ultimately ends to the north after curving around a peninsula. Species of vegetation observed along the Bank included, but was not limited to, the following:

Common Name	Scientific Name	Indicator Status
Red Maple	*Acer rubrum*	FAC
White Pine	*Pinus strobus*	FACU
Sweet Pepperbush	*Clethra alnifolia*	FAC
Highbush Blueberry	*Vaccinium corymbosum*	FACW
Maleberry	*Lyonia ligustrina*	FACW
Poison Ivy	*Toxicodendron radicans*	FAC
Tussock Sedge	*Carex stricta*	OBL
Sensitive Fern	*Onoclea sensibilis*	FACW
Skunk Cabbage	*Symplocarpus foetidus*	OBL
Cinnamon Fern	*Osmunda cinnamomea*	FACW

The area below the Mean Low Water level of the impoundment is defined as **Land Under Water Bodies**. In the vicinity of the dam, the pond bottom consists of an unconsolidated sandy and mucky substrate that appears to be gradually sloping. At the time of delineation, the pond bottom in the vicinity of the Dam was colonized by a sparse community of emergent vegetation.

Outlet Channel

The Dam's spillway discharges to an outlet channel contained by training walls at the dam and flows north, ultimately passing beneath Homestead Drive. The channel is shown as a perennial stream on the USGS Topographic Quadrangle for the area and, as such, has an associated **200-foot Riverfront Area**.

The edges of the channel are defined in section 10.54 of the WPA Regulations as **Bank**. Flag series R-1 through R-7 and R-100 through R-107 define the west and east Banks of the stream, respectively. Each of the series begins at the spillway's stone training walls and extends north, terminating at a culvert headwall just south of Homestead Drive near wetland flags C-9 and C-10, which is described further below.

The Banks are colonized primarily by an herbaceous layer along the edges and some shrubs and trees toward the northern delineated portions. The area within the 4-8' wide channel consisted of a mostly rocky substrate which became mucky toward the center and contained some debris and fallen trees near the culvert at the end of the series. Vegetation observed along the Bank included, but was not limited to, the following species:

Common Name	Scientific Name	Indicator Status
Red Maple	*Acer rubrum*	FAC
White Ash	*Fraxinus americana*	FACU
White Pine	*Pinus strobus*	FACU
Multiflora Rose	*Rosa multiflora*	FACU

Tatarian Honeysuckle	*Lonicera tatarica*	FACU
Poison Ivy	*Toxicodendron radicans*	FAC
Jewelweed	*Impatiens capensis*	FACW
Skunk Cabbage	*Symplocarpus foetidus*	OBL
Evergreen Woodfern	*Dryopteris intermedia*	FAC
Oriental Bittersweet	*Celastrus orbiculatus*	UPL

Bordering Vegetated Wetlands

Vegetated wetland areas were observed at both ends of the delineated portions of the Pond, as well as within the wooded areas on both sides of the outlet channel downstream of the dam. These areas are classified as **Bordering Vegetated Wetlands** and have associated **100-foot Buffer Zones**, as well as **50-foot No Disturb Zones** under the Bylaw. Each of these areas are described below.

Wetland A

Flag series A-1 to A-8 defines the edges of a small pocket of wooded BVW located along the northeastern limits of the delineated pond edge. The series begins along the wooded portion of pond bank a short distance upstream of the dam crest and continues north before turning east along the toe of slope from the neighboring property. The wetland has a semi-permanently flooded interior closest to the poorly defined pond banks and saturated edges towards the dam crest. The wetland is forested and has a sparse understory of shrubs with evidence of a moderate herbaceous layer. Wetland vegetation observed included, but is not limited to, the following species:

Common Name	Scientific Name	Indicator Status
Red Maple	*Acer rubrum*	FAC
Red Oak	*Quercus rubra*	FACU
White Pine	*Pinus strobus*	FACU
Highbush Blueberry	*Vaccinium corymbosum*	FACW
Maleberry	*Lyonia ligustrina*	FACW
Poison Ivy	*Toxicodendron radicans*	FAC
Cinnamon Fern	*Osmunda cinnamomea*	FACW

Wetland B

Flag series B-1 to B-24 defines the edges of a BVW located west of the dam, connected hydrologically to the Pond via a pipe beneath the dam embankment between flags P-1 and P-2. The series begins west of the pond edge and follows the wetland/upland border in a counterclockwise fashion. The wetland occupies a low-lying, depressed area between the High Street roadway embankment, dam crest, and neighboring property to the south. The wetland is mostly occupied by herbaceous vegetation and sparse shrubs with a small number of trees along the upland borders, and appears to be regularly maintained. The upper edges of wetland appear to have a saturated hydrology with a seasonally flooded interior. Wetland vegetation observed included, but is not limited to, the following species:

Common Name	Scientific Name	Indicator Status
Red Maple	*Acer rubrum*	FAC
Black Elderberry	*Sambucus nigra*	FACW
Multiflora Rose	*Rosa multiflora*	FACU
Skunk Cabbage	*Symplocarpus foetidus*	OBL
Common Rush	*Juncus effusus*	FACW
Tussock Sedge	*Carex stricta*	OBL
Canada Goldenrod	*Solidago canadensis*	FACU

Wetland C

Flag series C-1 to C-30 defines the edges of a BVW bordering the downstream outlet channel. The series begins at Bank flag R-2 and borders a stone wall located at the toe of slope from the dam embankment before turning north along the toe of slope from the neighboring property to the west. The series continues east along the base of the Homestead Lane roadway embankment before turning south along the toe of slope from the neighboring property to the east, then turning west once more to border the stone wall along the dam crest embankment. The wetland appears to be seasonally to semi-permanently flooded and fed by a combination of road runoff, groundwater, and overflow from the stream. The wetland is densely forested with a dense shrub understory and moderate herb layer. Wetland vegetation observed included, but is not limited to, the following species:

Common Name	Scientific Name	Indicator Status
Red Maple	*Acer rubrum*	FAC
Slippery Elm	*Ulmus rubra*	FAC
White Pine	*Pinus strobus*	FACU
Arrowwood	*Viburnum dentatum*	FAC
Highbush Blueberry	*Vaccinium corymbosum*	FACW
Horsetail	*Equisetum sp.*	Assume FAC
Skunk Cabbage	*Symplocarpus foetidus*	OBL
Cinnamon Fern	*Osmunda cinnamomea*	FACW
Jewelweed	*Impatiens capensis*	FACW

EK

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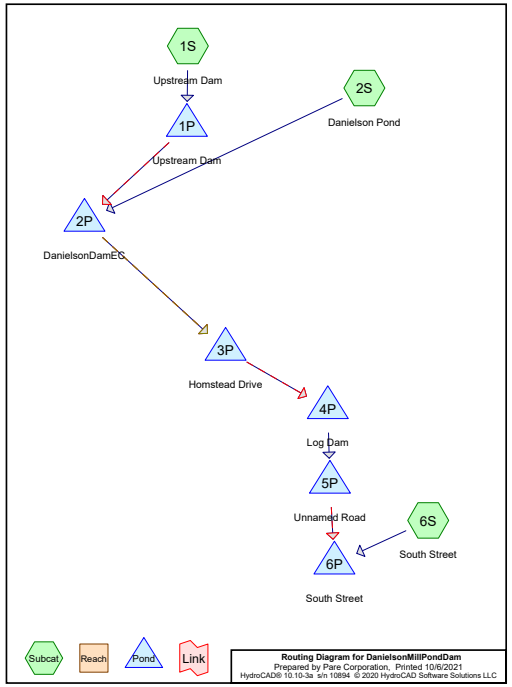
APPENDIX D
Hydrologic and Hydraulics Analyses

Danielson Mill Dam

Medfield, Massachusetts

Danielson Mill Dam Existing Condition



Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Danielson NOAA 24-hr S1	1-yr	Default	24.00	1	2.79	2
2	2-yr	Danielson NOAA 24-hr S1	2-yr	Default	24.00	1	3.43	2
3	5-yr	Danielson NOAA 24-hr S1	5-yr	Default	24.00	1	4.46	2
4	10-yr	Danielson NOAA 24-hr S1	10-yr	Default	24.00	1	5.32	2
5	25-yr	Danielson NOAA 24-hr S1	25-yr	Default	24.00	1	6.50	2
6	50-yr	Danielson NOAA 24-hr S1	50-yr	Default	24.00	1	7.37	2
7	100-yr	Danielson NOAA 24-hr S1	100-yr	Default	24.00	1	8.32	2
8	200-yr	Danielson NOAA 24-hr S1	200-yr	Default	24.00	1	9.48	2
9	500-yr	Danielson NOAA 24-hr S1	500-yr	Default	24.00	1	11.30	2
10	1000-yr	Danielson NOAA 24-hr S1	1000-yr	Default	24.00	1	12.80	2

Summary for Subcatchment 1S: Upstream Dam

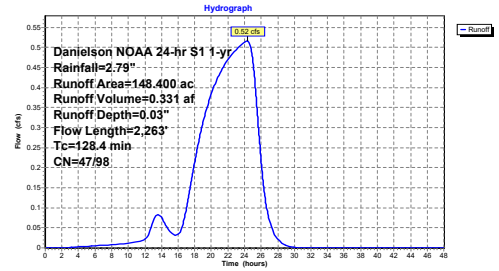
Runoff = 0.52 cfs @ 24.39 hrs, Volume= 0.331 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1-yr Rainfall=2.79"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

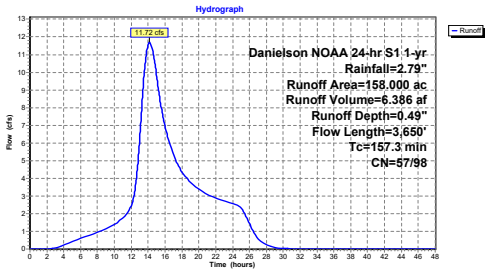
Runoff = 11.72 cfs @ 14.16 hrs, Volume= 6.386 af, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1-yr Rainfall=2.79"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

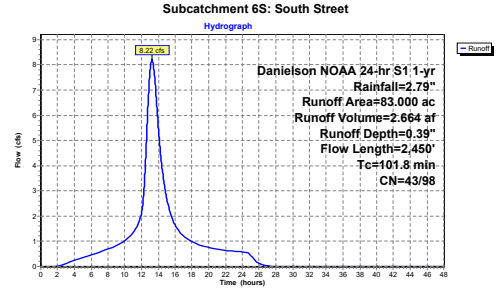
Runoff = 8.22 cfs @ 13.23 hrs, Volume= 2.664 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1-yr Rainfall=2.79"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.19" for 1-yr event
Inflow = 1.02 cfs @ 24.39 hrs, Volume= 2.314 af, Incl. 0.50 cfs Base Flow
Outflow = 0.98 cfs @ 24.95 hrs, Volume= 2.315 af, Atten= 4%, Lag= 33.7 min
Primary = 0.98 cfs @ 24.95 hrs, Volume= 2.315 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 149.07' @ 24.95 hrs Storage= 0.765 af (0.069 af above start)

Plug-Flow detention time= 826.2 min calculated for 1.618 af (70% of inflow)
Center-of-Mass det. time= 13.2 min (1,432.0 - 1,418.8)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

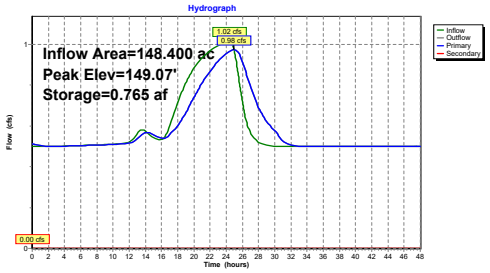
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=0.98 cfs @ 24.95 hrs HW=149.07' TW=146.11' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 0.98 cfs @ 1.53 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2P: DanielsonDamEC

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.42" for 1-yr event
Inflow = 12.79 cfs @ 14.16 hrs, Volume= 10.685 af, Incl. 0.50 cfs Base Flow
Outflow = 4.79 cfs @ 19.45 hrs, Volume= 10.200 af, Atten= 63%, Lag= 317.5 min
Primary = 4.79 cfs @ 19.45 hrs, Volume= 10.200 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 146.13' @ 19.45 hrs Storage= 27.071 af (3.087 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 314.3 min (1,485.0 - 1,170.7)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	145.60'	**3.8' long SLs** 2 End Contraction(s) 4.0' Crest Height
#2	Primary	143.00'	**3.8' long SLsOperate X 0.00** 2 End Contraction(s) 0.5' Crest Height
#3	Tertiary	147.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 138.00 172.20 189.20 208.00 235.60 262.00 270.00

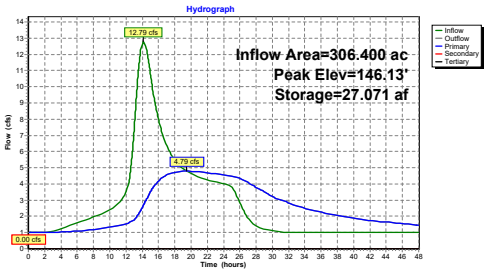
Device	Routing	Invert	Outlet Devices
			Elev. (feet) 148.10 147.20 147.00 147.08 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10
#4	Secondary	146.40'	**3.5' long x 5.0' breadth TWallOTing X 2.00** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=4.79 cfs @ 19.45 hrs HW=146.13' TW=138.42' (Dynamic Tailwater)
└**1=SLs** (Weir Controls 4.79 cfs @ 2.43 fps)
└**2=SLsOperate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.20' (Dynamic Tailwater)
└**4=TWallOTing** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.20' (Dynamic Tailwater)
└**3=Top of Dam** (Controls 0.00 cfs)

Pond 2P: DanielsonDamEC



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.40" for 1-yr event
Inflow = 4.79 cfs @ 19.45 hrs, Volume= 10.200 af
Outflow = 4.79 cfs @ 19.46 hrs, Volume= 10.200 af, Atten= 0%, Lag= 0.8 min
Primary = 4.79 cfs @ 19.46 hrs, Volume= 10.200 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 138.42' @ 19.47 hrs Storage= 0.011 af (0.004 af above start)

Plug-Flow detention time= 2.3 min calculated for 10.193 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (1,485.4 - 1,485.0)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

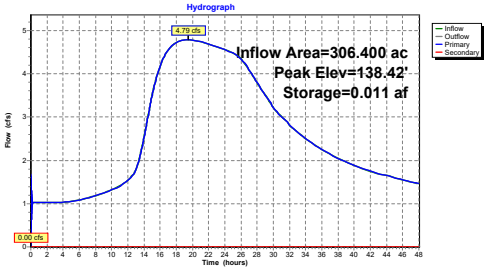
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=4.79 cfs @ 19.46 hrs HW=138.42' TW=138.34' (Dynamic Tailwater)
└**1=RCP_Round 48"** (Outlet Controls 4.79 cfs @ 1.70 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.40" for 1-yr event
Inflow = 4.79 cfs @ 19.46 hrs, Volume= 10.200 af
Outflow = 4.79 cfs @ 19.47 hrs, Volume= 10.200 af, Atten= 0%, Lag= 0.4 min
Primary = 4.79 cfs @ 19.47 hrs, Volume= 10.200 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 138.34' @ 19.47 hrs Storage= 0.012 af (0.003 af above start)

Plug-Flow detention time= 3.1 min calculated for 10.190 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (1,485.6 - 1,485.4)

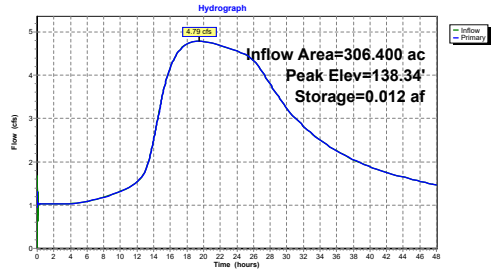
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=4.79 cfs @ 19.47 hrs HW=138.34' TW=137.78' (Dynamic Tailwater)
└**1=Log Dam** (Weir Controls 4.79 cfs @ 1.46 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.40" for 1-yr event
Inflow = 4.79 cfs @ 19.47 hrs, Volume= 10.200 af
Outflow = 4.79 cfs @ 19.60 hrs, Volume= 10.195 af, Atten= 0%, Lag= 7.9 min
Primary = 4.79 cfs @ 19.60 hrs, Volume= 10.195 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 137.78' @ 19.60 hrs Storage= 0.057 af (0.048 af above start)

Plug-Flow detention time= 8.3 min calculated for 10.186 af (100% of inflow)
Center-of-Mass det. time= 5.0 min (1,490.6 - 1,485.6)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

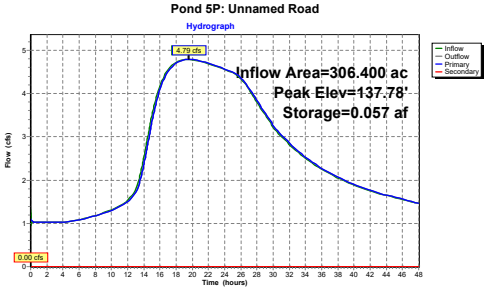
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=4.79 cfs @ 19.60 hrs HW=137.78' TW=127.45' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 4.79 cfs @ 2.07 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=137.27' TW=126.23' (Dynamic Tailwater)
└**1=Top of Road** (Controls 0.00 cfs)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 0.40" for 1-yr event
Inflow = 10.03 cfs @ 13.24 hrs, Volume= 12.859 af
Outflow = 10.03 cfs @ 13.24 hrs, Volume= 12.858 af, Atten= 0%, Lag= 0.1 min
Primary = 10.03 cfs @ 13.24 hrs, Volume= 12.858 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 127.69' @ 13.24 hrs Storage= 0.002 af

Plug-Flow detention time= 0.4 min calculated for 12.857 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (1,358.9 - 1,358.7)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

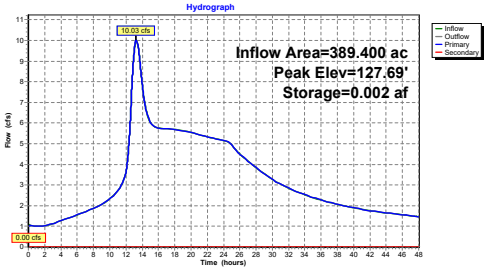
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=10.03 cfs @ 13.24 hrs HW=127.69' (Free Discharge)
└**1=Culvert** (Inlet Controls 10.03 cfs @ 4.49 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

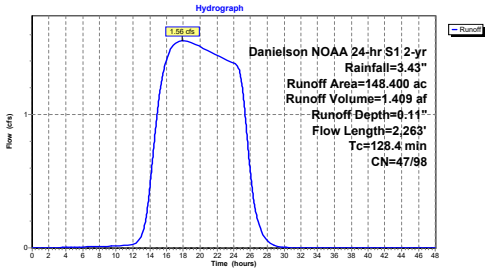
Runoff = 1.56 cfs @ 17.83 hrs, Volume= 1.409 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 2-yr Rainfall=3.43"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

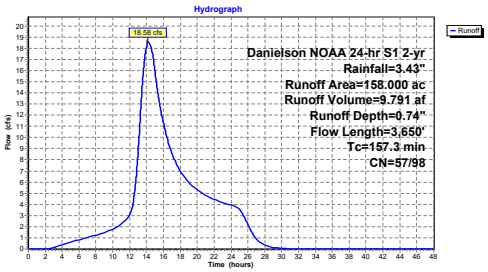
Runoff = 18.58 cfs @ 14.16 hrs, Volume= 9.791 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 2-yr Rainfall=3.43"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

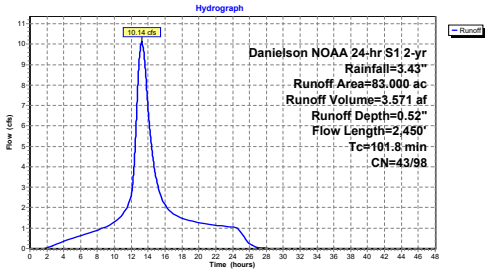
Runoff = 10.14 cfs @ 13.23 hrs, Volume= 3.571 af, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 2-yr Rainfall=3.43"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.27" for 2-yr event
Inflow = 2.06 cfs @ 17.83 hrs, Volume= 3.392 af, Incl. 0.50 cfs Base Flow
Outflow = 1.99 cfs @ 20.71 hrs, Volume= 3.393 af, Atten= 3%, Lag= 172.4 min
Primary = 1.99 cfs @ 20.71 hrs, Volume= 3.393 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 149.20' @ 20.71 hrs Storage= 0.897 af (0.201 af above start)

Plug-Flow detention time= 536.9 min calculated for 2.697 af (79% of inflow)
Center-of-Mass det. time= 40.7 min (1,382.1 - 1,341.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

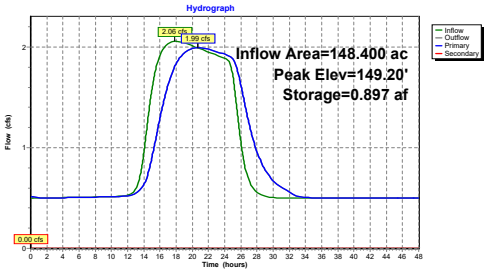
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=1.99 cfs @ 20.71 hrs HW=149.20' TW=146.35' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 1.99 cfs @ 1.96 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2P: DanielsonDamEC

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.59" for 2-yr event
Inflow = 19.73 cfs @ 14.16 hrs, Volume= 15.168 af, Incl. 0.50 cfs Base Flow
Outflow = 7.90 cfs @ 19.81 hrs, Volume= 14.495 af, Atten= 60%, Lag= 338.7 min
Primary = 7.90 cfs @ 19.81 hrs, Volume= 14.495 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 146.35' @ 19.81 hrs Storage= 28.785 af (4.801 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 333.1 min (1,476.3 - 1,143.2)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	145.60'	**3.8' long SLs** 2 End Contraction(s) 4.0' Crest Height
#2	Primary	143.00'	**3.8' long SLsOperate X 0.00** 2 End Contraction(s) 0.5' Crest Height
#3	Tertiary	147.00'	**Top of Dam, C= 2.60**
			Offset (feet) 0.00 25.00 54.50 67.60 100.00 138.00 172.20 189.20 208.00 235.60 262.00 270.00

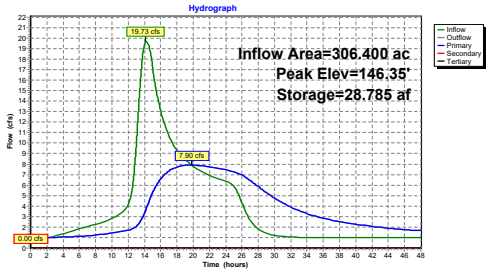
			Elev. (feet) 148.10 147.20 147.00 147.08 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10
#4	Secondary	146.40'	**3.5' long x 5.0' breadth TWallOTing X 2.00**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=7.90 cfs @ 19.81 hrs HW=146.35' TW=138.58' (Dynamic Tailwater)
└─**1=SLs** (Weir Controls 7.90 cfs @ 2.89 fps)
└─**2=SLsOperate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.20' (Dynamic Tailwater)
└─**4=TWallOTing** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.20' (Dynamic Tailwater)
└─**3=Top of Dam** (Controls 0.00 cfs)

Pond 2P: DanielsonDamEC



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.57" for 2-yr event
Inflow = 7.90 cfs @ 19.81 hrs, Volume= 14.495 af
Outflow = 7.90 cfs @ 19.82 hrs, Volume= 14.494 af, Atten= 0%, Lag= 0.7 min
Primary = 7.90 cfs @ 19.82 hrs, Volume= 14.494 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 138.58' @ 19.82 hrs Storage= 0.014 af (0.007 af above start)

Plug-Flow detention time= 1.9 min calculated for 14.487 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (1,476.8 - 1,476.3)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

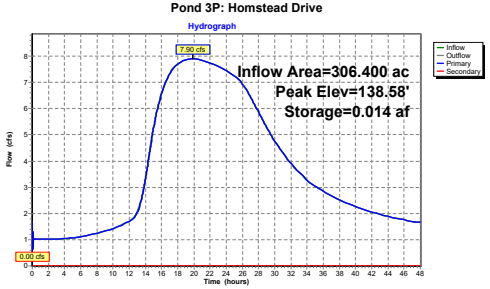
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"**
			L= 106.0' RCP, rounded edge headwall, Ke= 0.100
			Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900
			n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27**
			Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00
			Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=7.90 cfs @ 19.82 hrs HW=138.58' TW=138.42' (Dynamic Tailwater)
└─**1=RCP_Round 48"** (Outlet Controls 7.90 cfs @ 2.43 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└─**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.57" for 2-yr event
Inflow = 7.90 cfs @ 19.82 hrs, Volume= 14.494 af
Outflow = 7.90 cfs @ 19.82 hrs, Volume= 14.494 af, Atten= 0%, Lag= 0.3 min
Primary = 7.90 cfs @ 19.82 hrs, Volume= 14.494 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 138.42' @ 19.82 hrs Storage= 0.014 af (0.004 af above start)

Plug-Flow detention time= 2.3 min calculated for 14.484 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (1,477.1 - 1,476.8)

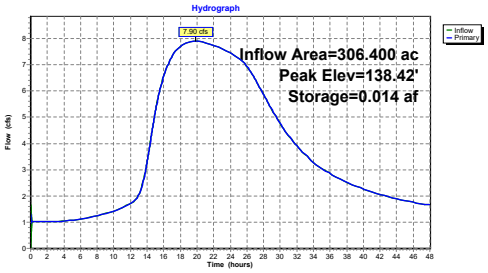
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27**
			Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00
			Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=7.90 cfs @ 19.82 hrs HW=138.42' TW=138.08' (Dynamic Tailwater)
└─**1=Log Dam** (Weir Controls 7.90 cfs @ 1.66 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.57" for 2-yr event
Inflow = 7.90 cfs @ 19.82 hrs, Volume= 14.494 af
Outflow = 7.86 cfs @ 20.80 hrs, Volume= 14.486 af, Atten= 0%, Lag= 58.3 min
Primary = 7.86 cfs @ 20.80 hrs, Volume= 14.486 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 138.09' @ 20.80 hrs Storage= 0.318 af (0.309 af above start)

Plug-Flow detention time= 18.8 min calculated for 14.477 af (100% of inflow)
Center-of-Mass det. time= 16.2 min (1,493.3 - 1,477.1)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

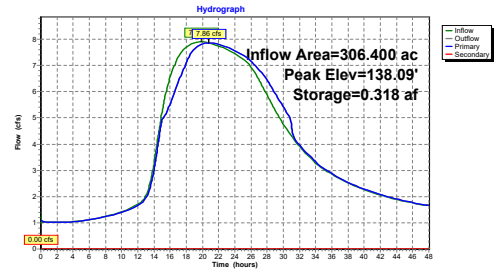
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=7.86 cfs @ 20.80 hrs HW=138.09' TW=127.65' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 7.86 cfs @ 2.52 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=137.27' TW=126.23' (Dynamic Tailwater)
└**1=Top of Road** (Controls 0.00 cfs)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 0.56" for 2-yr event
Inflow = 12.24 cfs @ 13.24 hrs, Volume= 18.057 af
Outflow = 12.24 cfs @ 13.24 hrs, Volume= 18.055 af, Atten= 0%, Lag= 0.1 min
Primary = 12.24 cfs @ 13.24 hrs, Volume= 18.055 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 127.80' @ 13.24 hrs Storage= 0.003 af

Plug-Flow detention time= 0.3 min calculated for 18.055 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (1,371.6 - 1,371.4)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

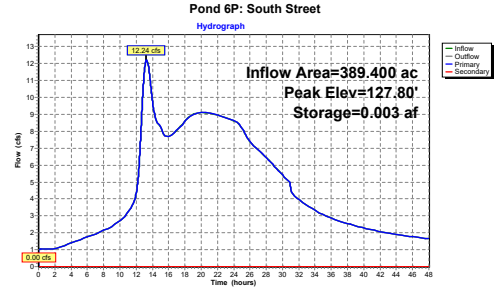
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=12.24 cfs @ 13.24 hrs HW=127.80' (Free Discharge)
└**1=Culvert** (Inlet Controls 12.24 cfs @ 4.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

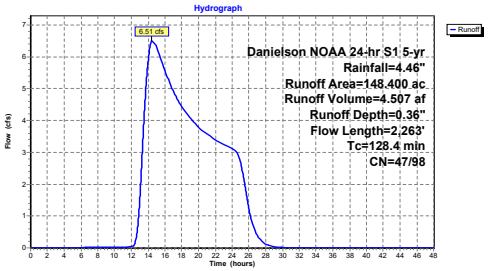
Runoff = 6.51 cfs @ 14.41 hrs, Volume= 4.507 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 5-yr Rainfall=4.46"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

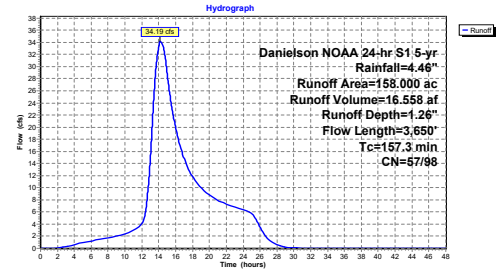
Runoff = 34.19 cfs @ 14.16 hrs, Volume= 16.558 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 5-yr Rainfall=4.46"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

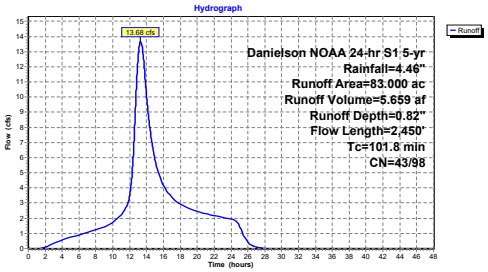
Runoff = 13.68 cfs @ 13.24 hrs, Volume= 5.659 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 5-yr Rainfall=4.46"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.52" for 5-yr event
Inflow = 7.01 cfs @ 14.41 hrs, Volume= 6.490 af, Incl. 0.50 cfs Base Flow
Outflow = 5.93 cfs @ 16.20 hrs, Volume= 6.491 af, Atten= 15%, Lag= 107.1 min
Primary = 5.93 cfs @ 16.20 hrs, Volume= 6.491 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 149.57' @ 16.20 hrs Storage= 1.273 af (0.576 af above start)

Plug-Flow detention time= 291.8 min calculated for 5.794 af (89% of inflow)
Center-of-Mass det. time= 57.7 min (1,276.0 - 1,218.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

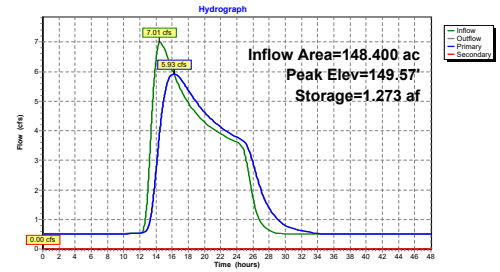
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=5.93 cfs @ 16.20 hrs HW=149.57' TW=146.65' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 5.93 cfs @ 2.87 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2P: DanielsonDamEC

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.98" for 5-yr event
Inflow = 38.09 cfs @ 14.33 hrs, Volume= 25.033 af, Incl. 0.50 cfs Base Flow
Outflow = 17.32 cfs @ 18.15 hrs, Volume= 24.162 af, Atten= 55%, Lag= 228.8 min
Primary = 14.28 cfs @ 18.15 hrs, Volume= 22.201 af
Secondary = 3.04 cfs @ 18.15 hrs, Volume= 1.961 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 146.72' @ 18.15 hrs Storage= 32.169 af (8.185 af above start)

Plug-Flow detention time= 2,781.6 min calculated for 0.178 af (1% of inflow)
Center-of-Mass det. time= 315.1 min (1,422.4 - 1,107.4)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	145.60'	**3.8' long SLs** 2 End Contraction(s) 4.0' Crest Height
#2	Primary	143.00'	**3.8' long SLsOperate X 0.00** 2 End Contraction(s) 0.5' Crest Height
#3	Tertiary	147.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 138.00 172.20 189.20 208.00 235.60 262.00 270.00

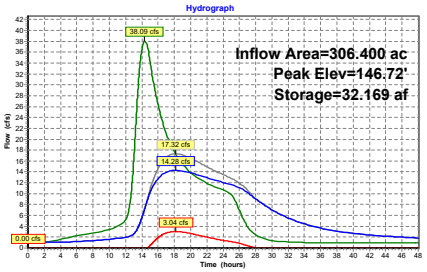
Device	Routing	Invert	Outlet Devices
#4	Secondary	146.40'	**3.5' long x 5.0' breadth TWallOTing X 2.00** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 Elev. (feet) 148.10 147.20 147.00 147.08 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10

Primary OutFlow Max=14.28 cfs @ 18.15 hrs HW=146.72' TW=139.17' (Dynamic Tailwater)
└─**1=SLs** (Weir Controls 14.28 cfs @ 3.57 fps)
└─**2=SLsOperate** (Controls 0.00 cfs)

Secondary OutFlow Max=3.04 cfs @ 18.15 hrs HW=146.72' TW=139.17' (Dynamic Tailwater)
└─**4=TWallOTing** (Weir Controls 3.04 cfs @ 1.37 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.20' (Dynamic Tailwater)
└─**3=Top of Dam** (Controls 0.00 cfs)

Pond 2P: DanielsonDamEC



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.95" for 5-yr event
Inflow = 17.32 cfs @ 18.15 hrs, Volume= 24.162 af
Outflow = 17.30 cfs @ 18.20 hrs, Volume= 24.161 af, Atten= 0%, Lag= 3.1 min
Primary = 17.30 cfs @ 18.20 hrs, Volume= 24.161 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 139.18' @ 18.77 hrs Storage= 0.039 af (0.033 af above start)

Plug-Flow detention time= 1.7 min calculated for 24.155 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,423.3 - 1,422.4)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

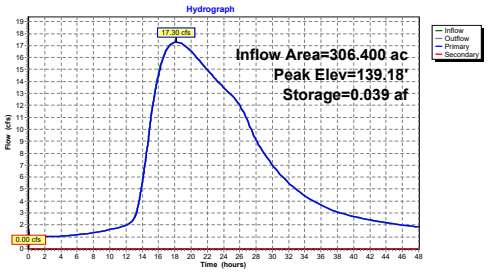
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=17.29 cfs @ 18.20 hrs HW=139.17' TW=138.88' (Dynamic Tailwater)
└─**1=RCP_Round 48"** (Outlet Controls 17.29 cfs @ 3.48 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└─**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.95" for 5-yr event
Inflow = 17.30 cfs @ 18.20 hrs, Volume= 24.161 af
Outflow = 17.27 cfs @ 18.25 hrs, Volume= 24.161 af, Atten= 0%, Lag= 2.9 min
Primary = 17.27 cfs @ 18.25 hrs, Volume= 24.161 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 138.90' @ 19.02 hrs Storage= 0.023 af (0.013 af above start)

Plug-Flow detention time= 1.6 min calculated for 24.151 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (1,423.7 - 1,423.3)

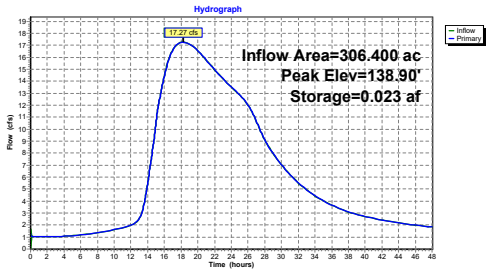
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=17.25 cfs @ 18.25 hrs HW=138.89' TW=138.79' (Dynamic Tailwater)
└─**1=Log Dam** (Weir Controls 17.25 cfs @ 1.20 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.95" for 5-yr event
Inflow = 17.27 cfs @ 18.25 hrs, Volume= 24.161 af
Outflow = 17.06 cfs @ 19.11 hrs, Volume= 24.150 af, Atten= 1%, Lag= 52.1 min
Primary = 17.06 cfs @ 19.11 hrs, Volume= 24.150 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 138.81' @ 19.11 hrs Storage= 0.844 af (0.835 af above start)

Plug-Flow detention time= 27.6 min calculated for 24.141 af (100% of inflow)
Center-of-Mass det. time= 25.8 min (1,449.5 - 1,423.7)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

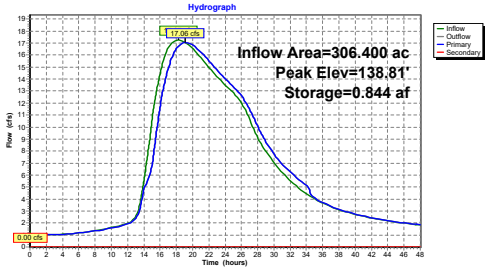
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=17.06 cfs @ 19.11 hrs HW=138.81' TW=128.12' (Dynamic Tailwater)
2=Culvert (Barrel Controls 17.06 cfs @ 3.40 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=137.27' TW=126.23' (Dynamic Tailwater)
1=Top of Road (Controls 0.00 cfs)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 0.92" for 5-yr event
Inflow = 19.73 cfs @ 18.72 hrs, Volume= 29.809 af
Outflow = 19.73 cfs @ 18.86 hrs, Volume= 29.808 af, Atten= 0%, Lag= 8.4 min
Primary = 19.73 cfs @ 18.86 hrs, Volume= 29.808 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 128.13' @ 18.86 hrs Storage= 0.017 af

Plug-Flow detention time= 0.4 min calculated for 29.805 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (1,347.2 - 1,347.0)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

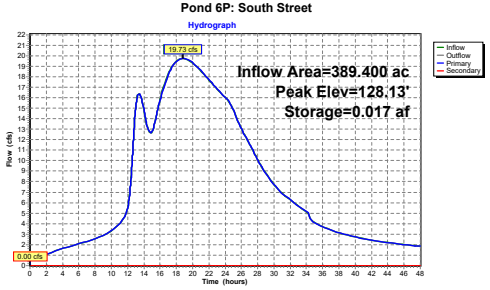
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=19.73 cfs @ 18.86 hrs HW=128.13' (Free Discharge)
1=Culvert (Barrel Controls 19.73 cfs @ 7.76 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
2=Top of Road (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

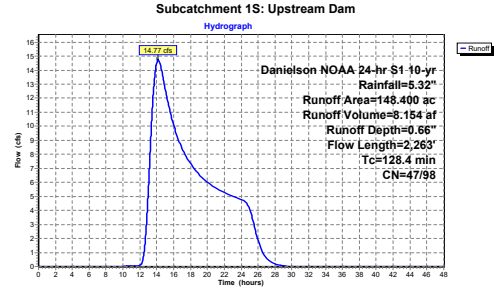
Runoff = 14.77 cfs @ 14.13 hrs, Volume= 8.154 af, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 10-yr Rainfall=5.32"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

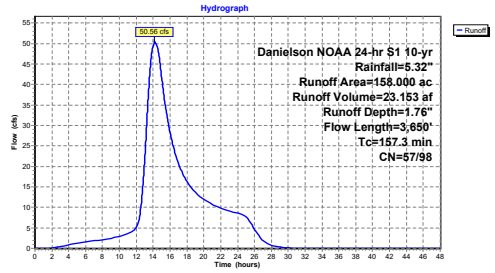
Runoff = 50.56 cfs @ 14.16 hrs, Volume= 23.153 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 10-yr Rainfall=5.32"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

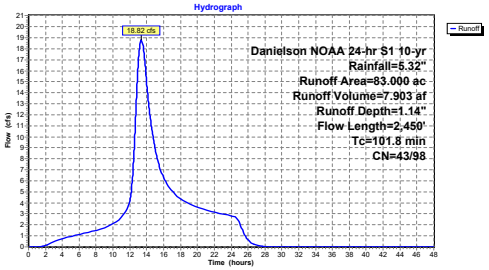
Runoff = 18.82 cfs @ 13.35 hrs, Volume= 7.903 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 10-yr Rainfall=5.32"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.82" for 10-yr event
Inflow = 15.27 cfs @ 14.13 hrs, Volume= 10.138 af, Incl. 0.50 cfs Base Flow
Outflow = 12.09 cfs @ 15.37 hrs, Volume= 10.138 af, Atten= 21%, Lag= 74.8 min
Primary = 12.09 cfs @ 15.37 hrs, Volume= 10.138 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 150.02' @ 15.37 hrs Storage= 1.759 af (1.063 af above start)

Plug-Flow detention time= 203.0 min calculated for 9.441 af (93% of inflow)
Center-of-Mass det. time= 58.8 min (1,213.2 - 1,154.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

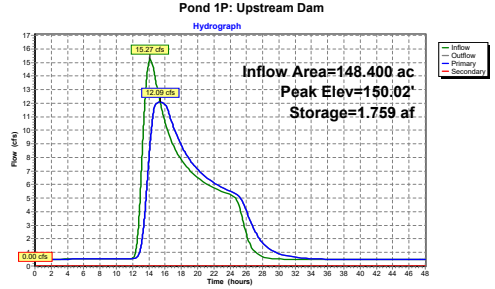
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=12.09 cfs @ 15.37 hrs HW=150.02' TW=146.87' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 12.09 cfs @ 3.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2P: DanielsonDamEC

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.38" for 10-yr event
Inflow = 60.73 cfs @ 14.34 hrs, Volume= 35.275 af, Incl. 0.50 cfs Base Flow
Outflow = 29.98 cfs @ 17.22 hrs, Volume= 34.306 af, Atten= 51%, Lag= 173.1 min
Primary = 20.50 cfs @ 17.22 hrs, Volume= 28.212 af
Secondary = 9.43 cfs @ 17.22 hrs, Volume= 6.087 af
Tertiary = 0.05 cfs @ 17.22 hrs, Volume= 0.006 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 147.03' @ 17.22 hrs Storage= 35.295 af (11.311 af above start)

Plug-Flow detention time= 1,221.5 min calculated for 10.321 af (29% of inflow)
Center-of-Mass det. time= 285.5 min (1,370.6 - 1,085.1)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	145.60'	**3.8' long SLs** 2 End Contraction(s) 4.0' Crest Height
#2	Primary	143.00'	**3.8' long SLsOperate X 0.00** 2 End Contraction(s) 0.5' Crest Height
#3	Tertiary	147.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 138.00 172.20 189.20 208.00 235.60 262.00 270.00

Elev. (feet) 148.10 147.20 147.00 147.08 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10

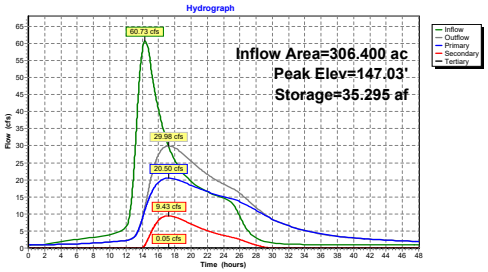
#4 Secondary 146.40' **3.5' long x 5.0' breadth TWallOTing X 2.00**
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=20.50 cfs @ 17.22 hrs HW=147.03' TW=139.91' (Dynamic Tailwater)
└**1=SLs** (Weir Controls 20.50 cfs @ 4.08 fps)
└**2=SLsOperate** (Controls 0.00 cfs)

Secondary OutFlow Max=9.43 cfs @ 17.22 hrs HW=147.03' TW=139.91' (Dynamic Tailwater)
└**4=TWallOTing** (Weir Controls 9.43 cfs @ 2.14 fps)

Tertiary OutFlow Max=0.05 cfs @ 17.22 hrs HW=147.03' TW=139.91' (Dynamic Tailwater)
└**3=Top of Dam** (Weir Controls 0.05 cfs @ 0.18 fps)

Pond 2P: DanielsonDamEC



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.34" for 10-yr event
Inflow = 29.98 cfs @ 17.22 hrs, Volume= 34.306 af
Outflow = 29.96 cfs @ 17.28 hrs, Volume= 34.305 af, Atten= 0%, Lag= 3.7 min
Primary = 29.96 cfs @ 17.28 hrs, Volume= 34.305 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 139.91' @ 17.40 hrs Storage= 0.093 af (0.087 af above start)

Plug-Flow detention time= 2.0 min calculated for 34.298 af (100% of inflow)
Center-of-Mass det. time= 1.4 min (1,372.0 - 1,370.6)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

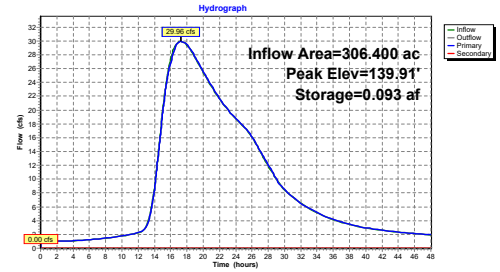
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=29.95 cfs @ 17.28 hrs HW=139.91' TW=139.52' (Dynamic Tailwater)
└**1=RCP_Round 48"** (Outlet Controls 29.95 cfs @ 4.18 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.34" for 10-yr event
Inflow = 29.96 cfs @ 17.28 hrs, Volume= 34.305 af
Outflow = 29.95 cfs @ 17.30 hrs, Volume= 34.304 af, Atten= 0%, Lag= 1.1 min
Primary = 29.95 cfs @ 17.30 hrs, Volume= 34.304 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 139.52' @ 17.50 hrs Storage= 0.051 af (0.042 af above start)

Plug-Flow detention time= 1.6 min calculated for 34.294 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,372.8 - 1,372.0)

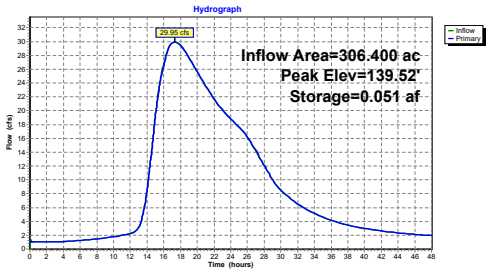
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=29.93 cfs @ 17.30 hrs HW=139.52' TW=139.46' (Dynamic Tailwater)
└**1=Log Dam** (Weir Controls 29.93 cfs @ 0.90 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.34" for 10-yr event
Inflow = 29.95 cfs @ 17.30 hrs, Volume= 34.304 af
Outflow = 29.89 cfs @ 17.53 hrs, Volume= 34.292 af, Atten= 0%, Lag= 13.7 min
Primary = 21.51 cfs @ 17.53 hrs, Volume= 30.920 af
Secondary = 8.38 cfs @ 17.53 hrs, Volume= 3.372 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 139.46' @ 17.53 hrs Storage= 1.340 af (1.331 af above start)

Plug-Flow detention time= 31.6 min calculated for 34.279 af (100% of inflow)
Center-of-Mass det. time= 30.3 min (1,403.1 - 1,372.8)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

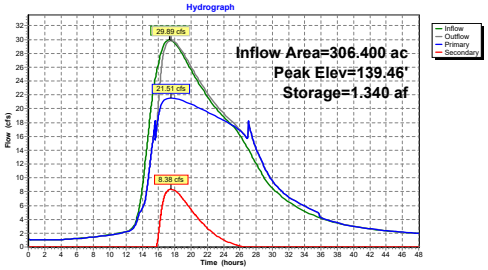
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=21.51 cfs @ 17.53 hrs HW=139.46' TW=128.68' (Dynamic Tailwater)
↳**2=Culvert** (Barrel Controls 21.51 cfs @ 4.10 fps)

Secondary OutFlow Max=8.38 cfs @ 17.53 hrs HW=139.46' TW=128.68' (Dynamic Tailwater)
↳**1=Top of Road** (Weir Controls 8.38 cfs @ 1.08 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 1.30" for 10-yr event
Inflow = 34.63 cfs @ 17.30 hrs, Volume= 42.195 af
Outflow = 34.54 cfs @ 17.53 hrs, Volume= 42.193 af, Atten= 0%, Lag= 13.6 min
Primary = 34.54 cfs @ 17.53 hrs, Volume= 42.193 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 128.68' @ 17.53 hrs Storage= 0.162 af

Plug-Flow detention time= 1.4 min calculated for 42.189 af (100% of inflow)
Center-of-Mass det. time= 1.3 min (1,314.4 - 1,313.1)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

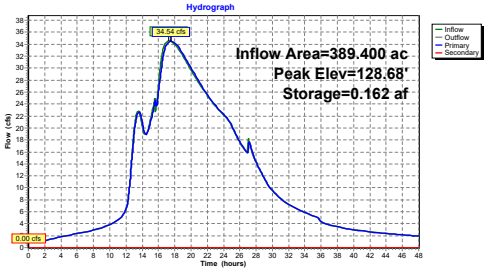
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=34.54 cfs @ 17.53 hrs HW=128.68' (Free Discharge)
↳**1=Culvert** (Barrel Controls 34.54 cfs @ 8.47 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
↳**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

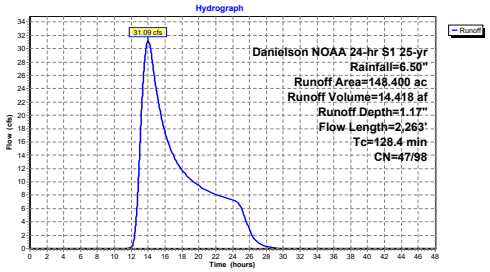
Runoff = 31.09 cfs @ 13.98 hrs, Volume= 14.418 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 25-yr Rainfall=6.50"

	Area (ac)	CN	Description
*	148.400	47	*0.1% imp*
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

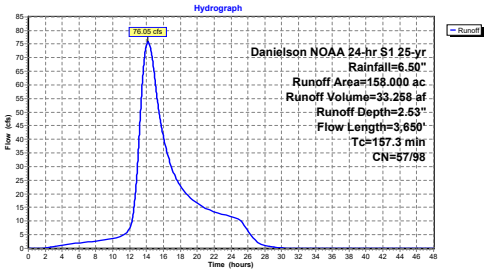
Runoff = 76.05 cfs @ 14.16 hrs, Volume= 33.258 af, Depth= 2.53"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 25-yr Rainfall=6.50"

	Area (ac)	CN	Description
*	158.000	62	*12.6% imp*
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

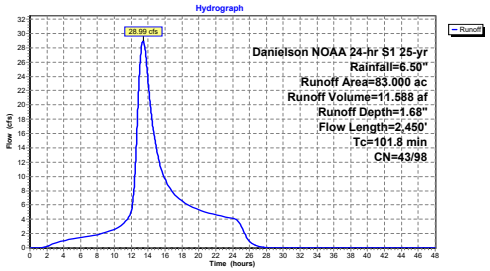
Runoff = 28.99 cfs @ 13.46 hrs, Volume= 11.588 af, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 25-yr Rainfall=6.50"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 1.33" for 25-yr event
Inflow = 31.59 cfs @ 13.98 hrs, Volume= 16.402 af, Incl. 0.50 cfs Base Flow
Outflow = 20.79 cfs @ 15.47 hrs, Volume= 16.403 af, Atten= 34%, Lag= 89.3 min
Primary = 20.79 cfs @ 15.47 hrs, Volume= 16.403 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 150.55' @ 15.47 hrs Storage= 3.236 af (2.539 af above start)

Plug-Flow detention time= 157.8 min calculated for 15.705 af (96% of inflow)
Center-of-Mass det. time= 70.5 min (1,172.6 - 1,102.1)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data**Listed below

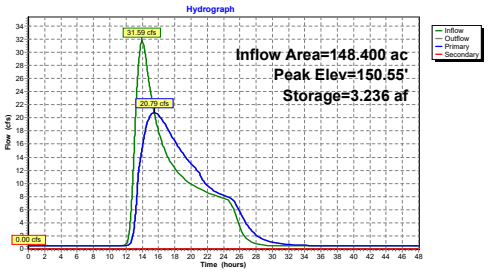
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=20.79 cfs @ 15.47 hrs HW=150.55' TW=147.27' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 20.79 cfs @ 4.60 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2P: DanielsonDamEC

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.02" for 25-yr event
Inflow = 93.24 cfs @ 14.33 hrs, Volume= 51.645 af, Incl. 0.50 cfs Base Flow
Outflow = 66.56 cfs @ 15.71 hrs, Volume= 50.586 af, Atten= 29%, Lag= 83.3 min
Primary = 25.77 cfs @ 15.71 hrs, Volume= 34.230 af
Secondary = 15.29 cfs @ 15.71 hrs, Volume= 11.041 af
Tertiary = 25.50 cfs @ 15.71 hrs, Volume= 5.315 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 147.27' @ 15.71 hrs Storage= 37.726 af (13.742 af above start)

Plug-Flow detention time= 781.2 min calculated for 26.602 af (52% of inflow)
Center-of-Mass det. time= 235.1 min (1,303.0 - 1,067.9)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data**Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	145.60'	**3.8' long SLs** 2 End Contraction(s) 4.0' Crest Height
#2	Primary	143.00'	**3.8' long SLsOperate X 0.00** 2 End Contraction(s) 0.5' Crest Height
#3	Tertiary	147.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 138.00 172.20 189.20 208.00 235.60 262.00 270.00

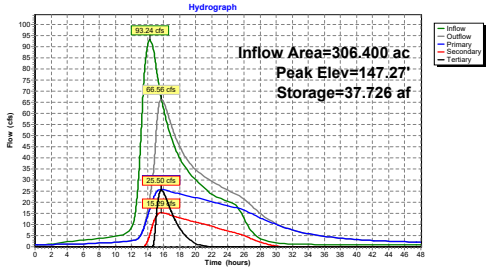
			Elev. (feet) 148.10 147.20 147.00 147.08 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10
#4	Secondary	146.40'	**3.5' long x 5.0' breadth TWallOTing X 2.00** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=25.77 cfs @ 15.71 hrs HW=147.27' TW=140.93' (Dynamic Tailwater)
└**1=SLs** (Weir Controls 25.77 cfs @ 4.45 fps)
└**2=SLsOperate** (Controls 0.00 cfs)

Secondary OutFlow Max=15.29 cfs @ 15.71 hrs HW=147.27' TW=140.93' (Dynamic Tailwater)
└**4=TWallOTing** (Weir Controls 15.29 cfs @ 2.50 fps)

Tertiary OutFlow Max=25.49 cfs @ 15.71 hrs HW=147.27' TW=140.93' (Dynamic Tailwater)
└**3=Top of Dam** (Weir Controls 25.49 cfs @ 0.69 fps)

Pond 2P: DanielsonDamEC



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.98" for 25-yr event
Inflow = 66.56 cfs @ 15.71 hrs, Volume= 50.586 af
Outflow = 66.09 cfs @ 15.82 hrs, Volume= 50.585 af, Atten= 1%, Lag= 6.5 min
Primary = 66.09 cfs @ 15.82 hrs, Volume= 50.585 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 140.95' @ 15.89 hrs Storage= 0.258 af (0.251 af above start)

Plug-Flow detention time= 2.2 min calculated for 50.573 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (1,304.8 - 1,303.0)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

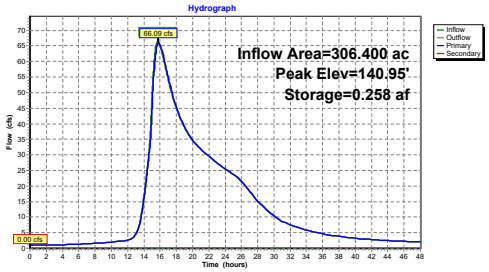
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=66.07 cfs @ 15.82 hrs HW=140.95' TW=140.02' (Dynamic Tailwater)
1=RCP_Round 48" (Outlet Controls 66.07 cfs @ 6.54 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
2=Top of Road (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.98" for 25-yr event
Inflow = 66.09 cfs @ 15.82 hrs, Volume= 50.585 af
Outflow = 65.98 cfs @ 15.84 hrs, Volume= 50.585 af, Atten= 0%, Lag= 1.2 min
Primary = 65.98 cfs @ 15.84 hrs, Volume= 50.585 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.03' @ 16.02 hrs Storage= 0.091 af (0.081 af above start)

Plug-Flow detention time= 1.4 min calculated for 50.569 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,305.6 - 1,304.8)

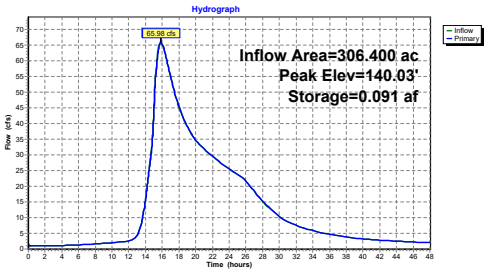
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=65.84 cfs @ 15.84 hrs HW=140.02' TW=139.89' (Dynamic Tailwater)
1=Log Dam (Weir Controls 65.84 cfs @ 1.25 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.98" for 25-yr event
Inflow = 65.98 cfs @ 15.84 hrs, Volume= 50.585 af
Outflow = 65.00 cfs @ 16.08 hrs, Volume= 50.571 af, Atten= 1%, Lag= 14.3 min
Primary = 25.30 cfs @ 16.08 hrs, Volume= 36.198 af
Secondary = 39.69 cfs @ 16.08 hrs, Volume= 14.372 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 139.90' @ 16.08 hrs Storage= 2.137 af (2.128 af above start)

Plug-Flow detention time= 28.8 min calculated for 50.556 af (100% of inflow)
Center-of-Mass det. time= 27.8 min (1,333.5 - 1,305.6)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

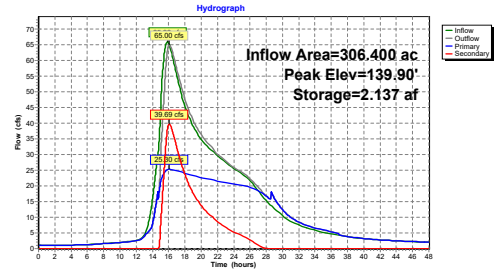
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=25.30 cfs @ 16.08 hrs HW=139.90' TW=129.79' (Dynamic Tailwater)
2=Culvert (Barrel Controls 25.30 cfs @ 4.82 fps)

Secondary OutFlow Max=39.69 cfs @ 16.08 hrs HW=139.90' TW=129.79' (Dynamic Tailwater)
1=Top of Road (Weir Controls 39.69 cfs @ 1.51 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 1.92" for 25-yr event
Inflow = 74.47 cfs @ 16.03 hrs, Volume= 62.159 af
Outflow = 71.73 cfs @ 16.43 hrs, Volume= 62.157 af, Atten= 4%, Lag= 24.0 min
Primary = 71.73 cfs @ 16.43 hrs, Volume= 62.157 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 129.84' @ 16.43 hrs Storage= 0.984 af

Plug-Flow detention time= 4.2 min calculated for 62.157 af (100% of inflow)
Center-of-Mass det. time= 4.2 min (1,262.6 - 1,258.4)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

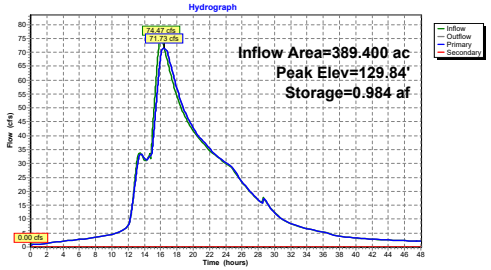
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=71.73 cfs @ 16.43 hrs HW=129.84' (Free Discharge)
└**1=Culvert** (Barrel Controls 71.73 cfs @ 9.55 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

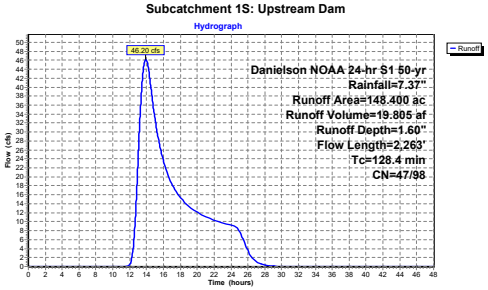
Runoff = 46.20 cfs @ 13.84 hrs, Volume= 19.805 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 50-yr Rainfall=7.37"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

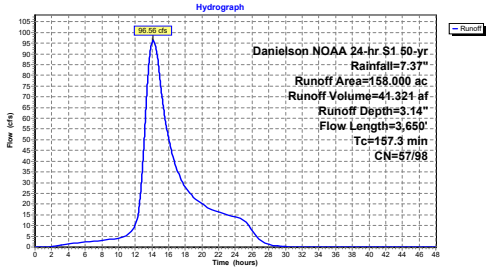
Runoff = 96.56 cfs @ 14.16 hrs, Volume= 41.321 af, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 50-yr Rainfall=7.37"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

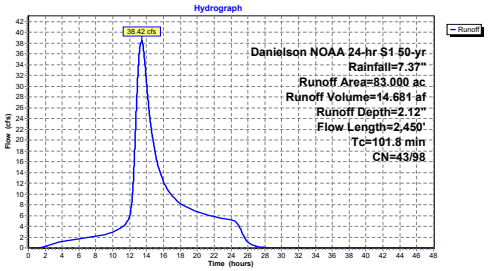
Runoff = 38.42 cfs @ 13.46 hrs, Volume= 14.681 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 50-yr Rainfall=7.37"

	Area (ac)	CN	Description
*	83.000	51	*15% imp*
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 1.76" for 50-yr event
Inflow = 46.70 cfs @ 13.84 hrs, Volume= 21.789 af, Incl. 0.50 cfs Base Flow
Outflow = 29.51 cfs @ 15.35 hrs, Volume= 21.790 af, Atten= 37%, Lag= 90.3 min
Primary = 29.51 cfs @ 15.35 hrs, Volume= 21.790 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 151.02' @ 15.35 hrs Storage= 4.578 af (3.881 af above start)

Plug-Flow detention time= 143.8 min calculated for 21.091 af (97% of inflow)
Center-of-Mass det. time= 78.4 min (1,155.7 - 1,077.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

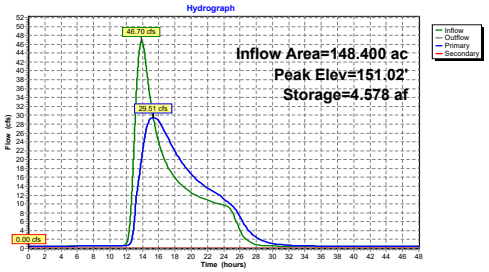
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=29.51 cfs @ 15.35 hrs HW=151.02' TW=147.37' (Dynamic Tailwater)
└─**1=Spillway Weir** (Weir Controls 29.51 cfs @ 5.30 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└─**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2P: DanielsonDamEC

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.55" for 50-yr event
Inflow = 120.93 cfs @ 14.33 hrs, Volume= 65.095 af, Incl. 0.50 cfs Base Flow
Outflow = 102.11 cfs @ 15.14 hrs, Volume= 63.986 af, Atten= 16%, Lag= 48.8 min
Primary = 28.02 cfs @ 15.14 hrs, Volume= 37.337 af
Secondary = 17.98 cfs @ 15.14 hrs, Volume= 13.650 af
Tertiary = 56.11 cfs @ 15.14 hrs, Volume= 13.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 147.37' @ 15.14 hrs Storage= 38.722 af (14.738 af above start)

Plug-Flow detention time= 613.2 min calculated for 39.998 af (61% of inflow)
Center-of-Mass det. time= 202.6 min (1,261.9 - 1,059.4)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	145.60'	**3.8' long SLs** 2 End Contraction(s) 4.0' Crest Height
#2	Primary	143.00'	**3.8' long SLsOperate X 0.00** 2 End Contraction(s) 0.5' Crest Height
#3	Tertiary	147.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 138.00 172.20 189.20 208.00 235.60 262.00 270.00

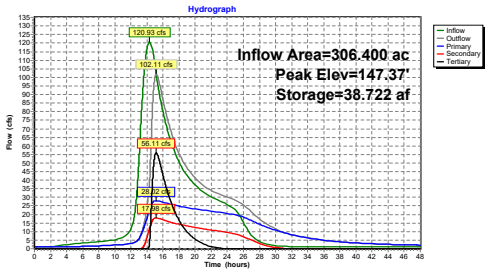
Device	Routing	Invert	Outlet Devices
			Elev. (feet) 148.10 147.20 147.00 147.08 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10
#4	Secondary	146.40'	**3.5' long x 5.0' breadth TWallOTing X 2.00** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=28.02 cfs @ 15.14 hrs HW=147.37' TW=141.91' (Dynamic Tailwater)
└─**1=SLs** (Weir Controls 28.02 cfs @ 4.59 fps)
└─**2=SLsOperate** (Controls 0.00 cfs)

Secondary OutFlow Max=17.98 cfs @ 15.14 hrs HW=147.37' TW=141.91' (Dynamic Tailwater)
└─**4=TWallOTing** (Weir Controls 17.98 cfs @ 2.64 fps)

Tertiary OutFlow Max=56.11 cfs @ 15.14 hrs HW=147.37' TW=141.91' (Dynamic Tailwater)
└─**3=Top of Dam** (Weir Controls 56.11 cfs @ 0.87 fps)

Pond 2P: DanielsonDamEC



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.51" for 50-yr event
Inflow = 102.11 cfs @ 15.14 hrs, Volume= 63.986 af
Outflow = 99.50 cfs @ 15.40 hrs, Volume= 63.985 af, Atten= 3%, Lag= 15.2 min
Primary = 99.50 cfs @ 15.40 hrs, Volume= 63.985 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 142.04' @ 15.40 hrs Storage= 0.603 af (0.597 af above start)

Plug-Flow detention time= 2.6 min calculated for 63.972 af (100% of inflow)
Center-of-Mass det. time= 2.3 min (1,264.2 - 1,261.9)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

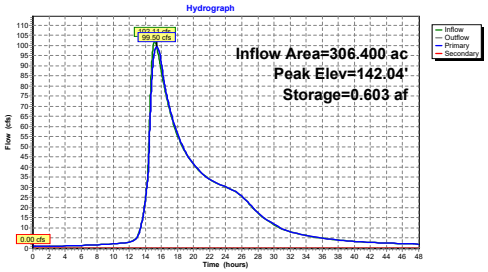
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=99.50 cfs @ 15.40 hrs HW=142.04' TW=140.29' (Dynamic Tailwater)
1=RCP_Round 48" (Barrel Controls 99.50 cfs @ 8.05 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
2=Top of Road (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.51" for 50-yr event
Inflow = 99.50 cfs @ 15.40 hrs, Volume= 63.985 af
Outflow = 99.43 cfs @ 15.41 hrs, Volume= 63.985 af, Atten= 0%, Lag= 0.7 min
Primary = 99.43 cfs @ 15.41 hrs, Volume= 63.985 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.29' @ 15.49 hrs Storage= 0.118 af (0.108 af above start)

Plug-Flow detention time= 1.3 min calculated for 63.968 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,265.0 - 1,264.2)

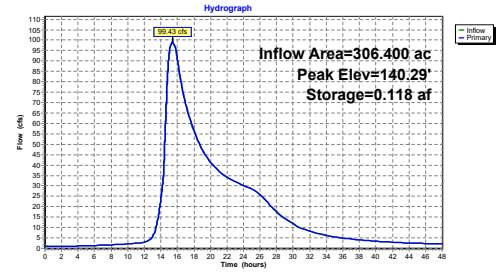
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=99.37 cfs @ 15.41 hrs HW=140.29' TW=140.07' (Dynamic Tailwater)
1=Log Dam (Weir Controls 99.37 cfs @ 1.53 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.51" for 50-yr event
Inflow = 99.43 cfs @ 15.41 hrs, Volume= 63.985 af
Outflow = 98.66 cfs @ 15.57 hrs, Volume= 63.970 af, Atten= 1%, Lag= 9.5 min
Primary = 26.65 cfs @ 15.57 hrs, Volume= 38.868 af
Secondary = 72.01 cfs @ 15.57 hrs, Volume= 25.102 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.08' @ 15.57 hrs Storage= 2.517 af (2.507 af above start)

Plug-Flow detention time= 26.3 min calculated for 63.961 af (100% of inflow)
Center-of-Mass det. time= 25.5 min (1,290.5 - 1,265.0)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

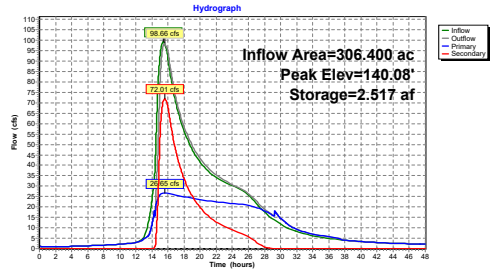
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=26.65 cfs @ 15.57 hrs HW=140.08' TW=130.68' (Dynamic Tailwater)
2=Culvert (Barrel Controls 26.65 cfs @ 5.08 fps)

Secondary OutFlow Max=72.01 cfs @ 15.57 hrs HW=140.08' TW=130.68' (Dynamic Tailwater)
1=Top of Road (Weir Controls 72.01 cfs @ 1.71 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 2.42" for 50-yr event
Inflow = 113.02 cfs @ 15.49 hrs, Volume= 78.651 af
Outflow = 106.12 cfs @ 16.01 hrs, Volume= 78.650 af, Atten= 6%, Lag= 30.6 min
Primary = 106.12 cfs @ 16.01 hrs, Volume= 78.650 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 130.84' @ 16.01 hrs Storage= 2.136 af

Plug-Flow detention time= 6.6 min calculated for 78.650 af (100% of inflow)
Center-of-Mass det. time= 6.6 min (1,230.4 - 1,223.8)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

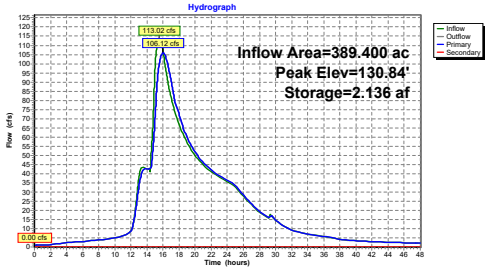
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=106.12 cfs @ 16.01 hrs HW=130.84' (Free Discharge)
└**1=Culvert** (Barrel Controls 106.12 cfs @ 10.28 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

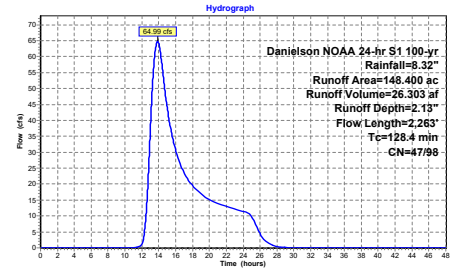
Runoff = 64.99 cfs @ 13.84 hrs, Volume= 26.303 af, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 100-yr Rainfall=8.32"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

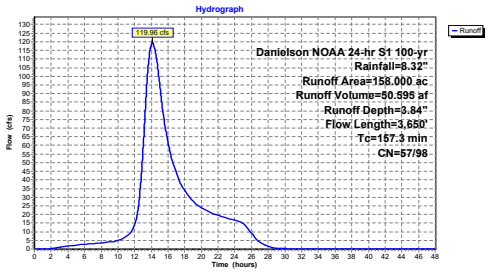
Runoff = 119.96 cfs @ 14.16 hrs, Volume= 50.595 af, Depth= 3.84"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 100-yr Rainfall=8.32"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

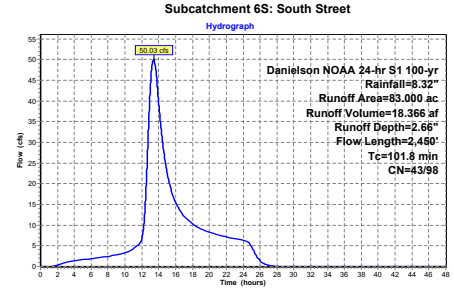
Runoff = 50.03 cfs @ 13.46 hrs, Volume= 18.366 af, Depth= 2.66"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 100-yr Rainfall=8.32"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 2.29" for 100-yr event
Inflow = 65.49 cfs @ 13.84 hrs, Volume= 28.287 af, Incl. 0.50 cfs Base Flow
Outflow = 37.95 cfs @ 15.41 hrs, Volume= 28.288 af, Atten= 42%, Lag= 94.1 min
Primary = 37.95 cfs @ 15.41 hrs, Volume= 28.288 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 151.44' @ 15.41 hrs Storage= 6.480 af (5.783 af above start)

Plug-Flow detention time= 139.1 min calculated for 27.588 af (98% of inflow)
Center-of-Mass det. time= 88.9 min (1,146.7 - 1,057.8)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

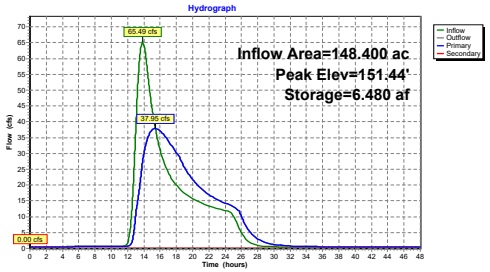
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=37.95 cfs @ 15.41 hrs HW=151.44' TW=147.42' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 37.95 cfs @ 5.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2P: DanielsonDamEC

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.17" for 100-yr event
Inflow = 152.32 cfs @ 14.16 hrs, Volume= 80.867 af, Incl. 0.50 cfs Base Flow
Outflow = 139.82 cfs @ 14.84 hrs, Volume= 79.712 af, Atten= 8%, Lag= 40.7 min
Primary = 29.88 cfs @ 14.84 hrs, Volume= 40.149 af
Secondary = 20.22 cfs @ 14.84 hrs, Volume= 15.998 af
Tertiary = 89.72 cfs @ 14.84 hrs, Volume= 23.564 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 147.45' @ 14.84 hrs Storage= 39.527 af (15.543 af above start)

Plug-Flow detention time= 493.1 min calculated for 55.722 af (69% of inflow)
Center-of-Mass det. time= 174.6 min (1,228.2 - 1,053.6)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	145.60'	**3.8' long SLs** 2 End Contraction(s) 4.0' Crest Height
#2	Primary	143.00'	**3.8' long SLsOperate X 0.00** 2 End Contraction(s) 0.5' Crest Height
#3	Tertiary	147.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 138.00 172.20 189.20 208.00 235.60 262.00 270.00

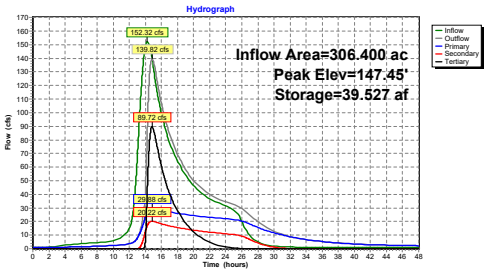
Device	Routing	Invert	Outlet Devices
			Elev. (feet) 148.10 147.20 147.00 147.08 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10
#4	Secondary	146.40'	**3.5' long x 5.0' breadth TWallOTing X 2.00** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=29.88 cfs @ 14.84 hrs HW=147.45' TW=143.34' (Dynamic Tailwater)
└**1=SLs** (Weir Controls 29.88 cfs @ 4.70 fps)
└**2=SLsOperate** (Controls 0.00 cfs)

Secondary OutFlow Max=20.22 cfs @ 14.84 hrs HW=147.45' TW=143.34' (Dynamic Tailwater)
└**4=TWallOTing** (Weir Controls 20.22 cfs @ 2.74 fps)

Tertiary OutFlow Max=89.71 cfs @ 14.84 hrs HW=147.45' TW=143.34' (Dynamic Tailwater)
└**3=Top of Dam** (Weir Controls 89.71 cfs @ 1.04 fps)

Pond 2P: DanielsonDamEC



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.12" for 100-yr event
Inflow = 139.82 cfs @ 14.84 hrs, Volume= 79.712 af
Outflow = 136.33 cfs @ 15.07 hrs, Volume= 79.711 af, Atten= 2%, Lag= 13.6 min
Primary = 136.33 cfs @ 15.07 hrs, Volume= 79.711 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 143.50' @ 15.07 hrs Storage= 1.165 af (1.159 af above start)

Plug-Flow detention time= 3.3 min calculated for 79.696 af (100% of inflow)
Center-of-Mass det. time= 3.0 min (1,231.3 - 1,228.2)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

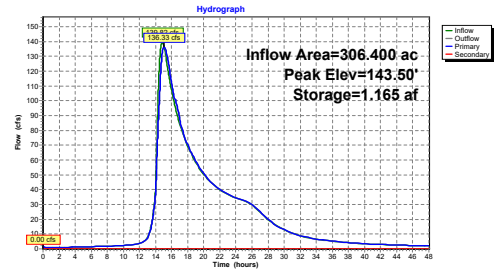
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=136.33 cfs @ 15.07 hrs HW=143.50' TW=140.53' (Dynamic Tailwater)
└**1=RCP_Round 48"** (Barrel Controls 136.33 cfs @ 10.85 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.12" for 100-yr event
Inflow = 136.33 cfs @ 15.07 hrs, Volume= 79.711 af
Outflow = 136.26 cfs @ 15.08 hrs, Volume= 79.710 af, Atten= 0%, Lag= 0.6 min
Primary = 136.26 cfs @ 15.08 hrs, Volume= 79.710 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.53' @ 15.14 hrs Storage= 0.145 af (0.136 af above start)

Plug-Flow detention time= 1.2 min calculated for 79.700 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,232.1 - 1,231.3)

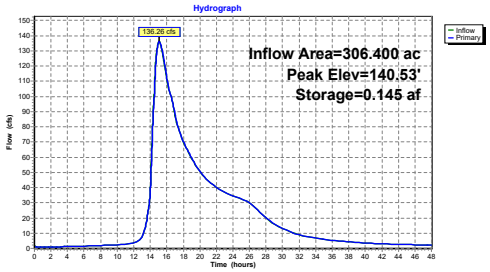
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=136.19 cfs @ 15.08 hrs HW=140.53' TW=140.22' (Dynamic Tailwater)
↳**1=Log Dam** (Weir Controls 136.19 cfs @ 1.77 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.12" for 100-yr event
Inflow = 136.26 cfs @ 15.08 hrs, Volume= 79.710 af
Outflow = 135.33 cfs @ 15.20 hrs, Volume= 79.694 af, Atten= 1%, Lag= 7.6 min
Primary = 27.70 cfs @ 15.20 hrs, Volume= 41.267 af
Secondary = 107.63 cfs @ 15.20 hrs, Volume= 38.428 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.22' @ 15.20 hrs Storage= 2.869 af (2.860 af above start)

Plug-Flow detention time= 23.9 min calculated for 79.677 af (100% of inflow)
Center-of-Mass det. time= 23.3 min (1,255.3 - 1,232.1)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

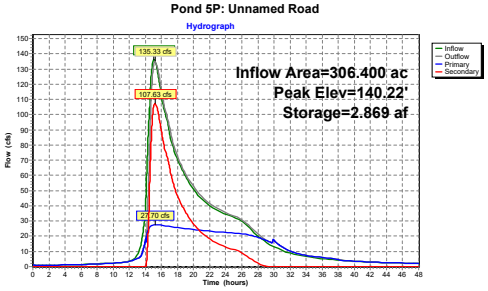
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=27.70 cfs @ 15.20 hrs HW=140.22' TW=131.51' (Dynamic Tailwater)
↳**2=Culvert** (Barrel Controls 27.70 cfs @ 5.28 fps)

Secondary OutFlow Max=107.63 cfs @ 15.20 hrs HW=140.22' TW=131.51' (Dynamic Tailwater)
↳**1=Top of Road** (Weir Controls 107.63 cfs @ 1.94 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 3.02" for 100-yr event
Inflow = 156.19 cfs @ 15.14 hrs, Volume= 98.061 af
Outflow = 135.57 cfs @ 15.88 hrs, Volume= 98.059 af, Atten= 13%, Lag= 44.9 min
Primary = 135.57 cfs @ 15.88 hrs, Volume= 98.059 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 131.93' @ 15.88 hrs Storage= 4.022 af

Plug-Flow detention time= 9.8 min calculated for 98.059 af (100% of inflow)
Center-of-Mass det. time= 9.8 min (1,205.0 - 1,195.2)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

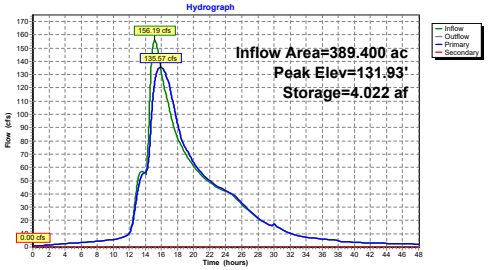
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=135.57 cfs @ 15.88 hrs HW=131.93' (Free Discharge)
└**1=Culvert** (Barrel Controls 135.57 cfs @ 10.89 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

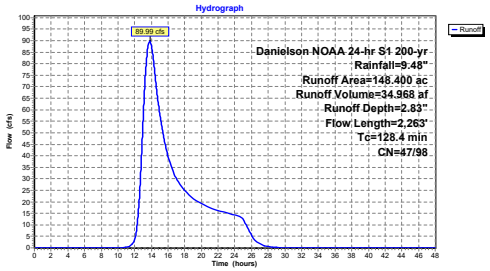
Runoff = 89.99 cfs @ 13.84 hrs, Volume= 34.968 af, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 200-yr Rainfall=9.48"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

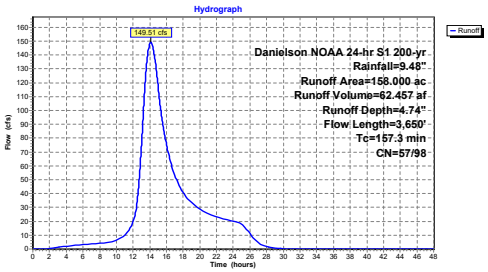
Runoff = 149.51 cfs @ 14.16 hrs, Volume= 62.457 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 200-yr Rainfall=9.48"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

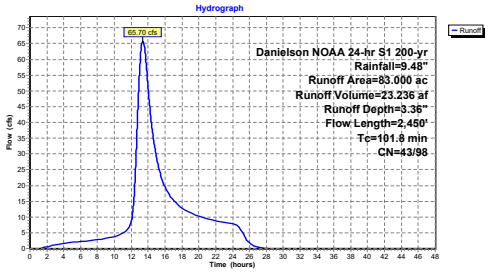
Runoff = 65.70 cfs @ 13.35 hrs, Volume= 23.236 af, Depth= 3.36"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 200-yr Rainfall=9.48"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 2.99" for 200-yr event
Inflow = 90.49 cfs @ 13.84 hrs, Volume= 36.952 af, Incl. 0.50 cfs Base Flow
Outflow = 50.22 cfs @ 15.39 hrs, Volume= 36.953 af, Atten= 44%, Lag= 92.9 min
Primary = 50.22 cfs @ 15.39 hrs, Volume= 36.953 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 152.02' @ 15.39 hrs Storage= 9.110 af (8.414 af above start)

Plug-Flow detention time= 138.2 min calculated for 36.253 af (98% of inflow)
Center-of-Mass det. time= 99.6 min (1,140.0 - 1,040.4)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

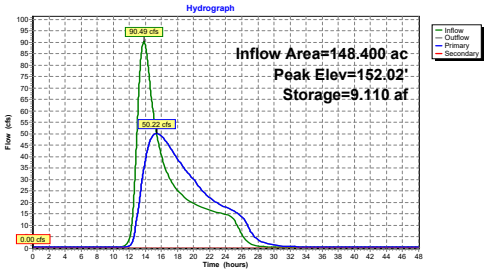
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=50.22 cfs @ 15.39 hrs HW=152.02' TW=147.49' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 50.22 cfs @ 6.69 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2P: DanielsonDamEC

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.97" for 200-yr event
Inflow = 191.42 cfs @ 14.16 hrs, Volume= 101.393 af, Incl. 0.50 cfs Base Flow
Outflow = 183.39 cfs @ 14.66 hrs, Volume= 100.193 af, Atten= 4%, Lag= 30.1 min
Primary = 31.74 cfs @ 14.66 hrs, Volume= 42.988 af
Secondary = 22.48 cfs @ 14.66 hrs, Volume= 18.371 af
Tertiary = 129.16 cfs @ 14.66 hrs, Volume= 38.834 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 147.53' @ 14.66 hrs Storage= 40.382 af (16.398 af above start)

Plug-Flow detention time= 396.3 min calculated for 76.209 af (75% of inflow)
Center-of-Mass det. time= 148.6 min (1,197.2 - 1,048.7)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	145.60'	**3.8' long SLs** 2 End Contraction(s) 4.0' Crest Height
#2	Primary	143.00'	**3.8' long SLsOperate X 0.00** 2 End Contraction(s) 0.5' Crest Height
#3	Tertiary	147.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 138.00 172.20 189.20 208.00 235.60 262.00 270.00

Elev. (feet) 148.10 147.20 147.00 147.08 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10

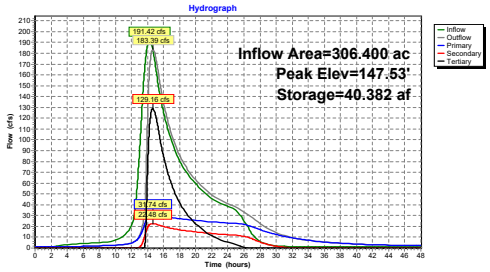
#4 Secondary 146.40' **3.5' long x 5.0' breadth TWallOTing X 2.00**
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=31.74 cfs @ 14.66 hrs HW=147.53' TW=145.01' (Dynamic Tailwater)
└**1=SLs** (Weir Controls 31.74 cfs @ 4.81 fps)
└**2=SLsOperate** (Controls 0.00 cfs)

Secondary OutFlow Max=22.48 cfs @ 14.66 hrs HW=147.53' TW=145.01' (Dynamic Tailwater)
└**4=TWallOTing** (Weir Controls 22.48 cfs @ 2.84 fps)

Tertiary OutFlow Max=129.16 cfs @ 14.66 hrs HW=147.53' TW=145.01' (Dynamic Tailwater)
└**3=Top of Dam** (Weir Controls 129.16 cfs @ 1.20 fps)

Pond 2P: DanielsonDamEC



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.92" for 200-yr event
Inflow = 183.39 cfs @ 14.66 hrs, Volume= 100.193 af
Outflow = 176.67 cfs @ 15.00 hrs, Volume= 100.192 af, Atten= 4%, Lag= 20.1 min
Primary = 176.67 cfs @ 15.00 hrs, Volume= 100.192 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 145.33' @ 15.00 hrs Storage= 2.074 af (2.067 af above start)

Plug-Flow detention time= 4.3 min calculated for 100.185 af (100% of inflow)
Center-of-Mass det. time= 4.0 min (1,201.3 - 1,197.2)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

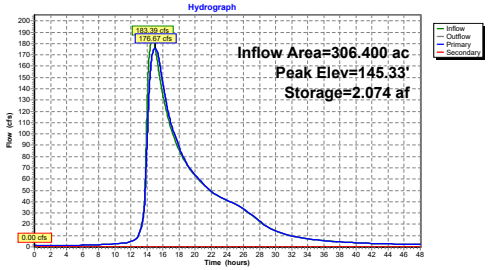
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=176.67 cfs @ 15.00 hrs HW=145.33' TW=140.74' (Dynamic Tailwater)
└**1=RCP_Round 48"** (Barrel Controls 176.67 cfs @ 14.06 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.92" for 200-yr event
Inflow = 176.67 cfs @ 15.00 hrs, Volume= 100.192 af
Outflow = 176.66 cfs @ 15.00 hrs, Volume= 100.191 af, Atten= 0%, Lag= 0.4 min
Primary = 176.66 cfs @ 15.00 hrs, Volume= 100.191 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.74' @ 15.02 hrs Storage= 0.170 af (0.160 af above start)

Plug-Flow detention time= 1.1 min calculated for 100.171 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,202.0 - 1,201.3)

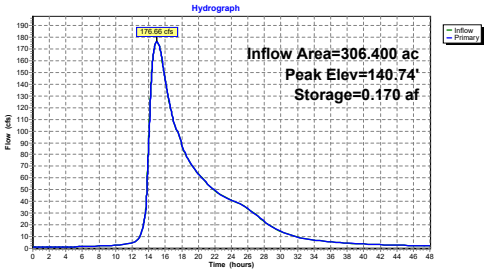
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=176.64 cfs @ 15.00 hrs HW=140.74' TW=140.35' (Dynamic Tailwater)
└**1=Log Dam** (Weir Controls 176.64 cfs @ 1.82 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.92" for 200-yr event
Inflow = 176.66 cfs @ 15.00 hrs, Volume= 100.191 af
Outflow = 176.59 cfs @ 15.04 hrs, Volume= 100.175 af, Atten= 0%, Lag= 2.2 min
Primary = 28.65 cfs @ 15.04 hrs, Volume= 43.683 af
Secondary = 147.94 cfs @ 15.04 hrs, Volume= 56.492 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.35' @ 15.04 hrs Storage= 3.120 af (3.110 af above start)

Plug-Flow detention time= 21.5 min calculated for 100.155 af (100% of inflow)
Center-of-Mass det. time= 21.0 min (1,223.0 - 1,202.0)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

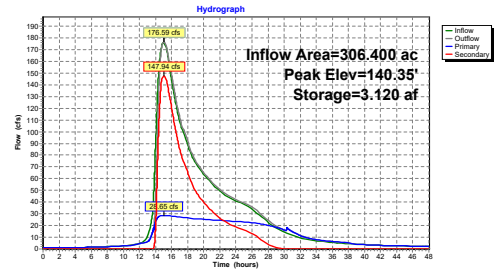
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=28.65 cfs @ 15.04 hrs HW=140.35' TW=132.68' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 28.65 cfs @ 5.46 fps)

Secondary OutFlow Max=147.94 cfs @ 15.04 hrs HW=140.35' TW=132.68' (Dynamic Tailwater)
└**1=Top of Road** (Weir Controls 147.94 cfs @ 2.19 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 3.80" for 200-yr event
Inflow = 205.68 cfs @ 14.90 hrs, Volume= 123.411 af
Outflow = 178.32 cfs @ 15.77 hrs, Volume= 123.410 af, Atten= 13%, Lag= 52.1 min
Primary = 168.18 cfs @ 15.77 hrs, Volume= 122.950 af
Secondary = 10.14 cfs @ 15.77 hrs, Volume= 0.460 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 133.29' @ 15.77 hrs Storage= 7.396 af

Plug-Flow detention time= 15.0 min calculated for 123.397 af (100% of inflow)
Center-of-Mass det. time= 15.0 min (1,183.6 - 1,168.6)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

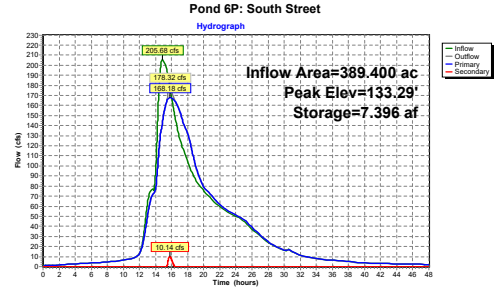
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=168.18 cfs @ 15.77 hrs HW=133.29' (Free Discharge)
└**1=Culvert** (Barrel Controls 168.18 cfs @ 13.38 fps)

Secondary OutFlow Max=10.14 cfs @ 15.77 hrs HW=133.29' (Free Discharge)
└**2=Top of Road** (Weir Controls 10.14 cfs @ 0.65 fps)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

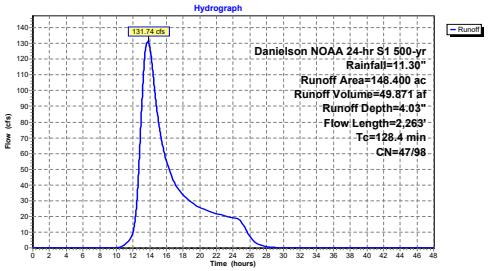
Runoff = 131.74 cfs @ 13.83 hrs, Volume= 49.871 af, Depth= 4.03"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 500-yr Rainfall=11.30"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

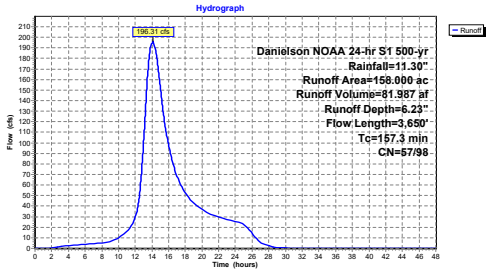
Runoff = 196.31 cfs @ 14.15 hrs, Volume= 81.987 af, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 500-yr Rainfall=11.30"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

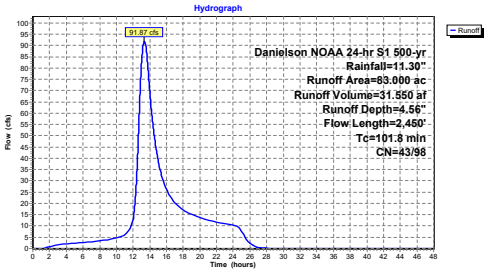
Runoff = 91.87 cfs @ 13.35 hrs, Volume= 31.550 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 500-yr Rainfall=11.30"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 4.19" for 500-yr event
Inflow = 132.24 cfs @ 13.83 hrs, Volume= 51.854 af, Incl. 0.50 cfs Base Flow
Outflow = 70.52 cfs @ 15.37 hrs, Volume= 51.855 af, Atten= 47%, Lag= 92.1 min
Primary = 70.52 cfs @ 15.37 hrs, Volume= 51.855 af
Secondary = 0.00 cfs @ 15.37 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 152.95' @ 15.37 hrs Storage= 13.732 af (13.036 af above start)

Plug-Flow detention time= 140.0 min calculated for 51.153 af (99% of inflow)
Center-of-Mass det. time= 112.4 min (1,134.2 - 1,021.8)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

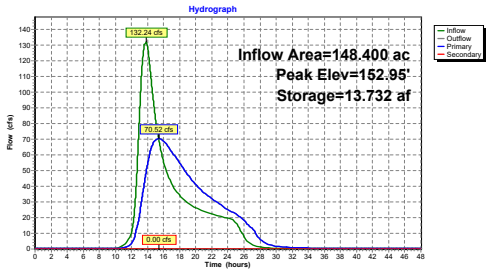
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=70.52 cfs @ 15.37 hrs HW=152.95' TW=147.74' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 70.52 cfs @ 7.89 fps)

Secondary OutFlow Max=0.00 cfs @ 15.37 hrs HW=152.95' TW=147.74' (Dynamic Tailwater)
└**2=Top of Dam** (Weir Controls 0.00 cfs @ 0.22 fps)

Pond 1P: Upstream Dam



Summary for Pond 2P: DanielsonDamEC

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.32" for 500-yr event
Inflow = 255.35 cfs @ 14.16 hrs, Volume= 135.826 af, Incl. 0.50 cfs Base Flow
Outflow = 237.67 cfs @ 14.24 hrs, Volume= 134.570 af, Atten= 7%, Lag= 5.0 min
Primary = 33.49 cfs @ 14.08 hrs, Volume= 44.120 af
Secondary = 25.18 cfs @ 14.21 hrs, Volume= 20.244 af
Tertiary = 192.58 cfs @ 14.37 hrs, Volume= 70.206 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 147.75' @ 15.13 hrs Storage= 43.000 af (19.016 af above start)

Plug-Flow detention time= 304.4 min calculated for 110.575 af (81% of inflow)
Center-of-Mass det. time= 121.7 min (1,165.2 - 1,043.5)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	145.60'	**3.8' long SLs** 2 End Contraction(s) 4.0' Crest Height
#2	Primary	143.00'	**3.8' long SLsOperate X 0.00** 2 End Contraction(s) 0.5' Crest Height
#3	Tertiary	147.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 138.00 172.20 189.20 208.00 235.60 262.00 270.00

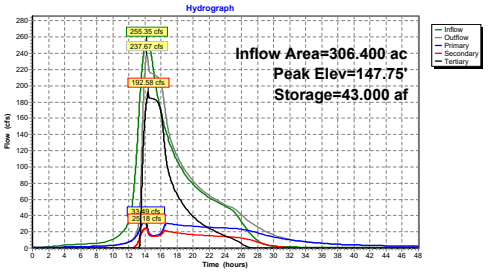
Device	Routing	Invert	Outlet Devices
#4	Secondary	146.40'	**3.5' long x 5.0' breadth TWallOTing X 2.00** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 Elev. (feet) 148.10 147.20 147.00 147.08 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10

Primary OutFlow Max=33.45 cfs @ 14.08 hrs HW=147.61' TW=145.64' (Dynamic Tailwater)
└**1=SLs** (Weir Controls 33.45 cfs @ 4.91 fps)
└**2=SLsOperate** (Controls 0.00 cfs)

Secondary OutFlow Max=25.14 cfs @ 14.21 hrs HW=147.62' TW=146.43' (Dynamic Tailwater)
└**4=TWallOTing** (Weir Controls 25.14 cfs @ 2.94 fps)

Tertiary OutFlow Max=192.12 cfs @ 14.37 hrs HW=147.64' TW=147.19' (Dynamic Tailwater)
└**3=Top of Dam** (Weir Controls 192.12 cfs @ 1.39 fps)

Pond 2P: DanielsonDamEC



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.27" for 500-yr event
Inflow = 237.67 cfs @ 14.24 hrs, Volume= 134.570 af
Outflow = 213.76 cfs @ 15.14 hrs, Volume= 134.569 af, Atten= 10%, Lag= 53.5 min
Primary = 213.76 cfs @ 15.14 hrs, Volume= 134.569 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 147.60' @ 15.14 hrs Storage= 3.469 af (3.463 af above start)

Plug-Flow detention time= 6.3 min calculated for 134.548 af (100% of inflow)
Center-of-Mass det. time= 6.1 min (1,171.3 - 1,165.2)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

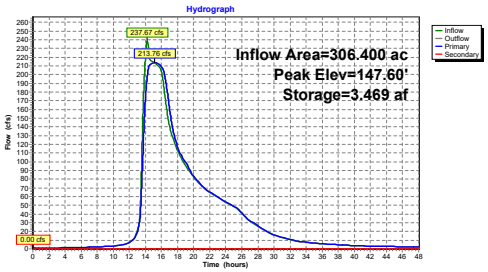
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=213.76 cfs @ 15.14 hrs HW=147.60' TW=140.89' (Dynamic Tailwater)
└**1=RCP_Round 48"** (Inlet Controls 213.76 cfs @ 17.01 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.27" for 500-yr event
Inflow = 213.76 cfs @ 15.14 hrs, Volume= 134.569 af
Outflow = 213.76 cfs @ 15.14 hrs, Volume= 134.568 af, Atten= 0%, Lag= 0.3 min
Primary = 213.76 cfs @ 15.14 hrs, Volume= 134.568 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.89' @ 15.15 hrs Storage= 0.187 af (0.178 af above start)

Plug-Flow detention time= 0.9 min calculated for 134.558 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,172.0 - 1,171.3)

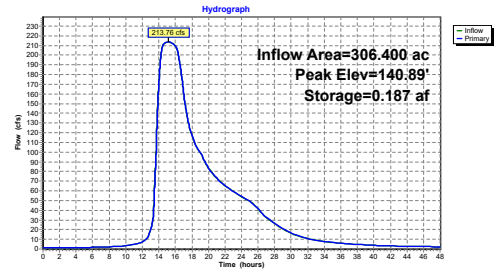
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=213.76 cfs @ 15.14 hrs HW=140.89' TW=140.46' (Dynamic Tailwater)
└**1=Log Dam** (Weir Controls 213.76 cfs @ 1.87 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.27" for 500-yr event
Inflow = 213.76 cfs @ 15.14 hrs, Volume= 134.568 af
Outflow = 213.75 cfs @ 15.17 hrs, Volume= 134.551 af, Atten= 0%, Lag= 1.9 min
Primary = 29.38 cfs @ 15.17 hrs, Volume= 46.882 af
Secondary = 184.37 cfs @ 15.17 hrs, Volume= 87.669 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.46' @ 15.17 hrs Storage= 3.223 af (3.214 af above start)

Plug-Flow detention time= 18.4 min calculated for 134.542 af (100% of inflow)
Center-of-Mass det. time= 18.0 min (1,190.1 - 1,172.0)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

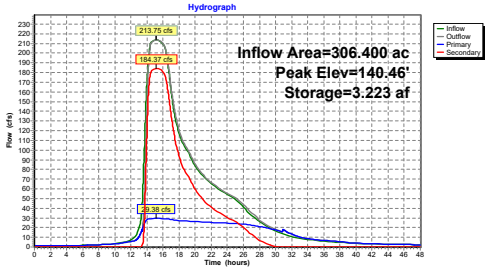
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=29.38 cfs @ 15.17 hrs HW=140.46' TW=133.57' (Dynamic Tailwater)
↳ **2=Culvert** (Barrel Controls 29.38 cfs @ 5.60 fps)

Secondary OutFlow Max=184.37 cfs @ 15.17 hrs HW=140.46' TW=133.57' (Dynamic Tailwater)
↳ **1=Top of Road** (Weir Controls 184.37 cfs @ 2.37 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 5.12" for 500-yr event
Inflow = 261.66 cfs @ 14.45 hrs, Volume= 166.101 af
Outflow = 254.50 cfs @ 14.89 hrs, Volume= 166.100 af, Atten= 3%, Lag= 26.2 min
Primary = 174.90 cfs @ 14.89 hrs, Volume= 152.684 af
Secondary = 79.60 cfs @ 14.89 hrs, Volume= 13.416 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 133.58' @ 14.89 hrs Storage= 8.219 af

Plug-Flow detention time= 17.7 min calculated for 166.083 af (100% of inflow)
Center-of-Mass det. time= 17.7 min (1,158.9 - 1,141.2)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

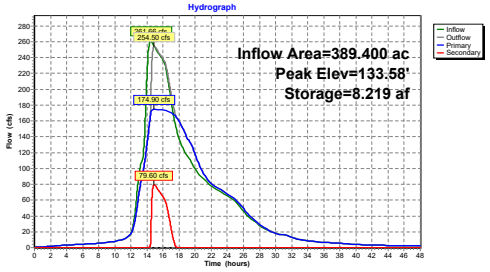
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=174.90 cfs @ 14.89 hrs HW=133.58' (Free Discharge)
↳ **1=Culvert** (Barrel Controls 174.90 cfs @ 13.92 fps)

Secondary OutFlow Max=79.60 cfs @ 14.89 hrs HW=133.58' (Free Discharge)
↳ **2=Top of Road** (Weir Controls 79.60 cfs @ 1.51 fps)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

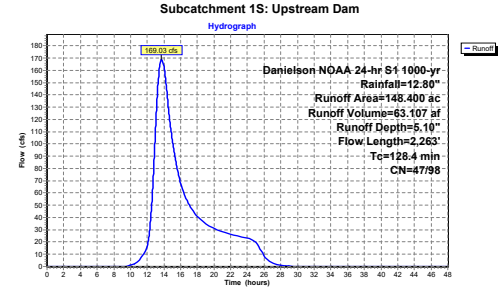
Runoff = 169.03 cfs @ 13.70 hrs, Volume= 63.107 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1000-yr Rainfall=12.80"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

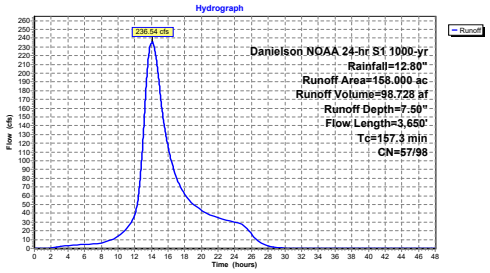
Runoff = 236.54 cfs @ 14.15 hrs, Volume= 98.728 af, Depth= 7.50"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1000-yr Rainfall=12.80"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

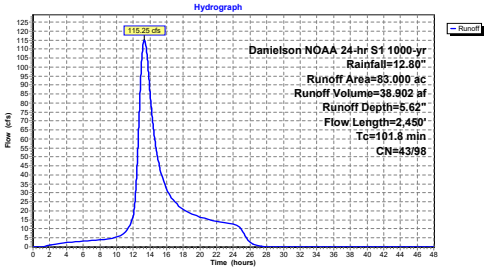
Runoff = 115.25 cfs @ 13.35 hrs, Volume= 38.902 af, Depth= 5.62"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1000-yr Rainfall=12.80"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 5.26" for 1000-yr event
Inflow = 169.53 cfs @ 13.70 hrs, Volume= 65.090 af, Incl. 0.50 cfs Base Flow
Outflow = 84.50 cfs @ 15.46 hrs, Volume= 65.091 af, Atten= 50%, Lag= 105.6 min
Primary = 83.56 cfs @ 15.46 hrs, Volume= 64.939 af
Secondary = 0.94 cfs @ 15.46 hrs, Volume= 0.153 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 153.54' @ 15.46 hrs Storage= 18.306 af (17.609 af above start)

Plug-Flow detention time= 145.5 min calculated for 64.395 af (99% of inflow)
Center-of-Mass det. time= 123.3 min (1,133.2 - 1,010.0)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

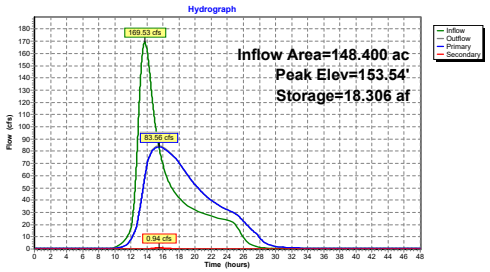
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=83.56 cfs @ 15.46 hrs HW=153.54' TW=148.23' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 83.56 cfs @ 8.64 fps)

Secondary OutFlow Max=0.94 cfs @ 15.46 hrs HW=153.54' TW=148.23' (Dynamic Tailwater)
└**2=Top of Dam** (Weir Controls 0.94 cfs @ 0.83 fps)

Pond 1P: Upstream Dam



Summary for Pond 2P: DanielsonDamEC

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.49" for 1000-yr event
Inflow = 310.25 cfs @ 14.16 hrs, Volume= 165.803 af, Incl. 0.50 cfs Base Flow
Outflow = 261.60 cfs @ 13.95 hrs, Volume= 164.506 af, Atten= 16%, Lag= 0.0 min
Primary = 34.08 cfs @ 13.78 hrs, Volume= 43.066 af
Secondary = 26.13 cfs @ 13.86 hrs, Volume= 20.484 af
Tertiary = 216.33 cfs @ 13.96 hrs, Volume= 100.957 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 148.24' @ 15.60 hrs Storage= 49.323 af (25.339 af above start)

Plug-Flow detention time= 263.7 min calculated for 140.508 af (85% of inflow)
Center-of-Mass det. time= 112.5 min (1,153.5 - 1,040.9)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	145.60'	**3.8' long SLs** 2 End Contraction(s) 4.0' Crest Height
#2	Primary	143.00'	**3.8' long SLsOperate X 0.00** 2 End Contraction(s) 0.5' Crest Height
#3	Tertiary	147.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 138.00 172.20 189.20 208.00 235.60 262.00 270.00

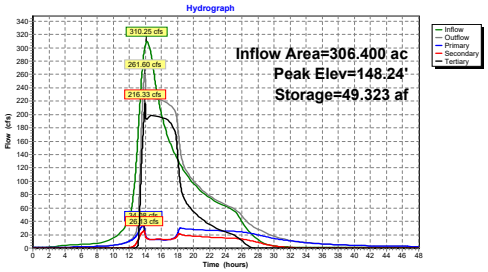
#4	Secondary	146.40'	Elev. (feet) 148.10 147.20 147.00 147.08 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10 **3.5' long x 5.0' breadth TWallOTing X 2.00** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=34.02 cfs @ 13.78 hrs HW=147.63' TW=145.66' (Dynamic Tailwater)
└**1=SLs** (Weir Controls 34.02 cfs @ 4.94 fps)
└**2=SLsOperate** (Controls 0.00 cfs)

Secondary OutFlow Max=26.05 cfs @ 13.86 hrs HW=147.65' TW=146.45' (Dynamic Tailwater)
└**4=TWallOTing** (Weir Controls 26.05 cfs @ 2.97 fps)

Tertiary OutFlow Max=215.19 cfs @ 13.96 hrs HW=147.68' TW=147.22' (Dynamic Tailwater)
└**3=Top of Dam** (Weir Controls 215.19 cfs @ 1.45 fps)

Pond 2P: DanielsonDamEC



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.44" for 1000-yr event
Inflow = 261.60 cfs @ 13.95 hrs, Volume= 164.506 af
Outflow = 222.41 cfs @ 15.60 hrs, Volume= 164.505 af, Atten= 15%, Lag= 99.2 min
Primary = 222.41 cfs @ 15.60 hrs, Volume= 164.505 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 148.19' @ 15.60 hrs Storage= 3.896 af (3.889 af above start)

Plug-Flow detention time= 7.8 min calculated for 164.498 af (100% of inflow)
Center-of-Mass det. time= 7.7 min (1,161.2 - 1,153.5)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

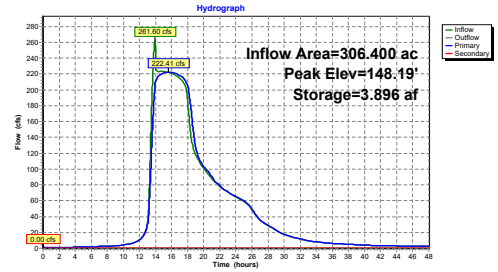
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=222.41 cfs @ 15.60 hrs HW=148.19' TW=140.92' (Dynamic Tailwater)
└**1=RCP_Round 48"** (Inlet Controls 222.41 cfs @ 17.70 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.44" for 1000-yr event
Inflow = 222.41 cfs @ 15.60 hrs, Volume= 164.505 af
Outflow = 222.41 cfs @ 15.60 hrs, Volume= 164.504 af, Atten= 0%, Lag= 0.3 min
Primary = 222.41 cfs @ 15.60 hrs, Volume= 164.504 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.92' @ 15.62 hrs Storage= 0.191 af (0.181 af above start)

Plug-Flow detention time= 0.9 min calculated for 164.494 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,161.9 - 1,161.2)

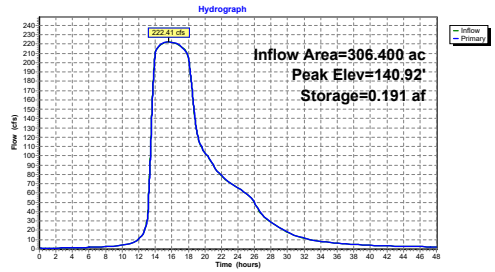
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=222.41 cfs @ 15.60 hrs HW=140.92' TW=140.48' (Dynamic Tailwater)
└**1=Log Dam** (Weir Controls 222.41 cfs @ 1.90 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.44" for 1000-yr event
Inflow = 222.41 cfs @ 15.60 hrs, Volume= 164.504 af
Outflow = 222.40 cfs @ 15.64 hrs, Volume= 164.487 af, Atten= 0%, Lag= 1.9 min
Primary = 29.54 cfs @ 15.64 hrs, Volume= 49.252 af
Secondary = 192.86 cfs @ 15.64 hrs, Volume= 115.235 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.48' @ 15.64 hrs Storage= 3.246 af (3.237 af above start)

Plug-Flow detention time= 16.5 min calculated for 164.460 af (100% of inflow)
Center-of-Mass det. time= 16.2 min (1,178.1 - 1,161.9)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

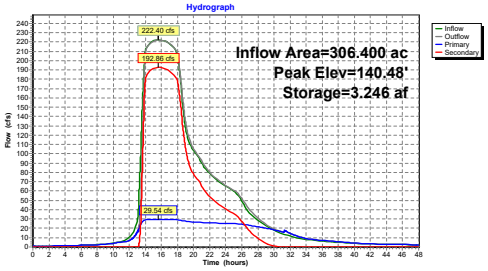
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=29.54 cfs @ 15.64 hrs HW=140.48' TW=133.59' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 29.54 cfs @ 5.63 fps)

Secondary OutFlow Max=192.86 cfs @ 15.64 hrs HW=140.48' TW=133.59' (Dynamic Tailwater)
└**1=Top of Road** (Weir Controls 192.86 cfs @ 2.40 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 6.27" for 1000-yr event
Inflow = 294.84 cfs @ 14.04 hrs, Volume= 203.389 af
Outflow = 284.52 cfs @ 14.38 hrs, Volume= 203.388 af, Atten= 3%, Lag= 20.3 min
Primary = 176.64 cfs @ 14.38 hrs, Volume= 174.320 af
Secondary = 107.89 cfs @ 14.38 hrs, Volume= 29.067 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 133.65' @ 14.38 hrs Storage= 8.458 af

Plug-Flow detention time= 18.8 min calculated for 203.387 af (100% of inflow)
Center-of-Mass det. time= 18.8 min (1,149.6 - 1,130.8)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

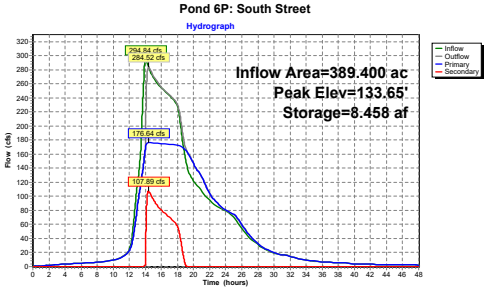
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=176.64 cfs @ 14.38 hrs HW=133.65' (Free Discharge)
└**1=Culvert** (Barrel Controls 176.64 cfs @ 14.06 fps)

Secondary OutFlow Max=107.88 cfs @ 14.38 hrs HW=133.65' (Free Discharge)
└**2=Top of Road** (Weir Controls 107.88 cfs @ 1.68 fps)

Pond 6P: South Street



Events for Subcatchment 1S: Upstream Dam

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.79	0.52	0.331	0.03
2-yr	3.43	1.56	1.409	0.11
5-yr	4.46	6.51	4.507	0.36
10-yr	5.32	14.77	8.154	0.66
25-yr	6.50	31.09	14.418	1.17
50-yr	7.37	46.20	19.805	1.60
100-yr	8.32	64.99	26.303	2.13
200-yr	9.48	89.99	34.968	2.83
500-yr	11.30	131.74	49.871	4.03
1000-yr	**12.80**	**169.03**	**63.107**	**5.10**

Events for Subcatchment 2S: Danielson Pond

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.79	11.72	6.386	0.49
2-yr	3.43	18.58	9.791	0.74
5-yr	4.46	34.19	16.558	1.26
10-yr	5.32	50.56	23.153	1.76
25-yr	6.50	76.05	33.258	2.53
50-yr	7.37	96.56	41.321	3.14
100-yr	8.32	119.96	50.595	3.84
200-yr	9.48	149.51	62.457	4.74
500-yr	11.30	196.31	81.987	6.23
1000-yr	**12.80**	**236.54**	**98.728**	**7.50**

Events for Subcatchment 6S: South Street

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.79	8.22	2.664	0.39
2-yr	3.43	10.14	3.571	0.52
5-yr	4.46	13.68	5.659	0.82
10-yr	5.32	18.82	7.903	1.14
25-yr	6.50	28.99	11.588	1.68
50-yr	7.37	38.42	14.681	2.12
100-yr	8.32	50.03	18.366	2.66
200-yr	9.48	65.70	23.236	3.36
500-yr	11.30	91.87	31.550	4.56
1000-yr	**12.80**	**115.25**	**38.902**	**5.62**

Events for Pond 1P: Upstream Dam

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	1.02	0.98	0.98	0.00	149.07	0.765
2-yr	2.06	1.99	1.99	0.00	149.20	0.897
5-yr	7.01	5.93	5.93	0.00	149.57	1.273
10-yr	15.27	12.09	12.09	0.00	150.02	1.759
25-yr	31.59	20.79	20.79	0.00	150.55	3.236
50-yr	46.70	29.51	29.51	0.00	151.02	4.578
100-yr	65.49	37.95	37.95	0.00	151.44	6.480
200-yr	90.49	50.22	50.22	0.00	152.02	9.110
500-yr	132.24	70.52	70.52	0.00	152.95	13.732
1000-yr	**169.53**	**84.50**	**83.56**	**0.94**	**153.54**	**18.306**

Events for Pond 2P: DanielsonDamEC

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	12.79	4.79	4.79	0.00	0.00	146.13	27.071
2-yr	19.73	7.90	7.90	0.00	0.00	146.35	28.785
5-yr	38.09	17.32	14.28	3.04	0.00	146.72	32.169
10-yr	60.73	29.98	20.50	9.43	0.05	147.03	35.295
25-yr	93.24	66.56	25.77	15.29	25.50	147.27	37.726
50-yr	120.93	102.11	28.02	17.98	56.11	147.37	38.722
100-yr	152.32	139.82	29.88	20.22	89.72	147.45	39.527
200-yr	191.42	183.39	31.74	22.48	129.16	147.53	40.382
500-yr	255.35	237.67	33.49	25.18	192.58	147.75	43.000
1000-yr	**310.25**	**261.60**	**34.08**	**26.13**	**216.33**	**148.24**	**49.323**

Events for Pond 3P: Homstead Drive

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	4.79	4.79	4.79	**0.00**	138.42	0.011
2-yr	7.90	7.90	7.90	0.00	138.58	0.014
5-yr	17.32	17.30	17.30	0.00	139.18	0.039
10-yr	29.98	29.96	29.96	0.00	139.91	0.093
25-yr	66.56	66.09	66.09	0.00	140.95	0.258
50-yr	102.11	99.50	99.50	0.00	142.04	0.603
100-yr	139.82	136.33	136.33	0.00	143.50	1.165
200-yr	183.39	176.67	176.67	0.00	145.33	2.074
500-yr	237.67	213.76	213.76	0.00	147.60	3.469
1000-yr	**261.60**	**222.41**	**222.41**	0.00	**148.19**	**3.896**

Events for Pond 4P: Log Dam

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	4.79	4.79	138.34	0.012
2-yr	7.90	7.90	138.42	0.014
5-yr	17.30	17.27	138.90	0.023
10-yr	29.96	29.95	139.52	0.051
25-yr	66.09	65.98	140.03	0.091
50-yr	99.50	99.43	140.29	0.118
100-yr	136.33	136.26	140.53	0.145
200-yr	176.67	176.66	140.74	0.170
500-yr	213.76	213.76	140.89	0.187
1000-yr	**222.41**	**222.41**	**140.92**	**0.191**

Events for Pond 5P: Unnamed Road

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	4.79	4.79	4.79	0.00	137.78	0.057
2-yr	7.90	7.86	7.86	0.00	138.09	0.318
5-yr	17.27	17.06	17.06	0.00	138.81	0.844
10-yr	29.95	29.89	21.51	8.38	139.46	1.340
25-yr	65.98	65.00	25.30	39.69	139.90	2.137
50-yr	99.43	98.66	26.65	72.01	140.08	2.517
100-yr	136.26	135.33	27.70	107.63	140.22	2.869
200-yr	176.66	176.59	28.65	147.94	140.35	3.120
500-yr	213.76	213.75	29.38	184.37	140.46	3.223
1000-yr	**222.41**	**222.40**	**29.54**	**192.86**	**140.48**	**3.246**

Events for Pond 6P: South Street

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	10.03	10.03	10.03	0.00	127.69	0.002
2-yr	12.24	12.24	12.24	0.00	127.80	0.003
5-yr	19.73	19.73	19.73	0.00	128.13	0.017
10-yr	34.63	34.54	34.54	0.00	128.68	0.162
25-yr	74.47	71.73	71.73	0.00	129.84	0.984
50-yr	113.02	106.12	106.12	0.00	130.84	2.136
100-yr	156.19	135.57	135.57	0.00	131.93	4.022
200-yr	205.68	178.32	168.18	10.14	133.29	7.396
500-yr	261.66	254.50	174.90	79.60	133.58	8.219
1000-yr	**294.84**	**284.52**	**176.64**	**107.89**	**133.65**	**8.458**

TABLE OF CONTENTS

Project Reports
1 Routing Diagram
2 Rainfall Events Listing

1-yr Event
3 Subcat 1S: Upstream Dam
4 Subcat 2S: Danielson Pond
6 Subcat 6S: South Street
7 Pond 1P: Upstream Dam
9 Pond 2P: DanielsonDamEC
11 Pond 3P: Homstead Drive
13 Pond 4P: Log Dam
15 Pond 5P: Unnamed Road
17 Pond 6P: South Street

2-yr Event
20 Subcat 1S: Upstream Dam
21 Subcat 2S: Danielson Pond
23 Subcat 6S: South Street
24 Pond 1P: Upstream Dam
26 Pond 2P: DanielsonDamEC
28 Pond 3P: Homstead Drive
30 Pond 4P: Log Dam
32 Pond 5P: Unnamed Road
34 Pond 6P: South Street

5-yr Event
37 Subcat 1S: Upstream Dam
38 Subcat 2S: Danielson Pond
40 Subcat 6S: South Street
41 Pond 1P: Upstream Dam
43 Pond 2P: DanielsonDamEC
45 Pond 3P: Homstead Drive
47 Pond 4P: Log Dam
49 Pond 5P: Unnamed Road
51 Pond 6P: South Street

10-yr Event
54 Subcat 1S: Upstream Dam
55 Subcat 2S: Danielson Pond
57 Subcat 6S: South Street
58 Pond 1P: Upstream Dam
60 Pond 2P: DanielsonDamEC
62 Pond 3P: Homstead Drive
64 Pond 4P: Log Dam
66 Pond 5P: Unnamed Road
68 Pond 6P: South Street

25-yr Event
71 Subcat 1S: Upstream Dam
72 Subcat 2S: Danielson Pond
74 Subcat 6S: South Street
75 Pond 1P: Upstream Dam
77 Pond 2P: DanielsonDamEC
79 Pond 3P: Homstead Drive
81 Pond 4P: Log Dam
83 Pond 5P: Unnamed Road
85 Pond 6P: South Street

50-yr Event
88 Subcat 1S: Upstream Dam
89 Subcat 2S: Danielson Pond
91 Subcat 6S: South Street
92 Pond 1P: Upstream Dam
94 Pond 2P: DanielsonDamEC
96 Pond 3P: Homstead Drive
98 Pond 4P: Log Dam
100 Pond 5P: Unnamed Road
102 Pond 6P: South Street

100-yr Event
105 Subcat 1S: Upstream Dam
106 Subcat 2S: Danielson Pond
108 Subcat 6S: South Street
109 Pond 1P: Upstream Dam
111 Pond 2P: DanielsonDamEC
113 Pond 3P: Homstead Drive
115 Pond 4P: Log Dam
117 Pond 5P: Unnamed Road
119 Pond 6P: South Street

200-yr Event
122 Subcat 1S: Upstream Dam
123 Subcat 2S: Danielson Pond
125 Subcat 6S: South Street
126 Pond 1P: Upstream Dam
128 Pond 2P: DanielsonDamEC
130 Pond 3P: Homstead Drive
132 Pond 4P: Log Dam
134 Pond 5P: Unnamed Road
136 Pond 6P: South Street

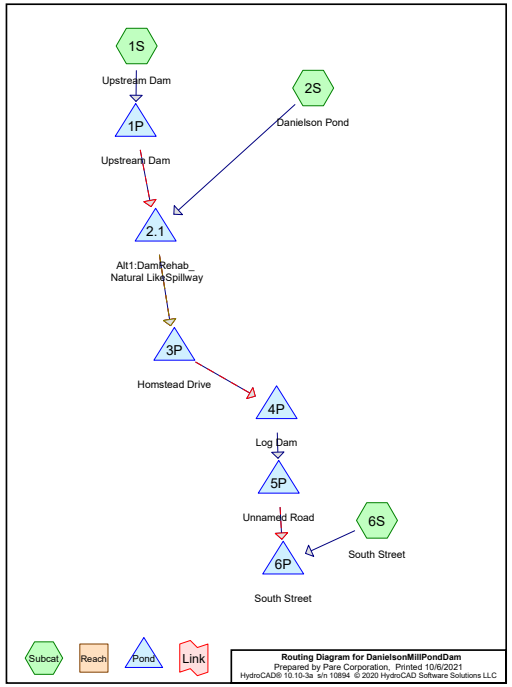
500-yr Event
139 Subcat 1S: Upstream Dam
140 Subcat 2S: Danielson Pond
142 Subcat 6S: South Street
143 Pond 1P: Upstream Dam
145 Pond 2P: DanielsonDamEC
147 Pond 3P: Homstead Drive
149 Pond 4P: Log Dam

151 Pond 5P: Unnamed Road
153 Pond 6P: South Street

1000-yr Event
156 Subcat 1S: Upstream Dam
157 Subcat 2S: Danielson Pond
159 Subcat 6S: South Street
160 Pond 1P: Upstream Dam
162 Pond 2P: DanielsonDamEC
164 Pond 3P: Homstead Drive
166 Pond 4P: Log Dam
168 Pond 5P: Unnamed Road
170 Pond 6P: South Street

Multi-Event Tables
173 Subcat 1S: Upstream Dam
174 Subcat 2S: Danielson Pond
175 Subcat 6S: South Street
176 Pond 1P: Upstream Dam
177 Pond 2P: DanielsonDamEC
178 Pond 3P: Homstead Drive
179 Pond 4P: Log Dam
180 Pond 5P: Unnamed Road
181 Pond 6P: South Street

Danielson Mill Dam Alt 1: Natural Like Spillway



Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Danielson NOAA 24-hr S1	1-yr	Default	24.00	1	2.79	2
2	2-yr	Danielson NOAA 24-hr S1	2-yr	Default	24.00	1	3.43	2
3	5-yr	Danielson NOAA 24-hr S1	5-yr	Default	24.00	1	4.46	2
4	10-yr	Danielson NOAA 24-hr S1	10-yr	Default	24.00	1	5.32	2
5	25-yr	Danielson NOAA 24-hr S1	25-yr	Default	24.00	1	6.50	2
6	50-yr	Danielson NOAA 24-hr S1	50-yr	Default	24.00	1	7.37	2
7	100-yr	Danielson NOAA 24-hr S1	100-yr	Default	24.00	1	8.32	2
8	200-yr	Danielson NOAA 24-hr S1	200-yr	Default	24.00	1	9.48	2
9	500-yr	Danielson NOAA 24-hr S1	500-yr	Default	24.00	1	11.30	2
10	1000-yr	Danielson NOAA 24-hr S1	1000-yr	Default	24.00	1	12.80	2

Summary for Subcatchment 1S: Upstream Dam

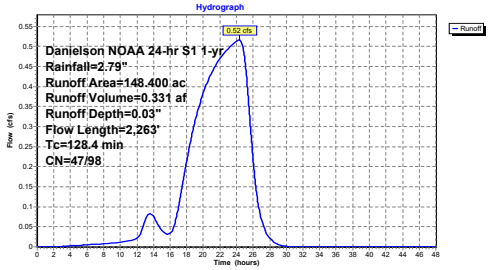
Runoff = 0.52 cfs @ 24.39 hrs, Volume= 0.331 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1-yr Rainfall=2.79"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

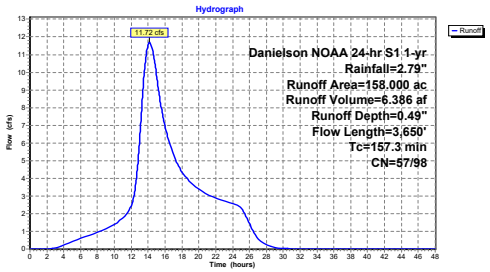
Runoff = 11.72 cfs @ 14.16 hrs, Volume= 6.386 af, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1-yr Rainfall=2.79"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

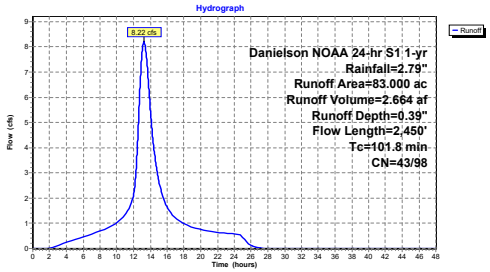
Runoff = 8.22 cfs @ 13.23 hrs, Volume= 2.664 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1-yr Rainfall=2.79"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.19" for 1-yr event
Inflow = 1.02 cfs @ 24.39 hrs, Volume= 2.314 af, Incl. 0.50 cfs Base Flow
Outflow = 0.98 cfs @ 24.95 hrs, Volume= 2.315 af, Atten= 4%, Lag= 33.7 min
Primary = 0.98 cfs @ 24.95 hrs, Volume= 2.315 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 149.07' @ 24.95 hrs Storage= 0.765 af (0.069 af above start)

Plug-Flow detention time= 826.2 min calculated for 1.618 af (70% of inflow)
Center-of-Mass det. time= 13.2 min (1,432.0 - 1,418.8)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

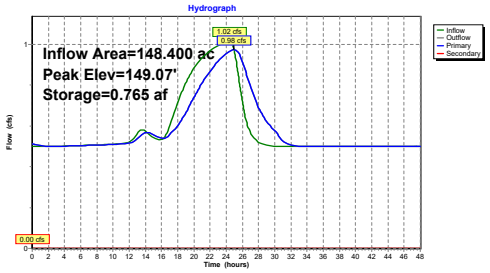
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=0.98 cfs @ 24.95 hrs HW=149.07' TW=145.83' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 0.98 cfs @ 1.53 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.42" for 1-yr event
Inflow = 12.79 cfs @ 14.16 hrs, Volume= 10.685 af, Incl. 0.50 cfs Base Flow
Outflow = 7.08 cfs @ 16.49 hrs, Volume= 11.679 af, Atten= 45%, Lag= 140.2 min
Primary = 7.08 cfs @ 16.49 hrs, Volume= 11.679 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 145.91' @ 16.49 hrs Storage= 25.090 af (1.106 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 82.3 min (1,253.0 - 1,170.7)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

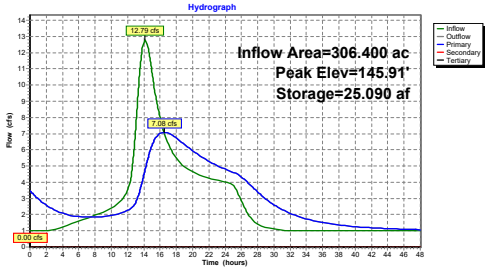
Device	Routing	Invert	Outlet Devices
#1	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#2	Primary	145.60'	**Natural Like Spillway Channel, C= 2.80** Offset (feet) 7.20 7.20 22.20 22.20 Elev. (feet) 148.00 145.60 145.60 148.00
#3	Device 6	146.50'	**12.0' long x 10.00' rise High Stage Weir Walls** 2 End Contraction(s) 4.0' Crest Height
#4	Device 6	142.00'	**2.0' long x 10.00' rise Stop Logs Removed X 0.00** 2 End Contraction(s) 4.0' Crest Height
#5	Device 6	141.00'	**6.0" Vert. Mud Drain X 0.00** C= 0.600 Limited to weir flow at low heads
#6	Secondary	141.00'	**30.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Primary OutFlow Max=7.08 cfs @ 16.49 hrs HW=145.91' TW=138.54' (Dynamic Tailwater)
└**2=Natural Like Spillway Channel** (Weir Controls 7.08 cfs @ 1.55 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.22' (Dynamic Tailwater)
└**6=Outlet Pipe** (Passes 0.00 cfs of 44.47 cfs potential flow)
├**3=High Stage Weir Walls** (Controls 0.00 cfs)
├**4=Stop Logs Removed** (Controls 0.00 cfs)
└**5=Mud Drain** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.22' (Dynamic Tailwater)
└**1=Top of Dam** (Controls 0.00 cfs)

Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.46" for 1-yr event
Inflow = 7.08 cfs @ 16.49 hrs, Volume= 11.679 af
Outflow = 7.08 cfs @ 16.51 hrs, Volume= 11.679 af, Atten= 0%, Lag= 0.7 min
Primary = 7.08 cfs @ 16.51 hrs, Volume= 11.679 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 138.54' @ 16.51 hrs Storage= 0.013 af (0.007 af above start)

Plug-Flow detention time= 2.2 min calculated for 11.671 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (1,253.5 - 1,253.0)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

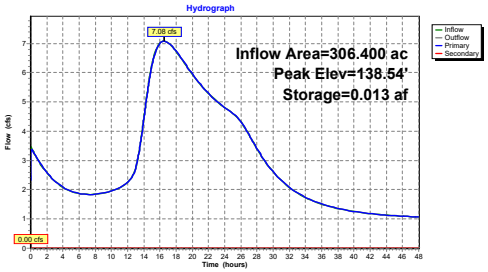
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=7.08 cfs @ 16.51 hrs HW=138.54' TW=138.40' (Dynamic Tailwater)
1=RCP_Round 48" (Outlet Controls 7.08 cfs @ 2.25 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.22' TW=138.21' (Dynamic Tailwater)
2=Top of Road (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.46" for 1-yr event
Inflow = 7.08 cfs @ 16.51 hrs, Volume= 11.679 af
Outflow = 7.08 cfs @ 16.51 hrs, Volume= 11.679 af, Atten= 0%, Lag= 0.3 min
Primary = 7.08 cfs @ 16.51 hrs, Volume= 11.679 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 138.40' @ 16.51 hrs Storage= 0.013 af (0.004 af above start)

Plug-Flow detention time= 2.8 min calculated for 11.668 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (1,253.8 - 1,253.5)

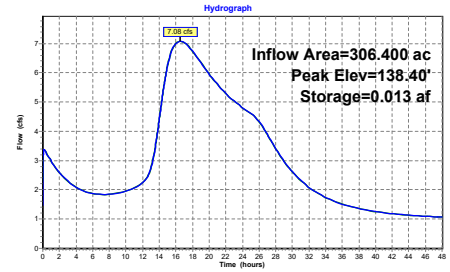
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=7.08 cfs @ 16.51 hrs HW=138.40' TW=137.95' (Dynamic Tailwater)
1=Log Dam (Weir Controls 7.08 cfs @ 1.62 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.46" for 1-yr event
Inflow = 7.08 cfs @ 16.51 hrs, Volume= 11.679 af
Outflow = 6.78 cfs @ 17.89 hrs, Volume= 11.680 af, Atten= 4%, Lag= 82.5 min
Primary = 6.78 cfs @ 17.89 hrs, Volume= 11.680 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 137.99' @ 17.89 hrs Storage= 0.246 af (0.236 af above start)

Plug-Flow detention time= 13.2 min calculated for 11.669 af (100% of inflow)
Center-of-Mass det. time= 10.9 min (1,264.7 - 1,253.8)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

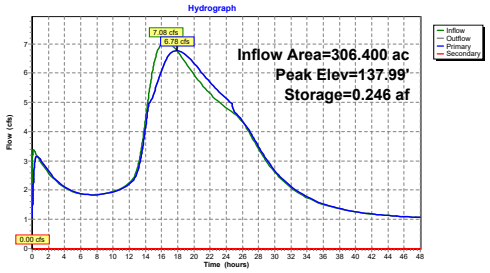
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=6.78 cfs @ 17.89 hrs HW=137.99' TW=127.58' (Dynamic Tailwater)
2=Culvert (Barrel Controls 6.78 cfs @ 2.38 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=137.27' TW=126.23' (Dynamic Tailwater)
1=Top of Road (Controls 0.00 cfs)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 0.44" for 1-yr event
Inflow = 11.07 cfs @ 13.34 hrs, Volume= 14.343 af
Outflow = 11.07 cfs @ 13.35 hrs, Volume= 14.342 af, Atten= 0%, Lag= 0.1 min
Primary = 11.07 cfs @ 13.35 hrs, Volume= 14.342 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 127.74' @ 13.35 hrs Storage= 0.003 af

Plug-Flow detention time= 0.4 min calculated for 14.342 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (1,188.6 - 1,188.4)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

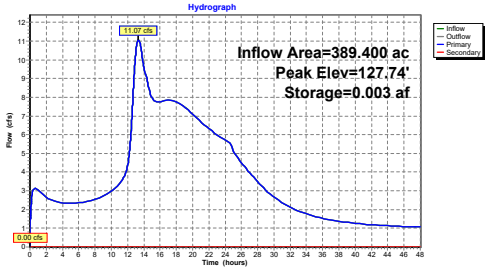
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76'/ 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=11.07 cfs @ 13.35 hrs HW=127.74' (Free Discharge)
└**1=Culvert** (Inlet Controls 11.07 cfs @ 4.61 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

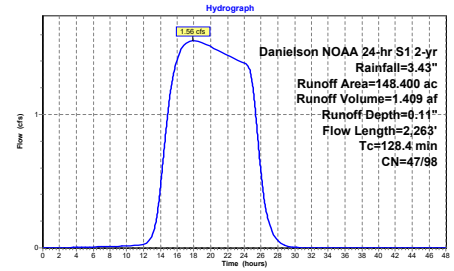
Runoff = 1.56 cfs @ 17.83 hrs, Volume= 1.409 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 2-yr Rainfall=3.43"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

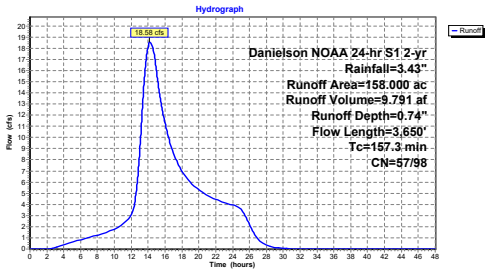
Runoff = 18.58 cfs @ 14.16 hrs, Volume= 9.791 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 2-yr Rainfall=3.43"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

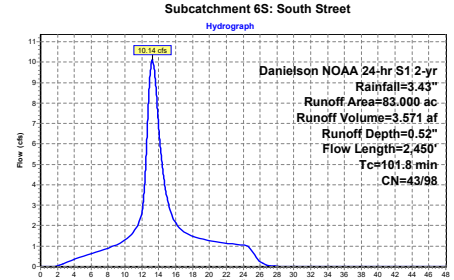
Runoff = 10.14 cfs @ 13.23 hrs, Volume= 3.571 af, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 2-yr Rainfall=3.43"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.27" for 2-yr event
Inflow = 2.06 cfs @ 17.83 hrs, Volume= 3.392 af, Incl. 0.50 cfs Base Flow
Outflow = 1.99 cfs @ 20.71 hrs, Volume= 3.393 af, Atten= 3%, Lag= 172.4 min
Primary = 1.99 cfs @ 20.71 hrs, Volume= 3.393 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 149.20' @ 20.71 hrs Storage= 0.897 af (0.201 af above start)

Plug-Flow detention time= 536.9 min calculated for 2.697 af (79% of inflow)
Center-of-Mass det. time= 40.7 min (1,382.1 - 1,341.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

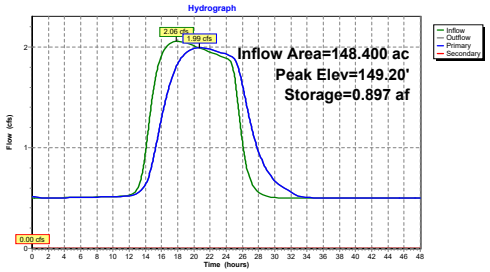
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=1.99 cfs @ 20.71 hrs HW=149.20' TW=145.96' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 1.99 cfs @ 1.96 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.59" for 2-yr event
Inflow = 19.73 cfs @ 14.16 hrs, Volume= 15.168 af, Incl. 0.50 cfs Base Flow
Outflow = 11.38 cfs @ 16.66 hrs, Volume= 16.147 af, Atten= 42%, Lag= 149.8 min
Primary = 11.38 cfs @ 16.66 hrs, Volume= 16.147 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 146.02' @ 16.66 hrs Storage= 26.151 af (2.167 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 118.6 min (1,261.8 - 1,143.2)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

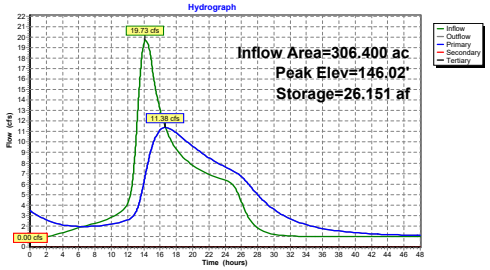
Device	Routing	Invert	Outlet Devices
#1	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#2	Primary	145.60'	**Natural Like Spillway Channel, C= 2.80** Offset (feet) 7.20 7.20 22.20 22.20 Elev. (feet) 148.00 145.60 145.60 148.00
#3	Device 6	146.50'	**12.0' long x 10.00' rise High Stage Weir Walls** 2 End Contraction(s) 4.0' Crest Height
#4	Device 6	142.00'	**2.0' long x 10.00' rise Stop Logs Removed X 0.00** 2 End Contraction(s) 4.0' Crest Height
#5	Device 6	141.00'	**6.0" Vert. Mud Drain X 0.00** C= 0.600 Limited to weir flow at low heads
#6	Secondary	141.00'	**30.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Primary OutFlow Max=11.38 cfs @ 16.66 hrs HW=146.02' TW=138.77' (Dynamic Tailwater)
└**2=Natural Like Spillway Channel** (Weir Controls 11.38 cfs @ 1.81 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.22' (Dynamic Tailwater)
└**6=Outlet Pipe** (Passes 0.00 cfs of 44.47 cfs potential flow)
├**3=High Stage Weir Walls** (Controls 0.00 cfs)
├**4=Stop Logs Removed** (Controls 0.00 cfs)
└**5=Mud Drain** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.22' (Dynamic Tailwater)
└**1=Top of Dam** (Controls 0.00 cfs)

Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.63" for 2-yr event
Inflow = 11.38 cfs @ 16.66 hrs, Volume= 16.147 af
Outflow = 11.38 cfs @ 16.67 hrs, Volume= 16.147 af, Atten= 0%, Lag= 0.9 min
Primary = 11.38 cfs @ 16.67 hrs, Volume= 16.147 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 138.78' @ 17.03 hrs Storage= 0.018 af (0.011 af above start)

Plug-Flow detention time= 1.8 min calculated for 16.139 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (1,262.4 - 1,261.8)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

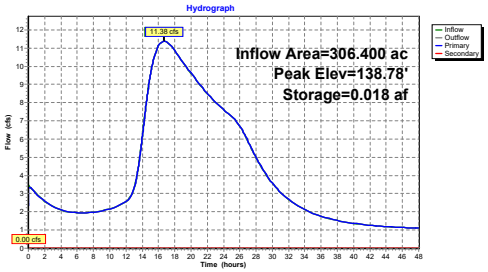
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=11.38 cfs @ 16.67 hrs HW=138.77' TW=138.54' (Dynamic Tailwater)
1=RCP_Round 48" (Outlet Controls 11.38 cfs @ 3.00 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.22' TW=138.21' (Dynamic Tailwater)
2=Top of Road (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.63" for 2-yr event
Inflow = 11.38 cfs @ 16.67 hrs, Volume= 16.147 af
Outflow = 11.37 cfs @ 16.68 hrs, Volume= 16.147 af, Atten= 0%, Lag= 0.6 min
Primary = 11.37 cfs @ 16.68 hrs, Volume= 16.147 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 138.55' @ 17.28 hrs Storage= 0.016 af (0.006 af above start)

Plug-Flow detention time= 2.1 min calculated for 16.137 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (1,262.7 - 1,262.4)

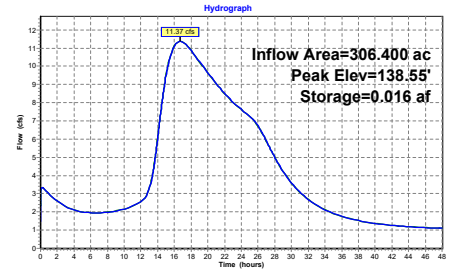
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=11.37 cfs @ 16.68 hrs HW=138.54' TW=138.33' (Dynamic Tailwater)
1=Log Dam (Weir Controls 11.37 cfs @ 1.65 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.63" for 2-yr event
Inflow = 11.37 cfs @ 16.68 hrs, Volume= 16.147 af
Outflow = 11.11 cfs @ 17.56 hrs, Volume= 16.147 af, Atten= 2%, Lag= 52.6 min
Primary = 11.11 cfs @ 17.56 hrs, Volume= 16.147 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 138.37' @ 17.56 hrs Storage= 0.502 af (0.493 af above start)

Plug-Flow detention time= 21.8 min calculated for 16.136 af (100% of inflow)
Center-of-Mass det. time= 20.1 min (1,282.8 - 1,262.7)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

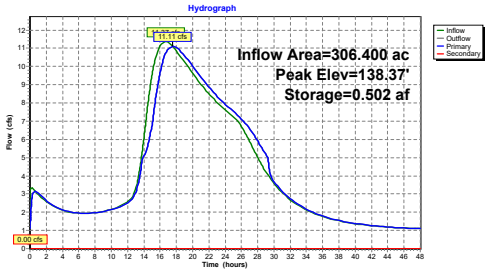
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=11.11 cfs @ 17.56 hrs HW=138.37' TW=127.82' (Dynamic Tailwater)
2=Culvert (Barrel Controls 11.11 cfs @ 2.89 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=137.27' TW=126.23' (Dynamic Tailwater)
1=Top of Road (Controls 0.00 cfs)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 0.61" for 2-yr event
Inflow = 13.63 cfs @ 13.35 hrs, Volume= 19.718 af
Outflow = 13.63 cfs @ 13.35 hrs, Volume= 19.717 af, Atten= 0%, Lag= 0.1 min
Primary = 13.63 cfs @ 13.35 hrs, Volume= 19.717 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 127.86' @ 13.35 hrs Storage= 0.003 af

Plug-Flow detention time= 0.3 min calculated for 19.717 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (1,209.5 - 1,209.3)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

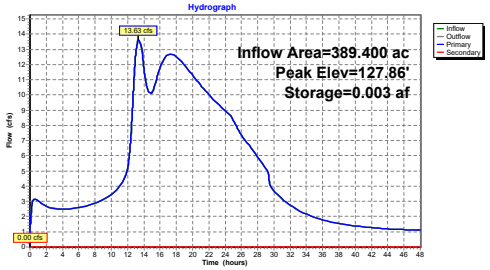
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=13.63 cfs @ 13.35 hrs HW=127.86' (Free Discharge)
└**1=Culvert** (Inlet Controls 13.63 cfs @ 4.86 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

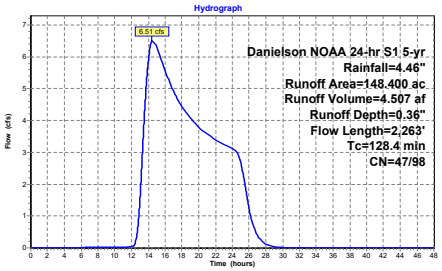
Runoff = 6.51 cfs @ 14.41 hrs, Volume= 4.507 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 5-yr Rainfall=4.46"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

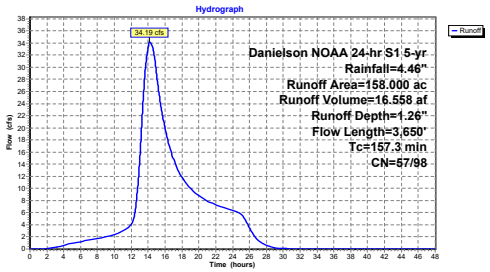
Runoff = 34.19 cfs @ 14.16 hrs, Volume= 16.558 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 5-yr Rainfall=4.46"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

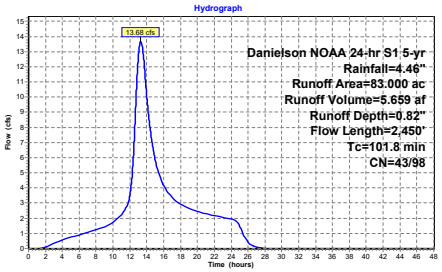
Runoff = 13.68 cfs @ 13.24 hrs, Volume= 5.659 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 5-yr Rainfall=4.46"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.52" for 5-yr event
Inflow = 7.01 cfs @ 14.41 hrs, Volume= 6.490 af, Incl. 0.50 cfs Base Flow
Outflow = 5.93 cfs @ 16.20 hrs, Volume= 6.491 af, Atten= 15%, Lag= 107.1 min
Primary = 5.93 cfs @ 16.20 hrs, Volume= 6.491 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 149.57' @ 16.20 hrs Storage= 1.273 af (0.576 af above start)

Plug-Flow detention time= 291.8 min calculated for 5.794 af (89% of inflow)
Center-of-Mass det. time= 57.7 min (1,276.0 - 1,218.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

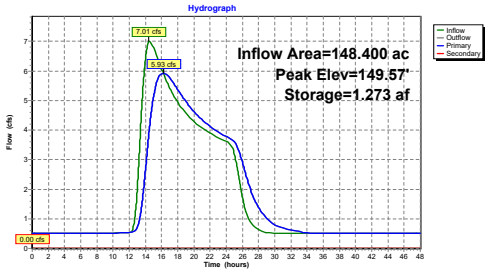
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=5.93 cfs @ 16.20 hrs HW=149.57' TW=146.30' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 5.93 cfs @ 2.87 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.98" for 5-yr event
Inflow = 38.09 cfs @ 14.33 hrs, Volume= 25.033 af, Incl. 0.50 cfs Base Flow
Outflow = 24.42 cfs @ 16.32 hrs, Volume= 25.995 af, Atten= 36%, Lag= 119.1 min
Primary = 24.42 cfs @ 16.32 hrs, Volume= 25.995 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 146.30' @ 16.32 hrs Storage= 28.374 af (4.390 af above start)

Plug-Flow detention time= 1,941.1 min calculated for 2.011 af (8% of inflow)
Center-of-Mass det. time= 133.5 min (1,240.9 - 1,107.4)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

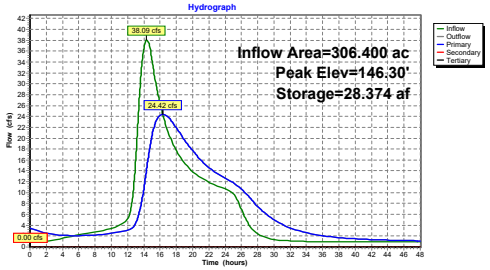
Device	Routing	Invert	Outlet Devices
#1	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#2	Primary	145.60'	**Natural Like Spillway Channel, C= 2.80** Offset (feet) 7.20 7.20 22.20 22.20 Elev. (feet) 148.00 145.60 145.60 148.00
#3	Device 6	146.50'	**12.0' long x 10.00' rise High Stage Weir Walls** 2 End Contraction(s) 4.0' Crest Height
#4	Device 6	142.00'	**2.0' long x 10.00' rise Stop Logs Removed X 0.00** 2 End Contraction(s) 4.0' Crest Height
#5	Device 6	141.00'	**6.0" Vert. Mud Drain X 0.00** C= 0.600 Limited to weir flow at low heads
#6	Secondary	141.00'	**30.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Primary OutFlow Max=24.42 cfs @ 16.32 hrs HW=146.30' TW=139.65' (Dynamic Tailwater)
└**2=Natural Like Spillway Channel** (Weir Controls 24.42 cfs @ 2.34 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.22' (Dynamic Tailwater)
└**6=Outlet Pipe** (Passes 0.00 cfs of 44.47 cfs potential flow)
├**3=High Stage Weir Walls** (Controls 0.00 cfs)
├**4=Stop Logs Removed** (Controls 0.00 cfs)
└**5=Mud Drain** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.22' (Dynamic Tailwater)
└**1=Top of Dam** (Controls 0.00 cfs)

Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.02" for 5-yr event
Inflow = 24.42 cfs @ 16.32 hrs, Volume= 25.995 af
Outflow = 24.28 cfs @ 16.47 hrs, Volume= 25.995 af, Atten= 1%, Lag= 9.3 min
Primary = 24.28 cfs @ 16.47 hrs, Volume= 25.995 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 139.68' @ 16.79 hrs Storage= 0.068 af (0.062 af above start)

Plug-Flow detention time= 1.9 min calculated for 25.985 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (1,242.1 - 1,240.9)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

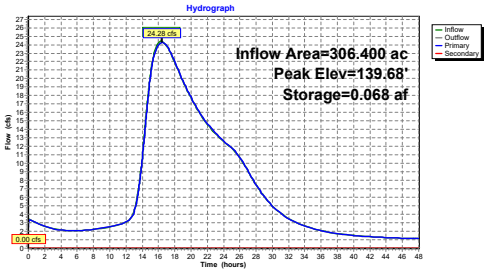
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=24.26 cfs @ 16.47 hrs HW=139.67' TW=139.34' (Dynamic Tailwater)
↳**1=RCP_Round 48"** (Outlet Controls 24.26 cfs @ 3.77 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.22' TW=138.21' (Dynamic Tailwater)
↳**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.02" for 5-yr event
Inflow = 24.28 cfs @ 16.47 hrs, Volume= 25.995 af
Outflow = 24.23 cfs @ 16.53 hrs, Volume= 25.995 af, Atten= 0%, Lag= 3.3 min
Primary = 24.23 cfs @ 16.53 hrs, Volume= 25.995 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 139.36' @ 16.93 hrs Storage= 0.044 af (0.034 af above start)

Plug-Flow detention time= 1.7 min calculated for 25.982 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (1,242.7 - 1,242.1)

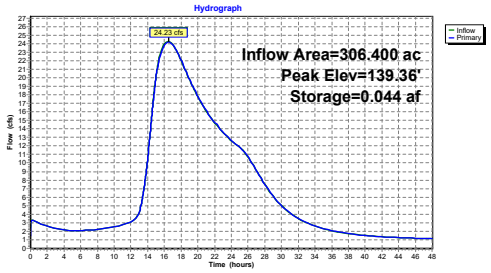
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=24.13 cfs @ 16.53 hrs HW=139.35' TW=139.29' (Dynamic Tailwater)
↳**1=Log Dam** (Weir Controls 24.13 cfs @ 0.88 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.02" for 5-yr event
Inflow = 24.23 cfs @ 16.53 hrs, Volume= 25.995 af
Outflow = 23.94 cfs @ 16.97 hrs, Volume= 25.995 af, Atten= 1%, Lag= 26.2 min
Primary = 20.08 cfs @ 16.97 hrs, Volume= 25.111 af
Secondary = 3.87 cfs @ 16.97 hrs, Volume= 0.884 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 139.31' @ 16.97 hrs Storage= 1.229 af (1.220 af above start)

Plug-Flow detention time= 30.3 min calculated for 25.983 af (100% of inflow)
Center-of-Mass det. time= 29.2 min (1,271.9 - 1,242.7)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

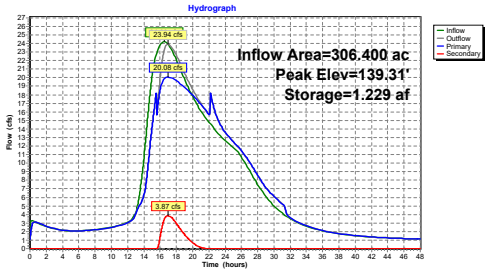
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=20.08 cfs @ 16.97 hrs HW=139.31' TW=128.42' (Dynamic Tailwater)
↳**2=Culvert** (Barrel Controls 20.08 cfs @ 3.82 fps)

Secondary OutFlow Max=3.87 cfs @ 16.97 hrs HW=139.31' TW=128.42' (Dynamic Tailwater)
↳**1=Top of Road** (Weir Controls 3.87 cfs @ 0.84 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 0.98" for 5-yr event
Inflow = 27.39 cfs @ 16.85 hrs, Volume= 31.654 af
Outflow = 27.34 cfs @ 16.98 hrs, Volume= 31.653 af, Atten= 0%, Lag= 7.5 min
Primary = 27.34 cfs @ 16.98 hrs, Volume= 31.653 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 128.42' @ 16.98 hrs Storage= 0.070 af

Plug-Flow detention time= 0.7 min calculated for 31.653 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (1,207.8 - 1,207.1)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

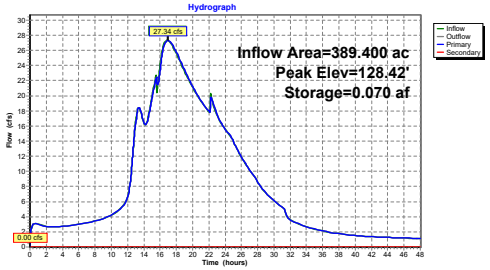
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=27.34 cfs @ 16.98 hrs HW=128.42' (Free Discharge)
└**1=Culvert** (Barrel Controls 27.34 cfs @ 8.16 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

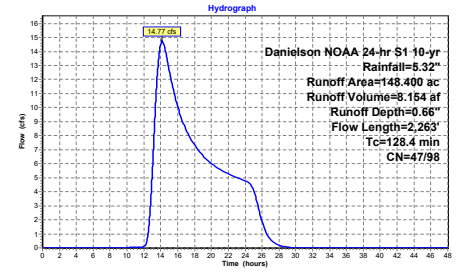
Runoff = 14.77 cfs @ 14.13 hrs, Volume= 8.154 af, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 10-yr Rainfall=5.32"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

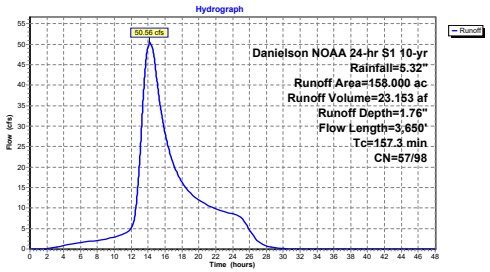
Runoff = 50.56 cfs @ 14.16 hrs, Volume= 23.153 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 10-yr Rainfall=5.32"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

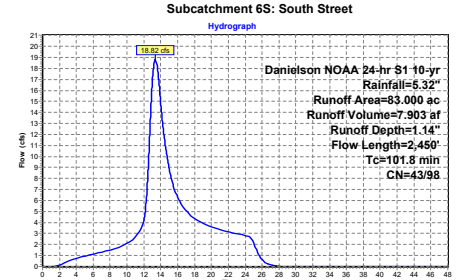
Runoff = 18.82 cfs @ 13.35 hrs, Volume= 7.903 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 10-yr Rainfall=5.32"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.82" for 10-yr event
Inflow = 15.27 cfs @ 14.13 hrs, Volume= 10.138 af, Incl. 0.50 cfs Base Flow
Outflow = 12.09 cfs @ 15.37 hrs, Volume= 10.138 af, Atten= 21%, Lag= 74.8 min
Primary = 12.09 cfs @ 15.37 hrs, Volume= 10.138 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 150.02' @ 15.37 hrs Storage= 1.759 af (1.063 af above start)

Plug-Flow detention time= 203.0 min calculated for 9.441 af (93% of inflow)
Center-of-Mass det. time= 58.8 min (1,213.2 - 1,154.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

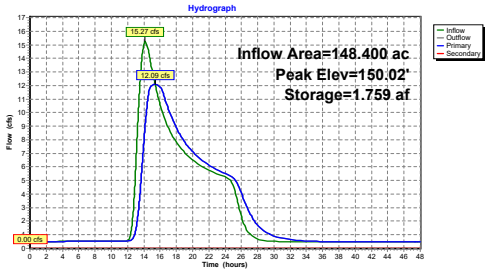
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=12.09 cfs @ 15.37 hrs HW=150.02' TW=146.54' (Dynamic Tailwater)
└─**1=Spillway Weir** (Weir Controls 12.09 cfs @ 3.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└─**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.38" for 10-yr event
Inflow = 60.73 cfs @ 14.34 hrs, Volume= 35.275 af, Incl. 0.50 cfs Base Flow
Outflow = 40.26 cfs @ 16.04 hrs, Volume= 36.228 af, Atten= 34%, Lag= 102.3 min
Primary = 39.65 cfs @ 16.04 hrs, Volume= 36.155 af
Secondary = 0.61 cfs @ 16.04 hrs, Volume= 0.073 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 146.56' @ 16.04 hrs Storage= 30.623 af (6.639 af above start)

Plug-Flow detention time= 937.1 min calculated for 12.242 af (35% of inflow)
Center-of-Mass det. time= 131.6 min (1,216.7 - 1,085.1)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

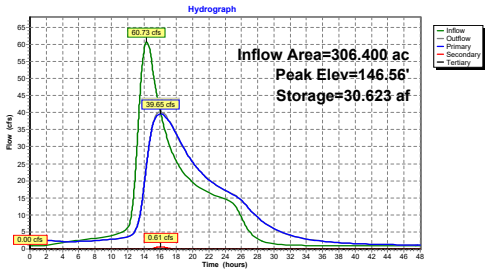
Device	Routing	Invert	Outlet Devices
#1	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#2	Primary	145.60'	**Natural Like Spillway Channel, C= 2.80** Offset (feet) 7.20 7.20 22.20 22.20 Elev. (feet) 148.00 145.60 145.60 148.00
#3	Device 6	146.50'	**12.0' long x 10.00' rise High Stage Weir Walls** 2 End Contraction(s) 4.0' Crest Height
#4	Device 6	142.00'	**2.0' long x 10.00' rise Stop Logs Removed X 0.00** 2 End Contraction(s) 4.0' Crest Height
#5	Device 6	141.00'	**6.0" Vert. Mud Drain X 0.00** C= 0.600 Limited to weir flow at low heads
#6	Secondary	141.00'	**30.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Primary OutFlow Max=39.65 cfs @ 16.04 hrs HW=146.56' TW=140.24' (Dynamic Tailwater)
└─**2=Natural Like Spillway Channel** (Weir Controls 39.65 cfs @ 2.75 fps)

Secondary OutFlow Max=0.61 cfs @ 16.04 hrs HW=146.56' TW=140.24' (Dynamic Tailwater)
└─**6=Outlet Pipe** (Passes 0.61 cfs of 49.08 cfs potential flow)
├─**3=High Stage Weir Walls** (Weir Controls 0.61 cfs @ 0.82 fps)
├─**4=Stop Logs Removed** (Controls 0.00 cfs)
└─**5=Mud Drain** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.22' (Dynamic Tailwater)
└─**1=Top of Dam** (Controls 0.00 cfs)

Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.42" for 10-yr event
Inflow = 40.26 cfs @ 16.04 hrs, Volume= 36.228 af
Outflow = 40.20 cfs @ 16.09 hrs, Volume= 36.228 af, Atten= 0%, Lag= 2.9 min
Primary = 40.20 cfs @ 16.09 hrs, Volume= 36.228 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 140.24' @ 16.26 hrs Storage= 0.129 af (0.122 af above start)

Plug-Flow detention time= 2.1 min calculated for 36.221 af (100% of inflow)
Center-of-Mass det. time= 1.6 min (1,218.3 - 1,216.7)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

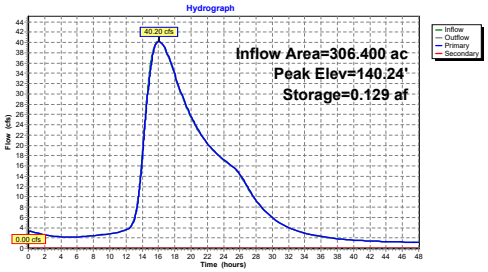
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=40.19 cfs @ 16.09 hrs HW=140.24' TW=139.70' (Dynamic Tailwater)
1=RCP_Round 48" (Outlet Controls 40.19 cfs @ 4.94 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.22' TW=138.21' (Dynamic Tailwater)
2=Top of Road (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.42" for 10-yr event
Inflow = 40.20 cfs @ 16.09 hrs, Volume= 36.228 af
Outflow = 40.15 cfs @ 16.12 hrs, Volume= 36.228 af, Atten= 0%, Lag= 1.5 min
Primary = 40.15 cfs @ 16.12 hrs, Volume= 36.228 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 139.71' @ 16.47 hrs Storage= 0.064 af (0.055 af above start)

Plug-Flow detention time= 1.6 min calculated for 36.218 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,219.0 - 1,218.3)

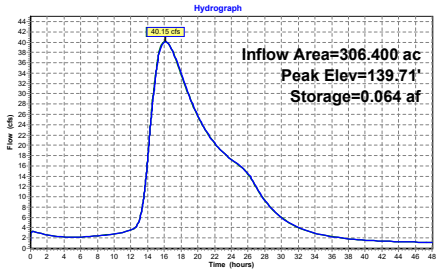
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=40.08 cfs @ 16.12 hrs HW=139.70' TW=139.62' (Dynamic Tailwater)
1=Log Dam (Weir Controls 40.08 cfs @ 1.01 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.42" for 10-yr event
Inflow = 40.15 cfs @ 16.12 hrs, Volume= 36.228 af
Outflow = 39.59 cfs @ 16.55 hrs, Volume= 36.228 af, Atten= 1%, Lag= 26.3 min
Primary = 23.08 cfs @ 16.55 hrs, Volume= 30.321 af
Secondary = 16.51 cfs @ 16.55 hrs, Volume= 5.907 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 139.63' @ 16.55 hrs Storage= 1.626 af (1.617 af above start)

Plug-Flow detention time= 30.2 min calculated for 36.215 af (100% of inflow)
Center-of-Mass det. time= 29.4 min (1,248.5 - 1,219.0)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

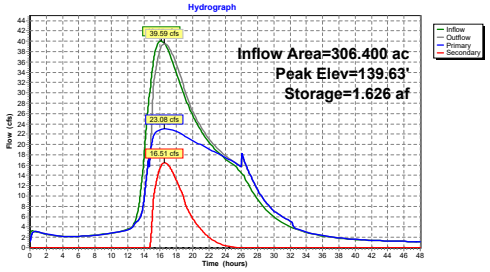
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=23.08 cfs @ 16.55 hrs HW=139.63' TW=129.03' (Dynamic Tailwater)
2=Culvert (Barrel Controls 23.08 cfs @ 4.40 fps)

Secondary OutFlow Max=16.51 cfs @ 16.55 hrs HW=139.63' TW=129.03' (Dynamic Tailwater)
1=Top of Road (Weir Controls 16.51 cfs @ 1.34 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 1.36" for 10-yr event
Inflow = 45.22 cfs @ 16.39 hrs, Volume= 44.131 af
Outflow = 45.00 cfs @ 16.64 hrs, Volume= 44.129 af, Atten= 0%, Lag= 15.1 min
Primary = 45.00 cfs @ 16.64 hrs, Volume= 44.129 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 129.03' @ 16.64 hrs Storage= 0.351 af

Plug-Flow detention time= 2.3 min calculated for 44.125 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (1,192.4 - 1,190.1)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

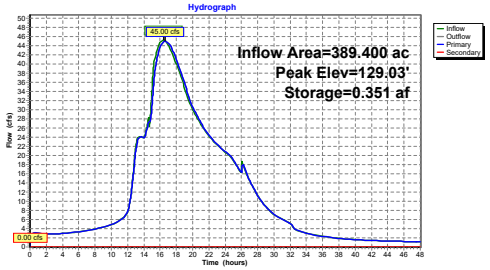
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=45.00 cfs @ 16.64 hrs HW=129.03' (Free Discharge)
└**1=Culvert** (Barrel Controls 45.00 cfs @ 8.83 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

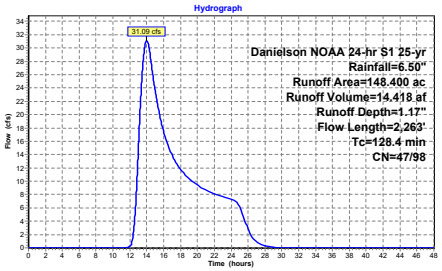
Runoff = 31.09 cfs @ 13.98 hrs, Volume= 14.418 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 25-yr Rainfall=6.50"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

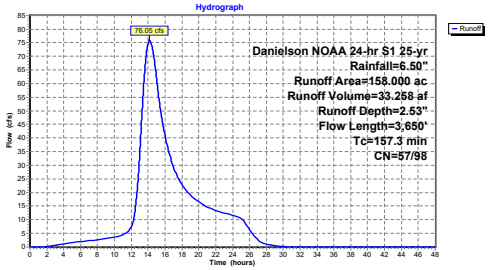
Runoff = 76.05 cfs @ 14.16 hrs, Volume= 33.258 af, Depth= 2.53"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 25-yr Rainfall=6.50"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

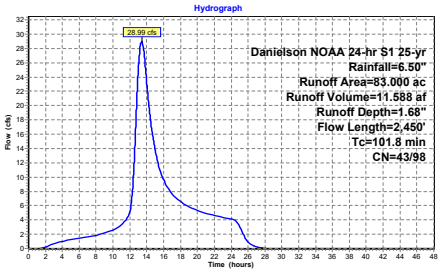
Runoff = 28.99 cfs @ 13.46 hrs, Volume= 11.588 af, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 25-yr Rainfall=6.50"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 1.33" for 25-yr event
Inflow = 31.59 cfs @ 13.98 hrs, Volume= 16.402 af, Incl. 0.50 cfs Base Flow
Outflow = 20.79 cfs @ 15.47 hrs, Volume= 16.403 af, Atten= 34%, Lag= 89.3 min
Primary = 20.79 cfs @ 15.47 hrs, Volume= 16.403 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 150.55' @ 15.47 hrs Storage= 3.236 af (2.539 af above start)

Plug-Flow detention time= 157.8 min calculated for 15.705 af (96% of inflow)
Center-of-Mass det. time= 70.5 min (1,172.6 - 1,102.1)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

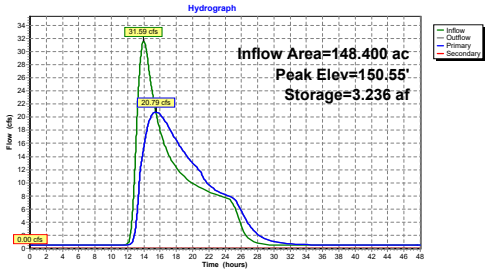
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=20.79 cfs @ 15.47 hrs HW=150.55' TW=146.85' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 20.79 cfs @ 4.60 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.02" for 25-yr event
Inflow = 93.24 cfs @ 14.33 hrs, Volume= 51.645 af, Incl. 0.50 cfs Base Flow
Outflow = 67.09 cfs @ 15.69 hrs, Volume= 52.588 af, Atten= 28%, Lag= 81.6 min
Primary = 58.85 cfs @ 15.69 hrs, Volume= 50.528 af
Secondary = 8.24 cfs @ 15.69 hrs, Volume= 2.059 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 146.85' @ 15.69 hrs Storage= 33.521 af (9.537 af above start)

Plug-Flow detention time= 608.6 min calculated for 28.603 af (55% of inflow)
Center-of-Mass det. time= 123.8 min (1,191.6 - 1,067.9)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

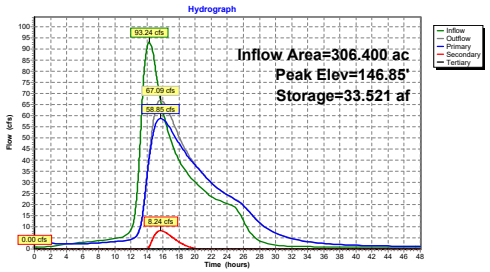
Device	Routing	Invert	Outlet Devices
#1	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#2	Primary	145.60'	**Natural Like Spillway Channel, C= 2.80** Offset (feet) 7.20 7.20 22.20 22.20 Elev. (feet) 148.00 145.60 145.60 148.00
#3	Device 6	146.50'	**12.0' long x 10.00' rise High Stage Weir Walls** 2 End Contraction(s) 4.0' Crest Height
#4	Device 6	142.00'	**2.0' long x 10.00' rise Stop Logs Removed X 0.00** 2 End Contraction(s) 4.0' Crest Height
#5	Device 6	141.00'	**6.0" Vert. Mud Drain X 0.00** C= 0.600 Limited to weir flow at low heads
#6	Secondary	141.00'	**30.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Primary OutFlow Max=58.85 cfs @ 15.69 hrs HW=146.85' TW=140.98' (Dynamic Tailwater)
└**2=Natural Like Spillway Channel** (Weir Controls 58.85 cfs @ 3.13 fps)

Secondary OutFlow Max=8.24 cfs @ 15.69 hrs HW=146.85' TW=140.98' (Dynamic Tailwater)
└**6=Outlet Pipe** (Passes 8.24 cfs of 50.70 cfs potential flow)
├**3=High Stage Weir Walls** (Weir Controls 8.24 cfs @ 1.96 fps)
├**4=Stop Logs Removed** (Controls 0.00 cfs)
└**5=Mud Drain** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.22' (Dynamic Tailwater)
└**1=Top of Dam** (Controls 0.00 cfs)

Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.06" for 25-yr event
Inflow = 67.09 cfs @ 15.69 hrs, Volume= 52.588 af
Outflow = 66.98 cfs @ 15.77 hrs, Volume= 52.588 af, Atten= 0%, Lag= 5.2 min
Primary = 66.98 cfs @ 15.77 hrs, Volume= 52.588 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 140.98' @ 15.81 hrs Storage= 0.265 af (0.259 af above start)

Plug-Flow detention time= 2.3 min calculated for 52.575 af (100% of inflow)
Center-of-Mass det. time= 2.0 min (1,193.6 - 1,191.6)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

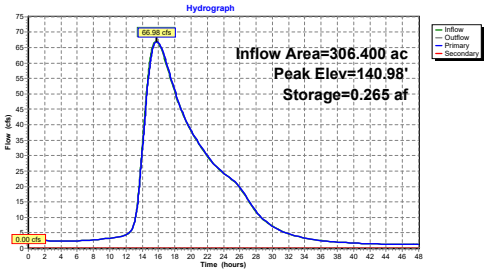
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=66.97 cfs @ 15.77 hrs HW=140.98' TW=140.04' (Dynamic Tailwater)
↳**1=RCP_Round 48"** (Outlet Controls 66.97 cfs @ 6.58 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.22' TW=138.21' (Dynamic Tailwater)
↳**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.06" for 25-yr event
Inflow = 66.98 cfs @ 15.77 hrs, Volume= 52.588 af
Outflow = 66.95 cfs @ 15.79 hrs, Volume= 52.588 af, Atten= 0%, Lag= 0.8 min
Primary = 66.95 cfs @ 15.79 hrs, Volume= 52.588 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.05' @ 15.91 hrs Storage= 0.092 af (0.083 af above start)

Plug-Flow detention time= 1.4 min calculated for 52.578 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,194.4 - 1,193.6)

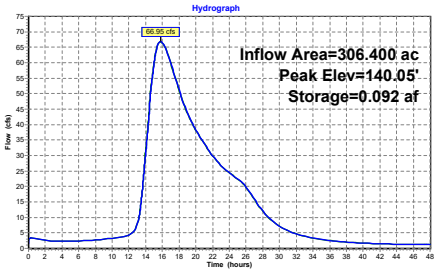
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=66.92 cfs @ 15.79 hrs HW=140.05' TW=139.91' (Dynamic Tailwater)
↳**1=Log Dam** (Weir Controls 66.92 cfs @ 1.25 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.06" for 25-yr event
Inflow = 66.95 cfs @ 15.79 hrs, Volume= 52.588 af
Outflow = 66.70 cfs @ 15.97 hrs, Volume= 52.587 af, Atten= 0%, Lag= 11.0 min
Primary = 25.39 cfs @ 15.97 hrs, Volume= 35.117 af
Secondary = 41.31 cfs @ 15.97 hrs, Volume= 17.471 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 139.91' @ 15.97 hrs Storage= 2.159 af (2.150 af above start)

Plug-Flow detention time= 27.6 min calculated for 52.578 af (100% of inflow)
Center-of-Mass det. time= 27.0 min (1,221.5 - 1,194.4)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

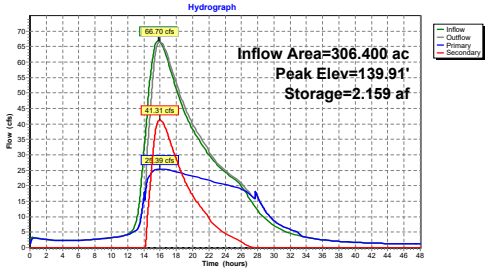
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=25.39 cfs @ 15.97 hrs HW=139.91' TW=129.91' (Dynamic Tailwater)
↳**2=Culvert** (Barrel Controls 25.39 cfs @ 4.84 fps)

Secondary OutFlow Max=41.31 cfs @ 15.97 hrs HW=139.91' TW=129.91' (Dynamic Tailwater)
↳**1=Top of Road** (Weir Controls 41.31 cfs @ 1.51 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 1.98" for 25-yr event
Inflow = 76.62 cfs @ 15.81 hrs, Volume= 64.175 af
Outflow = 74.84 cfs @ 16.29 hrs, Volume= 64.174 af, Atten= 2%, Lag= 29.1 min
Primary = 74.84 cfs @ 16.29 hrs, Volume= 64.174 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 129.93' @ 16.29 hrs Storage= 1.103 af

Plug-Flow detention time= 5.2 min calculated for 64.167 af (100% of inflow)
Center-of-Mass det. time= 5.1 min (1,174.1 - 1,169.0)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

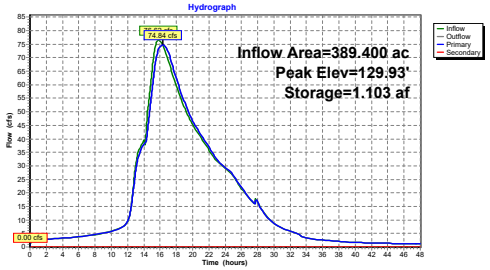
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=74.84 cfs @ 16.29 hrs HW=129.93' (Free Discharge)
└**1=Culvert** (Barrel Controls 74.84 cfs @ 9.62 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

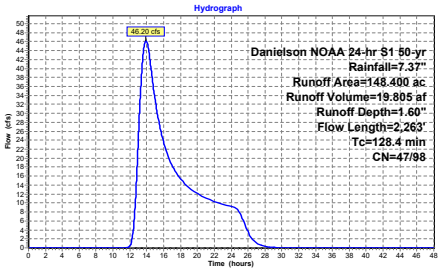
Runoff = 46.20 cfs @ 13.84 hrs, Volume= 19.805 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 50-yr Rainfall=7.37"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

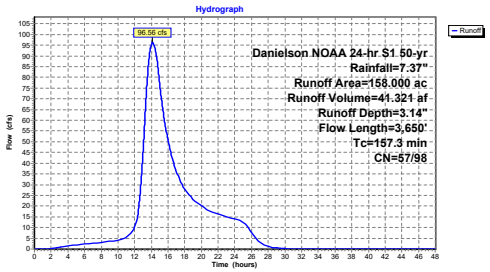
Runoff = 96.56 cfs @ 14.16 hrs, Volume= 41.321 af, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 50-yr Rainfall=7.37"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

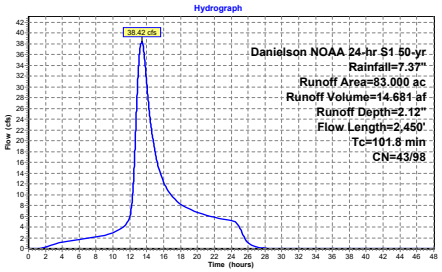
Runoff = 38.42 cfs @ 13.46 hrs, Volume= 14.681 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 50-yr Rainfall=7.37"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 1.76" for 50-yr event
Inflow = 46.70 cfs @ 13.84 hrs, Volume= 21.789 af, Incl. 0.50 cfs Base Flow
Outflow = 29.51 cfs @ 15.35 hrs, Volume= 21.790 af, Atten= 37%, Lag= 90.3 min
Primary = 29.51 cfs @ 15.35 hrs, Volume= 21.790 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 151.02' @ 15.35 hrs Storage= 4.578 af (3.881 af above start)

Plug-Flow detention time= 143.8 min calculated for 21.091 af (97% of inflow)
Center-of-Mass det. time= 78.4 min (1,155.7 - 1,077.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

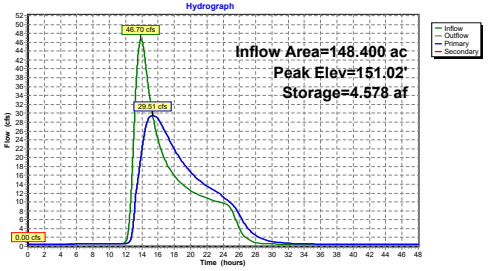
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=29.51 cfs @ 15.35 hrs HW=151.02' TW=147.06' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 29.51 cfs @ 5.30 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.55" for 50-yr event
Inflow = 120.93 cfs @ 14.33 hrs, Volume= 65.095 af, Incl. 0.50 cfs Base Flow
Outflow = 91.44 cfs @ 15.51 hrs, Volume= 66.031 af, Atten= 24%, Lag= 70.7 min
Primary = 74.58 cfs @ 15.51 hrs, Volume= 61.155 af
Secondary = 16.86 cfs @ 15.51 hrs, Volume= 4.876 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 147.07' @ 15.51 hrs Storage= 35.664 af (11.680 af above start)

Plug-Flow detention time= 489.0 min calculated for 42.043 af (65% of inflow)
Center-of-Mass det. time= 117.0 min (1,176.4 - 1,059.4)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

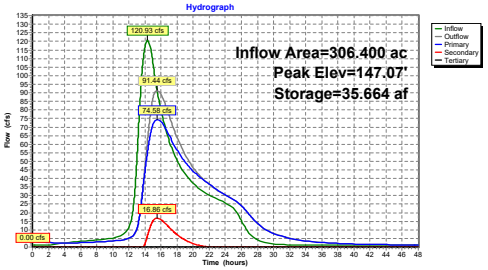
Device	Routing	Invert	Outlet Devices
#1	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#2	Primary	145.60'	**Natural Like Spillway Channel, C= 2.80** Offset (feet) 7.20 7.20 22.20 22.20 Elev. (feet) 148.00 145.60 145.60 148.00
#3	Device 6	146.50'	**12.0' long x 10.00' rise High Stage Weir Walls** 2 End Contraction(s) 4.0' Crest Height
#4	Device 6	142.00'	**2.0' long x 10.00' rise Stop Logs Removed X 0.00** 2 End Contraction(s) 4.0' Crest Height
#5	Device 6	141.00'	**6.0" Vert. Mud Drain X 0.00** C= 0.600 Limited to weir flow at low heads
#6	Secondary	141.00'	**30.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Primary OutFlow Max=74.58 cfs @ 15.51 hrs HW=147.07' TW=141.61' (Dynamic Tailwater)
└**2=Natural Like Spillway Channel** (Weir Controls 74.58 cfs @ 3.39 fps)

Secondary OutFlow Max=16.86 cfs @ 15.51 hrs HW=147.07' TW=141.61' (Dynamic Tailwater)
└**6=Outlet Pipe** (Passes 16.86 cfs of 51.87 cfs potential flow)
├**3=High Stage Weir Walls** (Weir Controls 16.86 cfs @ 2.50 fps)
├**4=Stop Logs Removed** (Controls 0.00 cfs)
└**5=Mud Drain** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.22' (Dynamic Tailwater)
└**1=Top of Dam** (Controls 0.00 cfs)

Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.59" for 50-yr event
Inflow = 91.44 cfs @ 15.51 hrs, Volume= 66.031 af
Outflow = 91.10 cfs @ 15.67 hrs, Volume= 66.031 af, Atten= 0%, Lag= 10.0 min
Primary = 91.10 cfs @ 15.67 hrs, Volume= 66.031 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 141.62' @ 15.67 hrs Storage= 0.446 af (0.440 af above start)

Plug-Flow detention time= 2.6 min calculated for 66.017 af (100% of inflow)
Center-of-Mass det. time= 2.3 min (1,178.7 - 1,176.4)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

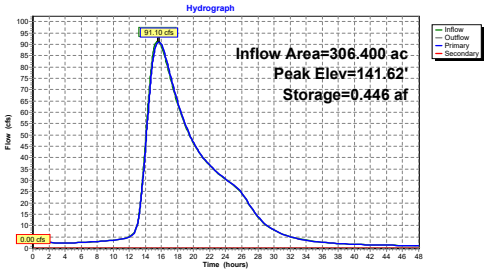
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=91.10 cfs @ 15.67 hrs HW=141.62' TW=140.24' (Dynamic Tailwater)
1=RCP_Round 48" (Barrel Controls 91.10 cfs @ 7.81 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.22' TW=138.21' (Dynamic Tailwater)
2=Top of Road (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.59" for 50-yr event
Inflow = 91.10 cfs @ 15.67 hrs, Volume= 66.031 af
Outflow = 91.08 cfs @ 15.68 hrs, Volume= 66.031 af, Atten= 0%, Lag= 0.7 min
Primary = 91.08 cfs @ 15.68 hrs, Volume= 66.031 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.24' @ 15.76 hrs Storage= 0.111 af (0.101 af above start)

Plug-Flow detention time= 1.3 min calculated for 66.021 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,179.6 - 1,178.7)

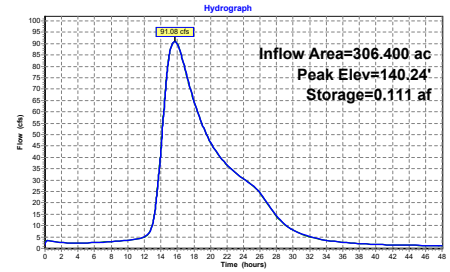
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=91.06 cfs @ 15.68 hrs HW=140.24' TW=140.04' (Dynamic Tailwater)
1=Log Dam (Weir Controls 91.06 cfs @ 1.46 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.59" for 50-yr event
Inflow = 91.08 cfs @ 15.68 hrs, Volume= 66.031 af
Outflow = 90.83 cfs @ 15.83 hrs, Volume= 66.031 af, Atten= 0%, Lag= 8.9 min
Primary = 26.39 cfs @ 15.83 hrs, Volume= 37.664 af
Secondary = 64.44 cfs @ 15.83 hrs, Volume= 28.367 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.04' @ 15.83 hrs Storage= 2.430 af (2.420 af above start)

Plug-Flow detention time= 25.2 min calculated for 66.015 af (100% of inflow)
Center-of-Mass det. time= 24.8 min (1,204.3 - 1,179.6)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

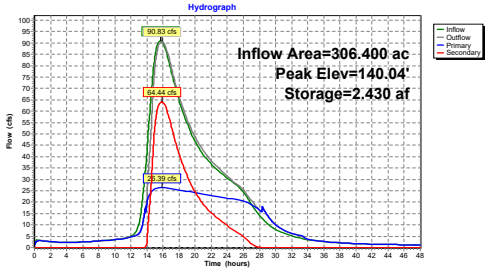
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=26.39 cfs @ 15.83 hrs HW=140.04' TW=130.67' (Dynamic Tailwater)
2=Culvert (Barrel Controls 26.39 cfs @ 5.03 fps)

Secondary OutFlow Max=64.44 cfs @ 15.83 hrs HW=140.04' TW=130.67' (Dynamic Tailwater)
1=Top of Road (Weir Controls 64.44 cfs @ 1.66 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 2.49" for 50-yr event
Inflow = 104.17 cfs @ 15.66 hrs, Volume= 80.712 af
Outflow = 101.55 cfs @ 16.16 hrs, Volume= 80.711 af, Atten= 3%, Lag= 29.7 min
Primary = 101.55 cfs @ 16.16 hrs, Volume= 80.711 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 130.70' @ 16.16 hrs Storage= 1.953 af

Plug-Flow detention time= 7.4 min calculated for 80.711 af (100% of inflow)
Center-of-Mass det. time= 7.4 min (1,162.4 - 1,155.0)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

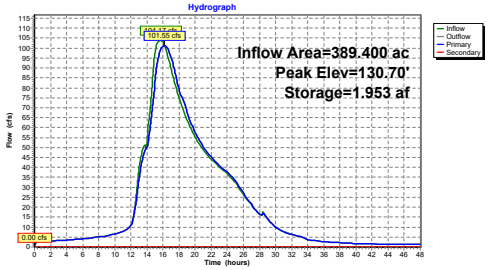
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=101.55 cfs @ 16.16 hrs HW=130.70' (Free Discharge)
└**1=Culvert** (Barrel Controls 101.55 cfs @ 10.19 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

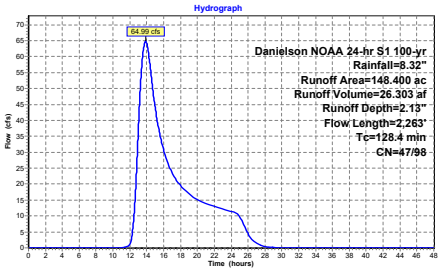
Runoff = 64.99 cfs @ 13.84 hrs, Volume= 26.303 af, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 100-yr Rainfall=8.32"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

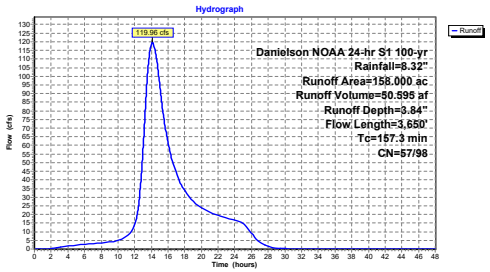
Runoff = 119.96 cfs @ 14.16 hrs, Volume= 50.595 af, Depth= 3.84"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 100-yr Rainfall=8.32"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

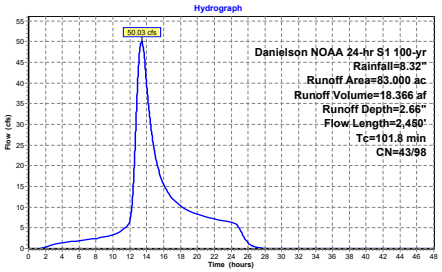
Runoff = 50.03 cfs @ 13.46 hrs, Volume= 18.366 af, Depth= 2.66"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 100-yr Rainfall=8.32"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 2.29" for 100-yr event
Inflow = 65.49 cfs @ 13.84 hrs, Volume= 28.287 af, Incl. 0.50 cfs Base Flow
Outflow = 37.95 cfs @ 15.41 hrs, Volume= 28.288 af, Atten= 42%, Lag= 94.1 min
Primary = 37.95 cfs @ 15.41 hrs, Volume= 28.288 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 151.44' @ 15.41 hrs Storage= 6.480 af (5.783 af above start)

Plug-Flow detention time= 139.1 min calculated for 27.588 af (98% of inflow)
Center-of-Mass det. time= 88.9 min (1,146.7 - 1,057.8)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

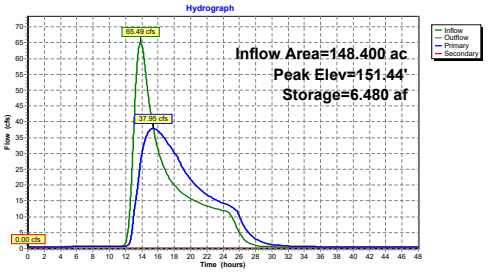
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=37.95 cfs @ 15.41 hrs HW=151.44' TW=147.28' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 37.95 cfs @ 5.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.17" for 100-yr event
Inflow = 152.32 cfs @ 14.16 hrs, Volume= 80.867 af, Incl. 0.50 cfs Base Flow
Outflow = 119.14 cfs @ 15.35 hrs, Volume= 81.797 af, Atten= 22%, Lag= 71.1 min
Primary = 91.68 cfs @ 15.35 hrs, Volume= 72.885 af
Secondary = 27.46 cfs @ 15.35 hrs, Volume= 8.911 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 147.28' @ 15.35 hrs Storage= 37.827 af (13.843 af above start)

Plug-Flow detention time= 405.6 min calculated for 57.812 af (71% of inflow)
Center-of-Mass det. time= 110.4 min (1,164.0 - 1,053.6)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

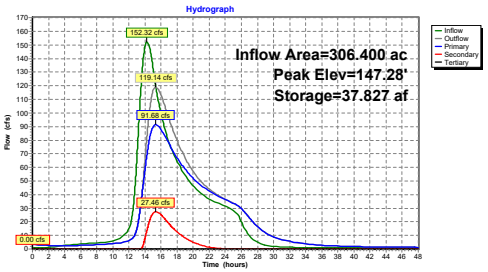
Device	Routing	Invert	Outlet Devices
#1	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#2	Primary	145.60'	**Natural Like Spillway Channel, C= 2.80** Offset (feet) 7.20 7.20 22.20 22.20 Elev. (feet) 148.00 145.60 145.60 148.00
#3	Device 6	146.50'	**12.0' long x 10.00' rise High Stage Weir Walls** 2 End Contraction(s) 4.0' Crest Height
#4	Device 6	142.00'	**2.0' long x 10.00' rise Stop Logs Removed X 0.00** 2 End Contraction(s) 4.0' Crest Height
#5	Device 6	141.00'	**6.0" Vert. Mud Drain X 0.00** C= 0.600 Limited to weir flow at low heads
#6	Secondary	141.00'	**30.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Primary OutFlow Max=91.68 cfs @ 15.35 hrs HW=147.28' TW=142.81' (Dynamic Tailwater)
└**2=Natural Like Spillway Channel** (Weir Controls 91.68 cfs @ 3.63 fps)

Secondary OutFlow Max=27.46 cfs @ 15.35 hrs HW=147.28' TW=142.81' (Dynamic Tailwater)
└**6=Outlet Pipe** (Passes 27.46 cfs of 49.97 cfs potential flow)
├**3=High Stage Weir Walls** (Weir Controls 27.46 cfs @ 2.96 fps)
├**4=Stop Logs Removed** (Controls 0.00 cfs)
└**5=Mud Drain** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.22' (Dynamic Tailwater)
└**1=Top of Dam** (Controls 0.00 cfs)

Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.20" for 100-yr event
Inflow = 119.14 cfs @ 15.35 hrs, Volume= 81.797 af
Outflow = 118.53 cfs @ 15.53 hrs, Volume= 81.797 af, Atten= 1%, Lag= 11.1 min
Primary = 118.53 cfs @ 15.53 hrs, Volume= 81.797 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 142.84' @ 15.53 hrs Storage= 0.886 af (0.880 af above start)

Plug-Flow detention time= 3.3 min calculated for 81.781 af (100% of inflow)
Center-of-Mass det. time= 3.0 min (1,167.0 - 1,164.0)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

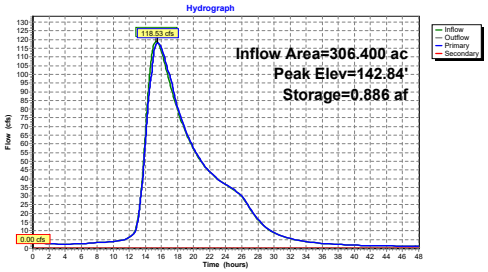
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=118.53 cfs @ 15.53 hrs HW=142.84' TW=140.42' (Dynamic Tailwater)
1=RCP_Round 48" (Barrel Controls 118.53 cfs @ 9.43 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.22' TW=138.21' (Dynamic Tailwater)
2=Top of Road (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.20" for 100-yr event
Inflow = 118.53 cfs @ 15.53 hrs, Volume= 81.797 af
Outflow = 118.50 cfs @ 15.54 hrs, Volume= 81.797 af, Atten= 0%, Lag= 0.6 min
Primary = 118.50 cfs @ 15.54 hrs, Volume= 81.797 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.42' @ 15.60 hrs Storage= 0.133 af (0.123 af above start)

Plug-Flow detention time= 1.2 min calculated for 81.786 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,167.9 - 1,167.0)

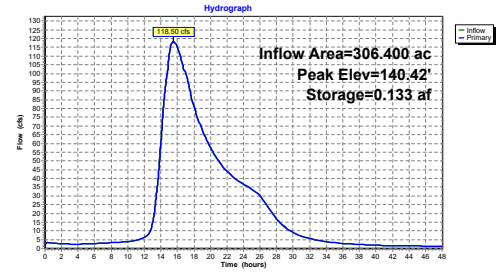
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=118.48 cfs @ 15.54 hrs HW=140.42' TW=140.16' (Dynamic Tailwater)
1=Log Dam (Weir Controls 118.48 cfs @ 1.66 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.20" for 100-yr event
Inflow = 118.50 cfs @ 15.54 hrs, Volume= 81.797 af
Outflow = 118.20 cfs @ 15.67 hrs, Volume= 81.796 af, Atten= 0%, Lag= 7.8 min
Primary = 27.24 cfs @ 15.67 hrs, Volume= 40.054 af
Secondary = 90.96 cfs @ 15.67 hrs, Volume= 41.742 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.16' @ 15.67 hrs Storage= 2.714 af (2.705 af above start)

Plug-Flow detention time= 23.1 min calculated for 81.787 af (100% of inflow)
Center-of-Mass det. time= 22.8 min (1,190.6 - 1,167.9)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

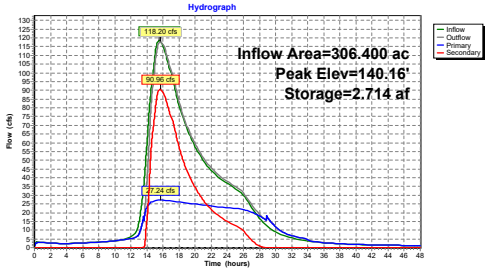
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=27.24 cfs @ 15.67 hrs HW=140.16' TW=131.47' (Dynamic Tailwater)
2=Culvert (Barrel Controls 27.24 cfs @ 5.19 fps)

Secondary OutFlow Max=90.96 cfs @ 15.67 hrs HW=140.16' TW=131.47' (Dynamic Tailwater)
1=Top of Road (Weir Controls 90.96 cfs @ 1.84 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 3.09" for 100-yr event
Inflow = 135.86 cfs @ 15.52 hrs, Volume= 100.163 af
Outflow = 128.37 cfs @ 16.22 hrs, Volume= 100.161 af, Atten= 6%, Lag= 42.0 min
Primary = 128.37 cfs @ 16.22 hrs, Volume= 100.161 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 131.59' @ 16.22 hrs Storage= 3.360 af

Plug-Flow detention time= 10.1 min calculated for 100.161 af (100% of inflow)
Center-of-Mass det. time= 10.1 min (1,153.7 - 1,143.6)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

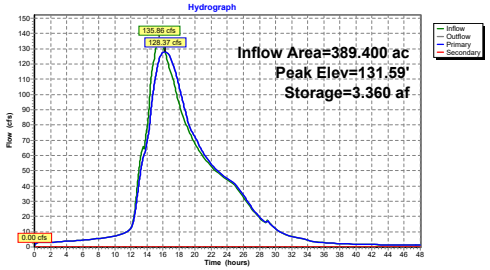
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=128.37 cfs @ 16.22 hrs HW=131.59' (Free Discharge)
└**1=Culvert** (Barrel Controls 128.37 cfs @ 10.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

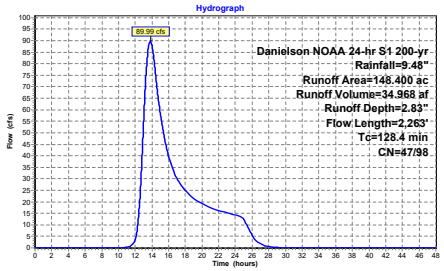
Runoff = 89.99 cfs @ 13.84 hrs, Volume= 34.968 af, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 200-yr Rainfall=9.48"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

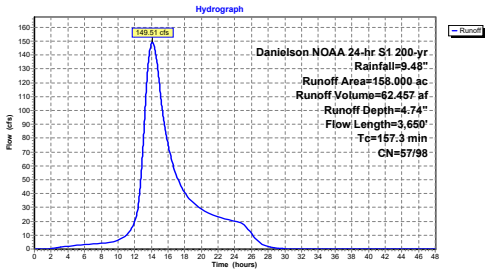
Runoff = 149.51 cfs @ 14.16 hrs, Volume= 62.457 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 200-yr Rainfall=9.48"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

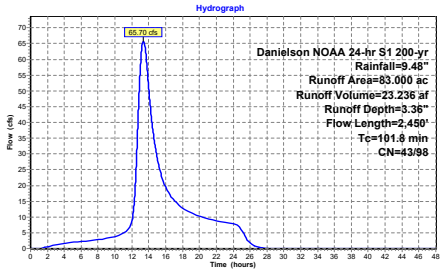
Runoff = 65.70 cfs @ 13.35 hrs, Volume= 23.236 af, Depth= 3.36"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 200-yr Rainfall=9.48"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 2.99" for 200-yr event
Inflow = 90.49 cfs @ 13.84 hrs, Volume= 36.952 af, Incl. 0.50 cfs Base Flow
Outflow = 50.22 cfs @ 15.39 hrs, Volume= 36.953 af, Atten= 44%, Lag= 92.9 min
Primary = 50.22 cfs @ 15.39 hrs, Volume= 36.953 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 152.02' @ 15.39 hrs Storage= 9.110 af (8.414 af above start)

Plug-Flow detention time= 138.2 min calculated for 36.253 af (98% of inflow)
Center-of-Mass det. time= 99.6 min (1,140.0 - 1,040.4)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

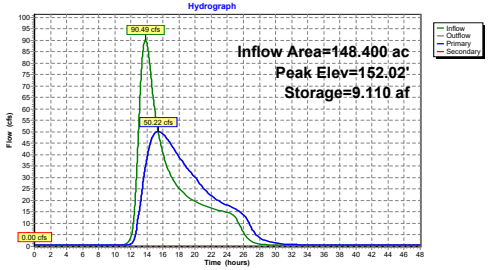
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=50.22 cfs @ 15.39 hrs HW=152.02' TW=147.53' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 50.22 cfs @ 6.69 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.97" for 200-yr event
Inflow = 191.42 cfs @ 14.16 hrs, Volume= 101.393 af, Incl. 0.50 cfs Base Flow
Outflow = 155.19 cfs @ 15.23 hrs, Volume= 102.316 af, Atten= 19%, Lag= 64.4 min
Primary = 113.20 cfs @ 15.23 hrs, Volume= 87.313 af
Secondary = 41.99 cfs @ 15.23 hrs, Volume= 15.003 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 147.54' @ 15.23 hrs Storage= 40.440 af (16.456 af above start)

Plug-Flow detention time= 337.9 min calculated for 78.331 af (77% of inflow)
Center-of-Mass det. time= 103.3 min (1,152.0 - 1,048.7)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

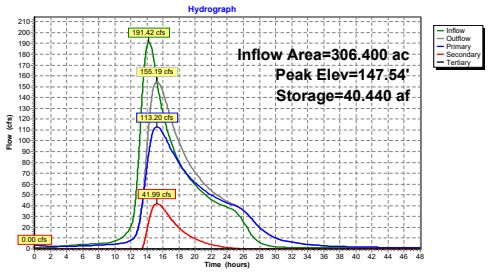
Device	Routing	Invert	Outlet Devices
#1	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#2	Primary	145.60'	**Natural Like Spillway Channel, C= 2.80** Offset (feet) 7.20 7.20 22.20 22.20 Elev. (feet) 148.00 145.60 145.60 148.00
#3	Device 6	146.50'	**12.0' long x 10.00' rise High Stage Weir Walls** 2 End Contraction(s) 4.0' Crest Height
#4	Device 6	142.00'	**2.0' long x 10.00' rise Stop Logs Removed X 0.00** 2 End Contraction(s) 4.0' Crest Height
#5	Device 6	141.00'	**6.0" Vert. Mud Drain X 0.00** C= 0.600 Limited to weir flow at low heads
#6	Secondary	141.00'	**30.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Primary OutFlow Max=113.20 cfs @ 15.23 hrs HW=147.54' TW=144.13' (Dynamic Tailwater)
└**2=Natural Like Spillway Channel** (Weir Controls 113.20 cfs @ 3.90 fps)

Secondary OutFlow Max=41.99 cfs @ 15.23 hrs HW=147.54' TW=144.13' (Dynamic Tailwater)
└**6=Outlet Pipe** (Passes 41.99 cfs of 43.60 cfs potential flow)
├**3=High Stage Weir Walls** (Weir Controls 41.99 cfs @ 3.43 fps)
├**4=Stop Logs Removed** (Controls 0.00 cfs)
└**5=Mud Drain** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.22' (Dynamic Tailwater)
└**1=Top of Dam** (Controls 0.00 cfs)

Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 4.01" for 200-yr event
Inflow = 155.19 cfs @ 15.23 hrs, Volume= 102.316 af
Outflow = 153.51 cfs @ 15.52 hrs, Volume= 102.316 af, Atten= 1%, Lag= 17.0 min
Primary = 153.51 cfs @ 15.52 hrs, Volume= 102.316 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 144.22' @ 15.52 hrs Storage= 1.504 af (1.497 af above start)

Plug-Flow detention time= 4.1 min calculated for 102.298 af (100% of inflow)
Center-of-Mass det. time= 3.9 min (1,155.9 - 1,152.0)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

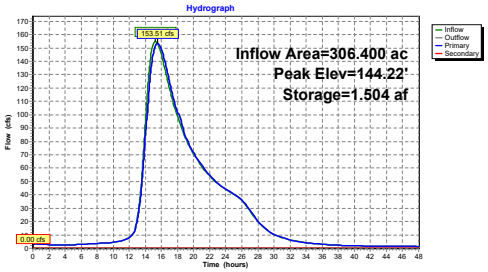
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=153.51 cfs @ 15.52 hrs HW=144.22' TW=140.63' (Dynamic Tailwater)
1=RCP_Round 48" (Barrel Controls 153.51 cfs @ 12.22 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.22' TW=138.21' (Dynamic Tailwater)
2=Top of Road (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 4.01" for 200-yr event
Inflow = 153.51 cfs @ 15.52 hrs, Volume= 102.316 af
Outflow = 153.50 cfs @ 15.53 hrs, Volume= 102.316 af, Atten= 0%, Lag= 0.5 min
Primary = 153.50 cfs @ 15.53 hrs, Volume= 102.316 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.63' @ 15.57 hrs Storage= 0.157 af (0.147 af above start)

Plug-Flow detention time= 1.1 min calculated for 102.305 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,156.7 - 1,155.9)

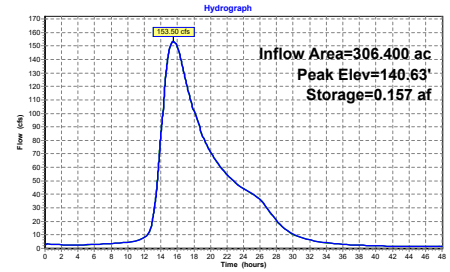
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=153.48 cfs @ 15.53 hrs HW=140.63' TW=140.28' (Dynamic Tailwater)
1=Log Dam (Weir Controls 153.48 cfs @ 1.80 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 4.01" for 200-yr event
Inflow = 153.50 cfs @ 15.53 hrs, Volume= 102.316 af
Outflow = 153.27 cfs @ 15.63 hrs, Volume= 102.315 af, Atten= 0%, Lag= 6.3 min
Primary = 28.13 cfs @ 15.63 hrs, Volume= 42.606 af
Secondary = 125.14 cfs @ 15.63 hrs, Volume= 59.709 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.28' @ 15.63 hrs Storage= 3.020 af (3.010 af above start)

Plug-Flow detention time= 21.0 min calculated for 102.295 af (100% of inflow)
Center-of-Mass det. time= 20.7 min (1,177.4 - 1,156.7)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

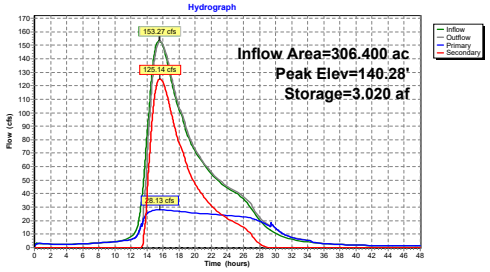
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=28.13 cfs @ 15.63 hrs HW=140.28' TW=132.65' (Dynamic Tailwater)
2=Culvert (Barrel Controls 28.13 cfs @ 5.36 fps)

Secondary OutFlow Max=125.14 cfs @ 15.63 hrs HW=140.28' TW=132.65' (Dynamic Tailwater)
1=Top of Road (Weir Controls 125.14 cfs @ 2.05 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 3.87" for 200-yr event
Inflow = 176.16 cfs @ 15.45 hrs, Volume= 125.551 af
Outflow = 159.82 cfs @ 16.43 hrs, Volume= 125.550 af, Atten= 9%, Lag= 58.9 min
Primary = 159.82 cfs @ 16.43 hrs, Volume= 125.550 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 132.95' @ 16.43 hrs Storage= 6.461 af

Plug-Flow detention time= 15.2 min calculated for 125.550 af (100% of inflow)
Center-of-Mass det. time= 15.2 min (1,147.5 - 1,132.4)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

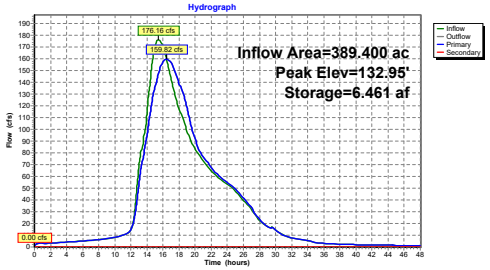
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=159.82 cfs @ 16.43 hrs HW=132.95' (Free Discharge)
└**1=Culvert** (Barrel Controls 159.82 cfs @ 12.72 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

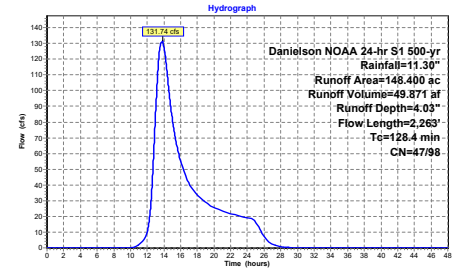
Runoff = 131.74 cfs @ 13.83 hrs, Volume= 49.871 af, Depth= 4.03"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 500-yr Rainfall=11.30"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

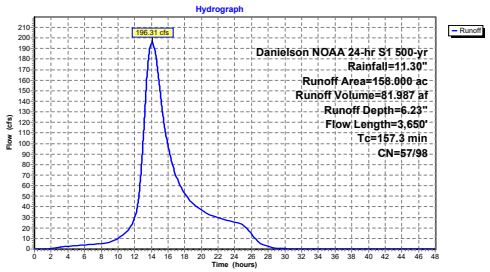
Runoff = 196.31 cfs @ 14.15 hrs, Volume= 81.987 af, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 500-yr Rainfall=11.30"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

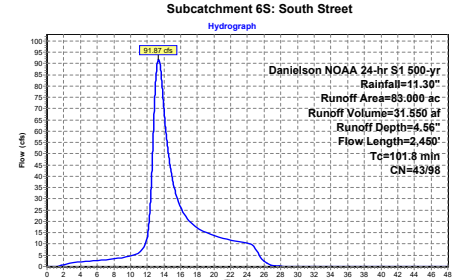
Runoff = 91.87 cfs @ 13.35 hrs, Volume= 31.550 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 500-yr Rainfall=11.30"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 4.19" for 500-yr event
Inflow = 132.24 cfs @ 13.83 hrs, Volume= 51.854 af, Incl. 0.50 cfs Base Flow
Outflow = 70.52 cfs @ 15.37 hrs, Volume= 51.855 af, Atten= 47%, Lag= 92.1 min
Primary = 70.52 cfs @ 15.37 hrs, Volume= 51.855 af
Secondary = 0.00 cfs @ 15.37 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 152.95' @ 15.37 hrs Storage= 13.732 af (13.036 af above start)

Plug-Flow detention time= 140.0 min calculated for 51.153 af (99% of inflow)
Center-of-Mass det. time= 112.4 min (1,134.2 - 1,021.8)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

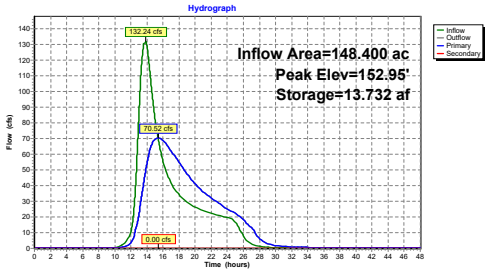
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=70.52 cfs @ 15.37 hrs HW=152.95' TW=148.01' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 70.52 cfs @ 7.89 fps)

Secondary OutFlow Max=0.00 cfs @ 15.37 hrs HW=152.95' TW=148.01' (Dynamic Tailwater)
└**2=Top of Dam** (Weir Controls 0.00 cfs @ 0.22 fps)

Pond 1P: Upstream Dam



Summary for Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.32" for 500-yr event
Inflow = 255.35 cfs @ 14.16 hrs, Volume= 135.826 af, Incl. 0.50 cfs Base Flow
Outflow = 191.52 cfs @ 15.34 hrs, Volume= 136.738 af, Atten= 25%, Lag= 70.9 min
Primary = 156.30 cfs @ 15.35 hrs, Volume= 114.785 af
Secondary = 46.19 cfs @ 14.20 hrs, Volume= 21.918 af
Tertiary = 1.14 cfs @ 15.51 hrs, Volume= 0.035 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 148.01' @ 15.51 hrs Storage= 46.198 af (22.214 af above start)

Plug-Flow detention time= 275.6 min calculated for 112.742 af (83% of inflow)
Center-of-Mass det. time= 98.2 min (1,141.7 - 1,043.5)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

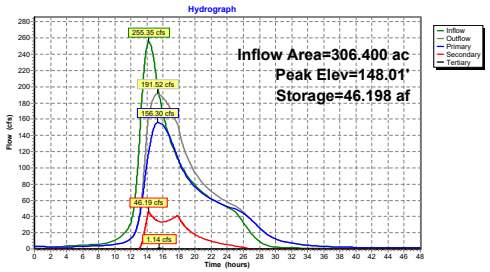
Device	Routing	Invert	Outlet Devices
#1	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#2	Primary	145.60'	**Natural Like Spillway Channel, C= 2.80** Offset (feet) 7.20 7.20 22.20 22.20 Elev. (feet) 148.00 145.60 145.60 148.00
#3	Device 6	146.50'	**12.0' long x 10.00' rise High Stage Weir Walls** 2 End Contraction(s) 4.0' Crest Height
#4	Device 6	142.00'	**2.0' long x 10.00' rise Stop Logs Removed X 0.00** 2 End Contraction(s) 4.0' Crest Height
#5	Device 6	141.00'	**6.0" Vert. Mud Drain X 0.00** C= 0.600 Limited to weir flow at low heads
#6	Secondary	141.00'	**30.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Primary OutFlow Max=156.28 cfs @ 15.35 hrs HW=148.01' TW=145.89' (Dynamic Tailwater)
└**2=Natural Like Spillway Channel** (Weir Controls 156.28 cfs @ 4.34 fps)

Secondary OutFlow Max=46.08 cfs @ 14.20 hrs HW=147.61' TW=143.80' (Dynamic Tailwater)
└**6=Outlet Pipe** (Inlet Controls 46.08 cfs @ 9.39 fps)
├**3=High Stage Weir Walls** (Passes 46.08 cfs of 46.30 cfs potential flow)
├**4=Stop Logs Removed** (Controls 0.00 cfs)
└**5=Mud Drain** (Controls 0.00 cfs)

Tertiary OutFlow Max=1.13 cfs @ 15.51 hrs HW=148.01' TW=145.97' (Dynamic Tailwater)
└**1=Top of Dam** (Weir Controls 1.13 cfs @ 0.31 fps)

Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.36" for 500-yr event
Inflow = 191.52 cfs @ 15.34 hrs, Volume= 136.738 af
Outflow = 188.66 cfs @ 15.74 hrs, Volume= 136.738 af, Atten= 1%, Lag= 23.6 min
Primary = 188.66 cfs @ 15.74 hrs, Volume= 136.738 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 146.02' @ 15.74 hrs Storage= 2.480 af (2.473 af above start)

Plug-Flow detention time= 5.6 min calculated for 136.730 af (100% of inflow)
Center-of-Mass det. time= 5.5 min (1,147.2 - 1,141.7)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

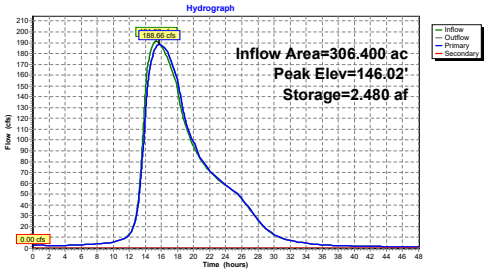
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=188.66 cfs @ 15.74 hrs HW=146.02' TW=140.79' (Dynamic Tailwater)
1=RCP_Round 48" (Inlet Controls 188.66 cfs @ 15.01 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.22' TW=138.21' (Dynamic Tailwater)
2=Top of Road (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.36" for 500-yr event
Inflow = 188.66 cfs @ 15.74 hrs, Volume= 136.738 af
Outflow = 188.66 cfs @ 15.74 hrs, Volume= 136.737 af, Atten= 0%, Lag= 0.4 min
Primary = 188.66 cfs @ 15.74 hrs, Volume= 136.737 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.79' @ 15.76 hrs Storage= 0.176 af (0.166 af above start)

Plug-Flow detention time= 1.0 min calculated for 136.727 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,147.9 - 1,147.2)

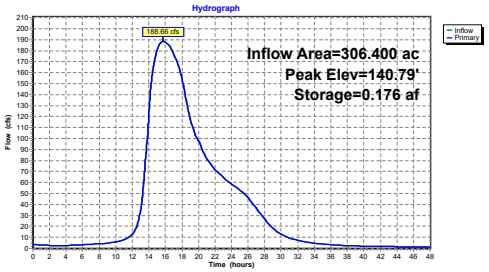
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=188.65 cfs @ 15.74 hrs HW=140.79' TW=140.39' (Dynamic Tailwater)
1=Log Dam (Weir Controls 188.65 cfs @ 1.83 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.36" for 500-yr event
Inflow = 188.66 cfs @ 15.74 hrs, Volume= 136.737 af
Outflow = 188.64 cfs @ 15.78 hrs, Volume= 136.737 af, Atten= 0%, Lag= 2.2 min
Primary = 28.90 cfs @ 15.78 hrs, Volume= 46.165 af
Secondary = 159.74 cfs @ 15.78 hrs, Volume= 90.572 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.39' @ 15.78 hrs Storage= 3.154 af (3.145 af above start)

Plug-Flow detention time= 18.3 min calculated for 136.727 af (100% of inflow)
Center-of-Mass det. time= 18.1 min (1,166.0 - 1,147.9)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

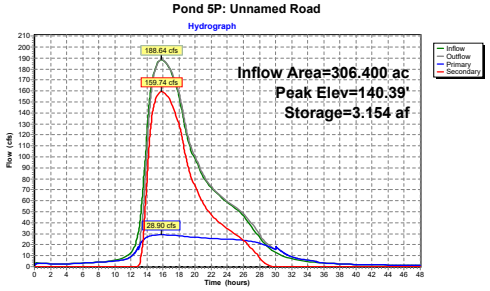
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=28.90 cfs @ 15.78 hrs HW=140.39' TW=133.47' (Dynamic Tailwater)
2=Culvert (Barrel Controls 28.90 cfs @ 5.50 fps)

Secondary OutFlow Max=159.74 cfs @ 15.78 hrs HW=140.39' TW=133.47' (Dynamic Tailwater)
1=Top of Road (Weir Controls 159.74 cfs @ 2.25 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 5.19" for 500-yr event
Inflow = 219.16 cfs @ 15.29 hrs, Volume= 168.287 af
Outflow = 218.73 cfs @ 15.52 hrs, Volume= 168.286 af, Atten= 0%, Lag= 14.0 min
Primary = 172.43 cfs @ 15.52 hrs, Volume= 159.351 af
Secondary = 46.30 cfs @ 15.52 hrs, Volume= 8.935 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 133.47' @ 15.52 hrs Storage= 7.895 af

Plug-Flow detention time= 19.3 min calculated for 168.286 af (100% of inflow)
Center-of-Mass det. time= 19.3 min (1,141.6 - 1,122.3)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

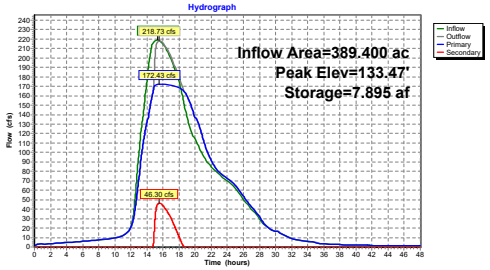
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=172.43 cfs @ 15.52 hrs HW=133.47' (Free Discharge)
└**1=Culvert** (Barrel Controls 172.43 cfs @ 13.72 fps)

Secondary OutFlow Max=46.30 cfs @ 15.52 hrs HW=133.47' (Free Discharge)
└**2=Top of Road** (Weir Controls 46.30 cfs @ 1.22 fps)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

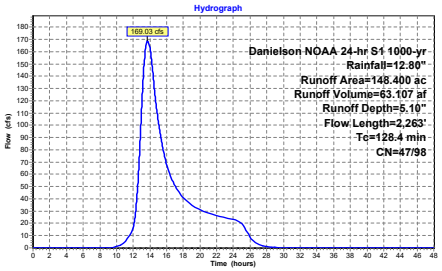
Runoff = 169.03 cfs @ 13.70 hrs, Volume= 63.107 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1000-yr Rainfall=12.80"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

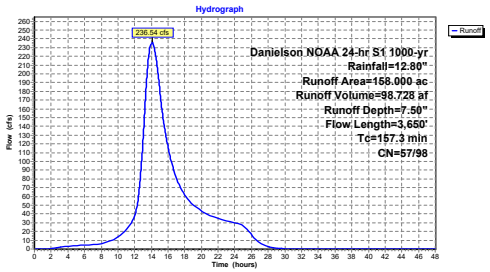
Runoff = 236.54 cfs @ 14.15 hrs, Volume= 98.728 af, Depth= 7.50"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1000-yr Rainfall=12.80"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

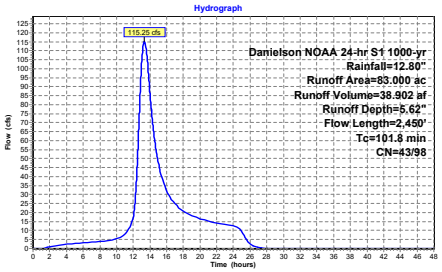
Runoff = 115.25 cfs @ 13.35 hrs, Volume= 38.902 af, Depth= 5.62"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1000-yr Rainfall=12.80"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 5.26" for 1000-yr event
Inflow = 169.53 cfs @ 13.70 hrs, Volume= 65.090 af, Incl. 0.50 cfs Base Flow
Outflow = 84.50 cfs @ 15.46 hrs, Volume= 65.091 af, Atten= 50%, Lag= 105.6 min
Primary = 83.56 cfs @ 15.46 hrs, Volume= 64.939 af
Secondary = 0.94 cfs @ 15.46 hrs, Volume= 0.153 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 153.54' @ 15.46 hrs Storage= 18.306 af (17.609 af above start)

Plug-Flow detention time= 145.5 min calculated for 64.395 af (99% of inflow)
Center-of-Mass det. time= 123.3 min (1,133.2 - 1,010.0)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

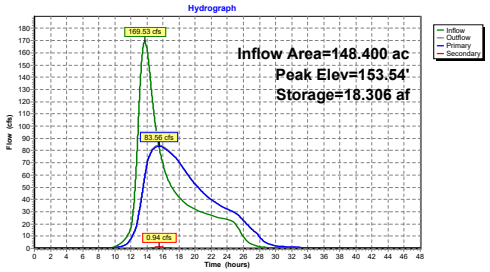
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=83.56 cfs @ 15.46 hrs HW=153.54' TW=148.33' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 83.56 cfs @ 8.64 fps)

Secondary OutFlow Max=0.94 cfs @ 15.46 hrs HW=153.54' TW=148.33' (Dynamic Tailwater)
└**2=Top of Dam** (Weir Controls 0.94 cfs @ 0.83 fps)

Pond 1P: Upstream Dam



Summary for Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.49" for 1000-yr event
Inflow = 310.25 cfs @ 14.16 hrs, Volume= 165.803 af, Incl. 0.50 cfs Base Flow
Outflow = 232.08 cfs @ 14.79 hrs, Volume= 166.706 af, Atten= 25%, Lag= 37.7 min
Primary = 163.97 cfs @ 14.51 hrs, Volume= 123.835 af
Secondary = 47.08 cfs @ 13.87 hrs, Volume= 22.553 af
Tertiary = 129.99 cfs @ 15.61 hrs, Volume= 20.317 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 148.34' @ 15.63 hrs Storage= 50.712 af (26.728 af above start)

Plug-Flow detention time= 244.3 min calculated for 142.721 af (86% of inflow)
Center-of-Mass det. time= 96.2 min (1,137.1 - 1,040.9)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

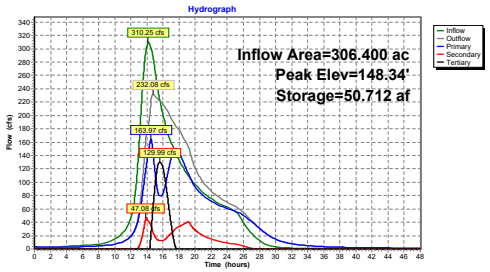
Device	Routing	Invert	Outlet Devices
#1	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#2	Primary	145.60'	**Natural Like Spillway Channel, C= 2.80** Offset (feet) 7.20 7.20 22.20 22.20 Elev. (feet) 148.00 145.60 145.60 148.00
#3	Device 6	146.50'	**12.0' long x 10.00' rise High Stage Weir Walls** 2 End Contraction(s) 4.0' Crest Height
#4	Device 6	142.00'	**2.0' long x 10.00' rise Stop Logs Removed X 0.00** 2 End Contraction(s) 4.0' Crest Height
#5	Device 6	141.00'	**6.0" Vert. Mud Drain X 0.00** C= 0.600 Limited to weir flow at low heads
#6	Secondary	141.00'	**30.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Primary OutFlow Max=163.77 cfs @ 14.51 hrs HW=148.11' TW=145.99' (Dynamic Tailwater)
└**2=Natural Like Spillway Channel** (Weir Controls 163.77 cfs @ 4.55 fps)

Secondary OutFlow Max=46.96 cfs @ 13.87 hrs HW=147.62' TW=143.67' (Dynamic Tailwater)
└**6=Outlet Pipe** (Inlet Controls 46.96 cfs @ 9.57 fps)
├**3=High Stage Weir Walls** (Passes 46.96 cfs of 47.18 cfs potential flow)
├**4=Stop Logs Removed** (Controls 0.00 cfs)
└**5=Mud Drain** (Controls 0.00 cfs)

Tertiary OutFlow Max=129.97 cfs @ 15.61 hrs HW=148.34' TW=148.07' (Dynamic Tailwater)
└**1=Top of Dam** (Weir Controls 129.97 cfs @ 1.49 fps)

Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.53" for 1000-yr event
Inflow = 232.08 cfs @ 14.79 hrs, Volume= 166.706 af
Outflow = 220.64 cfs @ 15.66 hrs, Volume= 166.706 af, Atten= 5%, Lag= 52.2 min
Primary = 220.64 cfs @ 15.66 hrs, Volume= 166.706 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 148.07' @ 15.66 hrs Storage= 3.805 af (3.798 af above start)

Plug-Flow detention time= 7.2 min calculated for 166.699 af (100% of inflow)
Center-of-Mass det. time= 7.1 min (1,144.2 - 1,137.1)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

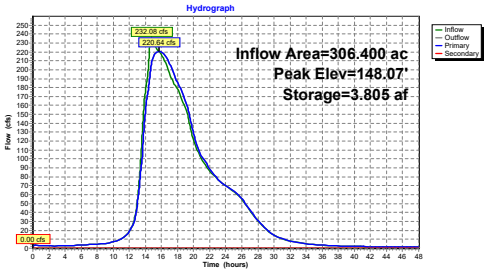
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=220.64 cfs @ 15.66 hrs HW=148.07' TW=140.92' (Dynamic Tailwater)
↳**1=RCP_Round 48"** (Inlet Controls 220.64 cfs @ 17.56 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.22' TW=138.21' (Dynamic Tailwater)
↳**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.53" for 1000-yr event
Inflow = 220.64 cfs @ 15.66 hrs, Volume= 166.706 af
Outflow = 220.64 cfs @ 15.66 hrs, Volume= 166.706 af, Atten= 0%, Lag= 0.3 min
Primary = 220.64 cfs @ 15.66 hrs, Volume= 166.706 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.92' @ 15.68 hrs Storage= 0.190 af (0.181 af above start)

Plug-Flow detention time= 0.9 min calculated for 166.678 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,144.9 - 1,144.2)

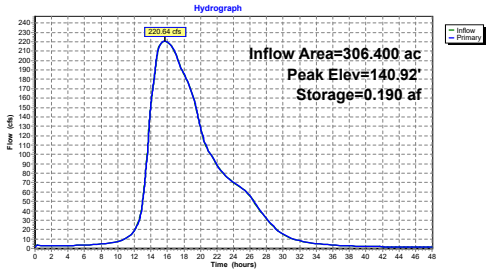
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=220.63 cfs @ 15.66 hrs HW=140.92' TW=140.48' (Dynamic Tailwater)
↳**1=Log Dam** (Weir Controls 220.63 cfs @ 1.89 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.53" for 1000-yr event
Inflow = 220.64 cfs @ 15.66 hrs, Volume= 166.706 af
Outflow = 220.63 cfs @ 15.70 hrs, Volume= 166.705 af, Atten= 0%, Lag= 1.9 min
Primary = 29.51 cfs @ 15.70 hrs, Volume= 48.820 af
Secondary = 191.12 cfs @ 15.70 hrs, Volume= 117.885 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.48' @ 15.70 hrs Storage= 3.242 af (3.233 af above start)

Plug-Flow detention time= 16.5 min calculated for 166.678 af (100% of inflow)
Center-of-Mass det. time= 16.4 min (1,161.2 - 1,144.9)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

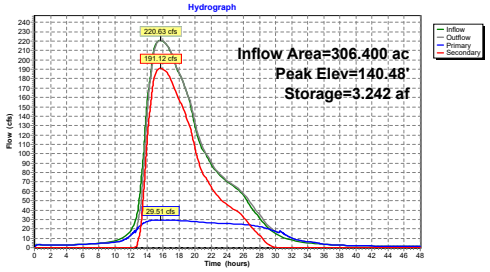
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=29.51 cfs @ 15.70 hrs HW=140.48' TW=133.58' (Dynamic Tailwater)
↳**2=Culvert** (Barrel Controls 29.51 cfs @ 5.62 fps)

Secondary OutFlow Max=191.12 cfs @ 15.70 hrs HW=140.48' TW=133.58' (Dynamic Tailwater)
↳**1=Top of Road** (Weir Controls 191.12 cfs @ 2.40 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 6.34" for 1000-yr event
Inflow = 261.92 cfs @ 15.06 hrs, Volume= 205.607 af
Outflow = 261.56 cfs @ 15.18 hrs, Volume= 205.606 af, Atten= 0%, Lag= 6.9 min
Primary = 175.33 cfs @ 15.18 hrs, Volume= 181.405 af
Secondary = 86.22 cfs @ 15.18 hrs, Volume= 24.201 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 133.59' @ 15.18 hrs Storage= 8.278 af

Plug-Flow detention time= 20.2 min calculated for 205.584 af (100% of inflow)
Center-of-Mass det. time= 20.2 min (1,137.9 - 1,117.7)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

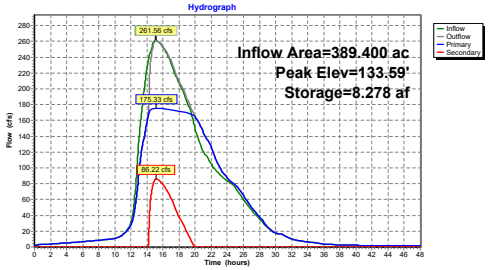
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=175.33 cfs @ 15.18 hrs HW=133.59' (Free Discharge)
└─**1=Culvert** (Barrel Controls 175.33 cfs @ 13.95 fps)

Secondary OutFlow Max=86.22 cfs @ 15.18 hrs HW=133.59' (Free Discharge)
└─**2=Top of Road** (Weir Controls 86.22 cfs @ 1.56 fps)

Pond 6P: South Street



Events for Subcatchment 1S: Upstream Dam

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.79	0.52	0.331	0.03
2-yr	3.43	1.56	1.409	0.11
5-yr	4.46	6.51	4.507	0.36
10-yr	5.32	14.77	8.154	0.66
25-yr	6.50	31.09	14.418	1.17
50-yr	7.37	46.20	19.805	1.60
100-yr	8.32	64.99	26.303	2.13
200-yr	9.48	89.99	34.968	2.83
500-yr	11.30	131.74	49.871	4.03
1000-yr	**12.80**	**169.03**	**63.107**	**5.10**

Events for Subcatchment 2S: Danielson Pond

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.79	11.72	6.386	0.49
2-yr	3.43	18.58	9.791	0.74
5-yr	4.46	34.19	16.558	1.26
10-yr	5.32	50.56	23.153	1.76
25-yr	6.50	76.05	33.258	2.53
50-yr	7.37	96.56	41.321	3.14
100-yr	8.32	119.96	50.595	3.84
200-yr	9.48	149.51	62.457	4.74
500-yr	11.30	196.31	81.987	6.23
1000-yr	**12.80**	**236.54**	**98.728**	**7.50**

Events for Subcatchment 6S: South Street

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.79	8.22	2.664	0.39
2-yr	3.43	10.14	3.571	0.52
5-yr	4.46	13.68	5.659	0.82
10-yr	5.32	18.82	7.903	1.14
25-yr	6.50	28.99	11.588	1.68
50-yr	7.37	38.42	14.681	2.12
100-yr	8.32	50.03	18.366	2.66
200-yr	9.48	65.70	23.236	3.36
500-yr	11.30	91.87	31.550	4.56
1000-yr	**12.80**	**115.25**	**38.902**	**5.62**

Events for Pond 1P: Upstream Dam

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	1.02	0.98	0.98	0.00	149.07	0.765
2-yr	2.06	1.99	1.99	0.00	149.20	0.897
5-yr	7.01	5.93	5.93	0.00	149.57	1.273
10-yr	15.27	12.09	12.09	0.00	150.02	1.759
25-yr	31.59	20.79	20.79	0.00	150.55	3.236
50-yr	46.70	29.51	29.51	0.00	151.02	4.578
100-yr	65.49	37.95	37.95	0.00	151.44	6.480
200-yr	90.49	50.22	50.22	0.00	152.02	9.110
500-yr	132.24	70.52	70.52	0.00	152.95	13.732
1000-yr	**169.53**	**84.50**	**83.56**	**0.94**	**153.54**	**18.306**

Events for Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	12.79	7.08	7.08	0.00	0.00	145.91	25.090
2-yr	19.73	11.38	11.38	0.00	0.00	146.02	26.151
5-yr	38.09	24.42	24.42	0.00	0.00	146.30	28.374
10-yr	60.73	40.26	39.65	0.61	0.00	146.56	30.623
25-yr	93.24	67.09	58.85	8.24	0.00	146.85	33.521
50-yr	120.93	91.44	74.58	16.86	0.00	147.07	35.664
100-yr	152.32	119.14	91.68	27.46	0.00	147.28	37.827
200-yr	191.42	155.19	113.20	41.99	0.00	147.54	40.440
500-yr	255.35	191.52	156.30	46.19	1.14	148.01	46.198
1000-yr	**310.25**	**232.08**	**163.97**	**47.08**	**129.99**	**148.34**	**50.712**

Events for Pond 3P: Homstead Drive

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	7.08	7.08	7.08	**0.00**	138.54	0.013
2-yr	11.38	11.38	11.38	0.00	138.78	0.018
5-yr	24.42	24.28	24.28	0.00	139.68	0.068
10-yr	40.26	40.20	40.20	0.00	140.24	0.129
25-yr	67.09	66.98	66.98	0.00	140.98	0.265
50-yr	91.44	91.10	91.10	0.00	141.62	0.446
100-yr	119.14	118.53	118.53	0.00	142.84	0.886
200-yr	155.19	153.51	153.51	0.00	144.22	1.504
500-yr	191.52	188.66	188.66	0.00	146.02	2.480
1000-yr	**232.08**	**220.64**	**220.64**	0.00	**148.07**	**3.805**

Events for Pond 4P: Log Dam

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	7.08	7.08	138.40	0.013
2-yr	11.38	11.37	138.55	0.016
5-yr	24.28	24.23	139.36	0.044
10-yr	40.20	40.15	139.71	0.064
25-yr	66.98	66.95	140.05	0.092
50-yr	91.10	91.08	140.24	0.111
100-yr	118.53	118.50	140.42	0.133
200-yr	153.51	153.50	140.63	0.157
500-yr	188.66	188.66	140.79	0.176
1000-yr	**220.64**	**220.64**	**140.92**	**0.190**

Events for Pond 5P: Unnamed Road

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	7.08	6.78	6.78	0.00	137.99	0.246
2-yr	11.37	11.11	11.11	0.00	138.37	0.502
5-yr	24.23	23.94	20.08	3.87	139.31	1.229
10-yr	40.15	39.59	23.08	16.51	139.63	1.626
25-yr	66.95	66.70	25.39	41.31	139.91	2.159
50-yr	91.08	90.83	26.39	64.44	140.04	2.430
100-yr	118.50	118.20	27.24	90.96	140.16	2.714
200-yr	153.50	153.27	28.13	125.14	140.28	3.020
500-yr	188.66	188.64	28.90	159.74	140.39	3.154
1000-yr	**220.64**	**220.63**	**29.51**	**191.12**	**140.48**	**3.242**

Events for Pond 6P: South Street

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	11.07	11.07	11.07	0.00	127.74	0.003
2-yr	13.63	13.63	13.63	0.00	127.86	0.003
5-yr	27.39	27.34	27.34	0.00	128.42	0.070
10-yr	45.22	45.00	45.00	0.00	129.03	0.351
25-yr	76.62	74.84	74.84	0.00	129.93	1.103
50-yr	104.17	101.55	101.55	0.00	130.70	1.953
100-yr	135.86	128.37	128.37	0.00	131.59	3.360
200-yr	176.16	159.82	159.82	0.00	132.95	6.461
500-yr	219.16	218.73	172.43	46.30	133.47	7.895
1000-yr	**261.92**	**261.56**	**175.33**	**86.22**	**133.59**	**8.278**

TABLE OF CONTENTS

Project Reports
1 Routing Diagram
2 Rainfall Events Listing

1-yr Event
3 Subcat 1S: Upstream Dam
4 Subcat 2S: Danielson Pond
6 Subcat 6S: South Street
7 Pond 1P: Upstream Dam
9 Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway
12 Pond 3P: Homstead Drive
14 Pond 4P: Log Dam
16 Pond 5P: Unnamed Road
18 Pond 6P: South Street

2-yr Event
21 Subcat 1S: Upstream Dam
22 Subcat 2S: Danielson Pond
24 Subcat 6S: South Street
25 Pond 1P: Upstream Dam
27 Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway
30 Pond 3P: Homstead Drive
32 Pond 4P: Log Dam
34 Pond 5P: Unnamed Road
36 Pond 6P: South Street

5-yr Event
39 Subcat 1S: Upstream Dam
40 Subcat 2S: Danielson Pond
42 Subcat 6S: South Street
43 Pond 1P: Upstream Dam
45 Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway
48 Pond 3P: Homstead Drive
50 Pond 4P: Log Dam
52 Pond 5P: Unnamed Road
54 Pond 6P: South Street

10-yr Event
57 Subcat 1S: Upstream Dam
58 Subcat 2S: Danielson Pond
60 Subcat 6S: South Street
61 Pond 1P: Upstream Dam
63 Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway
66 Pond 3P: Homstead Drive
68 Pond 4P: Log Dam
70 Pond 5P: Unnamed Road
72 Pond 6P: South Street

DanielsonMillPondDam
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25-yr Event
75 Subcat 1S: Upstream Dam
76 Subcat 2S: Danielson Pond
78 Subcat 6S: South Street
79 Pond 1P: Upstream Dam
81 Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway
84 Pond 3P: Homstead Drive
86 Pond 4P: Log Dam
88 Pond 5P: Unnamed Road
90 Pond 6P: South Street

50-yr Event
93 Subcat 1S: Upstream Dam
94 Subcat 2S: Danielson Pond
96 Subcat 6S: South Street
97 Pond 1P: Upstream Dam
99 Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway
102 Pond 3P: Homstead Drive
104 Pond 4P: Log Dam
106 Pond 5P: Unnamed Road
108 Pond 6P: South Street

100-yr Event
111 Subcat 1S: Upstream Dam
112 Subcat 2S: Danielson Pond
114 Subcat 6S: South Street
115 Pond 1P: Upstream Dam
117 Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway
120 Pond 3P: Homstead Drive
122 Pond 4P: Log Dam
124 Pond 5P: Unnamed Road
126 Pond 6P: South Street

200-yr Event
129 Subcat 1S: Upstream Dam
130 Subcat 2S: Danielson Pond
132 Subcat 6S: South Street
133 Pond 1P: Upstream Dam
135 Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway
138 Pond 3P: Homstead Drive
140 Pond 4P: Log Dam
142 Pond 5P: Unnamed Road
144 Pond 6P: South Street

500-yr Event
147 Subcat 1S: Upstream Dam
148 Subcat 2S: Danielson Pond
150 Subcat 6S: South Street
151 Pond 1P: Upstream Dam
153 Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway
156 Pond 3P: Homstead Drive
158 Pond 4P: Log Dam

Atl1 - Natural Like Spillway
Table of Contents
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DanielsonMillPondDam
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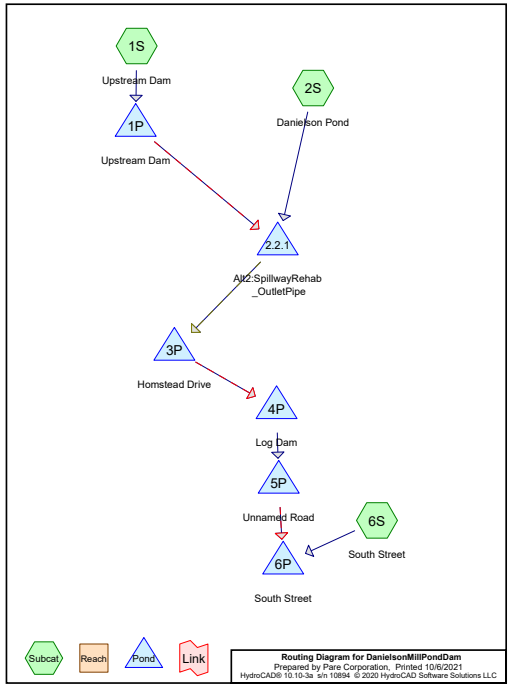
160 Pond 5P: Unnamed Road
162 Pond 6P: South Street

1000-yr Event
165 Subcat 1S: Upstream Dam
166 Subcat 2S: Danielson Pond
168 Subcat 6S: South Street
169 Pond 1P: Upstream Dam
171 Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway
174 Pond 3P: Homstead Drive
176 Pond 4P: Log Dam
178 Pond 5P: Unnamed Road
180 Pond 6P: South Street

Multi-Event Tables
183 Subcat 1S: Upstream Dam
184 Subcat 2S: Danielson Pond
185 Subcat 6S: South Street
186 Pond 1P: Upstream Dam
187 Pond 2.1: Alt1:DamRehab_ Natural LikeSpillway
188 Pond 3P: Homstead Drive
189 Pond 4P: Log Dam
190 Pond 5P: Unnamed Road
191 Pond 6P: South Street

Danielson Mill Dam Alt 2: Spillway Rehabilitation



Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Danielson NOAA 24-hr S1	1-yr	Default	24.00	1	2.79	2
2	2-yr	Danielson NOAA 24-hr S1	2-yr	Default	24.00	1	3.43	2
3	5-yr	Danielson NOAA 24-hr S1	5-yr	Default	24.00	1	4.46	2
4	10-yr	Danielson NOAA 24-hr S1	10-yr	Default	24.00	1	5.32	2
5	25-yr	Danielson NOAA 24-hr S1	25-yr	Default	24.00	1	6.50	2
6	50-yr	Danielson NOAA 24-hr S1	50-yr	Default	24.00	1	7.37	2
7	100-yr	Danielson NOAA 24-hr S1	100-yr	Default	24.00	1	8.32	2
8	200-yr	Danielson NOAA 24-hr S1	200-yr	Default	24.00	1	9.48	2
9	500-yr	Danielson NOAA 24-hr S1	500-yr	Default	24.00	1	11.30	2
10	1000-yr	Danielson NOAA 24-hr S1	1000-yr	Default	24.00	1	12.80	2

Summary for Subcatchment 1S: Upstream Dam

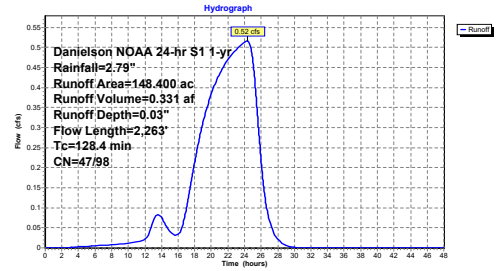
Runoff = 0.52 cfs @ 24.39 hrs, Volume= 0.331 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1-yr Rainfall=2.79"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

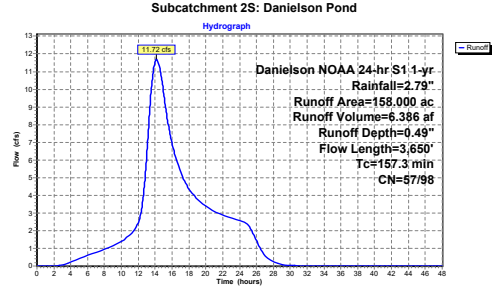
Runoff = 11.72 cfs @ 14.16 hrs, Volume= 6.386 af, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1-yr Rainfall=2.79"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

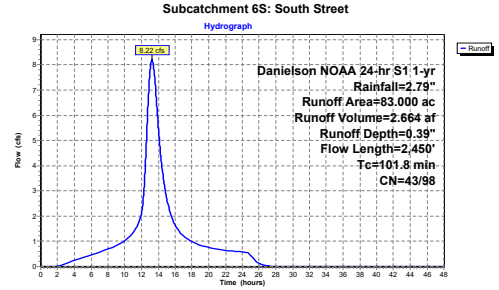
Runoff = 8.22 cfs @ 13.23 hrs, Volume= 2.664 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1-yr Rainfall=2.79"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.19" for 1-yr event
Inflow = 1.02 cfs @ 24.39 hrs, Volume= 2.314 af, Incl. 0.50 cfs Base Flow
Outflow = 0.98 cfs @ 24.95 hrs, Volume= 2.315 af, Atten= 4%, Lag= 33.7 min
Primary = 0.98 cfs @ 24.95 hrs, Volume= 2.315 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 149.07' @ 24.95 hrs Storage= 0.765 af (0.069 af above start)

Plug-Flow detention time= 826.2 min calculated for 1.618 af (70% of inflow)
Center-of-Mass det. time= 13.2 min (1,432.0 - 1,418.8)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

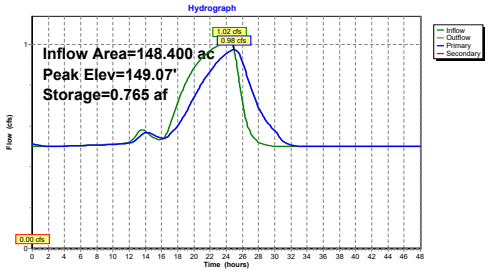
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=0.98 cfs @ 24.95 hrs HW=149.07' TW=146.01' (Dynamic Tailwater)
└─**1=Spillway Weir** (Weir Controls 0.98 cfs @ 1.53 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└─**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.42" for 1-yr event
Inflow = 12.79 cfs @ 14.16 hrs, Volume= 10.685 af, Incl. 0.50 cfs Base Flow
Outflow = 6.42 cfs @ 16.98 hrs, Volume= 10.355 af, Atten= 50%, Lag= 169.4 min
Primary = 6.42 cfs @ 16.98 hrs, Volume= 10.355 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 146.07' @ 16.98 hrs Storage= 26.544 af (2.560 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 239.3 min (1,410.0 - 1,170.7)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

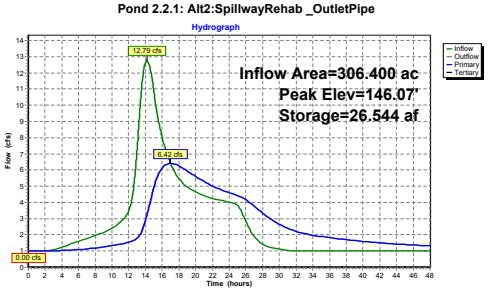
Device	Routing	Invert	Outlet Devices
#1	Device 6	145.60'	**3.8' long SLinplace** 2 End Contraction(s) 4.0' Crest Height
#2	Device 6	142.10'	**3.8' long SLOperated X 0.00** 2 End Contraction(s) 1.2' Crest Height
#3	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#4	Device 6	141.00'	**6.0" Vert. LLO X 0.00** C= 0.600 Limited to weir flow at low heads

Device	Routing	Invert	Outlet Devices
#5	Device 6	145.90'	**5.5' long LeftandRightSideWeirs X 2.00** 1 End Contraction(s) 6.0' Crest Height
#6	Primary	141.00'	**72.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 28.27 sf

Primary OutFlow Max=6.42 cfs @ 16.98 hrs HW=146.07' TW=138.50' (Dynamic Tailwater)
└─**6=Outlet Pipe** (Passes 6.42 cfs of 181.97 cfs potential flow)
  ├─**1=SLinplace** (Weir Controls 3.94 cfs @ 2.27 fps)
  ├─**2=SLOperated** (Controls 0.00 cfs)
  ├─**4=LLO** (Controls 0.00 cfs)
  └─**5=LeftandRightSideWeirs** (Weir Controls 2.48 cfs @ 1.35 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.20' (Dynamic Tailwater)
└─**3=Top of Dam** (Controls 0.00 cfs)

Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.41" for 1-yr event
Inflow = 6.42 cfs @ 16.98 hrs, Volume= 10.355 af
Outflow = 6.42 cfs @ 16.99 hrs, Volume= 10.355 af, Atten= 0%, Lag= 0.7 min
Primary = 6.42 cfs @ 16.99 hrs, Volume= 10.355 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 138.50' @ 17.00 hrs Storage= 0.012 af (0.006 af above start)

Plug-Flow detention time= 2.3 min calculated for 10.348 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (1,410.4 - 1,410.0)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

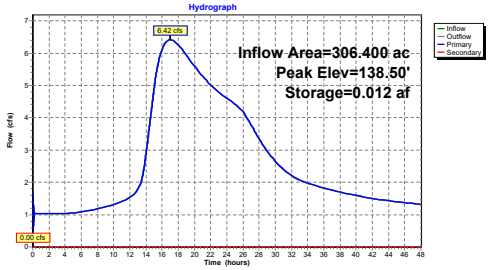
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=6.42 cfs @ 16.99 hrs HW=138.50' TW=138.38' (Dynamic Tailwater)
└─**1=RCP_Round 48"** (Outlet Controls 6.42 cfs @ 2.11 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└─**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.41" for 1-yr event
Inflow = 6.42 cfs @ 16.99 hrs, Volume= 10.355 af
Outflow = 6.42 cfs @ 17.00 hrs, Volume= 10.355 af, Atten= 0%, Lag= 0.3 min
Primary = 6.42 cfs @ 17.00 hrs, Volume= 10.355 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 138.38' @ 17.00 hrs Storage= 0.013 af (0.003 af above start)

Plug-Flow detention time= 3.0 min calculated for 10.344 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (1,410.7 - 1,410.4)

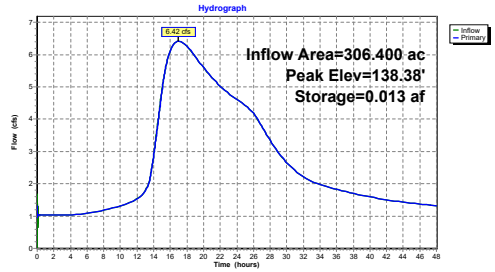
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=6.42 cfs @ 17.00 hrs HW=138.38' TW=137.90' (Dynamic Tailwater)
└**1=Log Dam** (Weir Controls 6.42 cfs @ 1.58 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.41" for 1-yr event
Inflow = 6.42 cfs @ 17.00 hrs, Volume= 10.355 af
Outflow = 6.16 cfs @ 18.33 hrs, Volume= 10.353 af, Atten= 4%, Lag= 79.7 min
Primary = 6.16 cfs @ 18.33 hrs, Volume= 10.353 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 137.93' @ 18.33 hrs Storage= 0.185 af (0.176 af above start)

Plug-Flow detention time= 11.3 min calculated for 10.343 af (100% of inflow)
Center-of-Mass det. time= 8.4 min (1,419.1 - 1,410.7)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

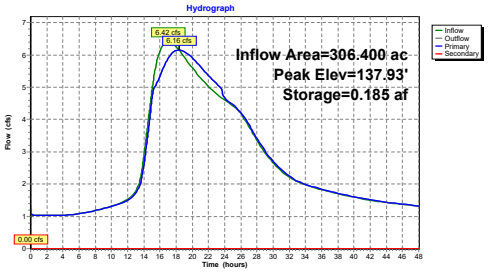
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=6.16 cfs @ 18.33 hrs HW=137.93' TW=127.54' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 6.16 cfs @ 2.29 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=137.27' TW=126.23' (Dynamic Tailwater)
└**1=Top of Road** (Controls 0.00 cfs)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 0.40" for 1-yr event
Inflow = 10.04 cfs @ 13.24 hrs, Volume= 13.017 af
Outflow = 10.04 cfs @ 13.24 hrs, Volume= 13.016 af, Atten= 0%, Lag= 0.1 min
Primary = 10.04 cfs @ 13.24 hrs, Volume= 13.016 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 127.70' @ 13.24 hrs Storage= 0.002 af

Plug-Flow detention time= 0.4 min calculated for 13.014 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (1,303.5 - 1,303.3)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

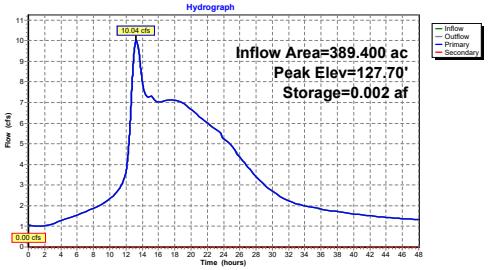
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=10.04 cfs @ 13.24 hrs HW=127.70' (Free Discharge)
└**1=Culvert** (Inlet Controls 10.04 cfs @ 4.49 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

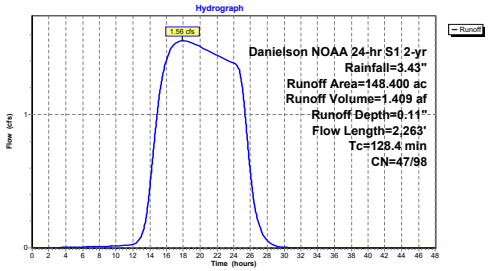
Runoff = 1.56 cfs @ 17.83 hrs, Volume= 1.409 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 2-yr Rainfall=3.43"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

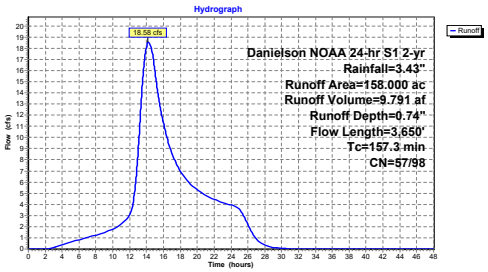
Runoff = 18.58 cfs @ 14.16 hrs, Volume= 9.791 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 2-yr Rainfall=3.43"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

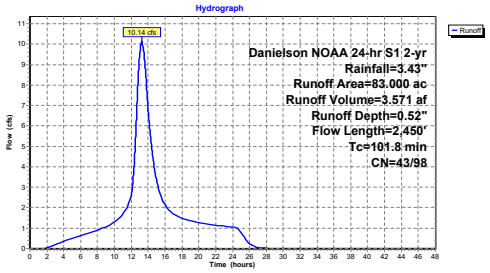
Runoff = 10.14 cfs @ 13.23 hrs, Volume= 3.571 af, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 2-yr Rainfall=3.43"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.27" for 2-yr event
Inflow = 2.06 cfs @ 17.83 hrs, Volume= 3.392 af, Incl. 0.50 cfs Base Flow
Outflow = 1.99 cfs @ 20.71 hrs, Volume= 3.393 af, Atten= 3%, Lag= 172.4 min
Primary = 1.99 cfs @ 20.71 hrs, Volume= 3.393 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 149.20' @ 20.71 hrs Storage= 0.897 af (0.201 af above start)

Plug-Flow detention time= 536.9 min calculated for 2.697 af (79% of inflow)
Center-of-Mass det. time= 40.7 min (1,382.1 - 1,341.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

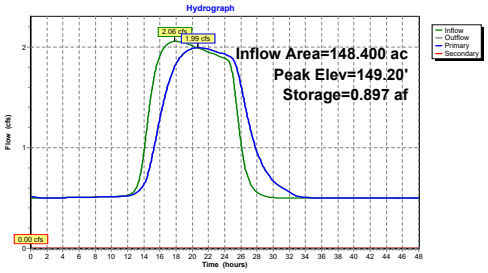
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=1.99 cfs @ 20.71 hrs HW=149.20' TW=146.14' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 1.99 cfs @ 1.96 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.59" for 2-yr event
Inflow = 19.73 cfs @ 14.16 hrs, Volume= 15.168 af, Incl. 0.50 cfs Base Flow
Outflow = 11.29 cfs @ 16.70 hrs, Volume= 14.783 af, Atten= 43%, Lag= 152.5 min
Primary = 11.29 cfs @ 16.70 hrs, Volume= 14.783 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 146.19' @ 16.70 hrs Storage= 27.541 af (3.557 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 221.2 min (1,364.4 - 1,143.2)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

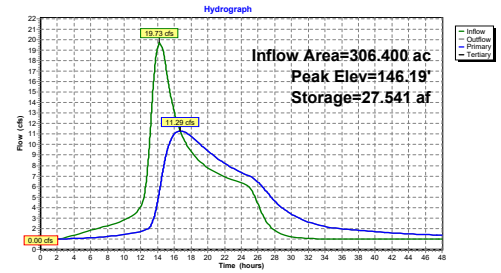
Device	Routing	Invert	Outlet Devices
#1	Device 6	145.60'	**3.8' long SLinplace** 2 End Contraction(s) 4.0' Crest Height
#2	Device 6	142.10'	**3.8' long SLOperated X 0.00** 2 End Contraction(s) 1.2' Crest Height
#3	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#4	Device 6	141.00'	**6.0" Vert. LLO X 0.00** C= 0.600 Limited to weir flow at low heads

#5	Device 6	145.90'	**5.5' long LeftandRightSideWeirs X 2.00** 1 End Contraction(s) 6.0' Crest Height
#6	Primary	141.00'	**72.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 28.27 sf

Primary OutFlow Max=11.29 cfs @ 16.70 hrs HW=146.19' TW=138.76' (Dynamic Tailwater)
└─**6=Outlet Pipe** (Passes 11.29 cfs of 188.49 cfs potential flow)
  ├─**1=SLinplace** (Weir Controls 5.59 cfs @ 2.56 fps)
  ├─**2=SLOperated** (Controls 0.00 cfs)
  ├─**4=LLO** (Controls 0.00 cfs)
  └─**5=LeftandRightSideWeirs** (Weir Controls 5.70 cfs @ 1.78 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.20' (Dynamic Tailwater)
└─**3=Top of Dam** (Controls 0.00 cfs)

Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.58" for 2-yr event
Inflow = 11.29 cfs @ 16.70 hrs, Volume= 14.783 af
Outflow = 11.28 cfs @ 16.72 hrs, Volume= 14.783 af, Atten= 0%, Lag= 0.9 min
Primary = 11.28 cfs @ 16.72 hrs, Volume= 14.783 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 138.77' @ 17.09 hrs Storage= 0.017 af (0.011 af above start)

Plug-Flow detention time= 1.8 min calculated for 14.775 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (1,364.9 - 1,364.4)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

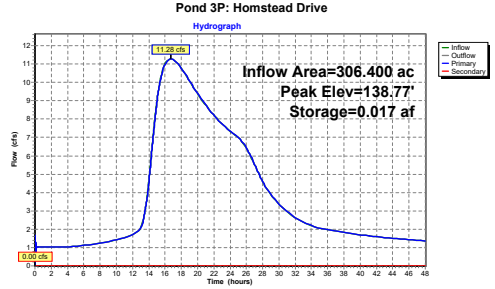
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=11.28 cfs @ 16.72 hrs HW=138.76' TW=138.54' (Dynamic Tailwater)
└─**1=RCP_Round 48"** (Outlet Controls 11.28 cfs @ 2.99 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└─**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.58" for 2-yr event
Inflow = 11.28 cfs @ 16.72 hrs, Volume= 14.783 af
Outflow = 11.28 cfs @ 16.73 hrs, Volume= 14.783 af, Atten= 0%, Lag= 0.6 min
Primary = 11.28 cfs @ 16.73 hrs, Volume= 14.783 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 138.55' @ 17.36 hrs Storage= 0.016 af (0.006 af above start)

Plug-Flow detention time= 2.3 min calculated for 14.772 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (1,365.2 - 1,364.9)

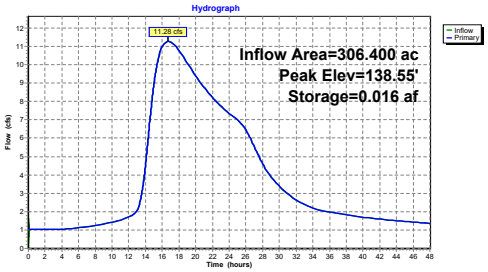
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=11.27 cfs @ 16.73 hrs HW=138.54' TW=138.32' (Dynamic Tailwater)
└─**1=Log Dam** (Weir Controls 11.27 cfs @ 1.67 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.58" for 2-yr event
Inflow = 11.28 cfs @ 16.73 hrs, Volume= 14.783 af
Outflow = 10.99 cfs @ 17.69 hrs, Volume= 14.780 af, Atten= 3%, Lag= 57.9 min
Primary = 10.99 cfs @ 17.69 hrs, Volume= 14.780 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 138.36' @ 17.69 hrs Storage= 0.495 af (0.486 af above start)

Plug-Flow detention time= 21.8 min calculated for 14.769 af (100% of inflow)
Center-of-Mass det. time= 19.7 min (1,384.8 - 1,365.2)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

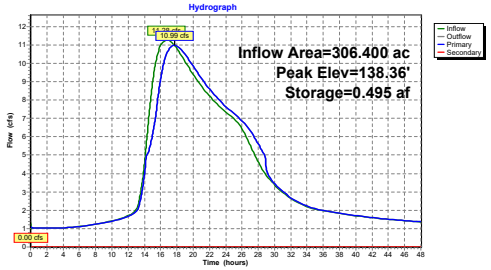
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=10.99 cfs @ 17.69 hrs HW=138.36' TW=127.81' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 10.99 cfs @ 2.87 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=137.27' TW=126.23' (Dynamic Tailwater)
└**1=Top of Road** (Controls 0.00 cfs)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 0.57" for 2-yr event
Inflow = 12.55 cfs @ 17.37 hrs, Volume= 18.351 af
Outflow = 12.55 cfs @ 17.37 hrs, Volume= 18.350 af, Atten= 0%, Lag= 0.1 min
Primary = 12.55 cfs @ 17.37 hrs, Volume= 18.350 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 127.81' @ 17.37 hrs Storage= 0.003 af

Plug-Flow detention time= 0.3 min calculated for 18.349 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (1,286.2 - 1,286.0)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

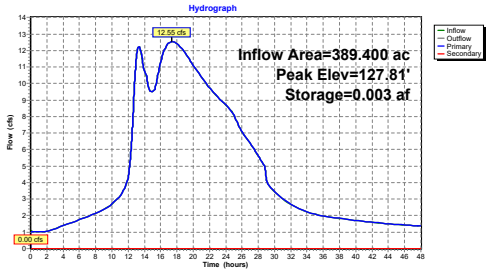
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=12.55 cfs @ 17.37 hrs HW=127.81' (Free Discharge)
└**1=Culvert** (Inlet Controls 12.55 cfs @ 4.76 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

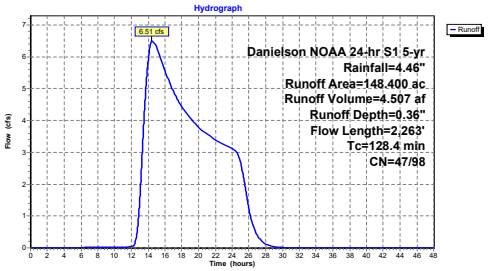
Runoff = 6.51 cfs @ 14.41 hrs, Volume= 4.507 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 5-yr Rainfall=4.46"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

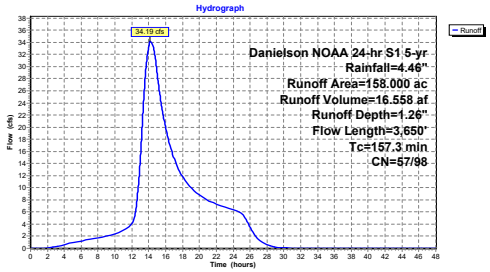
Runoff = 34.19 cfs @ 14.16 hrs, Volume= 16.558 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 5-yr Rainfall=4.46"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

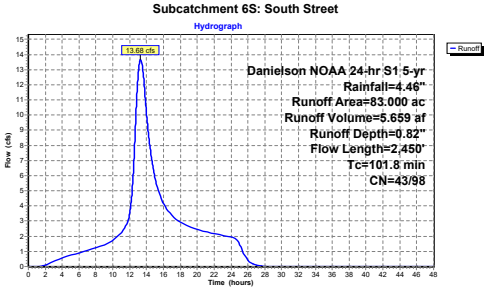
Runoff = 13.68 cfs @ 13.24 hrs, Volume= 5.659 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 5-yr Rainfall=4.46"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.52" for 5-yr event
Inflow = 7.01 cfs @ 14.41 hrs, Volume= 6.490 af, Incl. 0.50 cfs Base Flow
Outflow = 5.93 cfs @ 16.20 hrs, Volume= 6.491 af, Atten= 15%, Lag= 107.1 min
Primary = 5.93 cfs @ 16.20 hrs, Volume= 6.491 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 149.57' @ 16.20 hrs Storage= 1.273 af (0.576 af above start)

Plug-Flow detention time= 291.8 min calculated for 5.794 af (89% of inflow)
Center-of-Mass det. time= 57.7 min (1,276.0 - 1,218.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

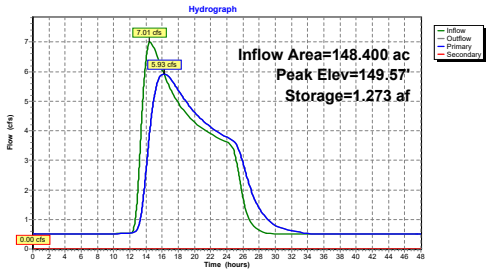
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=5.93 cfs @ 16.20 hrs HW=149.57' TW=146.46' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 5.93 cfs @ 2.87 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.98" for 5-yr event
Inflow = 38.09 cfs @ 14.33 hrs, Volume= 25.033 af, Incl. 0.50 cfs Base Flow
Outflow = 24.79 cfs @ 16.25 hrs, Volume= 24.597 af, Atten= 35%, Lag= 115.2 min
Primary = 24.79 cfs @ 16.25 hrs, Volume= 24.597 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 146.46' @ 16.25 hrs Storage= 29.679 af (5.695 af above start)

Plug-Flow detention time= 2,539.1 min calculated for 0.613 af (2% of inflow)
Center-of-Mass det. time= 188.4 min (1,295.8 - 1,107.4)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

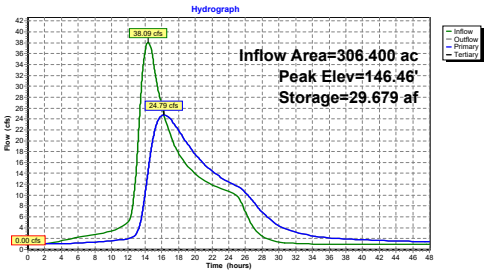
Device	Routing	Invert	Outlet Devices
#1	Device 6	145.60'	**3.8' long SLinplace** 2 End Contraction(s) 4.0' Crest Height
#2	Device 6	142.10'	**3.8' long SLOperated X 0.00** 2 End Contraction(s) 1.2' Crest Height
#3	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#4	Device 6	141.00'	**6.0" Vert. LLO X 0.00** C= 0.600 Limited to weir flow at low heads

#5	Device 6	145.90'	**5.5' long LeftandRightSideWeirs X 2.00** 1 End Contraction(s) 6.0' Crest Height
#6	Primary	141.00'	**72.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 28.27 sf

Primary OutFlow Max=24.79 cfs @ 16.25 hrs HW=146.46' TW=139.66' (Dynamic Tailwater)
└─**6=Outlet Pipe** (Passes 24.79 cfs of 202.49 cfs potential flow)
├─**1=SLinplace** (Weir Controls 9.71 cfs @ 3.11 fps)
├─**2=SLOperated** (Controls 0.00 cfs)
├─**4=LLO** (Controls 0.00 cfs)
└─**5=LeftandRightSideWeirs** (Weir Controls 15.08 cfs @ 2.47 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.20' (Dynamic Tailwater)
└─**3=Top of Dam** (Controls 0.00 cfs)

Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.96" for 5-yr event
Inflow = 24.79 cfs @ 16.25 hrs, Volume= 24.597 af
Outflow = 24.63 cfs @ 16.41 hrs, Volume= 24.597 af, Atten= 1%, Lag= 9.4 min
Primary = 24.63 cfs @ 16.41 hrs, Volume= 24.597 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 139.69' @ 16.73 hrs Storage= 0.070 af (0.063 af above start)

Plug-Flow detention time= 1.9 min calculated for 24.588 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (1,296.9 - 1,295.8)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

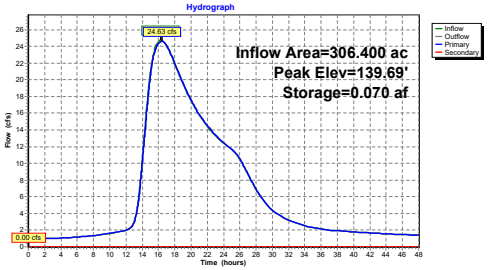
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=24.61 cfs @ 16.41 hrs HW=139.68' TW=139.35' (Dynamic Tailwater)
└─**1=RCP_Round 48"** (Outlet Controls 24.61 cfs @ 3.80 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└─**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.96" for 5-yr event
Inflow = 24.63 cfs @ 16.41 hrs, Volume= 24.597 af
Outflow = 24.57 cfs @ 16.47 hrs, Volume= 24.597 af, Atten= 0%, Lag= 3.2 min
Primary = 24.57 cfs @ 16.47 hrs, Volume= 24.597 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 139.37' @ 16.87 hrs Storage= 0.045 af (0.035 af above start)

Plug-Flow detention time= 1.8 min calculated for 24.587 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (1,297.5 - 1,296.9)

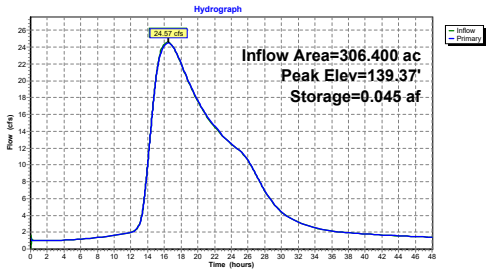
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=24.46 cfs @ 16.47 hrs HW=139.35' TW=139.30' (Dynamic Tailwater)
└─**1=Log Dam** (Weir Controls 24.46 cfs @ 0.88 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.96" for 5-yr event
Inflow = 24.57 cfs @ 16.47 hrs, Volume= 24.597 af
Outflow = 24.26 cfs @ 16.90 hrs, Volume= 24.593 af, Atten= 1%, Lag= 26.1 min
Primary = 20.17 cfs @ 16.90 hrs, Volume= 23.683 af
Secondary = 4.09 cfs @ 16.90 hrs, Volume= 0.910 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 139.32' @ 16.90 hrs Storage= 1.236 af (1.227 af above start)

Plug-Flow detention time= 30.9 min calculated for 24.584 af (100% of inflow)
Center-of-Mass det. time= 29.5 min (1,327.0 - 1,297.5)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

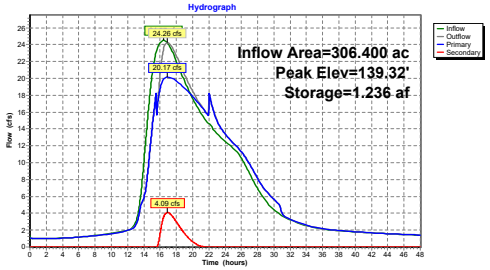
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=20.17 cfs @ 16.90 hrs HW=139.32' TW=128.44' (Dynamic Tailwater)
↳ **2=Culvert** (Barrel Controls 20.17 cfs @ 3.84 fps)

Secondary OutFlow Max=4.09 cfs @ 16.90 hrs HW=139.32' TW=128.44' (Dynamic Tailwater)
↳ **1=Top of Road** (Weir Controls 4.09 cfs @ 0.86 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 0.93" for 5-yr event
Inflow = 27.74 cfs @ 16.80 hrs, Volume= 30.253 af
Outflow = 27.67 cfs @ 16.94 hrs, Volume= 30.251 af, Atten= 0%, Lag= 8.6 min
Primary = 27.67 cfs @ 16.94 hrs, Volume= 30.251 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 128.44' @ 16.94 hrs Storage= 0.075 af

Plug-Flow detention time= 0.7 min calculated for 30.251 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,249.6 - 1,248.9)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

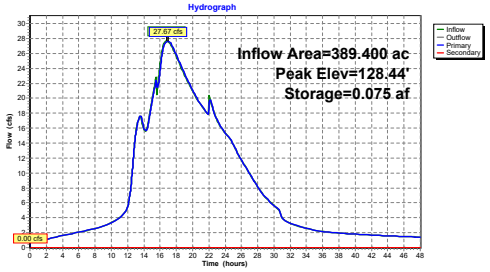
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=27.67 cfs @ 16.94 hrs HW=128.44' (Free Discharge)
↳ **1=Culvert** (Barrel Controls 27.67 cfs @ 8.18 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
↳ **2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

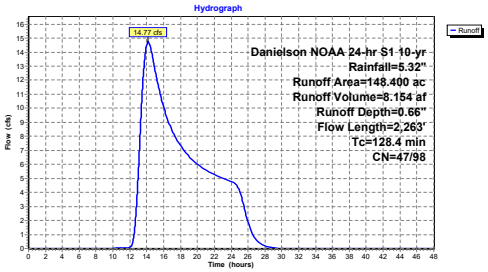
Runoff = 14.77 cfs @ 14.13 hrs, Volume= 8.154 af, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 10-yr Rainfall=5.32"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

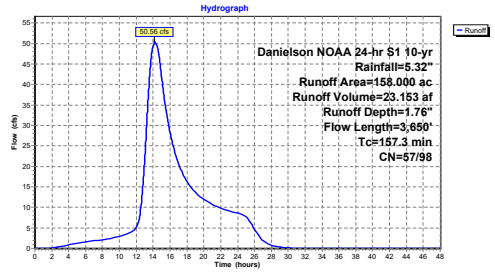
Runoff = 50.56 cfs @ 14.16 hrs, Volume= 23.153 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 10-yr Rainfall=5.32"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

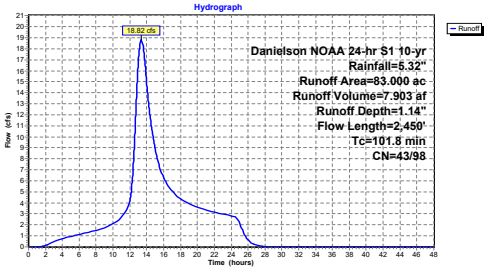
Runoff = 18.82 cfs @ 13.35 hrs, Volume= 7.903 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 10-yr Rainfall=5.32"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.82" for 10-yr event
Inflow = 15.27 cfs @ 14.13 hrs, Volume= 10.138 af, Incl. 0.50 cfs Base Flow
Outflow = 12.09 cfs @ 15.37 hrs, Volume= 10.138 af, Atten= 21%, Lag= 74.8 min
Primary = 12.09 cfs @ 15.37 hrs, Volume= 10.138 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 150.02' @ 15.37 hrs Storage= 1.759 af (1.063 af above start)

Plug-Flow detention time= 203.0 min calculated for 9.441 af (93% of inflow)
Center-of-Mass det. time= 58.8 min (1,213.2 - 1,154.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

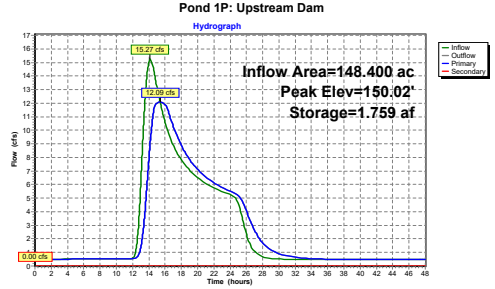
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=12.09 cfs @ 15.37 hrs HW=150.02' TW=146.67' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 12.09 cfs @ 3.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.38" for 10-yr event
Inflow = 60.73 cfs @ 14.34 hrs, Volume= 35.275 af, Incl. 0.50 cfs Base Flow
Outflow = 39.81 cfs @ 16.18 hrs, Volume= 34.813 af, Atten= 34%, Lag= 110.4 min
Primary = 39.81 cfs @ 16.18 hrs, Volume= 34.813 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 146.70' @ 16.09 hrs Storage= 32.008 af (8.024 af above start)

Plug-Flow detention time= 1,015.0 min calculated for 10.829 af (31% of inflow)
Center-of-Mass det. time= 169.0 min (1,254.1 - 1,085.1)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

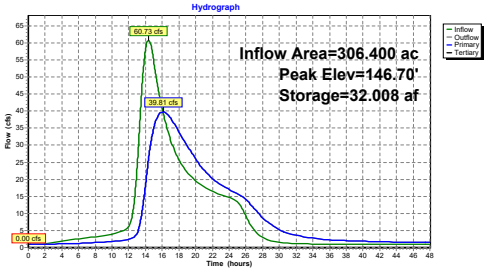
Device	Routing	Invert	Outlet Devices
#1	Device 6	145.60'	**3.8' long SLinplace** 2 End Contraction(s) 4.0' Crest Height
#2	Device 6	142.10'	**3.8' long SLOperated X 0.00** 2 End Contraction(s) 1.2' Crest Height
#3	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#4	Device 6	141.00'	**6.0" Vert. LLO X 0.00** C= 0.600 Limited to weir flow at low heads

#5	Device 6	145.90'	**5.5' long LeftandRightSideWeirs X 2.00** 1 End Contraction(s) 6.0' Crest Height
#6	Primary	141.00'	**72.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 28.27 sf

Primary OutFlow Max=39.77 cfs @ 16.18 hrs HW=146.70' TW=140.23' (Dynamic Tailwater)
└**6=Outlet Pipe** (Passes 39.77 cfs of 215.06 cfs potential flow)
  ├**1=SLinplace** (Weir Controls 13.97 cfs @ 3.55 fps)
  ├**2=SLOperated** (Controls 0.00 cfs)
  ├**4=LLO** (Controls 0.00 cfs)
  └**5=LeftandRightSideWeirs** (Weir Controls 25.80 cfs @ 2.97 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.20' (Dynamic Tailwater)
└**3=Top of Dam** (Controls 0.00 cfs)

Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.36" for 10-yr event
Inflow = 39.81 cfs @ 16.18 hrs, Volume= 34.813 af
Outflow = 39.75 cfs @ 16.20 hrs, Volume= 34.812 af, Atten= 0%, Lag= 1.4 min
Primary = 39.75 cfs @ 16.20 hrs, Volume= 34.812 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 140.23' @ 16.31 hrs Storage= 0.128 af (0.121 af above start)

Plug-Flow detention time= 2.2 min calculated for 34.802 af (100% of inflow)
Center-of-Mass det. time= 1.6 min (1,255.7 - 1,254.1)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

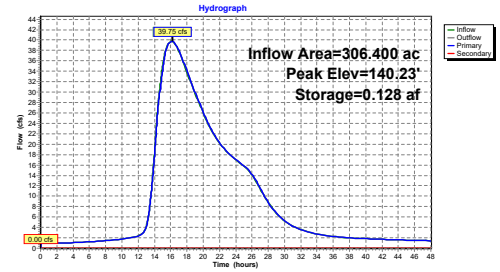
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=39.74 cfs @ 16.20 hrs HW=140.23' TW=139.70' (Dynamic Tailwater)
└**1=RCP_Round 48"** (Outlet Controls 39.74 cfs @ 4.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.36" for 10-yr event
Inflow = 39.75 cfs @ 16.20 hrs, Volume= 34.812 af
Outflow = 39.71 cfs @ 16.21 hrs, Volume= 34.812 af, Atten= 0%, Lag= 0.6 min
Primary = 39.71 cfs @ 16.21 hrs, Volume= 34.812 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 139.70' @ 16.52 hrs Storage= 0.064 af (0.054 af above start)

Plug-Flow detention time= 1.6 min calculated for 34.802 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,256.5 - 1,255.7)

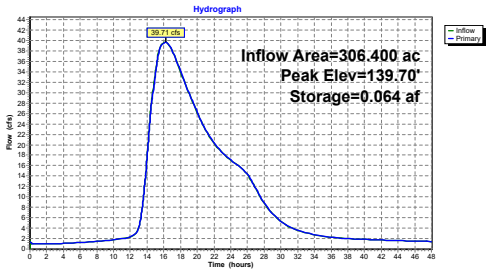
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=39.66 cfs @ 16.21 hrs HW=139.70' TW=139.62' (Dynamic Tailwater)
└**1=Log Dam** (Weir Controls 39.66 cfs @ 1.00 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.36" for 10-yr event
Inflow = 39.71 cfs @ 16.21 hrs, Volume= 34.812 af
Outflow = 39.21 cfs @ 16.59 hrs, Volume= 34.808 af, Atten= 1%, Lag= 22.9 min
Primary = 23.03 cfs @ 16.59 hrs, Volume= 28.867 af
Secondary = 16.18 cfs @ 16.59 hrs, Volume= 5.941 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 139.63' @ 16.59 hrs Storage= 1.615 af (1.606 af above start)

Plug-Flow detention time= 30.6 min calculated for 34.799 af (100% of inflow)
Center-of-Mass det. time= 29.7 min (1,286.1 - 1,256.5)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

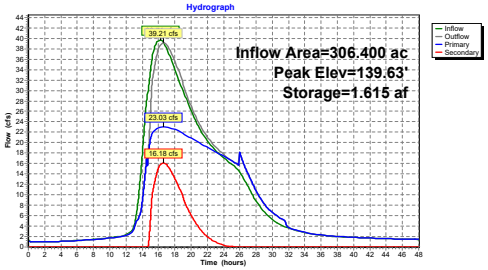
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=23.03 cfs @ 16.59 hrs HW=139.63' TW=129.02' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 23.03 cfs @ 4.39 fps)

Secondary OutFlow Max=16.18 cfs @ 16.59 hrs HW=139.63' TW=129.02' (Dynamic Tailwater)
└**1=Top of Road** (Weir Controls 16.18 cfs @ 1.33 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 1.32" for 10-yr event
Inflow = 44.80 cfs @ 16.40 hrs, Volume= 42.711 af
Outflow = 44.60 cfs @ 16.66 hrs, Volume= 42.710 af, Atten= 0%, Lag= 15.6 min
Primary = 44.60 cfs @ 16.66 hrs, Volume= 42.710 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 129.02' @ 16.66 hrs Storage= 0.343 af

Plug-Flow detention time= 2.4 min calculated for 42.705 af (100% of inflow)
Center-of-Mass det. time= 2.3 min (1,221.2 - 1,218.9)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

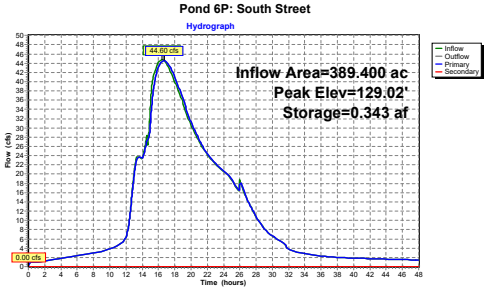
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=44.60 cfs @ 16.66 hrs HW=129.02' (Free Discharge)
└**1=Culvert** (Barrel Controls 44.60 cfs @ 8.82 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

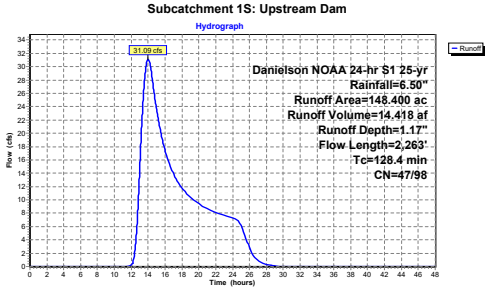
Runoff = 31.09 cfs @ 13.98 hrs, Volume= 14.418 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 25-yr Rainfall=6.50"

	Area (ac)	CN	Description
*	148.400	47	*0.1% imp*
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

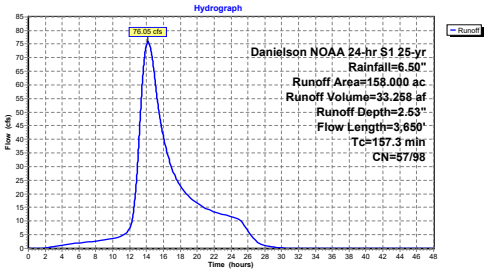
Runoff = 76.05 cfs @ 14.16 hrs, Volume= 33.258 af, Depth= 2.53"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 25-yr Rainfall=6.50"

	Area (ac)	CN	Description
*	158.000	62	*12.6% imp*
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

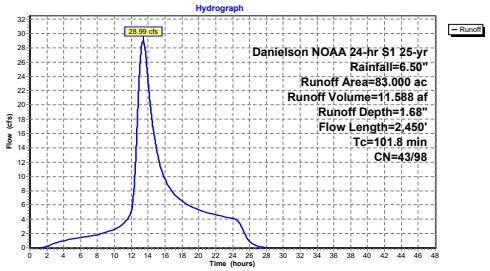
Runoff = 28.99 cfs @ 13.46 hrs, Volume= 11.588 af, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 25-yr Rainfall=6.50"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 1.33" for 25-yr event
Inflow = 31.59 cfs @ 13.98 hrs, Volume= 16.402 af, Incl. 0.50 cfs Base Flow
Outflow = 20.79 cfs @ 15.47 hrs, Volume= 16.403 af, Atten= 34%, Lag= 89.3 min
Primary = 20.79 cfs @ 15.47 hrs, Volume= 16.403 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 150.55' @ 15.47 hrs Storage= 3.236 af (2.539 af above start)

Plug-Flow detention time= 157.8 min calculated for 15.705 af (96% of inflow)
Center-of-Mass det. time= 70.5 min (1,172.6 - 1,102.1)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

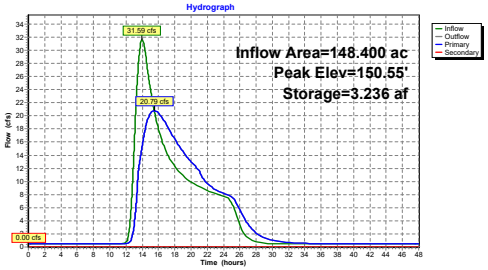
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=20.79 cfs @ 15.47 hrs HW=150.55' TW=147.02' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 20.79 cfs @ 4.60 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.02" for 25-yr event
Inflow = 93.24 cfs @ 14.33 hrs, Volume= 51.645 af, Incl. 0.50 cfs Base Flow
Outflow = 63.81 cfs @ 15.87 hrs, Volume= 51.156 af, Atten= 32%, Lag= 92.9 min
Primary = 63.81 cfs @ 15.87 hrs, Volume= 51.156 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 147.03' @ 15.87 hrs Storage= 35.301 af (11.317 af above start)

Plug-Flow detention time= 642.2 min calculated for 27.171 af (53% of inflow)
Center-of-Mass det. time= 151.4 min (1,219.3 - 1,067.9)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

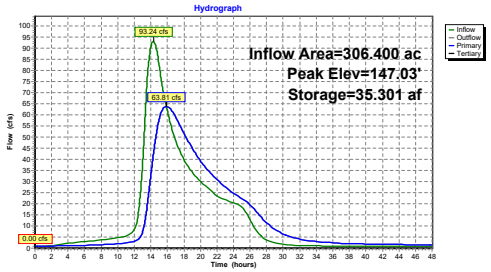
Device	Routing	Invert	Outlet Devices
#1	Device 6	145.60'	**3.8' long SLinplace** 2 End Contraction(s) 4.0' Crest Height
#2	Device 6	142.10'	**3.8' long SLOperated X 0.00** 2 End Contraction(s) 1.2' Crest Height
#3	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#4	Device 6	141.00'	**6.0" Vert. LLO X 0.00** C= 0.600 Limited to weir flow at low heads

#5	Device 6	145.90'	**5.5' long LeftandRightSideWeirs X 2.00** 1 End Contraction(s) 6.0' Crest Height
#6	Primary	141.00'	**72.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 28.27 sf

Primary OutFlow Max=63.81 cfs @ 15.87 hrs HW=147.03' TW=140.90' (Dynamic Tailwater)
└**6=Outlet Pipe** (Passes 63.81 cfs of 232.09 cfs potential flow)
├**1=SLinplace** (Weir Controls 20.51 cfs @ 4.08 fps)
├**2=SLOperated** (Controls 0.00 cfs)
├**4=LLO** (Controls 0.00 cfs)
└**5=LeftandRightSideWeirs** (Weir Controls 43.30 cfs @ 3.56 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.20' (Dynamic Tailwater)
└**3=Top of Dam** (Controls 0.00 cfs)

Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.00" for 25-yr event
Inflow = 63.81 cfs @ 15.87 hrs, Volume= 51.156 af
Outflow = 63.74 cfs @ 15.96 hrs, Volume= 51.155 af, Atten= 0%, Lag= 5.1 min
Primary = 63.74 cfs @ 15.96 hrs, Volume= 51.155 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 140.90' @ 16.00 hrs Storage= 0.246 af (0.239 af above start)

Plug-Flow detention time= 2.4 min calculated for 51.143 af (100% of inflow)
Center-of-Mass det. time= 2.0 min (1,221.3 - 1,219.3)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

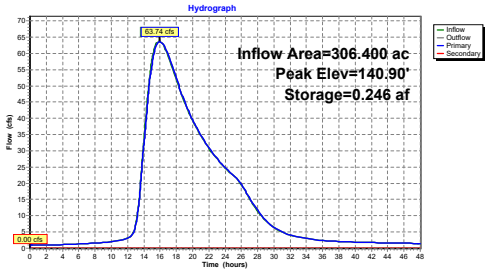
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=63.73 cfs @ 15.96 hrs HW=140.90' TW=140.02' (Dynamic Tailwater)
└**1=RCP_Round 48"** (Outlet Controls 63.73 cfs @ 6.39 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.00" for 25-yr event
Inflow = 63.74 cfs @ 15.96 hrs, Volume= 51.155 af
Outflow = 63.72 cfs @ 15.97 hrs, Volume= 51.155 af, Atten= 0%, Lag= 0.8 min
Primary = 63.72 cfs @ 15.97 hrs, Volume= 51.155 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.02' @ 16.10 hrs Storage= 0.090 af (0.080 af above start)

Plug-Flow detention time= 1.4 min calculated for 51.145 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (1,222.1 - 1,221.3)

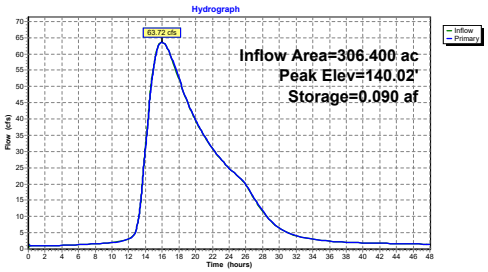
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=63.70 cfs @ 15.97 hrs HW=140.02' TW=139.89' (Dynamic Tailwater)
└**1=Log Dam** (Weir Controls 63.70 cfs @ 1.21 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.00" for 25-yr event
Inflow = 63.72 cfs @ 15.97 hrs, Volume= 51.155 af
Outflow = 63.53 cfs @ 16.16 hrs, Volume= 51.150 af, Atten= 0%, Lag= 11.4 min
Primary = 25.22 cfs @ 16.16 hrs, Volume= 33.653 af
Secondary = 38.31 cfs @ 16.16 hrs, Volume= 17.498 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 139.89' @ 16.16 hrs Storage= 2.118 af (2.109 af above start)

Plug-Flow detention time= 27.9 min calculated for 51.141 af (100% of inflow)
Center-of-Mass det. time= 27.2 min (1,249.3 - 1,222.1)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

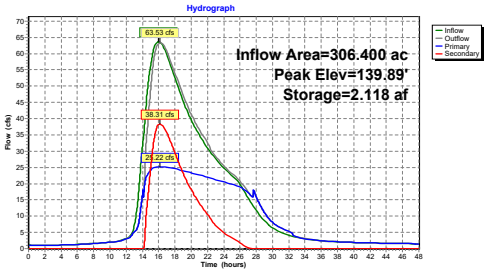
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=25.22 cfs @ 16.16 hrs HW=139.89' TW=129.84' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 25.22 cfs @ 4.80 fps)

Secondary OutFlow Max=38.31 cfs @ 16.16 hrs HW=139.89' TW=129.84' (Dynamic Tailwater)
└**1=Top of Road** (Weir Controls 38.31 cfs @ 1.52 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 1.93" for 25-yr event
Inflow = 73.00 cfs @ 15.96 hrs, Volume= 62.738 af
Outflow = 71.91 cfs @ 16.40 hrs, Volume= 62.737 af, Atten= 1%, Lag= 26.5 min
Primary = 71.91 cfs @ 16.40 hrs, Volume= 62.737 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 129.84' @ 16.40 hrs Storage= 0.991 af

Plug-Flow detention time= 5.2 min calculated for 62.737 af (100% of inflow)
Center-of-Mass det. time= 5.2 min (1,195.7 - 1,190.5)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

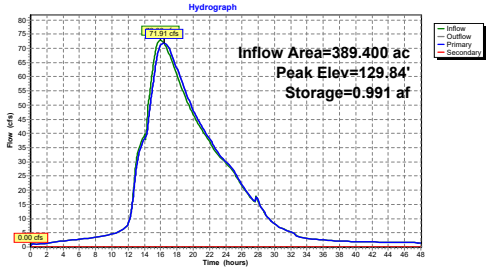
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=71.91 cfs @ 16.40 hrs HW=129.84' (Free Discharge)
└**1=Culvert** (Barrel Controls 71.91 cfs @ 9.55 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

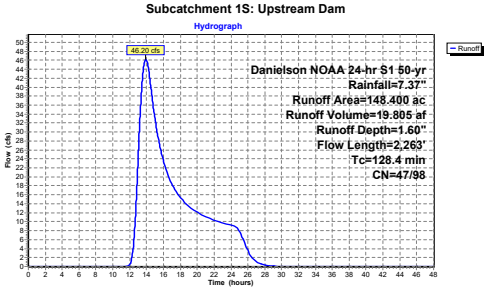
Runoff = 46.20 cfs @ 13.84 hrs, Volume= 19.805 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 50-yr Rainfall=7.37"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

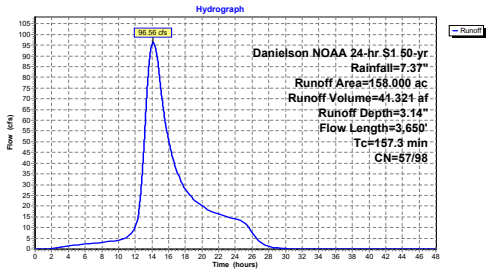
Runoff = 96.56 cfs @ 14.16 hrs, Volume= 41.321 af, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 50-yr Rainfall=7.37"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

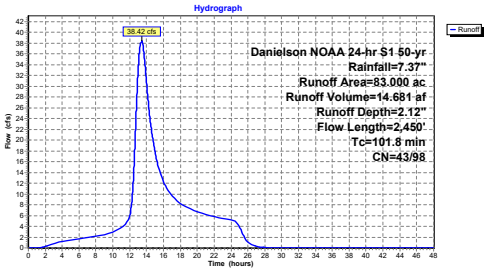
Runoff = 38.42 cfs @ 13.46 hrs, Volume= 14.681 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 50-yr Rainfall=7.37"

	Area (ac)	CN	Description
*	83.000	51	*15% imp*
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 1.76" for 50-yr event
Inflow = 46.70 cfs @ 13.84 hrs, Volume= 21.789 af, Incl. 0.50 cfs Base Flow
Outflow = 29.51 cfs @ 15.35 hrs, Volume= 21.790 af, Atten= 37%, Lag= 90.3 min
Primary = 29.51 cfs @ 15.35 hrs, Volume= 21.790 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 151.02' @ 15.35 hrs Storage= 4.578 af (3.881 af above start)

Plug-Flow detention time= 143.8 min calculated for 21.091 af (97% of inflow)
Center-of-Mass det. time= 78.4 min (1,155.7 - 1,077.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

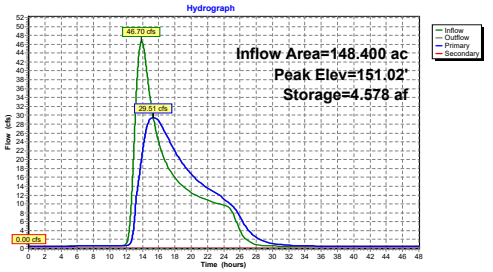
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=29.51 cfs @ 15.35 hrs HW=151.02' TW=147.27' (Dynamic Tailwater)
└─**1=Spillway Weir** (Weir Controls 29.51 cfs @ 5.30 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└─**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.55" for 50-yr event
Inflow = 120.93 cfs @ 14.33 hrs, Volume= 65.095 af, Incl. 0.50 cfs Base Flow
Outflow = 85.34 cfs @ 15.75 hrs, Volume= 64.589 af, Atten= 29%, Lag= 85.4 min
Primary = 85.34 cfs @ 15.75 hrs, Volume= 64.589 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 147.29' @ 15.75 hrs Storage= 37.911 af (13.927 af above start)

Plug-Flow detention time= 516.6 min calculated for 40.601 af (62% of inflow)
Center-of-Mass det. time= 141.9 min (1,201.2 - 1,059.4)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

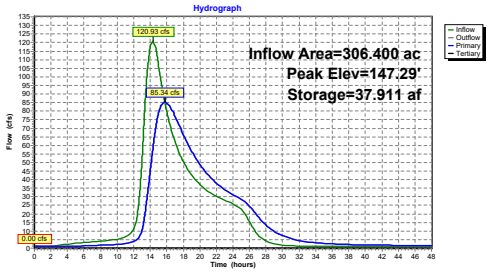
Device	Routing	Invert	Outlet Devices
#1	Device 6	145.60'	**3.8' long SLinplace** 2 End Contraction(s) 4.0' Crest Height
#2	Device 6	142.10'	**3.8' long SLOperated X 0.00** 2 End Contraction(s) 1.2' Crest Height
#3	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#4	Device 6	141.00'	**6.0" Vert. LLO X 0.00** C= 0.600 Limited to weir flow at low heads

#5	Device 6	145.90'	**5.5' long LeftandRightSideWeirs X 2.00** 1 End Contraction(s) 6.0' Crest Height
#6	Primary	141.00'	**72.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 28.27 sf

Primary OutFlow Max=85.34 cfs @ 15.75 hrs HW=147.29' TW=141.43' (Dynamic Tailwater)
└─**6=Outlet Pipe** (Passes 85.34 cfs of 245.29 cfs potential flow)
  ├─**1=SLinplace** (Weir Controls 26.18 cfs @ 4.47 fps)
  ├─**2=SLOperated** (Controls 0.00 cfs)
  ├─**4=LLO** (Controls 0.00 cfs)
  └─**5=LeftandRightSideWeirs** (Weir Controls 59.15 cfs @ 3.97 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.20' (Dynamic Tailwater)
└─**3=Top of Dam** (Controls 0.00 cfs)

Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.53" for 50-yr event
Inflow = 85.34 cfs @ 15.75 hrs, Volume= 64.589 af
Outflow = 85.22 cfs @ 15.85 hrs, Volume= 64.589 af, Atten= 0%, Lag= 6.1 min
Primary = 85.22 cfs @ 15.85 hrs, Volume= 64.589 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 141.43' @ 15.88 hrs Storage= 0.386 af (0.379 af above start)

Plug-Flow detention time= 2.6 min calculated for 64.582 af (100% of inflow)
Center-of-Mass det. time= 2.3 min (1,203.5 - 1,201.2)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

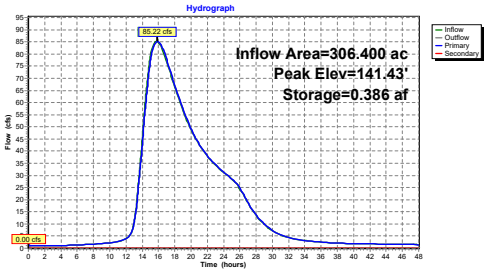
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=85.22 cfs @ 15.85 hrs HW=141.43' TW=140.19' (Dynamic Tailwater)
1=RCP_Round 48" (Outlet Controls 85.22 cfs @ 7.57 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
2=Top of Road (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.53" for 50-yr event
Inflow = 85.22 cfs @ 15.85 hrs, Volume= 64.589 af
Outflow = 85.21 cfs @ 15.87 hrs, Volume= 64.589 af, Atten= 0%, Lag= 0.7 min
Primary = 85.21 cfs @ 15.87 hrs, Volume= 64.589 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.19' @ 15.95 hrs Storage= 0.106 af (0.096 af above start)

Plug-Flow detention time= 1.3 min calculated for 64.579 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,204.4 - 1,203.5)

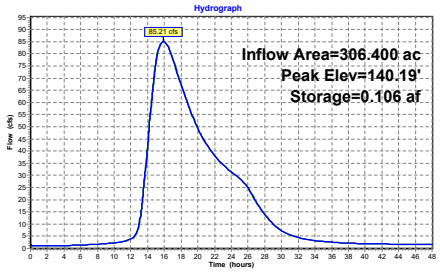
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=85.19 cfs @ 15.87 hrs HW=140.19' TW=140.01' (Dynamic Tailwater)
1=Log Dam (Weir Controls 85.19 cfs @ 1.41 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.53" for 50-yr event
Inflow = 85.21 cfs @ 15.87 hrs, Volume= 64.589 af
Outflow = 85.01 cfs @ 16.02 hrs, Volume= 64.584 af, Atten= 0%, Lag= 9.5 min
Primary = 26.18 cfs @ 16.02 hrs, Volume= 36.208 af
Secondary = 58.84 cfs @ 16.02 hrs, Volume= 28.376 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.02' @ 16.02 hrs Storage= 2.361 af (2.352 af above start)

Plug-Flow detention time= 25.5 min calculated for 64.574 af (100% of inflow)
Center-of-Mass det. time= 24.9 min (1,229.3 - 1,204.4)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

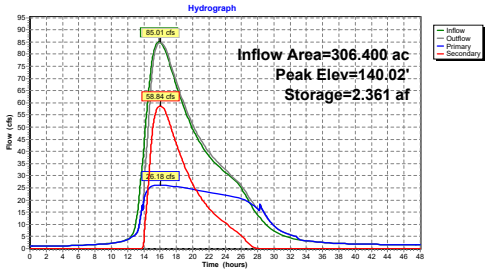
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=26.18 cfs @ 16.02 hrs HW=140.02' TW=130.53' (Dynamic Tailwater)
2=Culvert (Barrel Controls 26.18 cfs @ 4.99 fps)

Secondary OutFlow Max=58.84 cfs @ 16.02 hrs HW=140.02' TW=130.53' (Dynamic Tailwater)
1=Top of Road (Weir Controls 58.84 cfs @ 1.61 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 2.44" for 50-yr event
Inflow = 97.68 cfs @ 15.78 hrs, Volume= 79.265 af
Outflow = 95.97 cfs @ 16.28 hrs, Volume= 79.264 af, Atten= 2%, Lag= 29.9 min
Primary = 95.97 cfs @ 16.28 hrs, Volume= 79.264 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 130.54' @ 16.28 hrs Storage= 1.735 af

Plug-Flow detention time= 7.4 min calculated for 79.264 af (100% of inflow)
Center-of-Mass det. time= 7.4 min (1,181.9 - 1,174.5)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

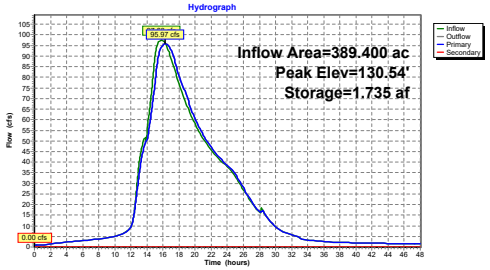
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=95.97 cfs @ 16.28 hrs HW=130.54' (Free Discharge)
└**1=Culvert** (Barrel Controls 95.97 cfs @ 10.08 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

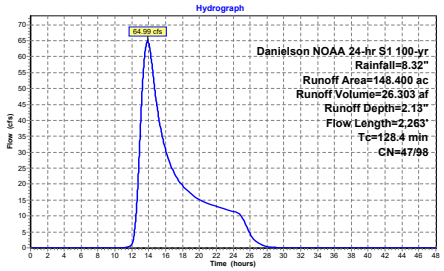
Runoff = 64.99 cfs @ 13.84 hrs, Volume= 26.303 af, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 100-yr Rainfall=8.32"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

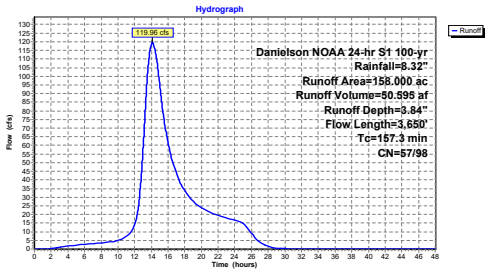
Runoff = 119.96 cfs @ 14.16 hrs, Volume= 50.595 af, Depth= 3.84"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 100-yr Rainfall=8.32"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

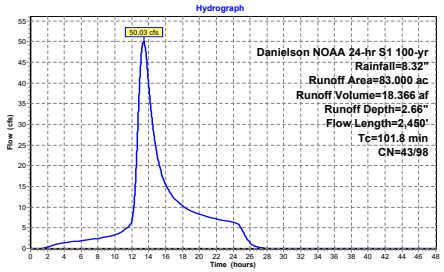
Runoff = 50.03 cfs @ 13.46 hrs, Volume= 18.366 af, Depth= 2.66"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 100-yr Rainfall=8.32"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 2.29" for 100-yr event
Inflow = 65.49 cfs @ 13.84 hrs, Volume= 28.287 af, Incl. 0.50 cfs Base Flow
Outflow = 37.95 cfs @ 15.41 hrs, Volume= 28.288 af, Atten= 42%, Lag= 94.1 min
Primary = 37.95 cfs @ 15.41 hrs, Volume= 28.288 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 151.44' @ 15.41 hrs Storage= 6.480 af (5.783 af above start)

Plug-Flow detention time= 139.1 min calculated for 27.588 af (98% of inflow)
Center-of-Mass det. time= 88.9 min (1,146.7 - 1,057.8)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

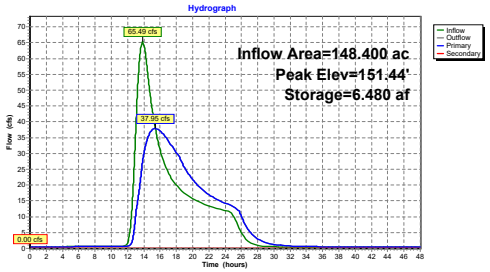
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=37.95 cfs @ 15.41 hrs HW=151.44' TW=147.55' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 37.95 cfs @ 5.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.17" for 100-yr event
Inflow = 152.32 cfs @ 14.16 hrs, Volume= 80.867 af, Incl. 0.50 cfs Base Flow
Outflow = 109.15 cfs @ 15.65 hrs, Volume= 80.344 af, Atten= 28%, Lag= 89.3 min
Primary = 109.15 cfs @ 15.65 hrs, Volume= 80.344 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 147.56' @ 15.65 hrs Storage= 40.665 af (16.681 af above start)

Plug-Flow detention time= 430.8 min calculated for 56.354 af (70% of inflow)
Center-of-Mass det. time= 133.6 min (1,187.3 - 1,053.6)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

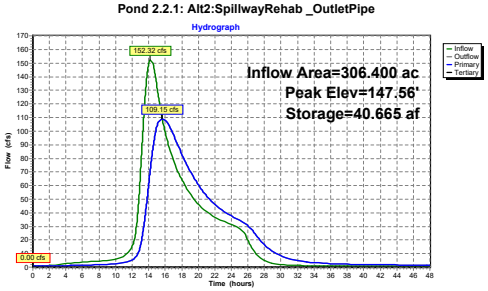
Device	Routing	Invert	Outlet Devices
#1	Device 6	145.60'	**3.8' long SLinplace** 2 End Contraction(s) 4.0' Crest Height
#2	Device 6	142.10'	**3.8' long SLOperated X 0.00** 2 End Contraction(s) 1.2' Crest Height
#3	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#4	Device 6	141.00'	**6.0" Vert. LLO X 0.00** C= 0.600 Limited to weir flow at low heads

Device	Routing	Invert	Outlet Devices
#5	Device 6	145.90'	**5.5' long LeftandRightSideWeirs X 2.00** 1 End Contraction(s) 6.0' Crest Height
#6	Primary	141.00'	**72.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 28.27 sf

Primary OutFlow Max=109.12 cfs @ 15.65 hrs HW=147.56' TW=142.51' (Dynamic Tailwater)
└**6=Outlet Pipe** (Passes 109.12 cfs of 256.70 cfs potential flow)
├**1=SLinplace** (Weir Controls 32.30 cfs @ 4.85 fps)
├**2=SLOperated** (Controls 0.00 cfs)
├**4=LLO** (Controls 0.00 cfs)
└**5=LeftandRightSideWeirs** (Weir Controls 76.81 cfs @ 4.35 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.20' (Dynamic Tailwater)
└**3=Top of Dam** (Controls 0.00 cfs)

Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.15" for 100-yr event
Inflow = 109.15 cfs @ 15.65 hrs, Volume= 80.344 af
Outflow = 108.85 cfs @ 15.83 hrs, Volume= 80.343 af, Atten= 0%, Lag= 10.7 min
Primary = 108.85 cfs @ 15.83 hrs, Volume= 80.343 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 142.52' @ 15.83 hrs Storage= 0.762 af (0.756 af above start)

Plug-Flow detention time= 3.2 min calculated for 80.328 af (100% of inflow)
Center-of-Mass det. time= 3.0 min (1,190.2 - 1,187.3)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

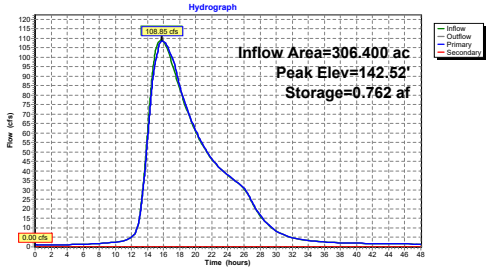
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=108.85 cfs @ 15.83 hrs HW=142.52' TW=140.36' (Dynamic Tailwater)
└**1=RCP_Round 48"** (Barrel Controls 108.85 cfs @ 8.66 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.15" for 100-yr event
Inflow = 108.85 cfs @ 15.83 hrs, Volume= 80.343 af
Outflow = 108.83 cfs @ 15.84 hrs, Volume= 80.343 af, Atten= 0%, Lag= 0.7 min
Primary = 108.83 cfs @ 15.84 hrs, Volume= 80.343 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.36' @ 15.91 hrs Storage= 0.125 af (0.116 af above start)

Plug-Flow detention time= 1.2 min calculated for 80.333 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,191.0 - 1,190.2)

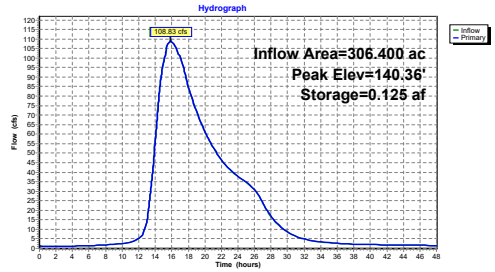
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=108.82 cfs @ 15.84 hrs HW=140.36' TW=140.12' (Dynamic Tailwater)
└**1=Log Dam** (Weir Controls 108.82 cfs @ 1.60 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.15" for 100-yr event
Inflow = 108.83 cfs @ 15.84 hrs, Volume= 80.343 af
Outflow = 108.63 cfs @ 15.98 hrs, Volume= 80.338 af, Atten= 0%, Lag= 8.5 min
Primary = 26.96 cfs @ 15.98 hrs, Volume= 38.620 af
Secondary = 81.67 cfs @ 15.98 hrs, Volume= 41.717 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.12' @ 15.98 hrs Storage= 2.620 af (2.611 af above start)

Plug-Flow detention time= 23.3 min calculated for 80.320 af (100% of inflow)
Center-of-Mass det. time= 22.9 min (1,213.9 - 1,191.0)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

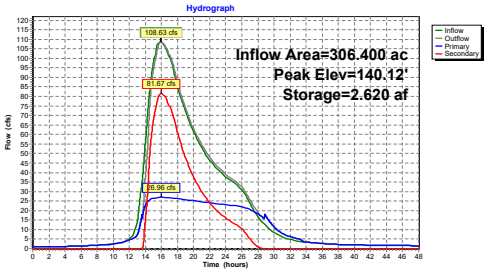
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=26.96 cfs @ 15.98 hrs HW=140.12' TW=131.26' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 26.96 cfs @ 5.14 fps)

Secondary OutFlow Max=81.67 cfs @ 15.98 hrs HW=140.12' TW=131.26' (Dynamic Tailwater)
└**1=Top of Road** (Weir Controls 81.67 cfs @ 1.78 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 3.04" for 100-yr event
Inflow = 124.69 cfs @ 15.78 hrs, Volume= 98.704 af
Outflow = 120.87 cfs @ 16.41 hrs, Volume= 98.703 af, Atten= 3%, Lag= 38.1 min
Primary = 120.87 cfs @ 16.41 hrs, Volume= 98.703 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 131.31' @ 16.41 hrs Storage= 2.863 af

Plug-Flow detention time= 9.9 min calculated for 98.692 af (100% of inflow)
Center-of-Mass det. time= 9.9 min (1,171.8 - 1,161.9)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

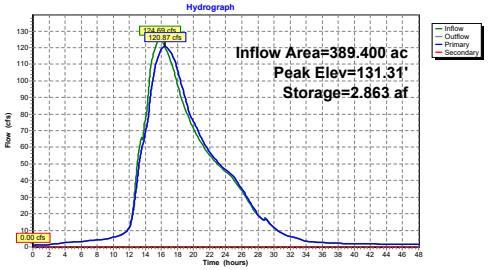
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=120.87 cfs @ 16.41 hrs HW=131.31' (Free Discharge)
└**1=Culvert** (Barrel Controls 120.87 cfs @ 10.58 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

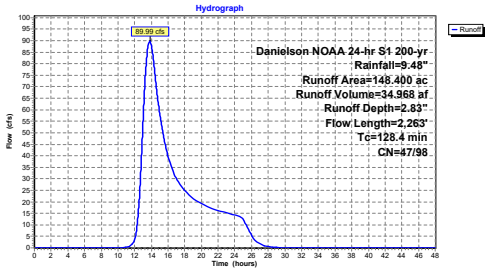
Runoff = 89.99 cfs @ 13.84 hrs, Volume= 34.968 af, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 200-yr Rainfall=9.48"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

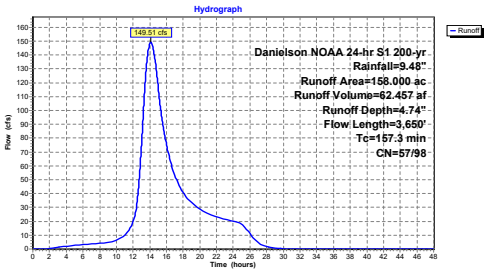
Runoff = 149.51 cfs @ 14.16 hrs, Volume= 62.457 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 200-yr Rainfall=9.48"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

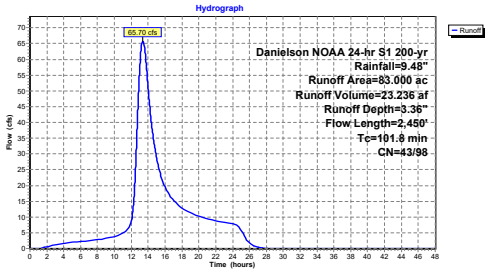
Runoff = 65.70 cfs @ 13.35 hrs, Volume= 23.236 af, Depth= 3.36"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 200-yr Rainfall=9.48"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 2.99" for 200-yr event
Inflow = 90.49 cfs @ 13.84 hrs, Volume= 36.952 af, Incl. 0.50 cfs Base Flow
Outflow = 50.22 cfs @ 15.39 hrs, Volume= 36.953 af, Atten= 44%, Lag= 92.9 min
Primary = 50.22 cfs @ 15.39 hrs, Volume= 36.953 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 152.02' @ 15.39 hrs Storage= 9.110 af (8.414 af above start)

Plug-Flow detention time= 138.2 min calculated for 36.253 af (98% of inflow)
Center-of-Mass det. time= 99.6 min (1,140.0 - 1,040.4)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

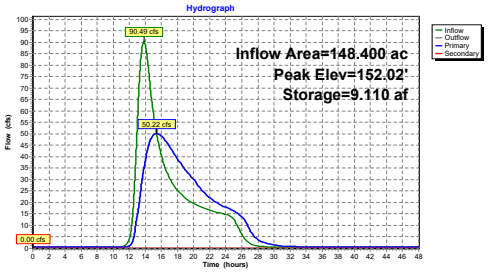
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=50.22 cfs @ 15.39 hrs HW=152.02' TW=147.86' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 50.22 cfs @ 6.69 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=145.79' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.97" for 200-yr event
Inflow = 191.42 cfs @ 14.16 hrs, Volume= 101.393 af, Incl. 0.50 cfs Base Flow
Outflow = 139.04 cfs @ 15.61 hrs, Volume= 100.850 af, Atten= 27%, Lag= 87.0 min
Primary = 139.04 cfs @ 15.61 hrs, Volume= 100.850 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 147.86' @ 15.61 hrs Storage= 44.350 af (20.366 af above start)

Plug-Flow detention time= 363.1 min calculated for 76.866 af (76% of inflow)
Center-of-Mass det. time= 126.4 min (1,175.1 - 1,048.7)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

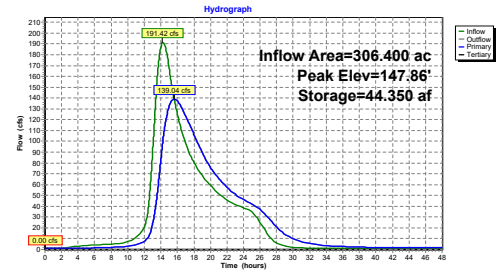
Device	Routing	Invert	Outlet Devices
#1	Device 6	145.60'	**3.8' long SLinplace** 2 End Contraction(s) 4.0' Crest Height
#2	Device 6	142.10'	**3.8' long SLOperated X 0.00** 2 End Contraction(s) 1.2' Crest Height
#3	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#4	Device 6	141.00'	**6.0" Vert. LLO X 0.00** C= 0.600 Limited to weir flow at low heads

#5	Device 6	145.90'	**5.5' long LeftandRightSideWeirs X 2.00** 1 End Contraction(s) 6.0' Crest Height
#6	Primary	141.00'	**72.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 28.27 sf

Primary OutFlow Max=139.01 cfs @ 15.61 hrs HW=147.86' TW=143.55' (Dynamic Tailwater)
└**6=Outlet Pipe** (Passes 139.01 cfs of 267.56 cfs potential flow)
├**1=SLinplace** (Weir Controls 39.83 cfs @ 5.26 fps)
├**2=SLOperated** (Controls 0.00 cfs)
├**4=LLO** (Controls 0.00 cfs)
└**5=LeftandRightSideWeirs** (Weir Controls 99.18 cfs @ 4.76 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.79' TW=138.20' (Dynamic Tailwater)
└**3=Top of Dam** (Controls 0.00 cfs)

Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.95" for 200-yr event
Inflow = 139.04 cfs @ 15.61 hrs, Volume= 100.850 af
Outflow = 138.36 cfs @ 15.85 hrs, Volume= 100.850 af, Atten= 0%, Lag= 14.2 min
Primary = 138.36 cfs @ 15.85 hrs, Volume= 100.850 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 143.58' @ 15.85 hrs Storage= 1.202 af (1.195 af above start)

Plug-Flow detention time= 4.0 min calculated for 100.833 af (100% of inflow)
Center-of-Mass det. time= 3.8 min (1,178.9 - 1,175.1)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

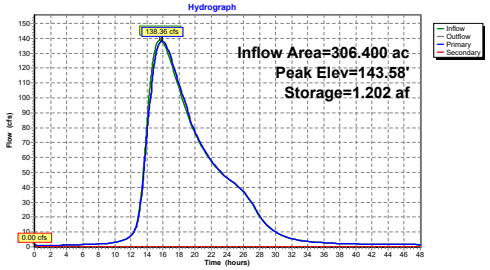
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=138.36 cfs @ 15.85 hrs HW=143.58' TW=140.55' (Dynamic Tailwater)
└**1=RCP_Round 48"** (Barrel Controls 138.36 cfs @ 11.01 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.95" for 200-yr event
Inflow = 138.36 cfs @ 15.85 hrs, Volume= 100.850 af
Outflow = 138.35 cfs @ 15.86 hrs, Volume= 100.850 af, Atten= 0%, Lag= 0.5 min
Primary = 138.35 cfs @ 15.86 hrs, Volume= 100.850 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.55' @ 15.90 hrs Storage= 0.147 af (0.137 af above start)

Plug-Flow detention time= 1.1 min calculated for 100.829 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,179.7 - 1,178.9)

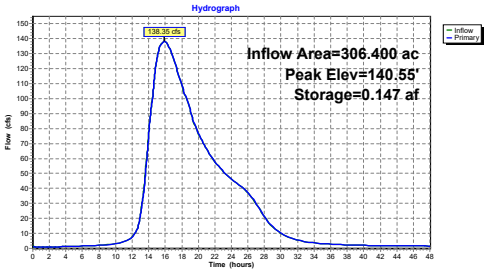
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=138.34 cfs @ 15.86 hrs HW=140.55' TW=140.23' (Dynamic Tailwater)
└**1=Log Dam** (Weir Controls 138.34 cfs @ 1.77 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.95" for 200-yr event
Inflow = 138.35 cfs @ 15.86 hrs, Volume= 100.850 af
Outflow = 138.20 cfs @ 15.96 hrs, Volume= 100.844 af, Atten= 0%, Lag= 6.4 min
Primary = 27.77 cfs @ 15.96 hrs, Volume= 41.209 af
Secondary = 110.43 cfs @ 15.96 hrs, Volume= 59.635 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.23' @ 15.96 hrs Storage= 2.894 af (2.885 af above start)

Plug-Flow detention time= 21.2 min calculated for 100.835 af (100% of inflow)
Center-of-Mass det. time= 20.8 min (1,200.5 - 1,179.7)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

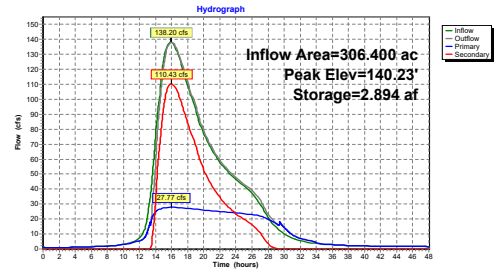
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=27.77 cfs @ 15.96 hrs HW=140.23' TW=132.34' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 27.77 cfs @ 5.29 fps)

Secondary OutFlow Max=110.43 cfs @ 15.96 hrs HW=140.23' TW=132.34' (Dynamic Tailwater)
└**1=Top of Road** (Weir Controls 110.43 cfs @ 1.96 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 3.82" for 200-yr event
Inflow = 158.82 cfs @ 15.70 hrs, Volume= 124.080 af
Outflow = 148.80 cfs @ 16.71 hrs, Volume= 124.079 af, Atten= 6%, Lag= 60.4 min
Primary = 148.80 cfs @ 16.71 hrs, Volume= 124.079 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 132.52' @ 16.71 hrs Storage= 5.361 af

Plug-Flow detention time= 14.4 min calculated for 124.066 af (100% of inflow)
Center-of-Mass det. time= 14.4 min (1,165.0 - 1,150.6)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

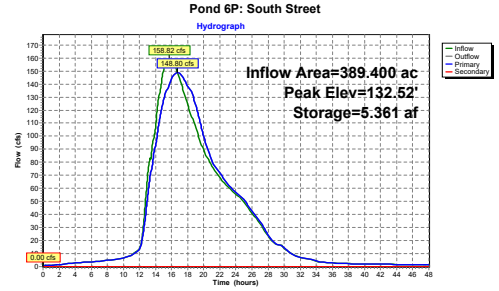
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=148.80 cfs @ 16.71 hrs HW=132.52' (Free Discharge)
└**1=Culvert** (Barrel Controls 148.80 cfs @ 11.84 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

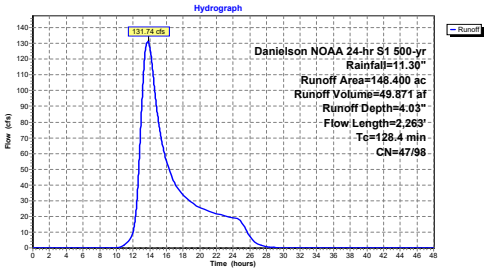
Runoff = 131.74 cfs @ 13.83 hrs, Volume= 49.871 af, Depth= 4.03"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 500-yr Rainfall=11.30"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

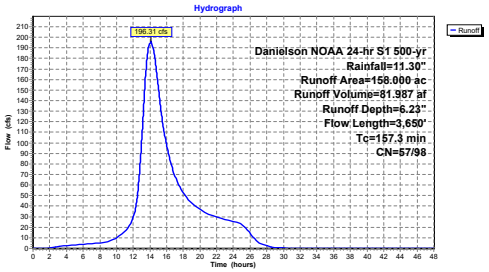
Runoff = 196.31 cfs @ 14.15 hrs, Volume= 81.987 af, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 500-yr Rainfall=11.30"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

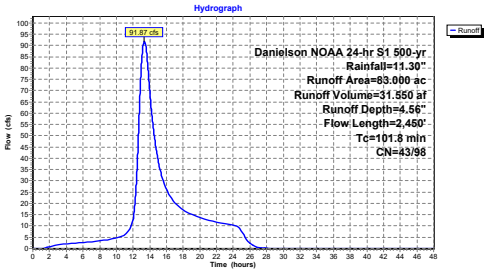
Runoff = 91.87 cfs @ 13.35 hrs, Volume= 31.550 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 500-yr Rainfall=11.30"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 4.19" for 500-yr event
Inflow = 132.24 cfs @ 13.83 hrs, Volume= 51.854 af, Incl. 0.50 cfs Base Flow
Outflow = 70.52 cfs @ 15.37 hrs, Volume= 51.855 af, Atten= 47%, Lag= 92.1 min
Primary = 70.52 cfs @ 15.37 hrs, Volume= 51.855 af
Secondary = 0.00 cfs @ 15.37 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 152.95' @ 15.37 hrs Storage= 13.732 af (13.036 af above start)

Plug-Flow detention time= 140.0 min calculated for 51.153 af (99% of inflow)
Center-of-Mass det. time= 112.4 min (1,134.2 - 1,021.8)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

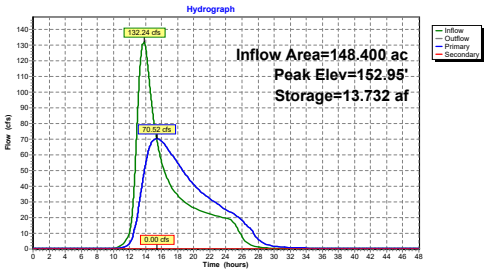
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=70.52 cfs @ 15.37 hrs HW=152.95' TW=148.17' (Dynamic Tailwater)
└─**1=Spillway Weir** (Weir Controls 70.52 cfs @ 7.89 fps)

Secondary OutFlow Max=0.00 cfs @ 15.37 hrs HW=152.95' TW=148.17' (Dynamic Tailwater)
└─**2=Top of Dam** (Weir Controls 0.00 cfs @ 0.22 fps)

Pond 1P: Upstream Dam



Summary for Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.32" for 500-yr event
Inflow = 255.35 cfs @ 14.16 hrs, Volume= 135.826 af, Incl. 0.50 cfs Base Flow
Outflow = 214.83 cfs @ 14.98 hrs, Volume= 135.256 af, Atten= 16%, Lag= 49.1 min
Primary = 169.99 cfs @ 14.92 hrs, Volume= 129.536 af
Tertiary = 47.91 cfs @ 15.25 hrs, Volume= 5.719 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 148.17' @ 15.25 hrs Storage= 48.398 af (24.414 af above start)

Plug-Flow detention time= 294.5 min calculated for 111.271 af (82% of inflow)
Center-of-Mass det. time= 115.6 min (1,159.2 - 1,043.5)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

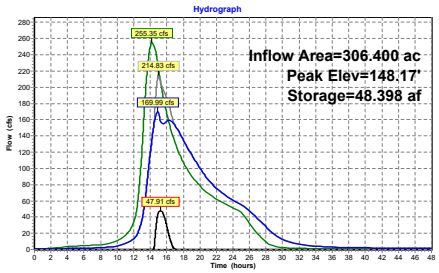
Device	Routing	Invert	Outlet Devices
#1	Device 6	145.60'	**3.8' long SLinplace** 2 End Contraction(s) 4.0' Crest Height
#2	Device 6	142.10'	**3.8' long SLOperated X 0.00** 2 End Contraction(s) 1.2' Crest Height
#3	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#4	Device 6	141.00'	**6.0" Vert. LLO X 0.00** C= 0.600 Limited to weir flow at low heads

#5	Device 6	145.90'	**5.5' long LeftandRightSideWeirs X 2.00** 1 End Contraction(s) 6.0' Crest Height
#6	Primary	141.00'	**72.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 28.27 sf

Primary OutFlow Max=169.95 cfs @ 14.92 hrs HW=148.16' TW=145.73' (Dynamic Tailwater)
└─**6=Outlet Pipe** (Passes 169.95 cfs of 212.11 cfs potential flow)
  ├─**1=SLinplace** (Weir Controls 47.29 cfs @ 5.62 fps)
  ├─**2=SLOperated** (Controls 0.00 cfs)
  ├─**4=LLO** (Controls 0.00 cfs)
  └─**5=LeftandRightSideWeirs** (Weir Controls 122.66 cfs @ 5.14 fps)

Tertiary OutFlow Max=47.91 cfs @ 15.25 hrs HW=148.17' TW=146.60' (Dynamic Tailwater)
└─**3=Top of Dam** (Weir Controls 47.91 cfs @ 1.08 fps)

Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.30" for 500-yr event
Inflow = 214.83 cfs @ 14.98 hrs, Volume= 135.256 af
Outflow = 199.95 cfs @ 15.48 hrs, Volume= 135.255 af, Atten= 7%, Lag= 29.8 min
Primary = 199.95 cfs @ 15.48 hrs, Volume= 135.255 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 146.71' @ 15.48 hrs Storage= 2.875 af (2.868 af above start)

Plug-Flow detention time= 5.6 min calculated for 135.234 af (100% of inflow)
Center-of-Mass det. time= 5.4 min (1,164.6 - 1,159.2)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

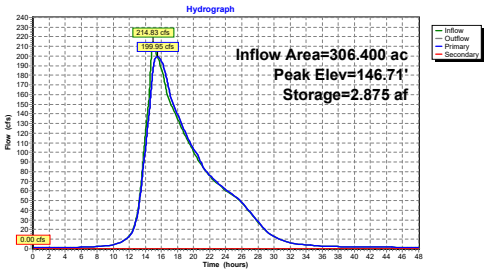
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=199.94 cfs @ 15.48 hrs HW=146.71' TW=140.84' (Dynamic Tailwater)
└─**1=RCP_Round 48"** (Inlet Controls 199.94 cfs @ 15.91 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└─**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.30" for 500-yr event
Inflow = 199.95 cfs @ 15.48 hrs, Volume= 135.255 af
Outflow = 199.94 cfs @ 15.48 hrs, Volume= 135.255 af, Atten= 0%, Lag= 0.4 min
Primary = 199.94 cfs @ 15.48 hrs, Volume= 135.255 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.84' @ 15.50 hrs Storage= 0.181 af (0.172 af above start)

Plug-Flow detention time= 1.0 min calculated for 135.245 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,165.3 - 1,164.6)

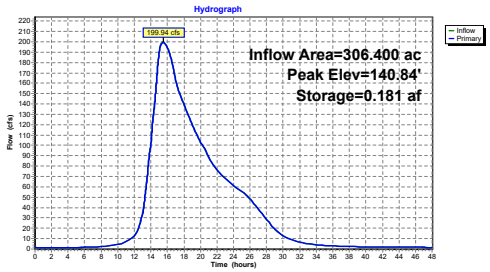
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=199.93 cfs @ 15.48 hrs HW=140.84' TW=140.42' (Dynamic Tailwater)
└─**1=Log Dam** (Weir Controls 199.93 cfs @ 1.84 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.30" for 500-yr event
Inflow = 199.94 cfs @ 15.48 hrs, Volume= 135.255 af
Outflow = 199.91 cfs @ 15.52 hrs, Volume= 135.249 af, Atten= 0%, Lag= 2.1 min
Primary = 29.12 cfs @ 15.52 hrs, Volume= 44.821 af
Secondary = 170.79 cfs @ 15.52 hrs, Volume= 90.428 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.42' @ 15.52 hrs Storage= 3.186 af (3.177 af above start)

Plug-Flow detention time= 18.4 min calculated for 135.225 af (100% of inflow)
Center-of-Mass det. time= 18.1 min (1,183.5 - 1,165.3)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

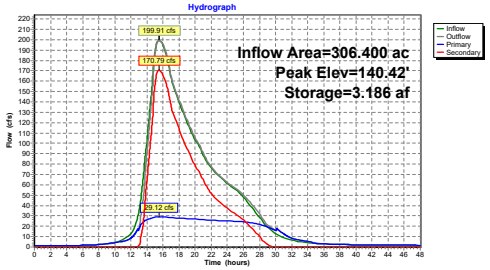
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=29.12 cfs @ 15.52 hrs HW=140.42' TW=133.51' (Dynamic Tailwater)
└─**2=Culvert** (Barrel Controls 29.12 cfs @ 5.55 fps)

Secondary OutFlow Max=170.79 cfs @ 15.52 hrs HW=140.42' TW=133.51' (Dynamic Tailwater)
└─**1=Top of Road** (Weir Controls 170.79 cfs @ 2.30 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 5.14" for 500-yr event
Inflow = 232.36 cfs @ 15.32 hrs, Volume= 166.799 af
Outflow = 230.38 cfs @ 15.57 hrs, Volume= 166.798 af, Atten= 1%, Lag= 15.0 min
Primary = 173.31 cfs @ 15.57 hrs, Volume= 159.123 af
Secondary = 57.07 cfs @ 15.57 hrs, Volume= 7.675 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 133.51' @ 15.57 hrs Storage= 8.001 af

Plug-Flow detention time= 19.3 min calculated for 166.780 af (100% of inflow)
Center-of-Mass det. time= 19.3 min (1,155.4 - 1,136.1)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

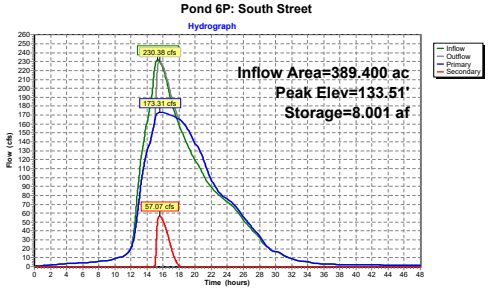
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=173.30 cfs @ 15.57 hrs HW=133.51' (Free Discharge)
└─**1=Culvert** (Barrel Controls 173.30 cfs @ 13.79 fps)

Secondary OutFlow Max=57.07 cfs @ 15.57 hrs HW=133.51' (Free Discharge)
└─**2=Top of Road** (Weir Controls 57.07 cfs @ 1.33 fps)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

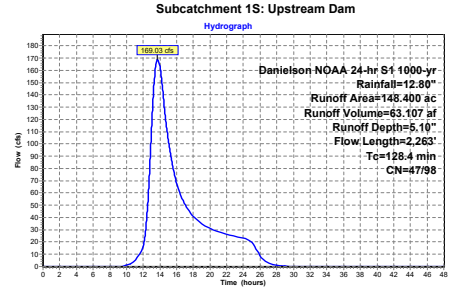
Runoff = 169.03 cfs @ 13.70 hrs, Volume= 63.107 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1000-yr Rainfall=12.80"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

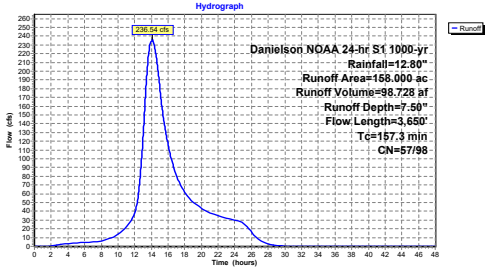
Runoff = 236.54 cfs @ 14.15 hrs, Volume= 98.728 af, Depth= 7.50"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1000-yr Rainfall=12.80"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

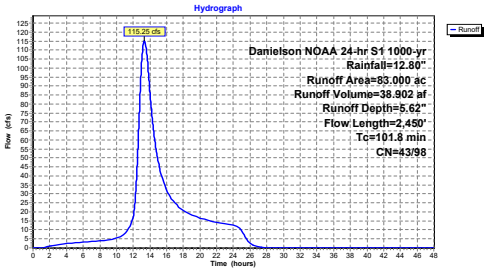
Runoff = 115.25 cfs @ 13.35 hrs, Volume= 38.902 af, Depth= 5.62"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1000-yr Rainfall=12.80"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 5.26" for 1000-yr event
Inflow = 169.53 cfs @ 13.70 hrs, Volume= 65.090 af, Incl. 0.50 cfs Base Flow
Outflow = 84.50 cfs @ 15.46 hrs, Volume= 65.091 af, Atten= 50%, Lag= 105.6 min
Primary = 83.56 cfs @ 15.46 hrs, Volume= 64.939 af
Secondary = 0.94 cfs @ 15.46 hrs, Volume= 0.153 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 153.54' @ 15.46 hrs Storage= 18.306 af (17.609 af above start)

Plug-Flow detention time= 145.5 min calculated for 64.395 af (99% of inflow)
Center-of-Mass det. time= 123.3 min (1,133.2 - 1,010.0)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

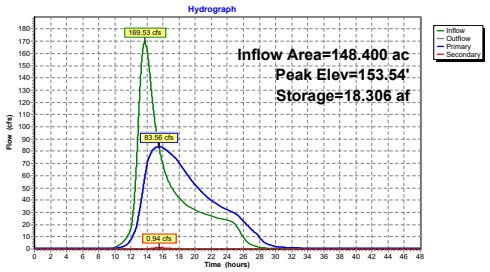
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=83.56 cfs @ 15.46 hrs HW=153.54' TW=148.46' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 83.56 cfs @ 8.64 fps)

Secondary OutFlow Max=0.94 cfs @ 15.46 hrs HW=153.54' TW=148.46' (Dynamic Tailwater)
└**2=Top of Dam** (Weir Controls 0.94 cfs @ 0.83 fps)

Pond 1P: Upstream Dam



Summary for Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.49" for 1000-yr event
Inflow = 310.25 cfs @ 14.16 hrs, Volume= 165.803 af, Incl. 0.50 cfs Base Flow
Outflow = 252.69 cfs @ 14.45 hrs, Volume= 165.212 af, Atten= 19%, Lag= 17.5 min
Primary = 176.57 cfs @ 14.39 hrs, Volume= 130.654 af
Tertiary = 168.88 cfs @ 15.50 hrs, Volume= 34.557 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 145.79' Storage= 23.984 af
Peak Elev= 148.46' @ 15.57 hrs Storage= 52.503 af (28.519 af above start)

Plug-Flow detention time= 258.8 min calculated for 141.227 af (85% of inflow)
Center-of-Mass det. time= 109.7 min (1,150.6 - 1,040.9)

Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

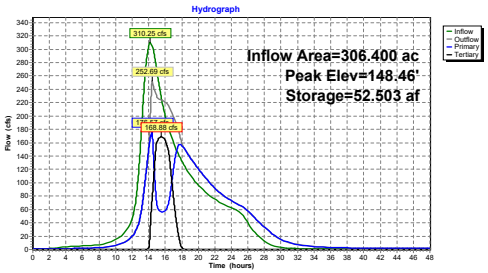
Device	Routing	Invert	Outlet Devices
#1	Device 6	145.60'	**3.8' long SLinplace** 2 End Contraction(s) 4.0' Crest Height
#2	Device 6	142.10'	**3.8' long SLOperated X 0.00** 2 End Contraction(s) 1.2' Crest Height
#3	Tertiary	148.00'	**Top of Dam, C= 2.60** Offset (feet) 0.00 0.00 260.00 260.00 Elev. (feet) 150.00 148.00 148.00 150.00
#4	Device 6	141.00'	**6.0" Vert. LLO X 0.00** C= 0.600 Limited to weir flow at low heads

#5	Device 6	145.90'	**5.5' long LeftandRightSideWeirs X 2.00** 1 End Contraction(s) 6.0' Crest Height
#6	Primary	141.00'	**72.0" Round Outlet Pipe** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 28.27 sf

Primary OutFlow Max=176.30 cfs @ 14.39 hrs HW=148.23' TW=145.93' (Dynamic Tailwater)
└**6=Outlet Pipe** (Passes 176.30 cfs of 206.10 cfs potential flow)
 ├**1=SLinplace** (Weir Controls 48.36 cfs @ 5.62 fps)
 ├**2=SLOperated** (Controls 0.00 cfs)
 ├**4=LLO** (Controls 0.00 cfs)
 └**5=LeftandRightSideWeirs** (Weir Controls 127.94 cfs @ 5.22 fps)

Tertiary OutFlow Max=168.78 cfs @ 15.50 hrs HW=148.46' TW=148.30' (Dynamic Tailwater)
└**3=Top of Dam** (Weir Controls 168.78 cfs @ 1.40 fps)

Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.47" for 1000-yr event
Inflow = 252.69 cfs @ 14.45 hrs, Volume= 165.212 af
Outflow = 224.02 cfs @ 15.58 hrs, Volume= 165.211 af, Atten= 11%, Lag= 68.0 min
Primary = 224.02 cfs @ 15.58 hrs, Volume= 165.211 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 148.30' @ 15.59 hrs Storage= 3.980 af (3.973 af above start)

Plug-Flow detention time= 7.2 min calculated for 165.187 af (100% of inflow)
Center-of-Mass det. time= 7.1 min (1,157.7 - 1,150.6)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

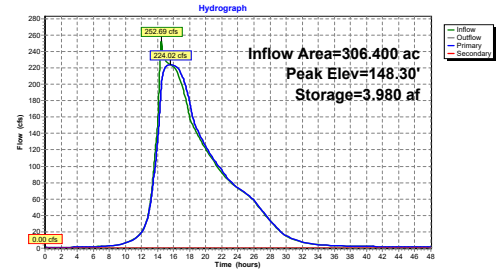
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=224.02 cfs @ 15.58 hrs HW=148.30' TW=140.93' (Dynamic Tailwater)
└**1=RCP_Round 48"** (Inlet Controls 224.02 cfs @ 17.83 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.20' TW=138.20' (Dynamic Tailwater)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.47" for 1000-yr event
Inflow = 224.02 cfs @ 15.58 hrs, Volume= 165.211 af
Outflow = 224.02 cfs @ 15.59 hrs, Volume= 165.211 af, Atten= 0%, Lag= 0.3 min
Primary = 224.02 cfs @ 15.59 hrs, Volume= 165.211 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.93' @ 15.60 hrs Storage= 0.192 af (0.182 af above start)

Plug-Flow detention time= 0.9 min calculated for 165.184 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,158.4 - 1,157.7)

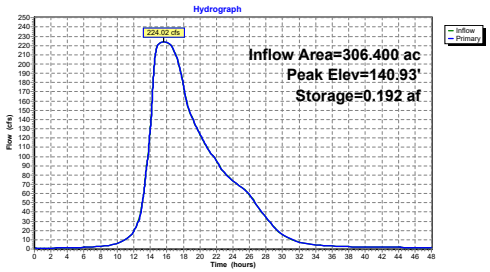
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=224.02 cfs @ 15.59 hrs HW=140.93' TW=140.49' (Dynamic Tailwater)
└**1=Log Dam** (Weir Controls 224.02 cfs @ 1.90 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.47" for 1000-yr event
Inflow = 224.02 cfs @ 15.59 hrs, Volume= 165.211 af
Outflow = 224.01 cfs @ 15.62 hrs, Volume= 165.205 af, Atten= 0%, Lag= 1.9 min
Primary = 29.57 cfs @ 15.62 hrs, Volume= 47.529 af
Secondary = 194.44 cfs @ 15.62 hrs, Volume= 117.675 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.49' @ 15.62 hrs Storage= 3.251 af (3.241 af above start)

Plug-Flow detention time= 16.6 min calculated for 165.195 af (100% of inflow)
Center-of-Mass det. time= 16.4 min (1,174.8 - 1,158.4)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

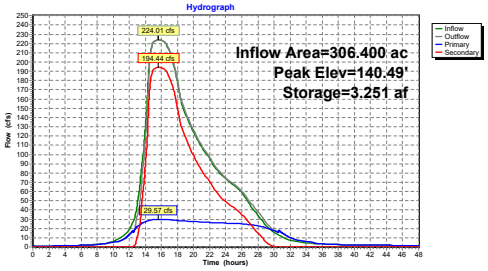
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=29.57 cfs @ 15.62 hrs HW=140.49' TW=133.60' (Dynamic Tailwater)
↳**2=Culvert** (Barrel Controls 29.57 cfs @ 5.63 fps)

Secondary OutFlow Max=194.44 cfs @ 15.62 hrs HW=140.49' TW=133.60' (Dynamic Tailwater)
↳**1=Top of Road** (Weir Controls 194.44 cfs @ 2.41 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 6.29" for 1000-yr event
Inflow = 270.06 cfs @ 14.88 hrs, Volume= 204.107 af
Outflow = 269.39 cfs @ 15.01 hrs, Volume= 204.106 af, Atten= 0%, Lag= 7.9 min
Primary = 175.79 cfs @ 15.01 hrs, Volume= 181.146 af
Secondary = 93.60 cfs @ 15.01 hrs, Volume= 22.960 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 133.62' @ 15.01 hrs Storage= 8.341 af

Plug-Flow detention time= 20.2 min calculated for 204.105 af (100% of inflow)
Center-of-Mass det. time= 20.2 min (1,148.5 - 1,128.3)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

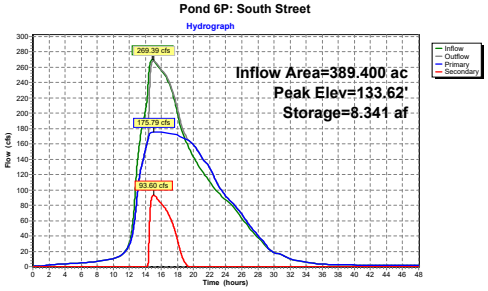
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=175.79 cfs @ 15.01 hrs HW=133.62' (Free Discharge)
↳**1=Culvert** (Barrel Controls 175.79 cfs @ 13.99 fps)

Secondary OutFlow Max=93.60 cfs @ 15.01 hrs HW=133.62' (Free Discharge)
↳**2=Top of Road** (Weir Controls 93.60 cfs @ 1.60 fps)

Pond 6P: South Street



Events for Subcatchment 1S: Upstream Dam

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.79	0.52	0.331	0.03
2-yr	3.43	1.56	1.409	0.11
5-yr	4.46	6.51	4.507	0.36
10-yr	5.32	14.77	8.154	0.66
25-yr	6.50	31.09	14.418	1.17
50-yr	7.37	46.20	19.805	1.60
100-yr	8.32	64.99	26.303	2.13
200-yr	9.48	89.99	34.968	2.83
500-yr	11.30	131.74	49.871	4.03
1000-yr	**12.80**	**169.03**	**63.107**	**5.10**

Events for Subcatchment 2S: Danielson Pond

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.79	11.72	6.386	0.49
2-yr	3.43	18.58	9.791	0.74
5-yr	4.46	34.19	16.558	1.26
10-yr	5.32	50.56	23.153	1.76
25-yr	6.50	76.05	33.258	2.53
50-yr	7.37	96.56	41.321	3.14
100-yr	8.32	119.96	50.595	3.84
200-yr	9.48	149.51	62.457	4.74
500-yr	11.30	196.31	81.987	6.23
1000-yr	**12.80**	**236.54**	**98.728**	**7.50**

Events for Subcatchment 6S: South Street

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.79	8.22	2.664	0.39
2-yr	3.43	10.14	3.571	0.52
5-yr	4.46	13.68	5.659	0.82
10-yr	5.32	18.82	7.903	1.14
25-yr	6.50	28.99	11.588	1.68
50-yr	7.37	38.42	14.681	2.12
100-yr	8.32	50.03	18.366	2.66
200-yr	9.48	65.70	23.236	3.36
500-yr	11.30	91.87	31.550	4.56
1000-yr	**12.80**	**115.25**	**38.902**	**5.62**

Events for Pond 1P: Upstream Dam

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	1.02	0.98	0.98	0.00	149.07	0.765
2-yr	2.06	1.99	1.99	0.00	149.20	0.897
5-yr	7.01	5.93	5.93	0.00	149.57	1.273
10-yr	15.27	12.09	12.09	0.00	150.02	1.759
25-yr	31.59	20.79	20.79	0.00	150.55	3.236
50-yr	46.70	29.51	29.51	0.00	151.02	4.578
100-yr	65.49	37.95	37.95	0.00	151.44	6.480
200-yr	90.49	50.22	50.22	0.00	152.02	9.110
500-yr	132.24	70.52	70.52	0.00	152.95	13.732
1000-yr	**169.53**	**84.50**	**83.56**	**0.94**	**153.54**	**18.306**

Events for Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Tertiary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	12.79	6.42	6.42	0.00	146.07	26.544
2-yr	19.73	11.29	11.29	0.00	146.19	27.541
5-yr	38.09	24.79	24.79	0.00	146.46	29.679
10-yr	60.73	39.81	39.81	0.00	146.70	32.008
25-yr	93.24	63.81	63.81	0.00	147.03	35.301
50-yr	120.93	85.34	85.34	0.00	147.29	37.911
100-yr	152.32	109.15	109.15	0.00	147.56	40.665
200-yr	191.42	139.04	139.04	0.00	147.86	44.350
500-yr	255.35	214.83	169.99	47.91	148.17	48.398
1000-yr	**310.25**	**252.69**	**176.57**	**168.88**	**148.46**	**52.503**

Events for Pond 3P: Homstead Drive

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	6.42	6.42	6.42	**0.00**	138.50	0.012
2-yr	11.29	11.28	11.28	0.00	138.77	0.017
5-yr	24.79	24.63	24.63	0.00	139.69	0.070
10-yr	39.81	39.75	39.75	0.00	140.23	0.128
25-yr	63.81	63.74	63.74	0.00	140.90	0.246
50-yr	85.34	85.22	85.22	0.00	141.43	0.386
100-yr	109.15	108.85	108.85	0.00	142.52	0.762
200-yr	139.04	138.36	138.36	0.00	143.58	1.202
500-yr	214.83	199.95	199.95	0.00	146.71	2.875
1000-yr	**252.69**	**224.02**	**224.02**	0.00	**148.30**	**3.980**

Events for Pond 4P: Log Dam

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	6.42	6.42	138.38	0.013
2-yr	11.28	11.28	138.55	0.016
5-yr	24.63	24.57	139.37	0.045
10-yr	39.75	39.71	139.70	0.064
25-yr	63.74	63.72	140.02	0.090
50-yr	85.22	85.21	140.19	0.106
100-yr	108.85	108.83	140.36	0.125
200-yr	138.36	138.35	140.55	0.147
500-yr	199.95	199.94	140.84	0.181
1000-yr	**224.02**	**224.02**	**140.93**	**0.192**

Events for Pond 5P: Unnamed Road

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	6.42	6.16	6.16	0.00	137.93	0.185
2-yr	11.28	10.99	10.99	0.00	138.36	0.495
5-yr	24.57	24.26	20.17	4.09	139.32	1.236
10-yr	39.71	39.21	23.03	16.18	139.63	1.615
25-yr	63.72	63.53	25.22	38.31	139.89	2.118
50-yr	85.21	85.01	26.18	58.84	140.02	2.361
100-yr	108.83	108.63	26.96	81.67	140.12	2.620
200-yr	138.35	138.20	27.77	110.43	140.23	2.894
500-yr	199.94	199.91	29.12	170.79	140.42	3.186
1000-yr	**224.02**	**224.01**	**29.57**	**194.44**	**140.49**	**3.251**

Events for Pond 6P: South Street

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	10.04	10.04	10.04	0.00	127.70	0.002
2-yr	12.55	12.55	12.55	0.00	127.81	0.003
5-yr	27.74	27.67	27.67	0.00	128.44	0.075
10-yr	44.80	44.60	44.60	0.00	129.02	0.343
25-yr	73.00	71.91	71.91	0.00	129.84	0.991
50-yr	97.68	95.97	95.97	0.00	130.54	1.735
100-yr	124.69	120.87	120.87	0.00	131.31	2.863
200-yr	158.82	148.80	148.80	0.00	132.52	5.361
500-yr	232.36	230.38	173.31	57.07	133.51	8.001
1000-yr	**270.06**	**269.39**	**175.79**	**93.60**	**133.62**	**8.341**

TABLE OF CONTENTS

Project Reports
1 Routing Diagram
2 Rainfall Events Listing

1-yr Event
3 Subcat 1S: Upstream Dam
4 Subcat 2S: Danielson Pond
6 Subcat 6S: South Street
7 Pond 1P: Upstream Dam
9 Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe
11 Pond 3P: Homstead Drive
13 Pond 4P: Log Dam
15 Pond 5P: Unnamed Road
17 Pond 6P: South Street

2-yr Event
20 Subcat 1S: Upstream Dam
21 Subcat 2S: Danielson Pond
23 Subcat 6S: South Street
24 Pond 1P: Upstream Dam
26 Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe
28 Pond 3P: Homstead Drive
30 Pond 4P: Log Dam
32 Pond 5P: Unnamed Road
34 Pond 6P: South Street

5-yr Event
37 Subcat 1S: Upstream Dam
38 Subcat 2S: Danielson Pond
40 Subcat 6S: South Street
41 Pond 1P: Upstream Dam
43 Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe
45 Pond 3P: Homstead Drive
47 Pond 4P: Log Dam
49 Pond 5P: Unnamed Road
51 Pond 6P: South Street

10-yr Event
54 Subcat 1S: Upstream Dam
55 Subcat 2S: Danielson Pond
57 Subcat 6S: South Street
58 Pond 1P: Upstream Dam
60 Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe
62 Pond 3P: Homstead Drive
64 Pond 4P: Log Dam
66 Pond 5P: Unnamed Road
68 Pond 6P: South Street

25-yr Event
71 Subcat 1S: Upstream Dam
72 Subcat 2S: Danielson Pond
74 Subcat 6S: South Street
75 Pond 1P: Upstream Dam
77 Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe
79 Pond 3P: Homstead Drive
81 Pond 4P: Log Dam
83 Pond 5P: Unnamed Road
85 Pond 6P: South Street

50-yr Event
88 Subcat 1S: Upstream Dam
89 Subcat 2S: Danielson Pond
91 Subcat 6S: South Street
92 Pond 1P: Upstream Dam
94 Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe
96 Pond 3P: Homstead Drive
98 Pond 4P: Log Dam
100 Pond 5P: Unnamed Road
102 Pond 6P: South Street

100-yr Event
105 Subcat 1S: Upstream Dam
106 Subcat 2S: Danielson Pond
108 Subcat 6S: South Street
109 Pond 1P: Upstream Dam
111 Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe
113 Pond 3P: Homstead Drive
115 Pond 4P: Log Dam
117 Pond 5P: Unnamed Road
119 Pond 6P: South Street

200-yr Event
122 Subcat 1S: Upstream Dam
123 Subcat 2S: Danielson Pond
125 Subcat 6S: South Street
126 Pond 1P: Upstream Dam
128 Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe
130 Pond 3P: Homstead Drive
132 Pond 4P: Log Dam
134 Pond 5P: Unnamed Road
136 Pond 6P: South Street

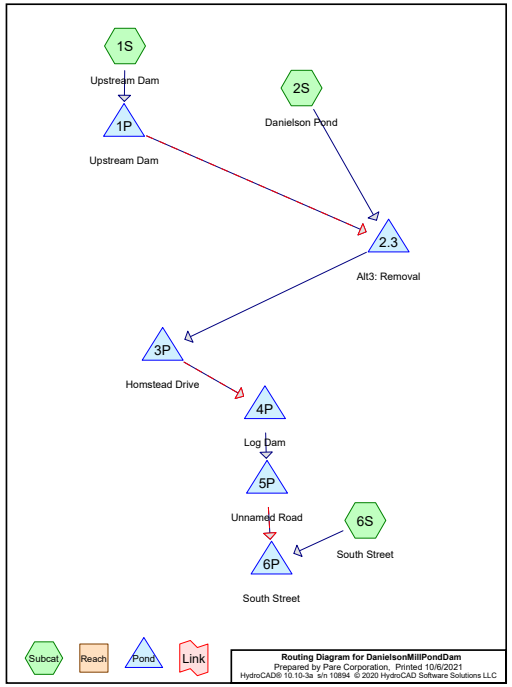
500-yr Event
139 Subcat 1S: Upstream Dam
140 Subcat 2S: Danielson Pond
142 Subcat 6S: South Street
143 Pond 1P: Upstream Dam
145 Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe
147 Pond 3P: Homstead Drive
149 Pond 4P: Log Dam

151 Pond 5P: Unnamed Road
153 Pond 6P: South Street

1000-yr Event
156 Subcat 1S: Upstream Dam
157 Subcat 2S: Danielson Pond
159 Subcat 6S: South Street
160 Pond 1P: Upstream Dam
162 Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe
164 Pond 3P: Homstead Drive
166 Pond 4P: Log Dam
168 Pond 5P: Unnamed Road
170 Pond 6P: South Street

Multi-Event Tables
173 Subcat 1S: Upstream Dam
174 Subcat 2S: Danielson Pond
175 Subcat 6S: South Street
176 Pond 1P: Upstream Dam
177 Pond 2.2.1: Alt2:SpillwayRehab _OutletPipe
178 Pond 3P: Homstead Drive
179 Pond 4P: Log Dam
180 Pond 5P: Unnamed Road
181 Pond 6P: South Street

Danielson Mill Dam Alt 3: Dam Removal



Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Danielson NOAA 24-hr S1	1-yr	Default	24.00	1	2.79	2
2	2-yr	Danielson NOAA 24-hr S1	2-yr	Default	24.00	1	3.43	2
3	5-yr	Danielson NOAA 24-hr S1	5-yr	Default	24.00	1	4.46	2
4	10-yr	Danielson NOAA 24-hr S1	10-yr	Default	24.00	1	5.32	2
5	25-yr	Danielson NOAA 24-hr S1	25-yr	Default	24.00	1	6.50	2
6	50-yr	Danielson NOAA 24-hr S1	50-yr	Default	24.00	1	7.37	2
7	100-yr	Danielson NOAA 24-hr S1	100-yr	Default	24.00	1	8.32	2
8	200-yr	Danielson NOAA 24-hr S1	200-yr	Default	24.00	1	9.48	2
9	500-yr	Danielson NOAA 24-hr S1	500-yr	Default	24.00	1	11.30	2
10	1000-yr	Danielson NOAA 24-hr S1	1000-yr	Default	24.00	1	12.80	2

Summary for Subcatchment 1S: Upstream Dam

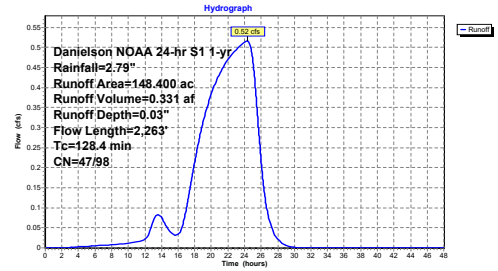
Runoff = 0.52 cfs @ 24.39 hrs, Volume= 0.331 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1-yr Rainfall=2.79"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

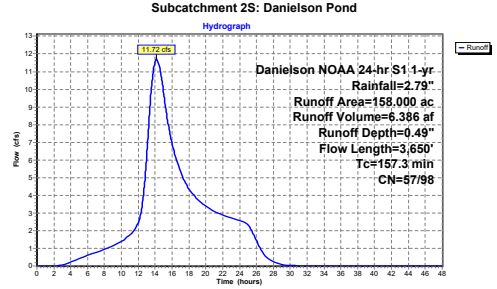
Runoff = 11.72 cfs @ 14.16 hrs, Volume= 6.386 af, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1-yr Rainfall=2.79"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

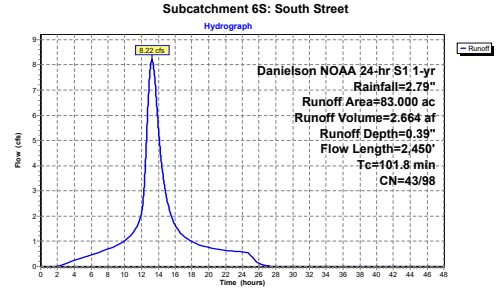
Runoff = 8.22 cfs @ 13.23 hrs, Volume= 2.664 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1-yr Rainfall=2.79"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.19" for 1-yr event
Inflow = 1.02 cfs @ 24.39 hrs, Volume= 2.314 af, Incl. 0.50 cfs Base Flow
Outflow = 0.98 cfs @ 24.95 hrs, Volume= 2.315 af, Atten= 4%, Lag= 33.7 min
Primary = 0.98 cfs @ 24.95 hrs, Volume= 2.315 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 149.07' @ 24.95 hrs Storage= 0.765 af (0.069 af above start)

Plug-Flow detention time= 826.2 min calculated for 1.618 af (70% of inflow)
Center-of-Mass det. time= 13.2 min (1,432.0 - 1,418.8)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

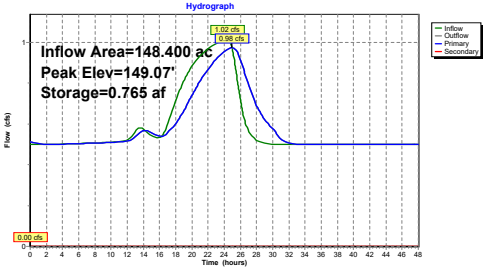
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=0.98 cfs @ 24.95 hrs HW=149.07' TW=141.22' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 0.98 cfs @ 1.53 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=141.50' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.3: Alt3: Removal

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.42" for 1-yr event
Inflow = 12.79 cfs @ 14.16 hrs, Volume= 10.685 af, Incl. 0.50 cfs Base Flow
Outflow = 14.52 cfs @ 0.00 hrs, Volume= 11.598 af, Atten= 0%, Lag= 0.0 min
Primary = 14.52 cfs @ 0.00 hrs, Volume= 11.598 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 141.50' Storage= 2.400 af
Peak Elev= 141.50' @ 0.00 hrs Storage= 2.400 af (0.000 af above start)

Plug-Flow detention time= 356.4 min calculated for 9.198 af (86% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

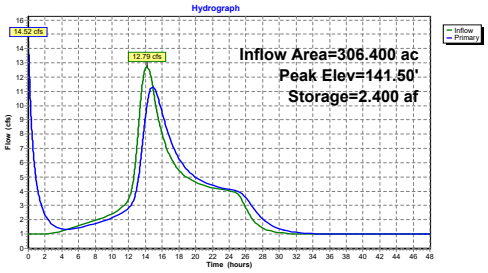
Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	141.00'	**Dam with Breach, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 112.00 127.00 139.00 140.00 172.20 189.20 208.00 235.60 262.00 270.00 Elev. (feet) 148.10 147.20 147.00 147.08 147.10 141.00 141.00 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10

Primary OutFlow Max=14.52 cfs @ 0.00 hrs HW=141.50' TW=138.31' (Dynamic Tailwater)
└**1=Dam with Breach** (Weir Controls 14.52 cfs @ 1.71 fps)

Pond 2.3: Alt3: Removal



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.45" for 1-yr event
Inflow = 14.52 cfs @ 0.00 hrs, Volume= 11.598 af
Outflow = 13.09 cfs @ 0.06 hrs, Volume= 11.598 af, Atten= 10%, Lag= 3.9 min
Primary = 13.09 cfs @ 0.06 hrs, Volume= 11.598 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 138.82' @ 0.07 hrs Storage= 0.019 af (0.013 af above start)

Plug-Flow detention time= 2.6 min calculated for 11.588 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (1,120.9 - 1,120.4)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

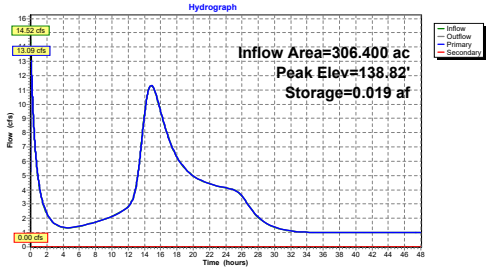
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=13.08 cfs @ 0.06 hrs HW=138.82' TW=138.55' (Dynamic Tailwater)
└**1=RCP_Round 48"** (Outlet Controls 13.08 cfs @ 3.32 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.31' TW=138.24' (Dynamic Tailwater)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.45" for 1-yr event
Inflow = 13.09 cfs @ 0.06 hrs, Volume= 11.598 af
Outflow = 13.08 cfs @ 0.07 hrs, Volume= 11.598 af, Atten= 0%, Lag= 0.3 min
Primary = 13.08 cfs @ 0.07 hrs, Volume= 11.598 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 138.55' @ 0.07 hrs Storage= 0.016 af (0.006 af above start)

Plug-Flow detention time= 2.9 min calculated for 11.587 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (1,121.2 - 1,120.9)

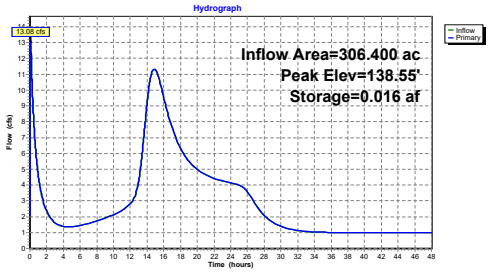
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=13.08 cfs @ 0.07 hrs HW=138.55' TW=137.78' (Dynamic Tailwater)
└**1=Log Dam** (Weir Controls 13.08 cfs @ 1.88 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.45" for 1-yr event
Inflow = 13.08 cfs @ 0.07 hrs, Volume= 11.598 af
Outflow = 10.31 cfs @ 15.62 hrs, Volume= 11.599 af, Atten= 21%, Lag= 933.4 min
Primary = 10.31 cfs @ 15.62 hrs, Volume= 11.599 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 138.30' @ 15.62 hrs Storage= 0.458 af (0.449 af above start)

Plug-Flow detention time= 16.3 min calculated for 11.588 af (100% of inflow)
Center-of-Mass det. time= 14.0 min (1,135.2 - 1,121.2)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

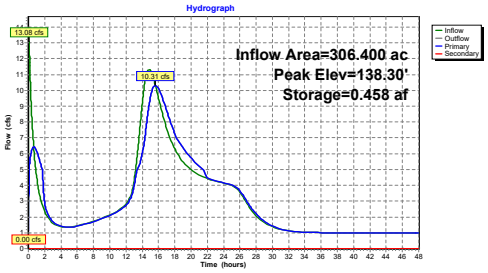
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=10.31 cfs @ 15.62 hrs HW=138.30' TW=127.80' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 10.31 cfs @ 2.80 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=137.28' TW=126.23' (Dynamic Tailwater)
└**1=Top of Road** (Controls 0.00 cfs)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 0.44" for 1-yr event
Inflow = 13.09 cfs @ 13.31 hrs, Volume= 14.262 af
Outflow = 13.09 cfs @ 13.31 hrs, Volume= 14.261 af, Atten= 0%, Lag= 0.1 min
Primary = 13.09 cfs @ 13.31 hrs, Volume= 14.261 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 127.84' @ 13.31 hrs Storage= 0.003 af

Plug-Flow detention time= 0.4 min calculated for 14.261 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (1,082.8 - 1,082.6)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

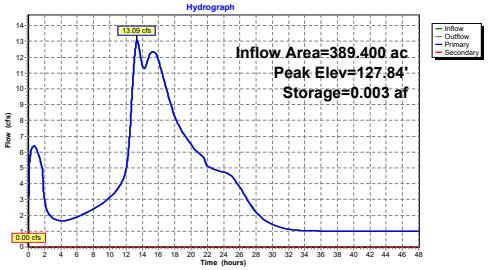
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=13.09 cfs @ 13.31 hrs HW=127.84' (Free Discharge)
└**1=Culvert** (Inlet Controls 13.09 cfs @ 4.81 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

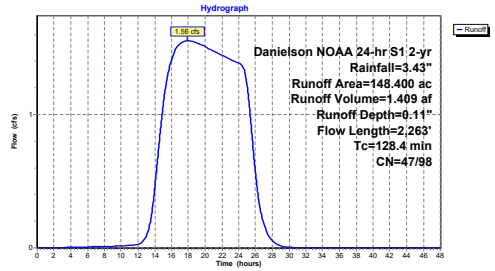
Runoff = 1.56 cfs @ 17.83 hrs, Volume= 1.409 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 2-yr Rainfall=3.43"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

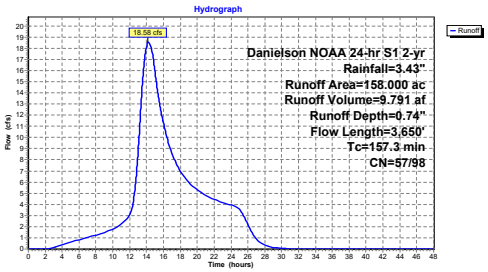
Runoff = 18.58 cfs @ 14.16 hrs, Volume= 9.791 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 2-yr Rainfall=3.43"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

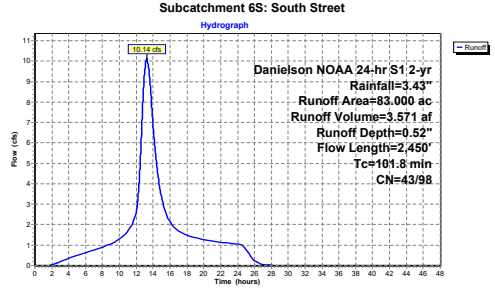
Runoff = 10.14 cfs @ 13.23 hrs, Volume= 3.571 af, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 2-yr Rainfall=3.43"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.27" for 2-yr event
Inflow = 2.06 cfs @ 17.83 hrs, Volume= 3.392 af, Incl. 0.50 cfs Base Flow
Outflow = 1.99 cfs @ 20.71 hrs, Volume= 3.393 af, Atten= 3%, Lag= 172.4 min
Primary = 1.99 cfs @ 20.71 hrs, Volume= 3.393 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 149.20' @ 20.71 hrs Storage= 0.897 af (0.201 af above start)

Plug-Flow detention time= 536.9 min calculated for 2.697 af (79% of inflow)
Center-of-Mass det. time= 40.7 min (1,382.1 - 1,341.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

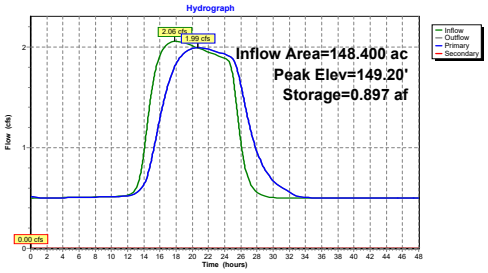
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=1.99 cfs @ 20.71 hrs HW=149.20' TW=141.34' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 1.99 cfs @ 1.96 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=141.50' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.3: Alt3: Removal

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.59" for 2-yr event
Inflow = 19.73 cfs @ 14.16 hrs, Volume= 15.168 af, Incl. 0.50 cfs Base Flow
Outflow = 17.53 cfs @ 14.95 hrs, Volume= 16.081 af, Atten= 11%, Lag= 47.6 min
Primary = 17.53 cfs @ 14.95 hrs, Volume= 16.081 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 141.50' Storage= 2.400 af
Peak Elev= 141.56' @ 14.95 hrs Storage= 2.594 af (0.194 af above start)

Plug-Flow detention time= 257.5 min calculated for 13.681 af (90% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

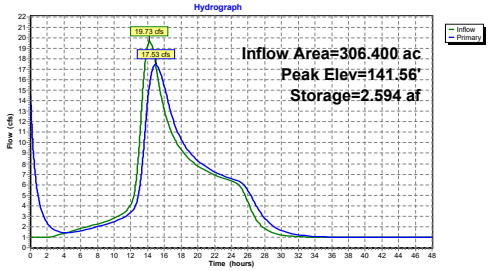
Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	141.00'	**Dam with Breach, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 112.00 127.00 139.00 140.00 172.20 189.20 208.00 235.60 262.00 270.00 Elev. (feet) 148.10 147.20 147.00 147.08 147.10 141.00 141.00 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10

Primary OutFlow Max=17.53 cfs @ 14.95 hrs HW=141.56' TW=139.10' (Dynamic Tailwater)
1=Dam with Breach (Weir Controls 17.53 cfs @ 1.80 fps)

Pond 2.3: Alt3: Removal



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.63" for 2-yr event
Inflow = 17.53 cfs @ 14.95 hrs, Volume= 16.081 af
Outflow = 17.45 cfs @ 14.98 hrs, Volume= 16.081 af, Atten= 0%, Lag= 1.6 min
Primary = 17.45 cfs @ 14.98 hrs, Volume= 16.081 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 139.13' @ 15.38 hrs Storage= 0.036 af (0.030 af above start)

Plug-Flow detention time= 2.2 min calculated for 16.071 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,122.5 - 1,121.8)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

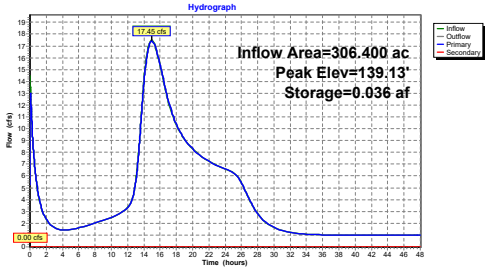
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=17.43 cfs @ 14.98 hrs HW=139.10' TW=138.78' (Dynamic Tailwater)
1=RCP_Round 48" (Outlet Controls 17.43 cfs @ 3.67 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.31' TW=138.24' (Dynamic Tailwater)
2=Top of Road (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.63" for 2-yr event
Inflow = 17.45 cfs @ 14.98 hrs, Volume= 16.081 af
Outflow = 17.42 cfs @ 14.99 hrs, Volume= 16.081 af, Atten= 0%, Lag= 0.4 min
Primary = 17.42 cfs @ 14.99 hrs, Volume= 16.081 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 138.84' @ 15.66 hrs Storage= 0.021 af (0.011 af above start)

Plug-Flow detention time= 2.2 min calculated for 16.069 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (1,122.8 - 1,122.5)

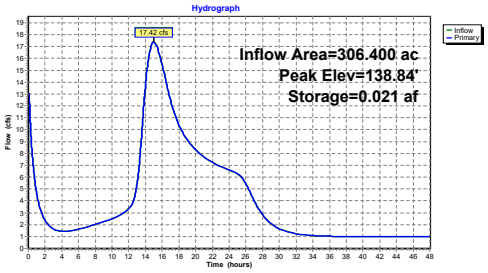
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=17.35 cfs @ 14.99 hrs HW=138.78' TW=138.63' (Dynamic Tailwater)
1=Log Dam (Weir Controls 17.35 cfs @ 1.46 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.63" for 2-yr event
Inflow = 17.42 cfs @ 14.99 hrs, Volume= 16.081 af
Outflow = 16.03 cfs @ 15.78 hrs, Volume= 16.081 af, Atten= 8%, Lag= 47.4 min
Primary = 16.03 cfs @ 15.78 hrs, Volume= 16.081 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 138.74' @ 15.78 hrs Storage= 0.785 af (0.776 af above start)

Plug-Flow detention time= 23.8 min calculated for 16.070 af (100% of inflow)
Center-of-Mass det. time= 22.1 min (1,144.9 - 1,122.8)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

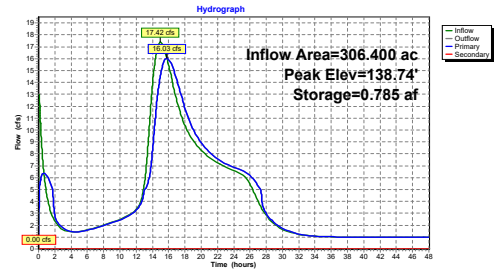
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=16.03 cfs @ 15.78 hrs HW=138.74' TW=128.07' (Dynamic Tailwater)
↳**2=Culvert** (Barrel Controls 16.03 cfs @ 3.32 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=137.28' TW=126.23' (Dynamic Tailwater)
↳**1=Top of Road** (Controls 0.00 cfs)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 0.61" for 2-yr event
Inflow = 18.45 cfs @ 15.52 hrs, Volume= 19.652 af
Outflow = 18.44 cfs @ 15.56 hrs, Volume= 19.651 af, Atten= 0%, Lag= 2.4 min
Primary = 18.44 cfs @ 15.56 hrs, Volume= 19.651 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 128.07' @ 15.56 hrs Storage= 0.013 af

Plug-Flow detention time= 0.3 min calculated for 19.649 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (1,096.4 - 1,096.2)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

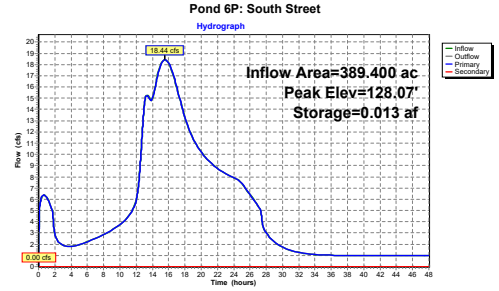
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=18.44 cfs @ 15.56 hrs HW=128.07' (Free Discharge)
↳**1=Culvert** (Barrel Controls 18.44 cfs @ 7.68 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
↳**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

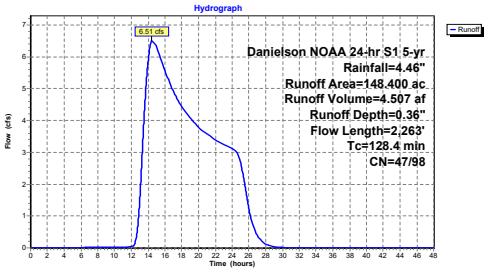
Runoff = 6.51 cfs @ 14.41 hrs, Volume= 4.507 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 5-yr Rainfall=4.46"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

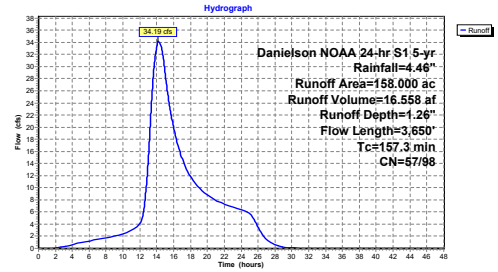
Runoff = 34.19 cfs @ 14.16 hrs, Volume= 16.558 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 5-yr Rainfall=4.46"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

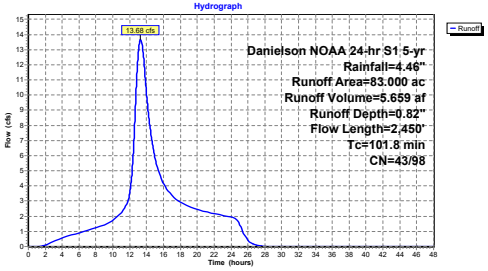
Runoff = 13.68 cfs @ 13.24 hrs, Volume= 5.659 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 5-yr Rainfall=4.46"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.52" for 5-yr event
Inflow = 7.01 cfs @ 14.41 hrs, Volume= 6.490 af, Incl. 0.50 cfs Base Flow
Outflow = 5.93 cfs @ 16.20 hrs, Volume= 6.491 af, Atten= 15%, Lag= 107.1 min
Primary = 5.93 cfs @ 16.20 hrs, Volume= 6.491 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 149.57' @ 16.20 hrs Storage= 1.273 af (0.576 af above start)

Plug-Flow detention time= 291.8 min calculated for 5.794 af (89% of inflow)
Center-of-Mass det. time= 57.7 min (1,276.0 - 1,218.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

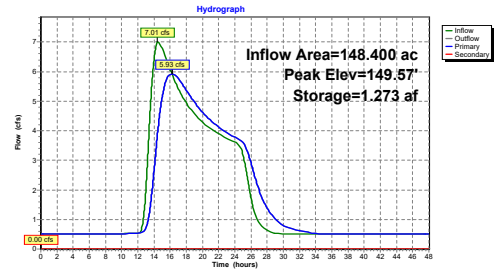
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=5.93 cfs @ 16.20 hrs HW=149.57' TW=141.78' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 5.93 cfs @ 2.87 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=141.50' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.3: Alt3: Removal

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 0.98" for 5-yr event
Inflow = 38.09 cfs @ 14.33 hrs, Volume= 25.033 af, Incl. 0.50 cfs Base Flow
Outflow = 34.49 cfs @ 15.00 hrs, Volume= 25.946 af, Atten= 9%, Lag= 39.7 min
Primary = 34.49 cfs @ 15.00 hrs, Volume= 25.946 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 141.50' Storage= 2.400 af
Peak Elev= 141.87' @ 15.00 hrs Storage= 3.508 af (1.108 af above start)

Plug-Flow detention time= 169.3 min calculated for 23.543 af (94% of inflow)
Center-of-Mass det. time= 4.4 min (1,111.8 - 1,107.4)

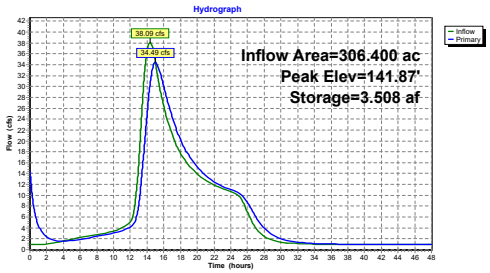
Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	141.00'	**Dam with Breach, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 112.00 127.00 139.00 140.00 172.20 189.20 208.00 235.60 262.00 270.00 Elev. (feet) 148.10 147.20 147.00 147.08 147.10 141.00 141.00 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10

Primary OutFlow Max=34.49 cfs @ 15.00 hrs HW=141.87' TW=140.03' (Dynamic Tailwater)
↳**1=Dam with Breach** (Weir Controls 34.49 cfs @ 2.15 fps)

Pond 2.3: Alt3: Removal



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.02" for 5-yr event
Inflow = 34.49 cfs @ 15.00 hrs, Volume= 25.946 af
Outflow = 34.36 cfs @ 15.07 hrs, Volume= 25.946 af, Atten= 0%, Lag= 4.5 min
Primary = 34.36 cfs @ 15.07 hrs, Volume= 25.946 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 140.04' @ 15.17 hrs Storage= 0.108 af (0.101 af above start)

Plug-Flow detention time= 2.2 min calculated for 25.937 af (100% of inflow)
Center-of-Mass det. time= 1.3 min (1,113.1 - 1,111.8)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

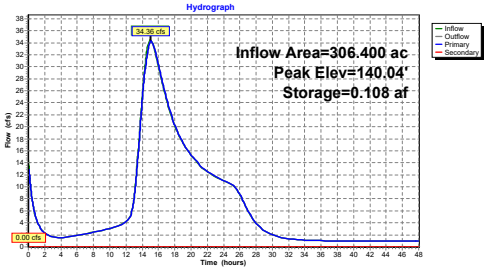
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=34.35 cfs @ 15.07 hrs HW=140.04' TW=139.58' (Dynamic Tailwater)
↳**1=RCP_Round 48"** (Outlet Controls 34.35 cfs @ 4.55 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.31' TW=138.24' (Dynamic Tailwater)
↳**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.02" for 5-yr event
Inflow = 34.36 cfs @ 15.07 hrs, Volume= 25.946 af
Outflow = 34.32 cfs @ 15.07 hrs, Volume= 25.946 af, Atten= 0%, Lag= 0.3 min
Primary = 34.32 cfs @ 15.07 hrs, Volume= 25.946 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 139.59' @ 15.40 hrs Storage= 0.055 af (0.045 af above start)

Plug-Flow detention time= 1.8 min calculated for 25.933 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,113.7 - 1,113.1)

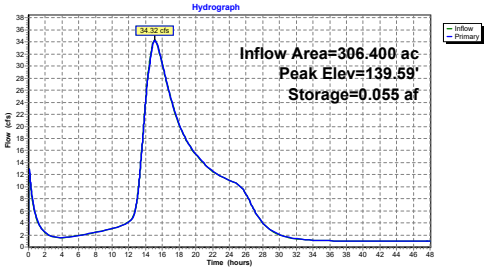
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=34.22 cfs @ 15.07 hrs HW=139.58' TW=139.51' (Dynamic Tailwater)
↳**1=Log Dam** (Weir Controls 34.22 cfs @ 0.97 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.02" for 5-yr event
Inflow = 34.32 cfs @ 15.07 hrs, Volume= 25.946 af
Outflow = 33.18 cfs @ 15.47 hrs, Volume= 25.946 af, Atten= 3%, Lag= 23.9 min
Primary = 22.12 cfs @ 15.47 hrs, Volume= 23.742 af
Secondary = 11.07 cfs @ 15.47 hrs, Volume= 2.204 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 139.52' @ 15.47 hrs Storage= 1.418 af (1.408 af above start)

Plug-Flow detention time= 29.7 min calculated for 25.937 af (100% of inflow)
Center-of-Mass det. time= 28.7 min (1,142.4 - 1,113.7)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

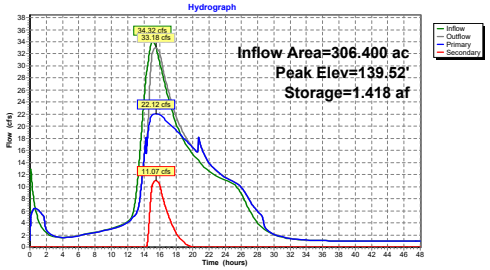
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=22.12 cfs @ 15.47 hrs HW=139.52' TW=128.79' (Dynamic Tailwater)
└─**2=Culvert** (Barrel Controls 22.12 cfs @ 4.21 fps)

Secondary OutFlow Max=11.07 cfs @ 15.47 hrs HW=139.52' TW=128.79' (Dynamic Tailwater)
└─**1=Top of Road** (Weir Controls 11.07 cfs @ 1.16 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 0.97" for 5-yr event
Inflow = 38.22 cfs @ 15.29 hrs, Volume= 31.606 af
Outflow = 37.88 cfs @ 15.56 hrs, Volume= 31.605 af, Atten= 1%, Lag= 16.0 min
Primary = 37.88 cfs @ 15.56 hrs, Volume= 31.605 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 128.80' @ 15.56 hrs Storage= 0.219 af

Plug-Flow detention time= 1.3 min calculated for 31.604 af (100% of inflow)
Center-of-Mass det. time= 1.2 min (1,102.0 - 1,100.7)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

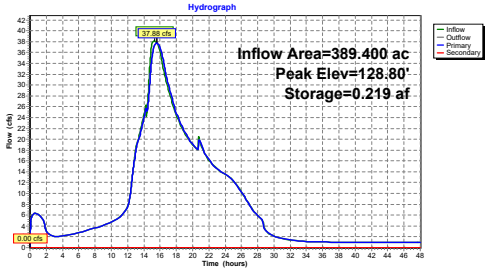
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=37.88 cfs @ 15.56 hrs HW=128.80' (Free Discharge)
└─**1=Culvert** (Barrel Controls 37.88 cfs @ 8.59 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└─**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

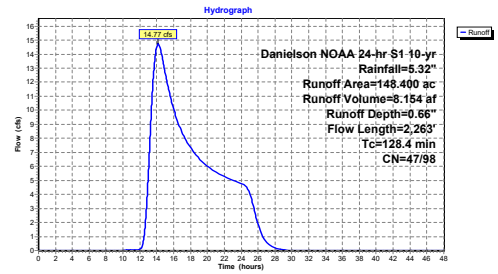
Runoff = 14.77 cfs @ 14.13 hrs, Volume= 8.154 af, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 10-yr Rainfall=5.32"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

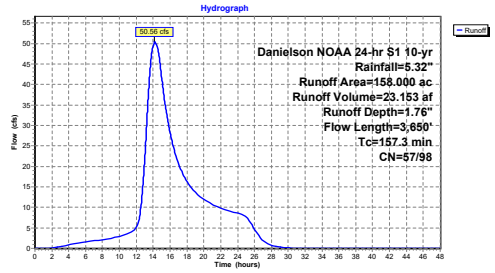
Runoff = 50.56 cfs @ 14.16 hrs, Volume= 23.153 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 10-yr Rainfall=5.32"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

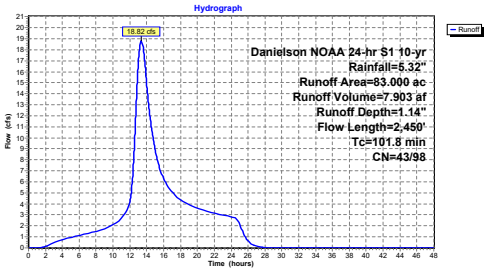
Runoff = 18.82 cfs @ 13.35 hrs, Volume= 7.903 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 10-yr Rainfall=5.32"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 0.82" for 10-yr event
Inflow = 15.27 cfs @ 14.13 hrs, Volume= 10.138 af, Incl. 0.50 cfs Base Flow
Outflow = 12.09 cfs @ 15.37 hrs, Volume= 10.138 af, Atten= 21%, Lag= 74.8 min
Primary = 12.09 cfs @ 15.37 hrs, Volume= 10.138 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 150.02' @ 15.37 hrs Storage= 1.759 af (1.063 af above start)

Plug-Flow detention time= 203.0 min calculated for 9.441 af (93% of inflow)
Center-of-Mass det. time= 58.8 min (1,213.2 - 1,154.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

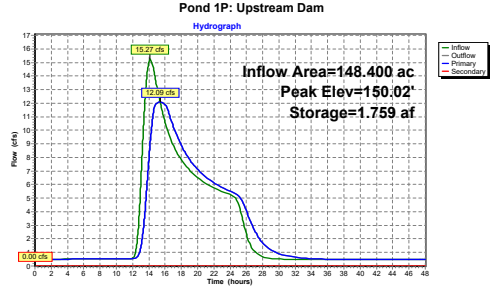
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=12.09 cfs @ 15.37 hrs HW=150.02' TW=142.14' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 12.09 cfs @ 3.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=141.50' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.3: Alt3: Removal

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.38" for 10-yr event
Inflow = 60.73 cfs @ 14.34 hrs, Volume= 35.275 af, Incl. 0.50 cfs Base Flow
Outflow = 55.38 cfs @ 14.94 hrs, Volume= 36.188 af, Atten= 9%, Lag= 36.2 min
Primary = 55.38 cfs @ 14.94 hrs, Volume= 36.188 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 141.50' Storage= 2.400 af
Peak Elev= 142.17' @ 14.94 hrs Storage= 4.476 af (2.076 af above start)

Plug-Flow detention time= 130.6 min calculated for 33.784 af (96% of inflow)
Center-of-Mass det. time= 14.8 min (1,099.9 - 1,085.1)

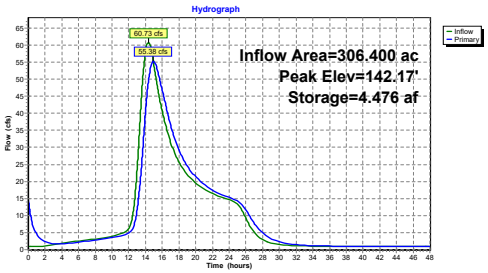
Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	141.00'	**Dam with Breach, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 112.00 127.00 139.00 140.00 172.20 189.20 208.00 235.60 262.00 270.00 Elev. (feet) 148.10 147.20 147.00 147.08 147.10 141.00 141.00 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10

Primary OutFlow Max=55.38 cfs @ 14.94 hrs HW=142.17' TW=140.65' (Dynamic Tailwater)
└**1=Dam with Breach** (Weir Controls 55.38 cfs @ 2.42 fps)

Pond 2.3: Alt3: Removal



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.42" for 10-yr event
Inflow = 55.38 cfs @ 14.94 hrs, Volume= 36.188 af
Outflow = 55.02 cfs @ 15.03 hrs, Volume= 36.188 af, Atten= 1%, Lag= 5.4 min
Primary = 55.02 cfs @ 15.03 hrs, Volume= 36.188 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 140.66' @ 15.12 hrs Storage= 0.188 af (0.182 af above start)

Plug-Flow detention time= 2.3 min calculated for 36.179 af (100% of inflow)
Center-of-Mass det. time= 1.7 min (1,101.6 - 1,099.9)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

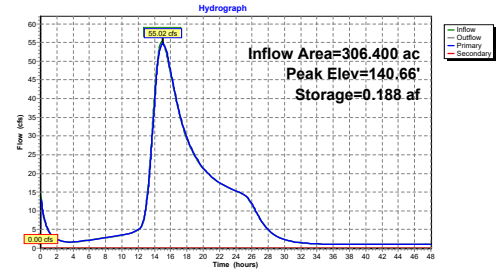
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=55.00 cfs @ 15.03 hrs HW=140.66' TW=139.90' (Dynamic Tailwater)
└**1=RCP_Round 48"** (Outlet Controls 55.00 cfs @ 5.89 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.31' TW=138.24' (Dynamic Tailwater)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.42" for 10-yr event
Inflow = 55.02 cfs @ 15.03 hrs, Volume= 36.188 af
Outflow = 54.91 cfs @ 15.05 hrs, Volume= 36.188 af, Atten= 0%, Lag= 1.0 min
Primary = 54.91 cfs @ 15.05 hrs, Volume= 36.188 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 139.92' @ 15.28 hrs Storage= 0.082 af (0.072 af above start)

Plug-Flow detention time= 1.6 min calculated for 36.174 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,102.4 - 1,101.6)

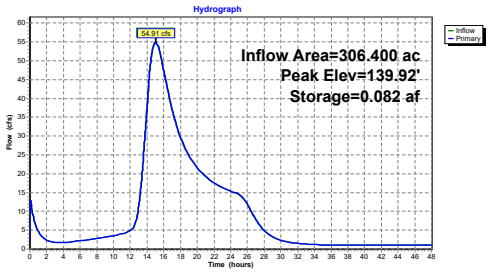
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=54.76 cfs @ 15.05 hrs HW=139.91' TW=139.80' (Dynamic Tailwater)
└**1=Log Dam** (Weir Controls 54.76 cfs @ 1.14 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 1.42" for 10-yr event
Inflow = 54.91 cfs @ 15.05 hrs, Volume= 36.188 af
Outflow = 53.78 cfs @ 15.35 hrs, Volume= 36.189 af, Atten= 2%, Lag= 18.0 min
Primary = 24.59 cfs @ 15.35 hrs, Volume= 28.411 af
Secondary = 29.19 cfs @ 15.35 hrs, Volume= 7.778 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 139.81' @ 15.35 hrs Storage= 1.968 af (1.958 af above start)

Plug-Flow detention time= 29.7 min calculated for 36.175 af (100% of inflow)
Center-of-Mass det. time= 29.0 min (1,131.4 - 1,102.4)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

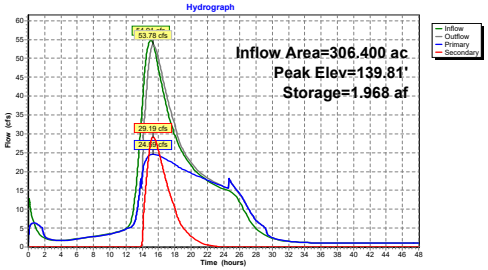
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=24.59 cfs @ 15.35 hrs HW=139.81' TW=129.49' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 24.59 cfs @ 4.68 fps)

Secondary OutFlow Max=29.19 cfs @ 15.35 hrs HW=139.81' TW=129.49' (Dynamic Tailwater)
└**1=Top of Road** (Weir Controls 29.19 cfs @ 1.53 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 1.36" for 10-yr event
Inflow = 61.63 cfs @ 15.26 hrs, Volume= 44.091 af
Outflow = 60.44 cfs @ 15.55 hrs, Volume= 44.090 af, Atten= 2%, Lag= 17.3 min
Primary = 60.44 cfs @ 15.55 hrs, Volume= 44.090 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 129.51' @ 15.55 hrs Storage= 0.690 af

Plug-Flow detention time= 3.3 min calculated for 44.085 af (100% of inflow)
Center-of-Mass det. time= 3.2 min (1,097.2 - 1,094.0)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

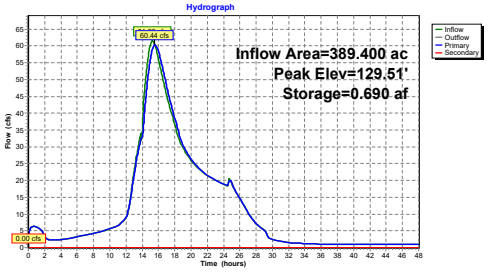
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=60.44 cfs @ 15.55 hrs HW=129.51' (Free Discharge)
└**1=Culvert** (Barrel Controls 60.44 cfs @ 9.27 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

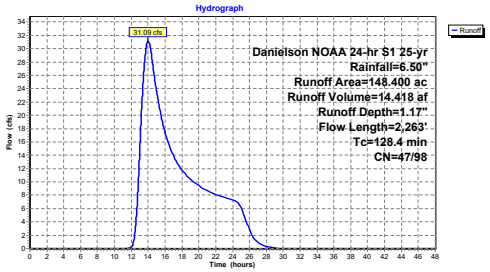
Runoff = 31.09 cfs @ 13.98 hrs, Volume= 14.418 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 25-yr Rainfall=6.50"

	Area (ac)	CN	Description
*	148.400	47	*0.1% imp*
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

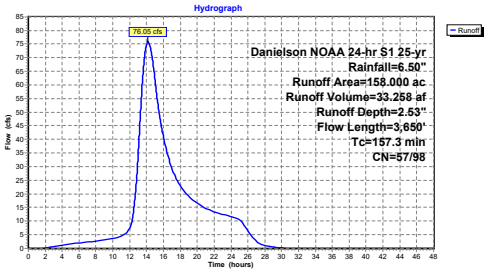
Runoff = 76.05 cfs @ 14.16 hrs, Volume= 33.258 af, Depth= 2.53"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 25-yr Rainfall=6.50"

	Area (ac)	CN	Description
*	158.000	62	*12.6% imp*
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

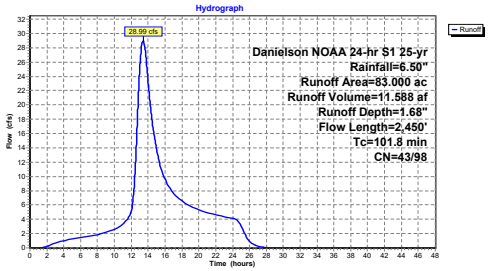
Runoff = 28.99 cfs @ 13.46 hrs, Volume= 11.588 af, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 25-yr Rainfall=6.50"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 1.33" for 25-yr event
Inflow = 31.59 cfs @ 13.98 hrs, Volume= 16.402 af, Incl. 0.50 cfs Base Flow
Outflow = 20.79 cfs @ 15.47 hrs, Volume= 16.403 af, Atten= 34%, Lag= 89.3 min
Primary = 20.79 cfs @ 15.47 hrs, Volume= 16.403 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 150.55' @ 15.47 hrs Storage= 3.236 af (2.539 af above start)

Plug-Flow detention time= 157.8 min calculated for 15.705 af (96% of inflow)
Center-of-Mass det. time= 70.5 min (1,172.6 - 1,102.1)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

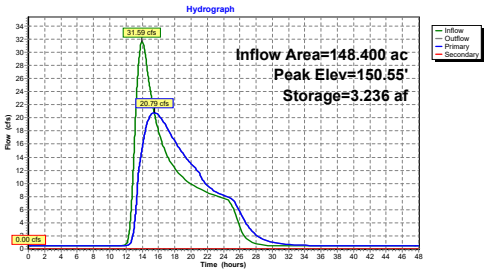
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=20.79 cfs @ 15.47 hrs HW=150.55' TW=142.48' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 20.79 cfs @ 4.60 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=141.50' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.3: Alt3: Removal

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.02" for 25-yr event
Inflow = 93.24 cfs @ 14.33 hrs, Volume= 51.645 af, Incl. 0.50 cfs Base Flow
Outflow = 85.48 cfs @ 14.86 hrs, Volume= 52.558 af, Atten= 8%, Lag= 32.1 min
Primary = 85.48 cfs @ 14.86 hrs, Volume= 52.558 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 141.50' Storage= 2.400 af
Peak Elev= 142.55' @ 14.89 hrs Storage= 5.795 af (3.395 af above start)

Plug-Flow detention time= 100.6 min calculated for 50.152 af (97% of inflow)
Center-of-Mass det. time= 21.9 min (1,089.8 - 1,067.9)

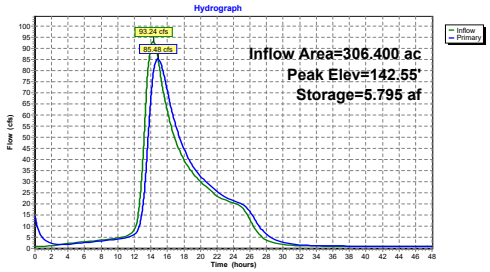
Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	141.00'	**Dam with Breach, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 112.00 127.00 139.00 140.00 172.20 189.20 208.00 235.60 262.00 270.00 Elev. (feet) 148.10 147.20 147.00 147.08 147.10 141.00 141.00 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10

Primary OutFlow Max=85.47 cfs @ 14.86 hrs HW=142.55' TW=141.42' (Dynamic Tailwater)
└**1=Dam with Breach** (Weir Controls 85.47 cfs @ 2.61 fps)

Pond 2.3: Alt3: Removal



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.06" for 25-yr event
Inflow = 85.48 cfs @ 14.86 hrs, Volume= 52.558 af
Outflow = 85.23 cfs @ 14.95 hrs, Volume= 52.558 af, Atten= 0%, Lag= 5.5 min
Primary = 85.23 cfs @ 14.95 hrs, Volume= 52.558 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 141.43' @ 14.97 hrs Storage= 0.385 af (0.379 af above start)

Plug-Flow detention time= 2.6 min calculated for 52.544 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (1,091.9 - 1,089.8)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

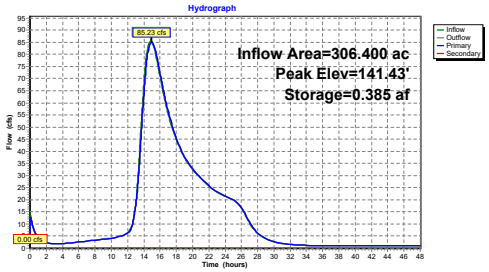
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=85.22 cfs @ 14.95 hrs HW=141.43' TW=140.19' (Dynamic Tailwater)
1=RCP_Round 48" (Outlet Controls 85.22 cfs @ 7.57 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.31' TW=138.24' (Dynamic Tailwater)
2=Top of Road (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.06" for 25-yr event
Inflow = 85.23 cfs @ 14.95 hrs, Volume= 52.558 af
Outflow = 85.19 cfs @ 14.96 hrs, Volume= 52.558 af, Atten= 0%, Lag= 0.6 min
Primary = 85.19 cfs @ 14.96 hrs, Volume= 52.558 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.19' @ 15.04 hrs Storage= 0.106 af (0.096 af above start)

Plug-Flow detention time= 1.4 min calculated for 52.547 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,092.8 - 1,091.9)

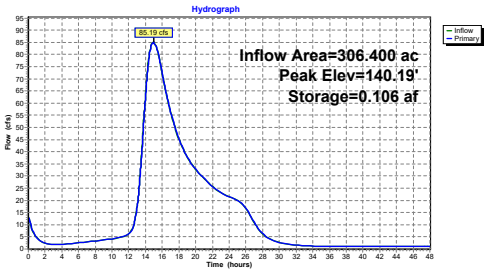
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=85.16 cfs @ 14.96 hrs HW=140.19' TW=140.01' (Dynamic Tailwater)
1=Log Dam (Weir Controls 85.16 cfs @ 1.41 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.06" for 25-yr event
Inflow = 85.19 cfs @ 14.96 hrs, Volume= 52.558 af
Outflow = 84.76 cfs @ 15.11 hrs, Volume= 52.558 af, Atten= 1%, Lag= 9.1 min
Primary = 26.17 cfs @ 15.11 hrs, Volume= 32.877 af
Secondary = 58.59 cfs @ 15.11 hrs, Volume= 19.682 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.01' @ 15.11 hrs Storage= 2.358 af (2.349 af above start)

Plug-Flow detention time= 26.7 min calculated for 52.549 af (100% of inflow)
Center-of-Mass det. time= 26.2 min (1,118.9 - 1,092.8)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

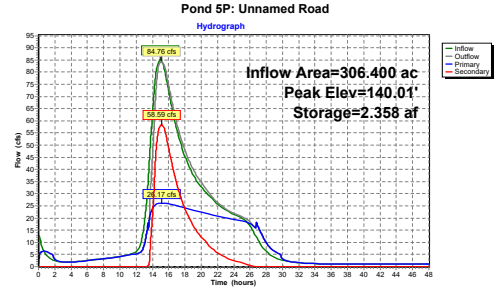
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=26.17 cfs @ 15.11 hrs HW=140.01' TW=130.47' (Dynamic Tailwater)
2=Culvert (Barrel Controls 26.17 cfs @ 4.98 fps)

Secondary OutFlow Max=58.59 cfs @ 15.11 hrs HW=140.01' TW=130.47' (Dynamic Tailwater)
1=Top of Road (Weir Controls 58.59 cfs @ 1.61 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 1.98" for 25-yr event
Inflow = 98.26 cfs @ 14.96 hrs, Volume= 64.146 af
Outflow = 95.01 cfs @ 15.41 hrs, Volume= 64.145 af, Atten= 3%, Lag= 26.5 min
Primary = 95.01 cfs @ 15.41 hrs, Volume= 64.145 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 130.51' @ 15.41 hrs Storage= 1.698 af

Plug-Flow detention time= 6.3 min calculated for 64.145 af (100% of inflow)
Center-of-Mass det. time= 6.3 min (1,091.3 - 1,085.0)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

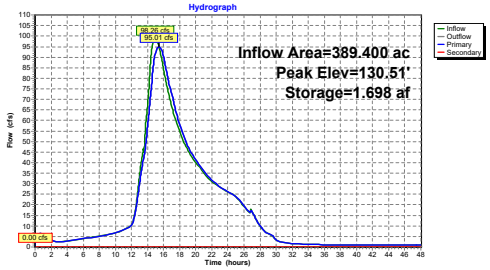
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=95.01 cfs @ 15.41 hrs HW=130.51' (Free Discharge)
└**1=Culvert** (Barrel Controls 95.01 cfs @ 10.06 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

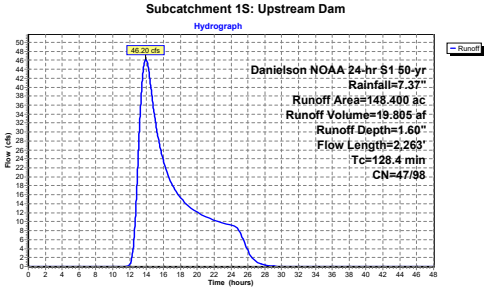
Runoff = 46.20 cfs @ 13.84 hrs, Volume= 19.805 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 50-yr Rainfall=7.37"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

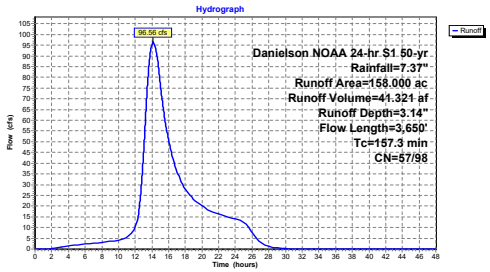
Runoff = 96.56 cfs @ 14.16 hrs, Volume= 41.321 af, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 50-yr Rainfall=7.37"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

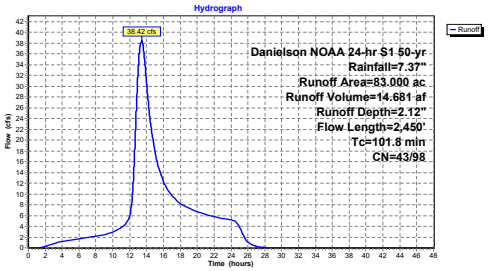
Runoff = 38.42 cfs @ 13.46 hrs, Volume= 14.681 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 50-yr Rainfall=7.37"

	Area (ac)	CN	Description
*	83.000	51	*15% imp*
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 1.76" for 50-yr event
Inflow = 46.70 cfs @ 13.84 hrs, Volume= 21.789 af, Incl. 0.50 cfs Base Flow
Outflow = 29.51 cfs @ 15.35 hrs, Volume= 21.790 af, Atten= 37%, Lag= 90.3 min
Primary = 29.51 cfs @ 15.35 hrs, Volume= 21.790 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 151.02' @ 15.35 hrs Storage= 4.578 af (3.881 af above start)

Plug-Flow detention time= 143.8 min calculated for 21.091 af (97% of inflow)
Center-of-Mass det. time= 78.4 min (1,155.7 - 1,077.3)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

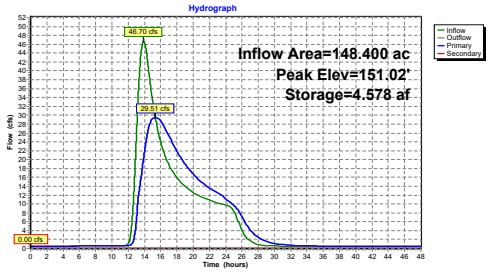
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=29.51 cfs @ 15.35 hrs HW=151.02' TW=142.96' (Dynamic Tailwater)
↳ **1=Spillway Weir** (Weir Controls 29.51 cfs @ 5.30 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=141.50' (Dynamic Tailwater)
↳ **2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.3: Alt3: Removal

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.55" for 50-yr event
Inflow = 120.93 cfs @ 14.33 hrs, Volume= 65.095 af, Incl. 0.50 cfs Base Flow
Outflow = 103.62 cfs @ 14.77 hrs, Volume= 66.007 af, Atten= 14%, Lag= 26.7 min
Primary = 103.62 cfs @ 14.77 hrs, Volume= 66.007 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 141.50' Storage= 2.400 af
Peak Elev= 142.97' @ 15.13 hrs Storage= 7.302 af (4.902 af above start)

Plug-Flow detention time= 88.0 min calculated for 63.601 af (98% of inflow)
Center-of-Mass det. time= 25.7 min (1,085.1 - 1,059.4)

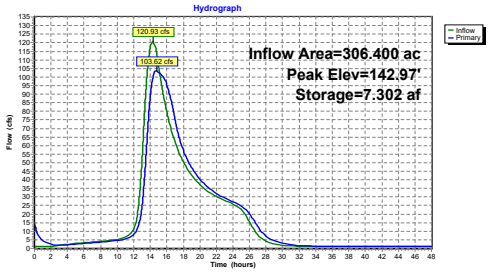
Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	141.00'	**Dam with Breach, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 112.00 127.00 139.00 140.00 172.20 189.20 208.00 235.60 262.00 270.00 Elev. (feet) 148.10 147.20 147.00 147.08 147.10 141.00 141.00 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10

Primary OutFlow Max=103.48 cfs @ 14.77 hrs HW=142.93' TW=142.19' (Dynamic Tailwater)
↳ **1=Dam with Breach** (Weir Controls 103.48 cfs @ 2.38 fps)

Pond 2.3: Alt3: Removal



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.59" for 50-yr event
Inflow = 103.62 cfs @ 14.77 hrs, Volume= 66.007 af
Outflow = 102.30 cfs @ 15.17 hrs, Volume= 66.008 af, Atten= 1%, Lag= 24.0 min
Primary = 102.30 cfs @ 15.17 hrs, Volume= 66.008 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 142.32' @ 15.17 hrs Storage= 0.690 af (0.683 af above start)

Plug-Flow detention time= 3.1 min calculated for 65.992 af (100% of inflow)
Center-of-Mass det. time= 2.7 min (1,087.8 - 1,085.1)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

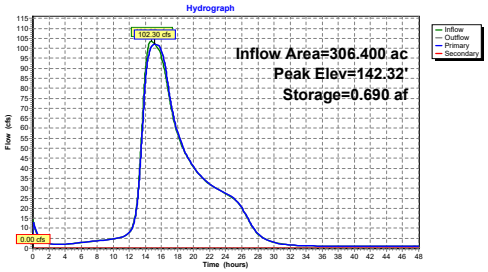
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=102.30 cfs @ 15.17 hrs HW=142.32' TW=140.32' (Dynamic Tailwater)
1=RCP_Round 48" (Barrel Controls 102.30 cfs @ 8.14 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.31' TW=138.24' (Dynamic Tailwater)
2=Top of Road (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.59" for 50-yr event
Inflow = 102.30 cfs @ 15.17 hrs, Volume= 66.008 af
Outflow = 102.29 cfs @ 15.18 hrs, Volume= 66.008 af, Atten= 0%, Lag= 0.5 min
Primary = 102.29 cfs @ 15.18 hrs, Volume= 66.008 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.32' @ 15.23 hrs Storage= 0.120 af (0.110 af above start)

Plug-Flow detention time= 1.3 min calculated for 65.990 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,088.6 - 1,087.8)

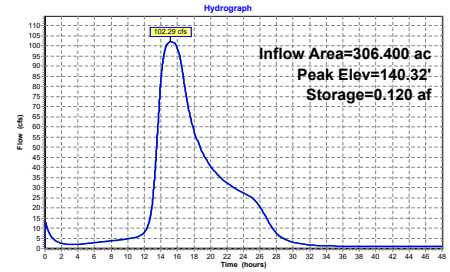
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=102.27 cfs @ 15.18 hrs HW=140.32' TW=140.09' (Dynamic Tailwater)
1=Log Dam (Weir Controls 102.27 cfs @ 1.55 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 2.59" for 50-yr event
Inflow = 102.29 cfs @ 15.18 hrs, Volume= 66.008 af
Outflow = 102.08 cfs @ 15.30 hrs, Volume= 66.008 af, Atten= 0%, Lag= 6.9 min
Primary = 26.76 cfs @ 15.30 hrs, Volume= 35.270 af
Secondary = 75.32 cfs @ 15.30 hrs, Volume= 30.738 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.09' @ 15.30 hrs Storage= 2.553 af (2.544 af above start)

Plug-Flow detention time= 24.3 min calculated for 65.999 af (100% of inflow)
Center-of-Mass det. time= 23.9 min (1,112.5 - 1,088.6)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

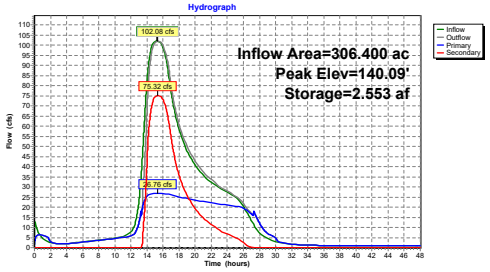
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=26.76 cfs @ 15.30 hrs HW=140.09' TW=131.11' (Dynamic Tailwater)
2=Culvert (Barrel Controls 26.76 cfs @ 5.10 fps)

Secondary OutFlow Max=75.32 cfs @ 15.30 hrs HW=140.09' TW=131.11' (Dynamic Tailwater)
1=Top of Road (Weir Controls 75.32 cfs @ 1.74 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 2.49" for 50-yr event
Inflow = 119.49 cfs @ 14.83 hrs, Volume= 80.689 af
Outflow = 115.35 cfs @ 15.64 hrs, Volume= 80.688 af, Atten= 3%, Lag= 48.4 min
Primary = 115.35 cfs @ 15.64 hrs, Volume= 80.688 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 131.13' @ 15.64 hrs Storage= 2.576 af

Plug-Flow detention time= 8.8 min calculated for 80.688 af (100% of inflow)
Center-of-Mass det. time= 8.7 min (1,088.7 - 1,079.9)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

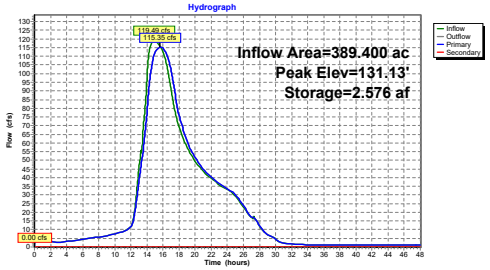
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=115.35 cfs @ 15.64 hrs HW=131.13' (Free Discharge)
└**1=Culvert** (Barrel Controls 115.35 cfs @ 10.47 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

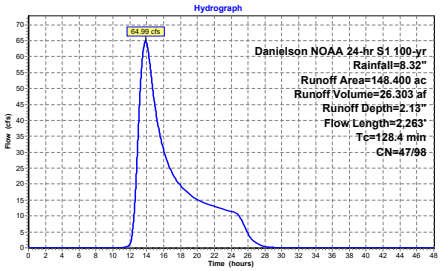
Runoff = 64.99 cfs @ 13.84 hrs, Volume= 26.303 af, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 100-yr Rainfall=8.32"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

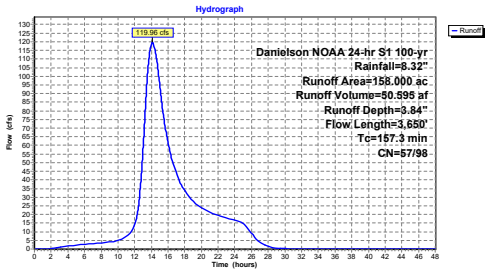
Runoff = 119.96 cfs @ 14.16 hrs, Volume= 50.595 af, Depth= 3.84"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 100-yr Rainfall=8.32"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

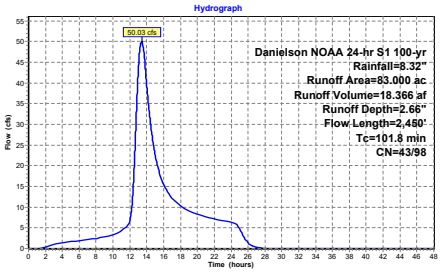
Runoff = 50.03 cfs @ 13.46 hrs, Volume= 18.366 af, Depth= 2.66"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 100-yr Rainfall=8.32"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 2.29" for 100-yr event
Inflow = 65.49 cfs @ 13.84 hrs, Volume= 28.287 af, Incl. 0.50 cfs Base Flow
Outflow = 37.95 cfs @ 15.41 hrs, Volume= 28.288 af, Atten= 42%, Lag= 94.1 min
Primary = 37.95 cfs @ 15.41 hrs, Volume= 28.288 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 151.44' @ 15.41 hrs Storage= 6.480 af (5.783 af above start)

Plug-Flow detention time= 139.1 min calculated for 27.588 af (98% of inflow)
Center-of-Mass det. time= 88.9 min (1,146.7 - 1,057.8)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

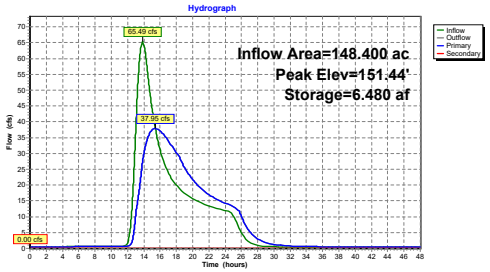
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=37.95 cfs @ 15.41 hrs HW=151.44' TW=143.48' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 37.95 cfs @ 5.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=141.50' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.3: Alt3: Removal

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.17" for 100-yr event
Inflow = 152.32 cfs @ 14.16 hrs, Volume= 80.867 af, Incl. 0.50 cfs Base Flow
Outflow = 123.74 cfs @ 15.06 hrs, Volume= 81.779 af, Atten= 19%, Lag= 54.0 min
Primary = 123.74 cfs @ 15.06 hrs, Volume= 81.779 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 141.50' Storage= 2.400 af
Peak Elev= 143.49' @ 15.23 hrs Storage= 9.539 af (7.139 af above start)

Plug-Flow detention time= 80.4 min calculated for 79.371 af (98% of inflow)
Center-of-Mass det. time= 30.2 min (1,083.8 - 1,053.6)

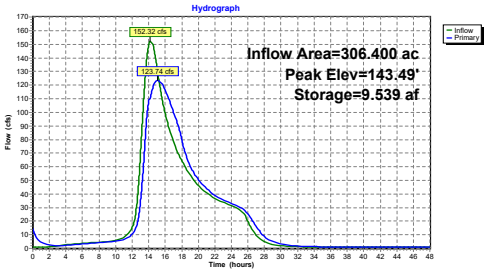
Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	141.00'	**Dam with Breach, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 112.00 127.00 139.00 140.00 172.20 189.20 208.00 235.60 262.00 270.00 Elev. (feet) 148.10 147.20 147.00 147.08 147.10 141.00 141.00 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10

Primary OutFlow Max=123.64 cfs @ 15.06 hrs HW=143.48' TW=142.99' (Dynamic Tailwater)
└**1=Dam with Breach** (Weir Controls 123.64 cfs @ 2.02 fps)

Pond 2.3: Alt3: Removal



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.20" for 100-yr event
Inflow = 123.74 cfs @ 15.06 hrs, Volume= 81.779 af
Outflow = 123.26 cfs @ 15.27 hrs, Volume= 81.780 af, Atten= 0%, Lag= 12.2 min
Primary = 123.26 cfs @ 15.27 hrs, Volume= 81.780 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 143.00' @ 15.27 hrs Storage= 0.953 af (0.947 af above start)

Plug-Flow detention time= 3.7 min calculated for 81.762 af (100% of inflow)
Center-of-Mass det. time= 3.4 min (1,087.2 - 1,083.8)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

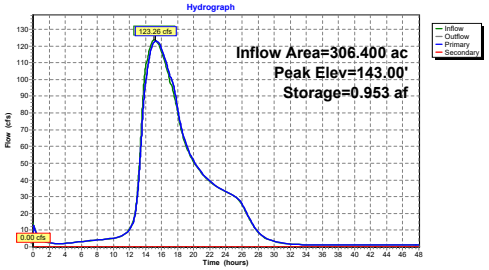
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=123.26 cfs @ 15.27 hrs HW=143.00' TW=140.45' (Dynamic Tailwater)
└**1=RCP_Round 48"** (Barrel Controls 123.26 cfs @ 9.81 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.31' TW=138.24' (Dynamic Tailwater)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.20" for 100-yr event
Inflow = 123.26 cfs @ 15.27 hrs, Volume= 81.780 af
Outflow = 123.25 cfs @ 15.28 hrs, Volume= 81.780 af, Atten= 0%, Lag= 0.6 min
Primary = 123.25 cfs @ 15.28 hrs, Volume= 81.780 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.45' @ 15.33 hrs Storage= 0.136 af (0.127 af above start)

Plug-Flow detention time= 1.2 min calculated for 81.761 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,088.0 - 1,087.2)

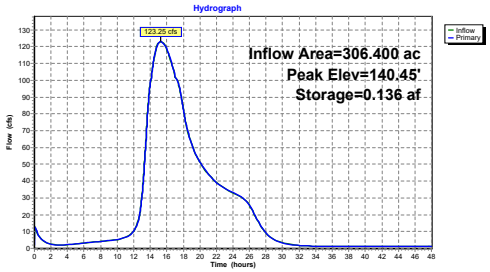
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=123.24 cfs @ 15.28 hrs HW=140.45' TW=140.18' (Dynamic Tailwater)
↳**1=Log Dam** (Weir Controls 123.24 cfs @ 1.70 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.20" for 100-yr event
Inflow = 123.25 cfs @ 15.28 hrs, Volume= 81.780 af
Outflow = 123.09 cfs @ 15.40 hrs, Volume= 81.780 af, Atten= 0%, Lag= 7.3 min
Primary = 27.38 cfs @ 15.40 hrs, Volume= 37.588 af
Secondary = 95.71 cfs @ 15.40 hrs, Volume= 44.192 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.18' @ 15.40 hrs Storage= 2.759 af (2.750 af above start)

Plug-Flow detention time= 22.3 min calculated for 81.771 af (100% of inflow)
Center-of-Mass det. time= 22.0 min (1,110.0 - 1,088.0)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

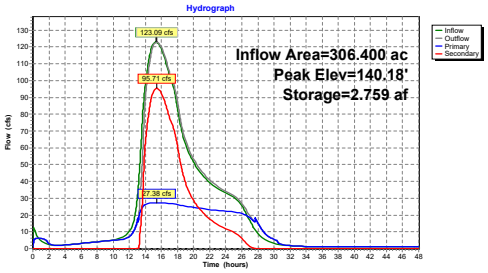
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=27.38 cfs @ 15.40 hrs HW=140.18' TW=131.85' (Dynamic Tailwater)
↳**2=Culvert** (Barrel Controls 27.38 cfs @ 5.21 fps)

Secondary OutFlow Max=95.71 cfs @ 15.40 hrs HW=140.18' TW=131.85' (Dynamic Tailwater)
↳**1=Top of Road** (Weir Controls 95.71 cfs @ 1.86 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 3.09" for 100-yr event
Inflow = 143.52 cfs @ 15.05 hrs, Volume= 100.147 af
Outflow = 135.79 cfs @ 15.96 hrs, Volume= 100.145 af, Atten= 5%, Lag= 54.3 min
Primary = 135.79 cfs @ 15.96 hrs, Volume= 100.145 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 131.94' @ 15.96 hrs Storage= 4.054 af

Plug-Flow detention time= 11.9 min calculated for 100.135 af (100% of inflow)
Center-of-Mass det. time= 11.9 min (1,089.7 - 1,077.7)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

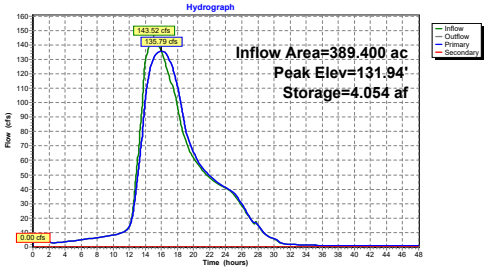
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=135.79 cfs @ 15.96 hrs HW=131.94' (Free Discharge)
└**1=Culvert** (Barrel Controls 135.79 cfs @ 10.89 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

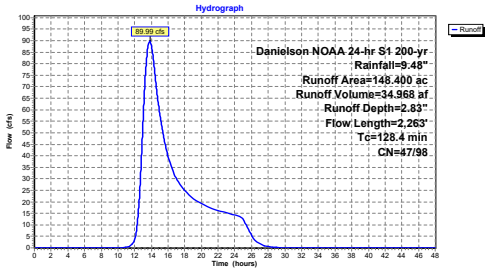
Runoff = 89.99 cfs @ 13.84 hrs, Volume= 34.968 af, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 200-yr Rainfall=9.48"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

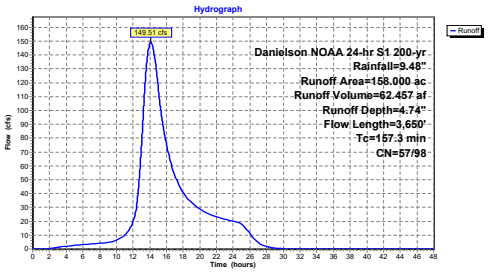
Runoff = 149.51 cfs @ 14.16 hrs, Volume= 62.457 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 200-yr Rainfall=9.48"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

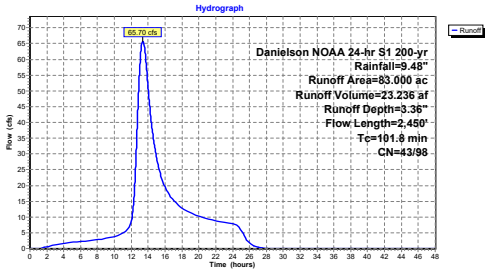
Runoff = 65.70 cfs @ 13.35 hrs, Volume= 23.236 af, Depth= 3.36"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 200-yr Rainfall=9.48"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 2.99" for 200-yr event
Inflow = 90.49 cfs @ 13.84 hrs, Volume= 36.952 af, Incl. 0.50 cfs Base Flow
Outflow = 50.22 cfs @ 15.39 hrs, Volume= 36.953 af, Atten= 44%, Lag= 92.9 min
Primary = 50.22 cfs @ 15.39 hrs, Volume= 36.953 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 152.02' @ 15.39 hrs Storage= 9.110 af (8.414 af above start)

Plug-Flow detention time= 138.2 min calculated for 36.253 af (98% of inflow)
Center-of-Mass det. time= 99.6 min (1,140.0 - 1,040.4)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

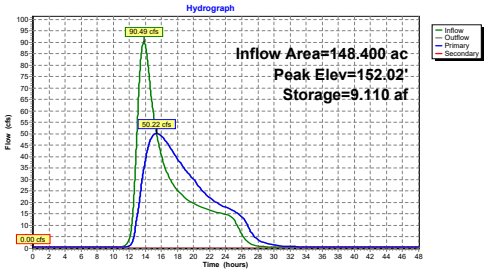
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=50.22 cfs @ 15.39 hrs HW=152.02' TW=144.17' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 50.22 cfs @ 6.69 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.99' TW=141.50' (Dynamic Tailwater)
└**2=Top of Dam** (Controls 0.00 cfs)

Pond 1P: Upstream Dam



Summary for Pond 2.3: Alt3: Removal

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 3.97" for 200-yr event
Inflow = 191.42 cfs @ 14.16 hrs, Volume= 101.393 af, Incl. 0.50 cfs Base Flow
Outflow = 145.24 cfs @ 15.20 hrs, Volume= 102.306 af, Atten= 24%, Lag= 62.3 min
Primary = 145.24 cfs @ 15.20 hrs, Volume= 102.306 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 141.50' Storage= 2.400 af
Peak Elev= 144.17' @ 15.47 hrs Storage= 13.034 af (10.634 af above start)

Plug-Flow detention time= 76.7 min calculated for 99.906 af (99% of inflow)
Center-of-Mass det. time= 36.4 min (1,085.1 - 1,048.7)

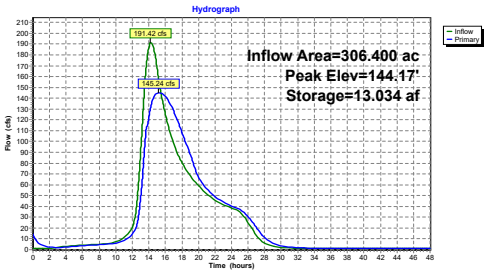
Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	141.00'	**Dam with Breach, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 112.00 127.00 139.00 140.00 172.20 189.20 208.00 235.60 262.00 270.00 Elev. (feet) 148.10 147.20 147.00 147.08 147.10 141.00 141.00 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10

Primary OutFlow Max=145.04 cfs @ 15.20 hrs HW=144.15' TW=143.81' (Dynamic Tailwater)
1=Dam with Breach (Weir Controls 145.04 cfs @ 1.68 fps)

Pond 2.3: Alt3: Removal



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 4.01" for 200-yr event
Inflow = 145.24 cfs @ 15.20 hrs, Volume= 102.306 af
Outflow = 144.75 cfs @ 15.49 hrs, Volume= 102.306 af, Atten= 0%, Lag= 17.4 min
Primary = 144.75 cfs @ 15.49 hrs, Volume= 102.306 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 143.84' @ 15.49 hrs Storage= 1.325 af (1.318 af above start)

Plug-Flow detention time= 4.4 min calculated for 102.287 af (100% of inflow)
Center-of-Mass det. time= 4.1 min (1,089.2 - 1,085.1)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

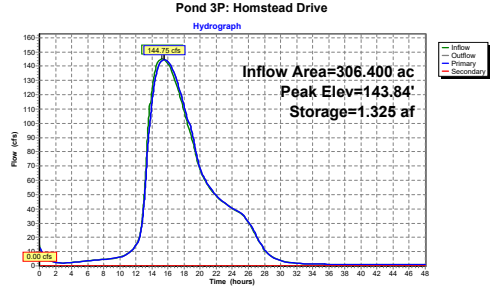
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=144.75 cfs @ 15.49 hrs HW=143.84' TW=140.58' (Dynamic Tailwater)
1=RCP_Round 48" (Barrel Controls 144.75 cfs @ 11.52 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.31' TW=138.24' (Dynamic Tailwater)
2=Top of Road (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 4.01" for 200-yr event
Inflow = 144.75 cfs @ 15.49 hrs, Volume= 102.306 af
Outflow = 144.74 cfs @ 15.50 hrs, Volume= 102.307 af, Atten= 0%, Lag= 0.5 min
Primary = 144.74 cfs @ 15.50 hrs, Volume= 102.307 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.58' @ 15.54 hrs Storage= 0.151 af (0.142 af above start)

Plug-Flow detention time= 1.1 min calculated for 102.296 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,090.0 - 1,089.2)

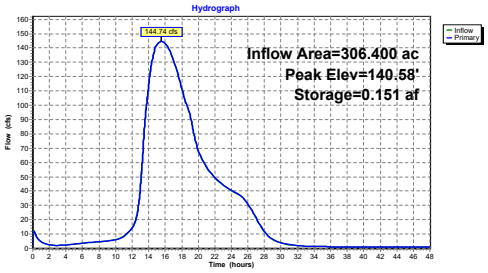
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=144.74 cfs @ 15.50 hrs HW=140.58' TW=140.25' (Dynamic Tailwater)
1=Log Dam (Weir Controls 144.74 cfs @ 1.79 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 4.01" for 200-yr event
Inflow = 144.74 cfs @ 15.50 hrs, Volume= 102.307 af
Outflow = 144.66 cfs @ 15.60 hrs, Volume= 102.307 af, Atten= 0%, Lag= 6.4 min
Primary = 27.93 cfs @ 15.60 hrs, Volume= 40.157 af
Secondary = 116.73 cfs @ 15.60 hrs, Volume= 62.150 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.25' @ 15.60 hrs Storage= 2.949 af (2.940 af above start)

Plug-Flow detention time= 20.4 min calculated for 102.297 af (100% of inflow)
Center-of-Mass det. time= 20.1 min (1,110.1 - 1,090.0)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

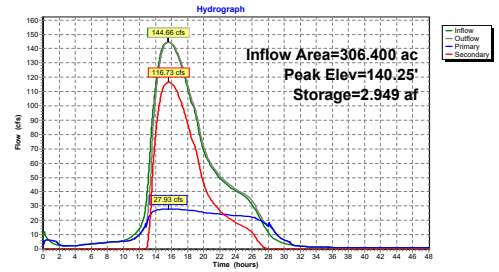
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=27.93 cfs @ 15.60 hrs HW=140.25' TW=132.84' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 27.93 cfs @ 5.32 fps)

Secondary OutFlow Max=116.73 cfs @ 15.60 hrs HW=140.25' TW=132.84' (Dynamic Tailwater)
└**1=Top of Road** (Weir Controls 116.73 cfs @ 2.00 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 3.87" for 200-yr event
Inflow = 170.00 cfs @ 14.98 hrs, Volume= 125.543 af
Outflow = 159.76 cfs @ 16.29 hrs, Volume= 125.542 af, Atten= 6%, Lag= 78.2 min
Primary = 159.76 cfs @ 16.29 hrs, Volume= 125.542 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 132.94' @ 16.29 hrs Storage= 6.455 af

Plug-Flow detention time= 17.0 min calculated for 125.542 af (100% of inflow)
Center-of-Mass det. time= 17.0 min (1,094.5 - 1,077.5)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

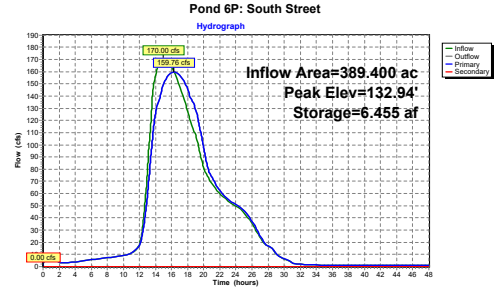
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=159.76 cfs @ 16.29 hrs HW=132.94' (Free Discharge)
└**1=Culvert** (Barrel Controls 159.76 cfs @ 12.71 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.23' (Free Discharge)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

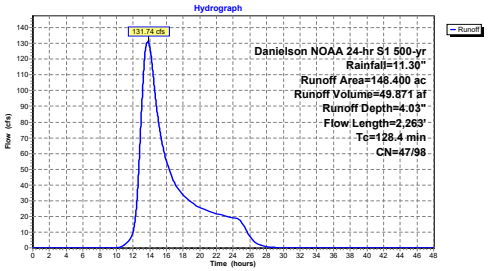
Runoff = 131.74 cfs @ 13.83 hrs, Volume= 49.871 af, Depth= 4.03"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 500-yr Rainfall=11.30"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

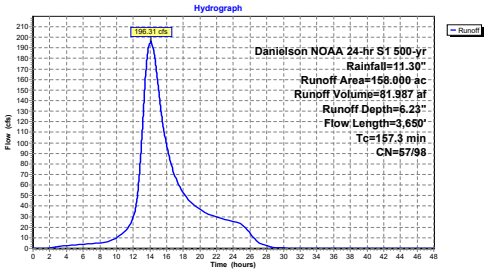
Runoff = 196.31 cfs @ 14.15 hrs, Volume= 81.987 af, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 500-yr Rainfall=11.30"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

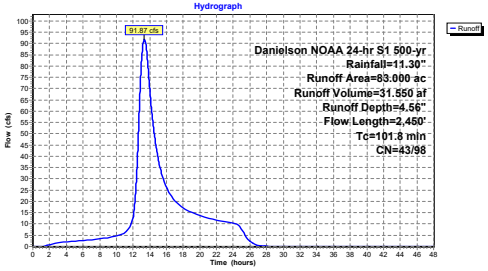
Runoff = 91.87 cfs @ 13.35 hrs, Volume= 31.550 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 500-yr Rainfall=11.30"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 4.19" for 500-yr event
Inflow = 132.24 cfs @ 13.83 hrs, Volume= 51.854 af, Incl. 0.50 cfs Base Flow
Outflow = 70.52 cfs @ 15.37 hrs, Volume= 51.855 af, Atten= 47%, Lag= 92.1 min
Primary = 70.52 cfs @ 15.37 hrs, Volume= 51.855 af
Secondary = 0.00 cfs @ 15.37 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 152.95' @ 15.37 hrs Storage= 13.732 af (13.036 af above start)

Plug-Flow detention time= 140.0 min calculated for 51.153 af (99% of inflow)
Center-of-Mass det. time= 112.4 min (1,134.2 - 1,021.8)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

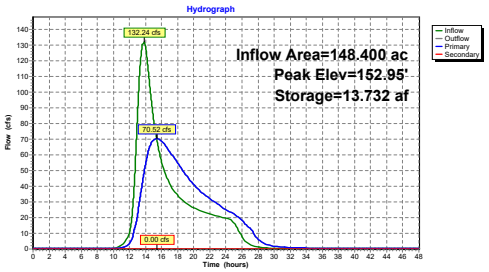
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=70.52 cfs @ 15.37 hrs HW=152.95' TW=145.29' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 70.52 cfs @ 7.89 fps)

Secondary OutFlow Max=0.00 cfs @ 15.37 hrs HW=152.95' TW=145.29' (Dynamic Tailwater)
└**2=Top of Dam** (Weir Controls 0.00 cfs @ 0.22 fps)

Pond 1P: Upstream Dam



Summary for Pond 2.3: Alt3: Removal

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.32" for 500-yr event
Inflow = 255.35 cfs @ 14.16 hrs, Volume= 135.826 af, Incl. 0.50 cfs Base Flow
Outflow = 174.39 cfs @ 15.48 hrs, Volume= 136.739 af, Atten= 32%, Lag= 79.0 min
Primary = 174.39 cfs @ 15.48 hrs, Volume= 136.739 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 141.50' Storage= 2.400 af
Peak Elev= 145.37' @ 15.86 hrs Storage= 20.338 af (17.938 af above start)

Plug-Flow detention time= 79.3 min calculated for 134.339 af (99% of inflow)
Center-of-Mass det. time= 48.9 min (1,092.5 - 1,043.5)

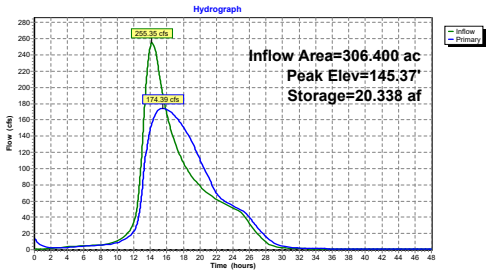
Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	141.00'	**Dam with Breach, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 112.00 127.00 139.00 140.00 172.20 189.20 208.00 235.60 262.00 270.00 Elev. (feet) 148.10 147.20 147.00 147.08 147.10 141.00 141.00 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10

Primary OutFlow Max=173.85 cfs @ 15.48 hrs HW=145.32' TW=145.12' (Dynamic Tailwater)
↳**1=Dam with Breach** (Weir Controls 173.85 cfs @ 1.26 fps)

Pond 2.3: Alt3: Removal



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.36" for 500-yr event
Inflow = 174.39 cfs @ 15.48 hrs, Volume= 136.739 af
Outflow = 173.57 cfs @ 15.87 hrs, Volume= 136.739 af, Atten= 0%, Lag= 23.3 min
Primary = 173.57 cfs @ 15.87 hrs, Volume= 136.739 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 145.17' @ 15.87 hrs Storage= 1.985 af (1.979 af above start)

Plug-Flow detention time= 5.6 min calculated for 136.731 af (100% of inflow)
Center-of-Mass det. time= 5.4 min (1,097.9 - 1,092.5)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

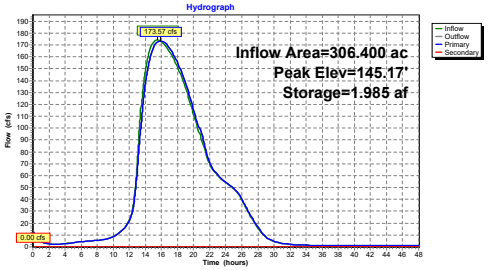
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=173.57 cfs @ 15.87 hrs HW=145.17' TW=140.73' (Dynamic Tailwater)
↳**1=RCP_Round 48"** (Barrel Controls 173.57 cfs @ 13.81 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.31' TW=138.24' (Dynamic Tailwater)
↳**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.36" for 500-yr event
Inflow = 173.57 cfs @ 15.87 hrs, Volume= 136.739 af
Outflow = 173.57 cfs @ 15.87 hrs, Volume= 136.739 af, Atten= 0%, Lag= 0.4 min
Primary = 173.57 cfs @ 15.87 hrs, Volume= 136.739 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.73' @ 15.89 hrs Storage= 0.168 af (0.159 af above start)

Plug-Flow detention time= 1.0 min calculated for 136.729 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,098.6 - 1,097.9)

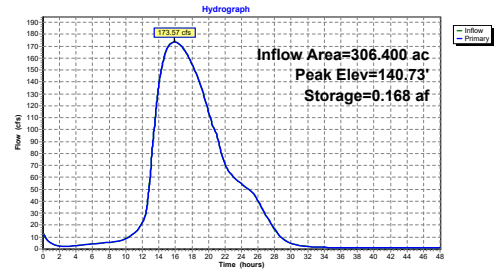
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=173.56 cfs @ 15.87 hrs HW=140.73' TW=140.34' (Dynamic Tailwater)
↳**1=Log Dam** (Weir Controls 173.56 cfs @ 1.82 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 5.36" for 500-yr event
Inflow = 173.57 cfs @ 15.87 hrs, Volume= 136.739 af
Outflow = 173.56 cfs @ 15.91 hrs, Volume= 136.740 af, Atten= 0%, Lag= 2.2 min
Primary = 28.58 cfs @ 15.91 hrs, Volume= 43.844 af
Secondary = 144.98 cfs @ 15.91 hrs, Volume= 92.896 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.34' @ 15.91 hrs Storage= 3.111 af (3.101 af above start)

Plug-Flow detention time= 18.0 min calculated for 136.730 af (100% of inflow)
Center-of-Mass det. time= 17.8 min (1,116.4 - 1,098.6)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

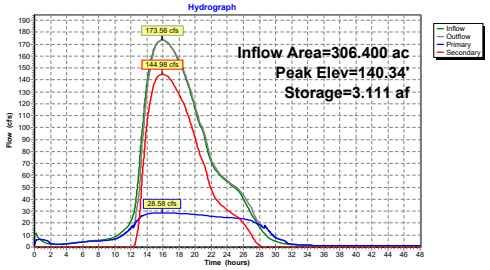
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=28.58 cfs @ 15.91 hrs HW=140.34' TW=133.41' (Dynamic Tailwater)
└─**2=Culvert** (Barrel Controls 28.58 cfs @ 5.44 fps)

Secondary OutFlow Max=144.97 cfs @ 15.91 hrs HW=140.34' TW=133.41' (Dynamic Tailwater)
└─**1=Top of Road** (Weir Controls 144.97 cfs @ 2.17 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 5.19" for 500-yr event
Inflow = 206.66 cfs @ 14.86 hrs, Volume= 168.290 af
Outflow = 205.81 cfs @ 15.14 hrs, Volume= 168.289 af, Atten= 0%, Lag= 16.9 min
Primary = 171.35 cfs @ 15.14 hrs, Volume= 160.824 af
Secondary = 34.47 cfs @ 15.14 hrs, Volume= 7.465 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 133.42' @ 15.14 hrs Storage= 7.766 af

Plug-Flow detention time= 21.2 min calculated for 168.289 af (100% of inflow)
Center-of-Mass det. time= 21.2 min (1,103.3 - 1,082.0)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

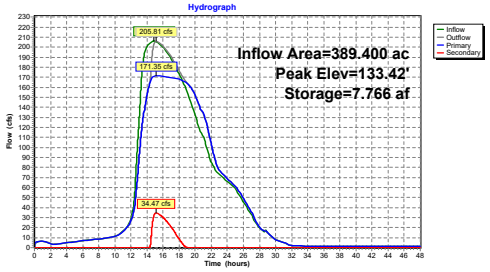
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=171.35 cfs @ 15.14 hrs HW=133.42' (Free Discharge)
└─**1=Culvert** (Barrel Controls 171.35 cfs @ 13.64 fps)

Secondary OutFlow Max=34.46 cfs @ 15.14 hrs HW=133.42' (Free Discharge)
└─**2=Top of Road** (Weir Controls 34.46 cfs @ 1.11 fps)

Pond 6P: South Street



Summary for Subcatchment 1S: Upstream Dam

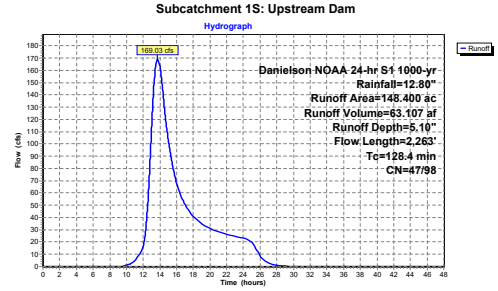
Runoff = 169.03 cfs @ 13.70 hrs, Volume= 63.107 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1000-yr Rainfall=12.80"

	Area (ac)	CN	Description
*	148.400	47	"0.1% imp"
	148.252	47	99.90% Pervious Area
	0.148	98	0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
47.1	500	0.0050	0.18		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
33.4	1,663	0.0029	0.83	207.53	**Channel Flow,** Area= 250.0 sf Perim= 180.0' r= 1.39' n= 0.120
128.4	2,263	Total			

Subcatchment 1S: Upstream Dam



Summary for Subcatchment 2S: Danielson Pond

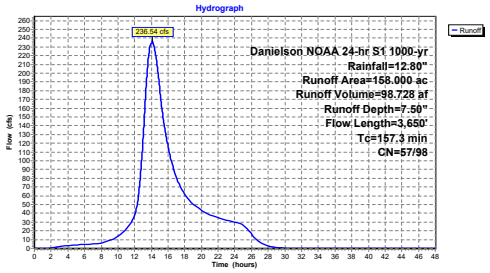
Runoff = 236.54 cfs @ 14.15 hrs, Volume= 98.728 af, Depth= 7.50"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1000-yr Rainfall=12.80"

	Area (ac)	CN	Description
*	158.000	62	"12.6% imp"
	138.092	57	87.40% Pervious Area
	19.908	98	12.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
24.2	115	0.0010	0.08		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
14.5	435	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
88.0	1,550	0.0138	0.29		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
3.8	650	0.0591	2.84	45.52	**Channel Flow,** Area= 16.0 sf Perim= 32.0' r= 0.50' n= 0.080
1.7	800	0.0072	7.71	50,887.96	**Channel Flow,** Area= 6,600.0 sf Perim= 610.0' r= 10.82' n= 0.080
157.3	3,650	Total			

Subcatchment 2S: Danielson Pond



Summary for Subcatchment 6S: South Street

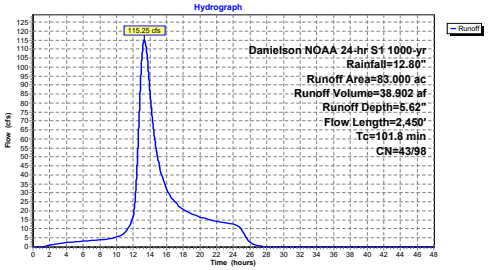
Runoff = 115.25 cfs @ 13.35 hrs, Volume= 38.902 af, Depth= 5.62"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Danielson NOAA 24-hr S1 1000-yr Rainfall=12.80"

	Area (ac)	CN	Description
*	83.000	51	"15% imp"
	70.550	43	85.00% Pervious Area
	12.450	98	15.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
84.7	100	0.0024	0.02		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.40"
8.5	350	0.0749	0.68		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
8.6	2,000	0.0082	3.87	1,286.03	**Channel Flow,** Area= 332.0 sf Perim= 95.0' r= 3.49' n= 0.080
101.8	2,450	Total			

Subcatchment 6S: South Street



Summary for Pond 1P: Upstream Dam

Inflow Area = 148.400 ac, 0.10% Impervious, Inflow Depth > 5.26" for 1000-yr event
Inflow = 169.53 cfs @ 13.70 hrs, Volume= 65.090 af, Incl. 0.50 cfs Base Flow
Outflow = 84.50 cfs @ 15.46 hrs, Volume= 65.091 af, Atten= 50%, Lag= 105.6 min
Primary = 83.56 cfs @ 15.46 hrs, Volume= 64.939 af
Secondary = 0.94 cfs @ 15.46 hrs, Volume= 0.153 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 148.99' Storage= 0.697 af
Peak Elev= 153.54' @ 15.46 hrs Storage= 18.306 af (17.609 af above start)

Plug-Flow detention time= 145.5 min calculated for 64.395 af (99% of inflow)
Center-of-Mass det. time= 123.3 min (1,133.2 - 1,010.0)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	155.000 af	**Custom Stage Data** Listed below

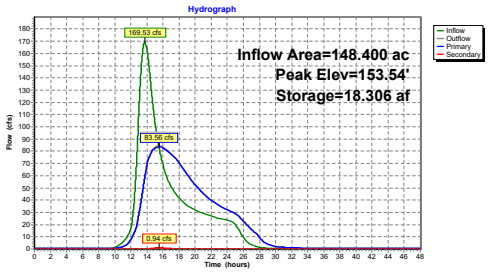
Elevation (feet)	Cum.Store (acre-feet)
147.00	0.000
149.00	0.700
150.00	1.700
151.00	4.500
152.00	9.000
153.00	14.000
154.00	22.000
155.00	35.000
156.00	50.000
160.00	155.000

Device	Routing	Invert	Outlet Devices
#1	Primary	148.85'	**3.0' long x 4.70' rise Spillway Weir** 2 End Contraction(s) 2.6' Crest Height
#2	Secondary	152.90'	**Top of Dam, C= 2.60** Offset (feet) 0.00 8.00 42.00 51.00 71.30 90.00 118.00 162.00 180.00 198.00 200.00 202.00 222.00 224.00 276.00 318.50 335.40 Elev. (feet) 157.00 155.30 154.70 154.75 154.77 154.00 153.69 154.30 154.50 154.20 152.90 154.50 154.00 154.30 154.60 155.90 157.00

Primary OutFlow Max=83.56 cfs @ 15.46 hrs HW=153.54' TW=146.10' (Dynamic Tailwater)
└**1=Spillway Weir** (Weir Controls 83.56 cfs @ 8.64 fps)

Secondary OutFlow Max=0.94 cfs @ 15.46 hrs HW=153.54' TW=146.10' (Dynamic Tailwater)
└**2=Top of Dam** (Weir Controls 0.94 cfs @ 0.83 fps)

Pond 1P: Upstream Dam



Summary for Pond 2.3: Alt3: Removal

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.49" for 1000-yr event
Inflow = 310.25 cfs @ 14.16 hrs, Volume= 165.803 af, Incl. 0.50 cfs Base Flow
Outflow = 190.98 cfs @ 15.68 hrs, Volume= 166.716 af, Atten= 38%, Lag= 91.4 min
Primary = 190.98 cfs @ 15.68 hrs, Volume= 166.716 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 141.50' Storage= 2.400 af
Peak Elev= 146.25' @ 16.21 hrs Storage= 27.997 af (25.597 af above start)

Plug-Flow detention time= 87.5 min calculated for 164.298 af (99% of inflow)
Center-of-Mass det. time= 62.4 min (1,103.4 - 1,040.9)

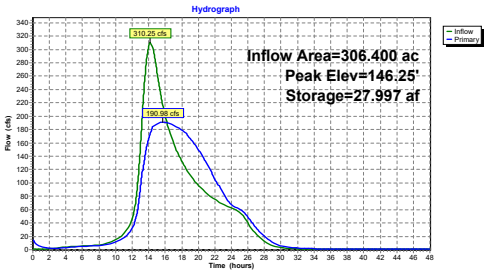
Volume	Invert	Avail.Storage	Storage Description
#1	137.00'	133.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
137.00	0.000
140.00	0.060
140.50	0.500
141.00	1.300
141.50	2.400
142.00	3.900
142.50	5.600
143.00	7.400
143.50	9.600
144.00	12.000
144.50	15.000
145.00	18.000
145.50	21.200
146.00	26.000
146.50	30.000
147.00	35.000
147.50	40.000
148.00	46.000
148.50	53.000
149.00	60.000
150.00	74.000
152.00	103.000
154.00	133.000

Device	Routing	Invert	Outlet Devices
#1	Primary	141.00'	**Dam with Breach, C= 2.60** Offset (feet) 0.00 25.00 54.50 67.60 100.00 112.00 127.00 139.00 140.00 172.20 189.20 208.00 235.60 262.00 270.00 Elev. (feet) 148.10 147.20 147.00 147.08 147.10 141.00 141.00 147.10 147.40 147.20 147.10 147.30 147.03 147.70 148.10

Primary OutFlow Max=190.03 cfs @ 15.68 hrs HW=146.18' TW=146.04' (Dynamic Tailwater)
└**1=Dam with Breach** (Weir Controls 190.03 cfs @ 1.04 fps)

Pond 2.3: Alt3: Removal



Summary for Pond 3P: Homstead Drive

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.53" for 1000-yr event
Inflow = 190.98 cfs @ 15.68 hrs, Volume= 166.716 af
Outflow = 190.18 cfs @ 16.22 hrs, Volume= 166.716 af, Atten= 0%, Lag= 32.1 min
Primary = 190.18 cfs @ 16.22 hrs, Volume= 166.716 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.19' Storage= 0.007 af
Peak Elev= 146.11' @ 16.22 hrs Storage= 2.532 af (2.525 af above start)

Plug-Flow detention time= 6.7 min calculated for 166.707 af (100% of inflow)
Center-of-Mass det. time= 6.5 min (1,109.9 - 1,103.4)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	11.000 af	**Custom Stage Data** Listed below

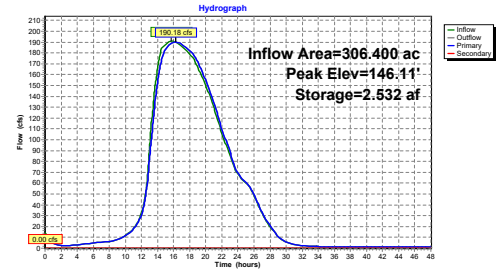
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
137.00	0.001
137.50	0.002
138.00	0.003
138.80	0.018
139.00	0.030
139.60	0.060
140.56	0.163
141.27	0.336
141.79	0.499
142.00	0.590
142.39	0.712
142.95	0.930
143.54	1.184
144.00	1.400
144.83	1.794
145.50	2.170
146.00	2.468
146.99	3.035
147.90	3.680
148.50	4.130
149.00	4.500
150.40	5.600
151.40	6.477
152.50	7.405
153.50	8.290
154.34	9.038
156.50	11.000

Device	Routing	Invert	Outlet Devices
#1	Primary	136.95'	**48.0" Round RCP_Round 48"** L= 106.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 136.95' / 136.80' S= 0.0014 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#2	Secondary	151.25'	**Top of Road, C= 3.27** Offset (feet) 0.00 29.00 91.00 110.00 114.00 145.00 172.00 183.00 200.00 218.00 243.00 280.00 Elev. (feet) 154.50 153.20 151.38 151.25 151.26 151.70 152.00 152.10 152.50 152.50 153.28 154.50

Primary OutFlow Max=190.18 cfs @ 16.22 hrs HW=146.11' TW=140.80' (Dynamic Tailwater)
└**1=RCP_Round 48"** (Inlet Controls 190.18 cfs @ 15.13 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.31' TW=138.24' (Dynamic Tailwater)
└**2=Top of Road** (Controls 0.00 cfs)

Pond 3P: Homstead Drive



Summary for Pond 4P: Log Dam

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.53" for 1000-yr event
Inflow = 190.18 cfs @ 16.22 hrs, Volume= 166.716 af
Outflow = 190.18 cfs @ 16.22 hrs, Volume= 166.716 af, Atten= 0%, Lag= 0.4 min
Primary = 190.18 cfs @ 16.22 hrs, Volume= 166.716 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 138.18' Storage= 0.010 af
Peak Elev= 140.80' @ 16.24 hrs Storage= 0.177 af (0.167 af above start)

Plug-Flow detention time= 0.9 min calculated for 166.705 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,110.6 - 1,109.9)

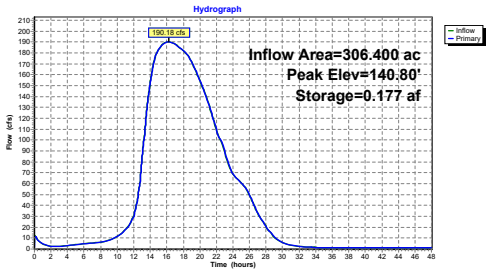
Volume	Invert	Avail.Storage	Storage Description
#1	136.50'	3.200 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
136.50	0.000
137.40	0.001
138.20	0.010
138.85	0.021
139.60	0.055
140.16	0.102
141.16	0.219
142.28	0.371
143.16	0.510
144.03	0.672
145.50	0.990
147.00	1.400
148.00	1.700
149.00	1.980
150.00	2.300
151.00	2.600
152.00	2.900
153.00	3.200

Device	Routing	Invert	Outlet Devices
#1	Primary	138.10'	**Log Dam, C= 3.27** Offset (feet) 0.00 32.50 48.40 64.00 76.00 86.40 96.40 136.50 143.00 150.00 160.00 162.00 Elev. (feet) 146.20 144.00 142.00 138.10 138.10 140.68 140.48 140.85 142.00 144.50 145.60 146.20

Primary OutFlow Max=190.18 cfs @ 16.22 hrs HW=140.80' TW=140.39' (Dynamic Tailwater)
└**1=Log Dam** (Weir Controls 190.18 cfs @ 1.83 fps)

Pond 4P: Log Dam



Summary for Pond 5P: Unnamed Road

Inflow Area = 306.400 ac, 6.55% Impervious, Inflow Depth > 6.53" for 1000-yr event
Inflow = 190.18 cfs @ 16.22 hrs, Volume= 166.716 af
Outflow = 190.17 cfs @ 16.26 hrs, Volume= 166.716 af, Atten= 0%, Lag= 2.1 min
Primary = 28.93 cfs @ 16.26 hrs, Volume= 46.603 af
Secondary = 161.24 cfs @ 16.26 hrs, Volume= 120.113 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Starting Elev= 137.26' Storage= 0.009 af
Peak Elev= 140.39' @ 16.26 hrs Storage= 3.159 af (3.150 af above start)

Plug-Flow detention time= 16.4 min calculated for 166.707 af (100% of inflow)
Center-of-Mass det. time= 16.3 min (1,126.9 - 1,110.6)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	12.000 af	**Custom Stage Data** Listed below

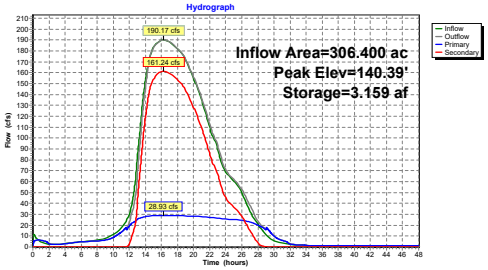
Elevation (feet)	Cum.Store (acre-feet)
136.00	0.000
136.93	0.002
137.30	0.010
137.80	0.059
138.00	0.260
138.50	0.590
139.00	1.000
139.50	1.371
140.00	2.323
140.30	3.067
140.90	3.650
141.40	4.500
142.30	6.400
143.00	8.000
144.10	10.100
145.00	12.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	138.90'	**Top of Road, C= 3.27** Offset (feet) 0.00 20.00 31.00 46.00 55.00 60.00 65.00 75.00 87.00 99.00 112.80 130.00 141.00 146.00 Elev. (feet) 142.80 141.30 140.20 139.80 139.80 139.30 138.90 139.56 139.94 139.74 139.97 141.47 142.10 142.80
#2	Primary	136.90'	**42.0" W x 18.0" H Box Culvert** L= 7.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0143 '/' Cc= 0.900 n= 0.078 Riprap, 12-inch, Flow Area= 5.25 sf

Primary OutFlow Max=28.93 cfs @ 16.26 hrs HW=140.39' TW=133.48' (Dynamic Tailwater)
↳**2=Culvert** (Barrel Controls 28.93 cfs @ 5.51 fps)

Secondary OutFlow Max=161.24 cfs @ 16.26 hrs HW=140.39' TW=133.48' (Dynamic Tailwater)
↳**1=Top of Road** (Weir Controls 161.24 cfs @ 2.26 fps)

Pond 5P: Unnamed Road



Summary for Pond 6P: South Street

Inflow Area = 389.400 ac, 8.35% Impervious, Inflow Depth > 6.34" for 1000-yr event
Inflow = 235.61 cfs @ 14.34 hrs, Volume= 205.619 af
Outflow = 234.99 cfs @ 14.58 hrs, Volume= 205.617 af, Atten= 0%, Lag= 14.3 min
Primary = 173.63 cfs @ 14.58 hrs, Volume= 185.211 af
Secondary = 61.36 cfs @ 14.58 hrs, Volume= 20.407 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.005 hrs
Peak Elev= 133.52' @ 14.58 hrs Storage= 8.045 af

Plug-Flow detention time= 22.3 min calculated for 205.596 af (100% of inflow)
Center-of-Mass det. time= 22.3 min (1,112.1 - 1,089.8)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	66.500 af	**Custom Stage Data** Listed below

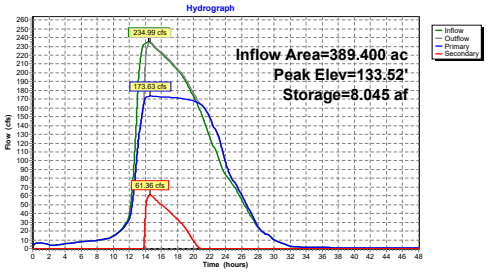
Elevation (feet)	Cum.Store (acre-feet)
126.00	0.000
127.00	0.001
127.50	0.002
127.95	0.003
128.16	0.020
128.42	0.069
128.65	0.146
128.91	0.276
129.20	0.457
129.50	0.685
129.80	0.933
130.00	1.197
130.36	1.500
130.61	1.826
130.89	2.200
131.40	3.000
131.92	4.000
132.46	5.200
133.00	6.600
133.50	7.980
134.00	9.550
134.56	11.350
135.00	13.200
135.50	15.046
136.00	17.400
136.50	19.400
136.88	21.300
137.29	23.440
137.70	25.600
138.00	27.600
138.30	29.800
139.00	34.235
139.79	40.025
140.77	47.800
141.00	49.900
143.00	66.500

Device	Routing	Invert	Outlet Devices
#1	Primary	126.76'	**48.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 126.76' / 125.76' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 12.57 sf
#2	Secondary	133.10'	**Top of Road, C= 3.27** Offset (feet) 0.00 60.00 94.00 121.70 153.00 206.00 227.00 289.00 339.00 440.00 480.00 552.00 Elev. (feet) 136.76 134.60 133.46 133.30 133.10 133.25 133.75 133.70 133.89 134.97 135.43 136.76

Primary OutFlow Max=173.63 cfs @ 14.58 hrs HW=133.52' (Free Discharge)
↳**1=Culvert** (Barrel Controls 173.63 cfs @ 13.82 fps)

Secondary OutFlow Max=61.36 cfs @ 14.58 hrs HW=133.52' (Free Discharge)
↳**2=Top of Road** (Weir Controls 61.36 cfs @ 1.37 fps)

Pond 6P: South Street



Events for Subcatchment 1S: Upstream Dam

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.79	0.52	0.331	0.03
2-yr	3.43	1.56	1.409	0.11
5-yr	4.46	6.51	4.507	0.36
10-yr	5.32	14.77	8.154	0.66
25-yr	6.50	31.09	14.418	1.17
50-yr	7.37	46.20	19.805	1.60
100-yr	8.32	64.99	26.303	2.13
200-yr	9.48	89.99	34.968	2.83
500-yr	11.30	131.74	49.871	4.03
1000-yr	**12.80**	**169.03**	**63.107**	**5.10**

Events for Subcatchment 2S: Danielson Pond

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.79	11.72	6.386	0.49
2-yr	3.43	18.58	9.791	0.74
5-yr	4.46	34.19	16.558	1.26
10-yr	5.32	50.56	23.153	1.76
25-yr	6.50	76.05	33.258	2.53
50-yr	7.37	96.56	41.321	3.14
100-yr	8.32	119.96	50.595	3.84
200-yr	9.48	149.51	62.457	4.74
500-yr	11.30	196.31	81.987	6.23
1000-yr	**12.80**	**236.54**	**98.728**	**7.50**

Events for Subcatchment 6S: South Street

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.79	8.22	2.664	0.39
2-yr	3.43	10.14	3.571	0.52
5-yr	4.46	13.68	5.659	0.82
10-yr	5.32	18.82	7.903	1.14
25-yr	6.50	28.99	11.588	1.68
50-yr	7.37	38.42	14.681	2.12
100-yr	8.32	50.03	18.366	2.66
200-yr	9.48	65.70	23.236	3.36
500-yr	11.30	91.87	31.550	4.56
1000-yr	**12.80**	**115.25**	**38.902**	**5.62**

Events for Pond 1P: Upstream Dam

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	1.02	0.98	0.98	0.00	149.07	0.765
2-yr	2.06	1.99	1.99	0.00	149.20	0.897
5-yr	7.01	5.93	5.93	0.00	149.57	1.273
10-yr	15.27	12.09	12.09	0.00	150.02	1.759
25-yr	31.59	20.79	20.79	0.00	150.55	3.236
50-yr	46.70	29.51	29.51	0.00	151.02	4.578
100-yr	65.49	37.95	37.95	0.00	151.44	6.480
200-yr	90.49	50.22	50.22	0.00	152.02	9.110
500-yr	132.24	70.52	70.52	0.00	152.95	13.732
1000-yr	**169.53**	**84.50**	**83.56**	**0.94**	**153.54**	**18.306**

Events for Pond 2.3: Alt3: Removal

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	12.79	14.52	141.50	2.400
2-yr	19.73	17.53	141.56	2.594
5-yr	38.09	34.49	141.87	3.508
10-yr	60.73	55.38	142.17	4.476
25-yr	93.24	85.48	142.55	5.795
50-yr	120.93	103.62	142.97	7.302
100-yr	152.32	123.74	143.49	9.539
200-yr	191.42	145.24	144.17	13.034
500-yr	255.35	174.39	145.37	20.338
1000-yr	**310.25**	**190.98**	**146.25**	**27.997**

Events for Pond 3P: Homstead Drive

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	14.52	13.09	13.09	**0.00**	138.82	0.019
2-yr	17.53	17.45	17.45	0.00	139.13	0.036
5-yr	34.49	34.36	34.36	0.00	140.04	0.108
10-yr	55.38	55.02	55.02	0.00	140.66	0.188
25-yr	85.48	85.23	85.23	0.00	141.43	0.385
50-yr	103.62	102.30	102.30	0.00	142.32	0.690
100-yr	123.74	123.26	123.26	0.00	143.00	0.953
200-yr	145.24	144.75	144.75	0.00	143.84	1.325
500-yr	174.39	173.57	173.57	0.00	145.17	1.985
1000-yr	**190.98**	**190.18**	**190.18**	0.00	**146.11**	**2.532**

Events for Pond 4P: Log Dam

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	13.09	13.08	138.55	0.016
2-yr	17.45	17.42	138.84	0.021
5-yr	34.36	34.32	139.59	0.055
10-yr	55.02	54.91	139.92	0.082
25-yr	85.23	85.19	140.19	0.106
50-yr	102.30	102.29	140.32	0.120
100-yr	123.26	123.25	140.45	0.136
200-yr	144.75	144.74	140.58	0.151
500-yr	173.57	173.57	140.73	0.168
1000-yr	**190.18**	**190.18**	**140.80**	**0.177**

Events for Pond 5P: Unnamed Road

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	13.08	10.31	10.31	0.00	138.30	0.458
2-yr	17.42	16.03	16.03	0.00	138.74	0.785
5-yr	34.32	33.18	22.12	11.07	139.52	1.418
10-yr	54.91	53.78	24.59	29.19	139.81	1.968
25-yr	85.19	84.76	26.17	58.59	140.01	2.358
50-yr	102.29	102.08	26.76	75.32	140.09	2.553
100-yr	123.25	123.09	27.38	95.71	140.18	2.759
200-yr	144.74	144.66	27.93	116.73	140.25	2.949
500-yr	173.57	173.56	28.58	144.98	140.34	3.111
1000-yr	**190.18**	**190.17**	**28.93**	**161.24**	**140.39**	**3.159**

Events for Pond 6P: South Street

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	13.09	13.09	13.09	0.00	127.84	0.003
2-yr	18.45	18.44	18.44	0.00	128.07	0.013
5-yr	38.22	37.88	37.88	0.00	128.80	0.219
10-yr	61.63	60.44	60.44	0.00	129.51	0.690
25-yr	98.26	95.01	95.01	0.00	130.51	1.698
50-yr	119.49	115.35	115.35	0.00	131.13	2.576
100-yr	143.52	135.79	135.79	0.00	131.94	4.054
200-yr	170.00	159.76	159.76	0.00	132.94	6.455
500-yr	206.66	205.81	171.35	34.47	133.42	7.766
1000-yr	**235.61**	**234.99**	**173.63**	**61.36**	**133.52**	**8.045**

TABLE OF CONTENTS

Project Reports
1 Routing Diagram
2 Rainfall Events Listing

1-yr Event
3 Subcat 1S: Upstream Dam
4 Subcat 2S: Danielson Pond
6 Subcat 6S: South Street
7 Pond 1P: Upstream Dam
9 Pond 2.3: Alt3: Removal
11 Pond 3P: Homstead Drive
13 Pond 4P: Log Dam
15 Pond 5P: Unnamed Road
17 Pond 6P: South Street

2-yr Event
20 Subcat 1S: Upstream Dam
21 Subcat 2S: Danielson Pond
23 Subcat 6S: South Street
24 Pond 1P: Upstream Dam
26 Pond 2.3: Alt3: Removal
28 Pond 3P: Homstead Drive
30 Pond 4P: Log Dam
32 Pond 5P: Unnamed Road
34 Pond 6P: South Street

5-yr Event
37 Subcat 1S: Upstream Dam
38 Subcat 2S: Danielson Pond
40 Subcat 6S: South Street
41 Pond 1P: Upstream Dam
43 Pond 2.3: Alt3: Removal
45 Pond 3P: Homstead Drive
47 Pond 4P: Log Dam
49 Pond 5P: Unnamed Road
51 Pond 6P: South Street

10-yr Event
54 Subcat 1S: Upstream Dam
55 Subcat 2S: Danielson Pond
57 Subcat 6S: South Street
58 Pond 1P: Upstream Dam
60 Pond 2.3: Alt3: Removal
62 Pond 3P: Homstead Drive
64 Pond 4P: Log Dam
66 Pond 5P: Unnamed Road
68 Pond 6P: South Street

25-yr Event
71 Subcat 1S: Upstream Dam
72 Subcat 2S: Danielson Pond
74 Subcat 6S: South Street
75 Pond 1P: Upstream Dam
77 Pond 2.3: Alt3: Removal
79 Pond 3P: Homstead Drive
81 Pond 4P: Log Dam
83 Pond 5P: Unnamed Road
85 Pond 6P: South Street

50-yr Event
88 Subcat 1S: Upstream Dam
89 Subcat 2S: Danielson Pond
91 Subcat 6S: South Street
92 Pond 1P: Upstream Dam
94 Pond 2.3: Alt3: Removal
96 Pond 3P: Homstead Drive
98 Pond 4P: Log Dam
100 Pond 5P: Unnamed Road
102 Pond 6P: South Street

100-yr Event
105 Subcat 1S: Upstream Dam
106 Subcat 2S: Danielson Pond
108 Subcat 6S: South Street
109 Pond 1P: Upstream Dam
111 Pond 2.3: Alt3: Removal
113 Pond 3P: Homstead Drive
115 Pond 4P: Log Dam
117 Pond 5P: Unnamed Road
119 Pond 6P: South Street

200-yr Event
122 Subcat 1S: Upstream Dam
123 Subcat 2S: Danielson Pond
125 Subcat 6S: South Street
126 Pond 1P: Upstream Dam
128 Pond 2.3: Alt3: Removal
130 Pond 3P: Homstead Drive
132 Pond 4P: Log Dam
134 Pond 5P: Unnamed Road
136 Pond 6P: South Street

500-yr Event
139 Subcat 1S: Upstream Dam
140 Subcat 2S: Danielson Pond
142 Subcat 6S: South Street
143 Pond 1P: Upstream Dam
145 Pond 2.3: Alt3: Removal
147 Pond 3P: Homstead Drive
149 Pond 4P: Log Dam

151 Pond 5P: Unnamed Road
153 Pond 6P: South Street

1000-yr Event
156 Subcat 1S: Upstream Dam
157 Subcat 2S: Danielson Pond
159 Subcat 6S: South Street
160 Pond 1P: Upstream Dam
162 Pond 2.3: Alt3: Removal
164 Pond 3P: Homstead Drive
166 Pond 4P: Log Dam
168 Pond 5P: Unnamed Road
170 Pond 6P: South Street

Multi-Event Tables
173 Subcat 1S: Upstream Dam
174 Subcat 2S: Danielson Pond
175 Subcat 6S: South Street
176 Pond 1P: Upstream Dam
177 Pond 2.3: Alt3: Removal
178 Pond 3P: Homstead Drive
179 Pond 4P: Log Dam
180 Pond 5P: Unnamed Road
181 Pond 6P: South Street

APPENDIX E
Seepage and Slope Stability Analyses

Danielson Mill Dam

Medfield, Massachusetts

Calculation Cover Sheet

Project #: 21032.00 **Calculation #:** 1

Project: Danielson Pond Dam Conceptual Design **Date:** See Below

Subject/Task: Seepage Analysis and Slope Stability

Status: Existing Condition for Danielson Pond Dam

Calculated by: HMS/MLP **Reviewed by:** MED

Revision Summary:

Revision #	Description	Date
0	Original Calculation	07/2021

Subject:

This calculation was performed to:

1. Determine the seepage and slope stability of the Danielson Pond Dam embankment under existing conditions during the maximum pool, normal pool, drawdown, and earthquake conditions.
2. Develop proposed improvements to the dam to meet minimum required factors of safety.

Information Provided/Used in the analysis:

1. Boring logs for B21-1 to B21-3.
2. Survey plan of the dam prepared by the Town of Medfield Engineering Department on February 5, 2020.
3. GeoStudio 2021.

References:

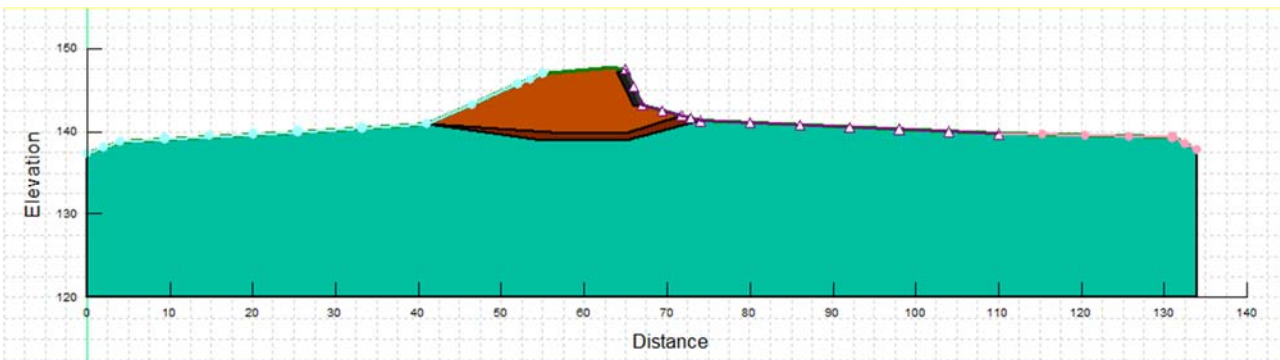
1. Braja M. D. (2007) "Principles of Foundation Engineering - 6th edition".
2. Department of the Navy, Naval Facilities Engineering Command; U.S. Government Printing Office (1986) "Soil Mechanics, Design Manual 7.01 and 7.02".
3. Feike J.L William J.A, and Van Genuchten, M Th. (1996) "The UNSODA Unsaturated Soil Hydraulic Database User's Manual Version 1.0", University of California, Riverside and US Department of Agriculture Salinity Laboratory, Riverside, CA.
4. Lindeburg R. M. (2006) "Civil Engineering Reference Manual for the PE Exam, 16th Edition", Professional Publications (2006)
5. Terzaghi, K., Peck, R. B. and Mesri, G. (1996) "Soil Mechanics in Engineering Practice" John Wiley & Sons, Inc.

1.0 - EXISTING CONDITIONS

Methodology:

Dam Embankment Geometry:

Dam section was taken at approximately 50 feet right of the spillway. The geometry of the section used the surface developed from the topographic survey and available LiDAR. The embankment was modeled as having 8 feet of loose to medium dense fill, overlying 1 foot of organic material, overlying native soil. A downstream stonewall was modeled on the downstream side extended from the crest to approximately El. 143 ft.



Soil Parameters:

Soil parameters provided in Table 1 were determined by corelating the boring logs information collected by Pare at Danielson Mill Dam on April 19, 2021 and using engineering judgement for materials based on previous projects with similar material types.

In general, the exploration program indicated that the embankment soil consists of 2 to 4 inches of topsoil, overlying 4 to 8 feet of loose to medium dense embankment fill, overlying medium dense to very dense native soil. A 1-foot thick layer of organic silt was encountered in B20-1 at approximately 7 feet. The thickness of each layer for the dam section was selected based on B21-1, B21-2, and B21-3, which were done along the dam crest.

The soil parameters used in the Slope/W and Seep/W analyses are presented in Tables 1.

Table 1: Soil parameters used in the Slope/W and Seep/W analyses.

Soil Layer/Classification	$(N_1)_{60}$ (Blows/ft)	D_r (%)	Angle of Internal Friction (°)	Sat. Unit Weight (lb/ft^3)	Void Ratio	Saturated Water Content	Saturated Hydraulic Conductivity (ft/sec)	Residual Water Content
Embankment fill	12	33	31	127	0.65	0.25	1.6E-5	0.05
Organics	14	36	28	120	0.83	0.31	8.2E-7	0.04
Native material	52	95	40	136	0.41	0.16	1.6E-4	0.02
Downstream Wall	N/A	N/A	40	145	N/A	0.1	3.0E-2	0.01

Seismic:

In general accordance with the ASCE 7-16 and using the N-Bar Method, the dam site has a Site Class "D" (i.e. Stiff Soil 15<N-bar<50)

The seismic parameter for the site was developed in accordance with IBC 15 and ASCE 7-16. Based upon available information, a modified peak ground acceleration for liquefaction potential coefficient of 0.13 was selected for the site.

Seepage:

Steady state seepage analyses were performed using GeoStudio SeepW software. Maximum pool was modeled at El. 146.9 ft, normal pool was modeled at El. 145.6 ft, and drawdown was modeled to El. 139.7 ft.

Slope Stability:

Stability analyses of the embankment slopes were performed using GeoStudio SlopeW software. The pore water pressures, and the phreatic surfaces generated from the seepage analyses were incorporated into the stability analysis. Grid and radius were used to generate the potential slip surfaces. The Morgenstern-Price method was used to compute the factor of safety for each potential slip surface. The minimum slip surface depth was set to 4 feet.

Results:

Seepage:

The result indicated no seepage occurred along the downstream toe of the dam.

Table 2: Results of Seepage Analyses for Existing

	Breakout Along DS Toe	Calculated Factor of Safety (FOS)
Maximum Storage Pool	None	>5
Drawdown from Max Pool	None	>10
Normal Pool	None	>5
Drawdown from Normal Pool	None	>10

Slope Stability:

The following table presents the results of the slope stability analyses. Bolded values in the "Calculated Factor of Safety" columns indicate cases where the minimum requirements were not met. As shown in the table below, the downstream slope does not meet the minimum required FOS's.

Table 3: Results of Slope Stability Analyses for Existing

	Required FOS	Upstream Slope	Downstream Slope
Maximum Storage Pool	**1.4**	N/A	**0.9**
Drawdown from Max Pool	**1.1**	1.5	N/A
Normal Pool	**1.5**	1.6	**0.9**
Drawdown from Normal Pool	**1.2**	1.5	N/A
Earthquake Loading at Normal Pool	**1.0**	1.0	**0.8**

2.0 - PROPOSED CONDITIONS

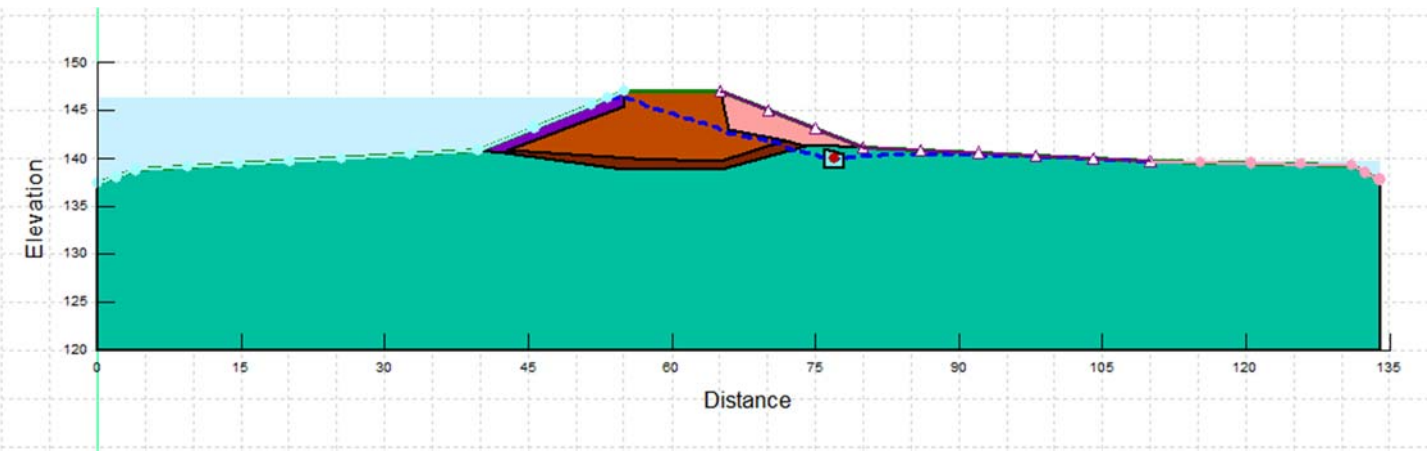
Methodology:

Embankment Geometry:

Improvements to the dam are required to increase stability of the downstream slope at the dam to meet the required minimum factors of safety. The crest, the upstream slope, and the downstream slope were also modified to provide a more uniform and maintainable surfaces.

The following improvements/ modified were included in the analysis:

1. The downstream slope was modeled at 2.5H:1V
2. The dam crest is 10 feet wide.
3. The dam crest was graded to El. 147.0 ft.
4. Riprap was added along upstream slope with a slope of 2.5H:1V.



The following materials parameters were utilized in the proposed conditions model:

Table 4: Soil parameters used in the Slope/W and Seep/W analyses.

Soil Layer/Classification	$(N_1)_{60}$ (Blows/ft)	D_r (%)	Angle of Internal Friction (°)	Sat. Unit Weight (lb/ft^3)	Saturated Water Content	Saturated Hydraulic Conductivity (ft/sec)	Residual Water Content
Embankment fill	12	33	31	127	0.25	1.6E-5	0.05
Organics	14	36	28	120	0.31	8.2E-7	0.04
Native material	52	95	40	136	0.16	1.6E-4	0.02
Downstream Wall	N/A	N/A	40	145	0.1	3.0E-2	0.01
Riprap	N/A	N/A	43	150	0.15	8.2E-4	0.01
Sand Gravel Fill	N/A	N/A	31	126	0.22	1.0E-3	0.02
Toe Drain	N/A	N/A	40	140	0.3	0.1	0.01

Results

Seepage:

The results did not indicate a seepage breakout along the crest, downstream slope, or toe of the embankment during normal pool, maximum pool, or drawdown conditions.

Slope Stability:

The following table presents the results of the slope stability analyses. As shown in the table, the proposed embankment meets all minimum required FOS's.

Table 4: Results of Slope Stability Analyses for Proposed Condition

	Required Factor of Safety	Upstream Slope	Downstream Slope
Maximum Storage Pool	**1.4**	N/A	1.6
Drawdown from Max Pool	**1.1**	1.9	N/A
Normal Pool	**1.5**	1.8	1.7
Drawdown from Normal Pool	**1.2**	1.9	N/A
Earthquake Loading at Normal Pool	**1.0**	1.1	1.2

Pare Corporation
10 Lincoln Road, Suite 210
Foxboro, MA 02035
508-543-1755

BORING NUMBER B21-1

CLIENT Town of Medfield
PROJECT NAME Danielson Pond Dam Conceptual Design
PROJECT NUMBER 21032.00
PROJECT LOCATION Medfield, MA
DATE STARTED 4/19/21 **COMPLETED** 4/19/21
GROUND ELEVATION 146.97 ft NAVD88 **HOLE SIZE** 4 in.
DRILLING CONTRACTOR Technical Drilling Services, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Wash & Drive
AT TIME OF DRILLING ---
LOGGED BY HMS **CHECKED BY** SJM
AT END OF DRILLING 4.60 ft / Elev 142.37 ft
BORING LOCATION 2887177.499°N, 711682.574°E (10 Feet Left of the Spillway)

DEPTH (ft)	CASING (bl/ft)	SAMPLE TYPE NUMBER	RECOVERY/PEN. (in)	DEPTH (FT)	BLOW COUNTS/6"	MIN/FT	GRAPHIC LOG	SAMPLE DESCRIPTION	STRATUM DESCRIPTION
0									
		S-1	11 / 24	0 - 2	2-4-9-4 (13)			1A: (Top 4") Moist, medium dense, brown, fine to coarse SAND, little fine to coarse gravel, trace roots, trace silt. 1B: (Bottom 7") Moist, medium dense, tan, fine to medium SAND, some coarse sand, some coarse gravel, trace silt.	4" TOPSOIL
		S-2	12 / 24	2 - 4	3-4-3-5 (7)			Moist/wet, loose, tan, fine to medium SAND, some fine to coarse gravel, little coarse sand, trace silt.	EMBANKMENT FILL
5		S-3	0 / 24	4 - 6	22-10-4-3 (14)			No Recovery.	
		S-4	18 / 24	6 - 8	1-4-19-4 (23)			4A: (Top 11") Wet, medium dense, tan, fine to coarse SAND, trace silt. 4B: (Bottom 7") Wet, medium dense, dark brown, fine to coarse GRAVEL and fine to coarse SAND, little silt (peat), trace roots.	ORGANICS
10		S-5	3 / 24	8 - 10	28-39-37-52 (76)			Wet, very dense, dark brown, fine to coarse SAND and fine to coarse GRAVEL, trace silt.	GLACIAL DEPOSITS
		S-6	11 / 24	10 - 12	33-22-21-18 (43)			6A: (Top 5") Wet, dense, gray/blue, fine to coarse GRAVEL and fine to coarse SAND, little silt. 6B: (Bottom 6") Wet, dense, tan, fine to coarse GRAVEL and fine to coarse SAND, trace silt.	
15									
		S-7	16 / 24	15 - 17	71-28-33-32 (61)			Wet, very dense, tan, fine to coarse SAND and fine to coarse GRAVEL, little silt.	
20									
		S-8	7 / 7	20 - 20.6	34-105/1"			Wet, very dense, tan, fine to coarse SAND, some silt.	
25								Bottom of borehole at 20.6 feet.	
30									

GRANULAR SOILS

BLOWS/FT	DENSITY
0 - 4	V. LOOSE
4 -10	LOOSE
10 - 30	M. DENSE
30 - 50	DENSE
>50	V. DENSE

COHESIVE SOILS

BLOWS/FT	CONSIST.
<2	V. SOFT
2 - 4	SOFT
4 - 8	M. STIFF
8 - 15	STIFF
15 - 30	V. STIFF
>30	HARD

REMARKS:
1. S-3: A piece of gravel was present in the sampling spoon tip - no sample recovered.
2. Potential bedrock at 20.6 feet. Driller experienced spoon and casing refusal. Weathered bedrock was present in tip of S-8.

BURMISTER CLASSIFICATION

TRACE	0 -10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%

PERCENT BY WEIGHT

NOTES: 1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

PARE BORING LOG - GINT STD US LAB.GDT - 9/8/21 15:51 - Y:\JOBS\21 JOBS\21032.00 MEDFIELD-DANIELSONPONDDAMCONCEPDESIGN-MA\BORING LOGS\21032.00 BORING LOGS.GPJ

Pare Corporation
10 Lincoln Road, Suite 210
Foxboro, MA 02035
508-543-1755

BORING NUMBER B21-2 (OW)

CLIENT Town of Medfield
PROJECT NAME Danielson Pond Dam Conceptual Design
PROJECT NUMBER 21032.00
PROJECT LOCATION Medfield, MA
DATE STARTED 4/19/21 **COMPLETED** 4/19/21
GROUND ELEVATION 147.19 ft NAVD88 **HOLE SIZE** 4 in.
DRILLING CONTRACTOR Technical Drilling Services, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Wash & Drive
AT TIME OF DRILLING ---
AT END OF DRILLING 5.60 ft / Elev 141.59 ft
LOGGED BY HMS **CHECKED BY** SJM
BORING LOCATION 2887200.158°N, 711703.364°E (20 Feet Right of the Spillway)

DEPTH (ft)	CASING (bl/ft)	SAMPLE TYPE NUMBER	RECOVERY/PEN. (in)	DEPTH (FT)	BLOW COUNTS/6"	MIN/FT	GRAPHIC LOG	SAMPLE DESCRIPTION	STRATUM DESCRIPTION
0									
		S-1	8 / 24	0 - 2	2-5-5-7 (10)			Moist, loose/medium dense, brown, fine to coarse SAND, some fine to coarse gravel, trace silt.	2" TOPSOIL
		S-2	2 / 24	2 - 4	3-5-3-4 (8)			Moist, loose, tan, coarse GRAVEL, trace fine to coarse sand, trace silt.	EMBANKMENT FILL
5		S-3	0 / 24	4 - 6	6-2-3-4 (5)			No Recovery.	
		S-4	11 / 24	6 - 8	2-3-7-8 (10)			Wet, medium dense, tan, fine to coarse SAND, little fine to coarse gravel, trace silt, trace roots.	
		S-5	2 / 10	8 - 8.8	15-104/4"			Wet, very dense, gray, fine to coarse GRAVEL, trace fine to coarse sand, trace silt.	GLACIAL DEPOSITS
10								Boulder.	BOULDER
		S-6	1 / 24	10.5 - 12.5	13-24-35-39 (59)			Wet, very dense, gray, fine to coarse GRAVEL, trace coarse sand.	GLACIAL DEPOSITS
		S-7	6 / 24	12.5 - 14.5	18-13-15-16 (28)			Wet, medium dense, tan/gray, fine to coarse SAND, little fine to coarse gravel.	
15		S-8	10 / 24	14.5 - 16.5	6-12-16-19 (28)			Wet, medium dense, tan, fine SAND and SILT, trace medium to coarse sand, trace fine gravel.	
20									
25									
30									

Bottom of borehole at 16.5 feet.

GRANULAR SOILS

BLOWS/FT	DENSITY
0 - 4	V. LOOSE
4 -10	LOOSE
10 - 30	M. DENSE
30 - 50	DENSE
>50	V. DENSE

COHESIVE SOILS

BLOWS/FT	CONSIST.
<2	V. SOFT
2 - 4	SOFT
4 - 8	M. STIFF
8 - 15	STIFF
15 - 30	V. STIFF
>30	HARD

REMARKS:
1. S-2: Rock fragment in tip.
2. Obstruction/boulder at approximately 8.8 feet. Driller advanced rollerbit to 9.5 feet.
3. Driller advanced core barrel through approximately 1-foot diameter boulder between 9.5 feet and 10.5 feet.
4. Well installed as follows: From 16.5 to 12.2 feet, the borehole collapsed, so native material was below 12.2 feet. A 2.25 inch (OD) PVC screen was installed from 12.2 to 2.2 feet and solid PVC was installed from 2.2 feet to ground surface. Sand pack from 12.2 feet to 0.5 feet. Flush mounted road box and cement from 0.5 feet to ground surface.

BURMISTER CLASSIFICATION

TRACE	0 -10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%

PERCENT BY WEIGHT

NOTES: 1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

PARE BORING LOG - GINT STD US LAB.GDT - 9/8/21 15:51 - Y:\JOBS\21 JOBS\21032.00 MEDFIELD-DANIELSONPONDDAMCONCEPDESIGN-MA\BORING LOGS\21032.00 BORING LOGS.GPJ

Pare Corporation
10 Lincoln Road, Suite 210
Foxboro, MA 02035
508-543-1755

BORING NUMBER B21-3

CLIENT Town of Medfield
PROJECT NAME Danielson Pond Dam Conceptual Design
PROJECT NUMBER 21032.00
PROJECT LOCATION Medfield, MA
DATE STARTED 4/19/21 **COMPLETED** 4/19/21
GROUND ELEVATION 147.09 ft NAVD88 **HOLE SIZE** 2 in.
DRILLING CONTRACTOR Technical Drilling Services, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Wash & Drive
AT TIME OF DRILLING 2.00 ft / Elev 145.09 ft
LOGGED BY HMS **CHECKED BY** SJM
AT END OF DRILLING --- N/A
BORING LOCATION 2887222.447°N, 711726.162°E (50 Feet Right of the Spillway)

DEPTH (ft)	CASING (bl/ft)	SAMPLE TYPE NUMBER	RECOVERY/PEN. (in)	DEPTH (FT)	BLOW COUNTS/6"	MIN/FT	GRAPHIC LOG	SAMPLE DESCRIPTION	STRATUM DESCRIPTION
0									
		S-1	5 / 24	0 - 2	2-WOH-1-1			Moist, very loose, brown, fine to coarse SAND, little wood and roots.	2" TOPSOIL
		S-2	22 / 24	2 - 4	3-3-3-3 (6)			2A: (Top 10") Wet, loose, gray, fine to coarse SAND, trace fine to coarse gravel, trace silt. 2B: (Bottom 12") Wet, loose, tan, fine to medium SAND, trace coarse sand, trace silt.	EMBANKMENT FILL
5		S-3	18 / 24	4 - 6	4-6-6-7 (12)			Wet, medium dense, brown, fine to medium SAND, little fine to coarse gravel, trace silt, organic lenses throughout.	
		S-4	9 / 24	6 - 8	3-5-11-12 (16)			4A: (Top 8") Wet, medium dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace roots/wood, trace silt. 4B: (Bottom 1") Wet, medium dense, gray, fine to coarse SAND, trace silt.	GLACIAL DEPOSITS
10								Bottom of borehole at 8.0 feet.	
15									
20									
25									
30									

GRANULAR SOILS

BLOWS/FT	DENSITY
0 - 4	V. LOOSE
4 -10	LOOSE
10 - 30	M. DENSE
30 - 50	DENSE
>50	V. DENSE

COHESIVE SOILS

BLOWS/FT	CONSIST.
<2	V. SOFT
2 - 4	SOFT
4 - 8	M. STIFF
8 - 15	STIFF
15 - 30	V. STIFF
>30	HARD

REMARKS:
1.The driller advanced continuous spoon samples without advancing casing during drilling.
2.Backfilled with coated Bentonite pellets due to small diameter and shallow depth.

BURMISTER CLASSIFICATION

TRACE	0 -10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%

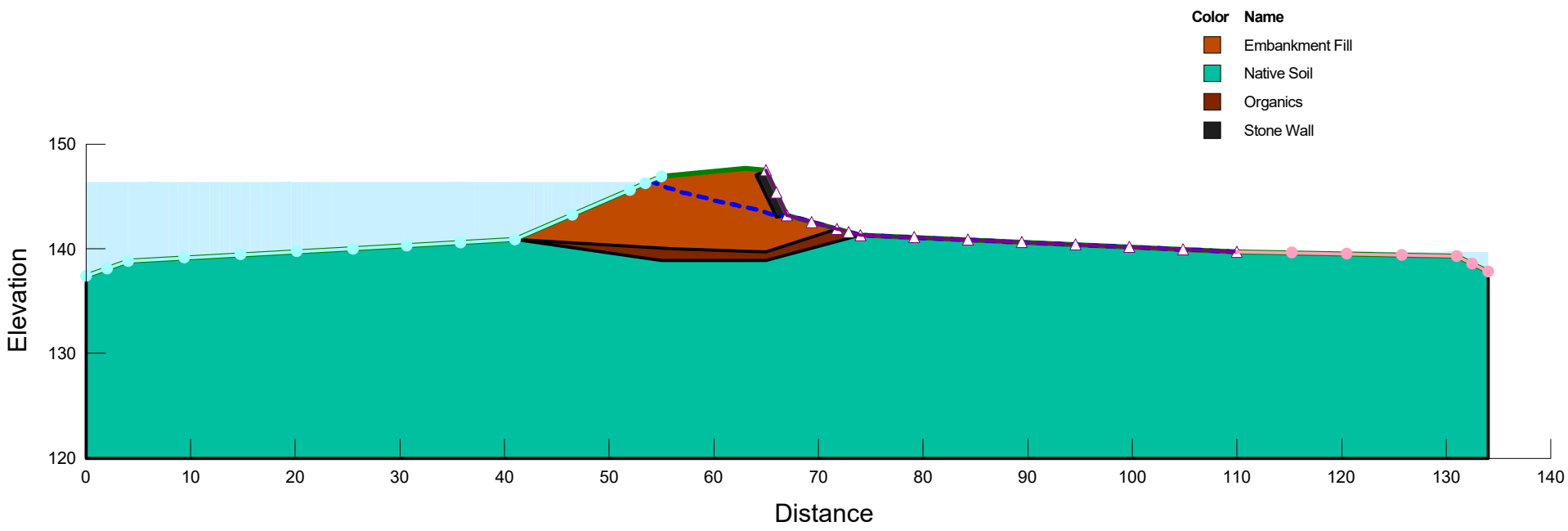
PERCENT BY WEIGHT

NOTES: 1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

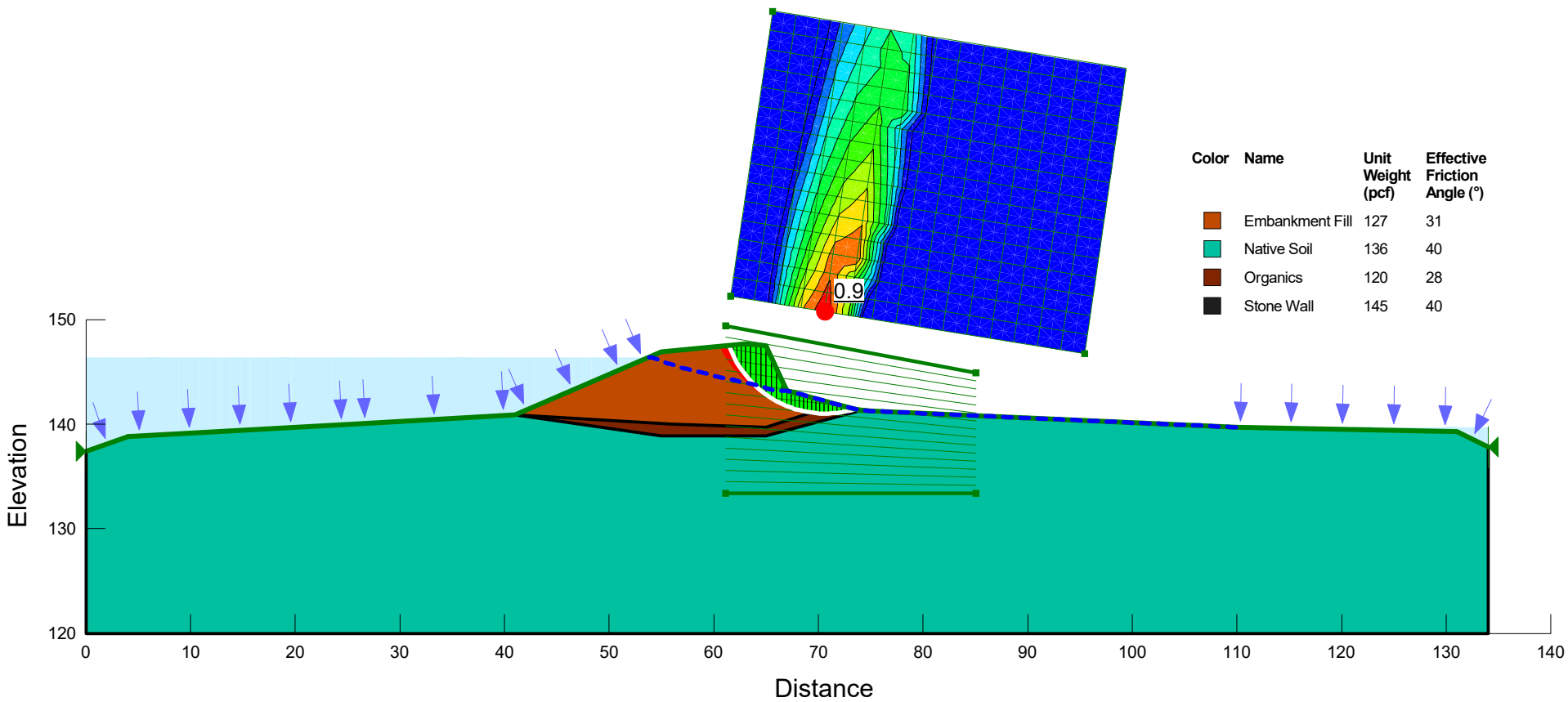
PARE BORING LOG - GINT STD US LAB.GDT - 9/8/21 15:51 - Y:\JOBS\21 JOBS\21032.00 MEDFIELD-DANIELSONPONDDAMCONCEPDESIGN-MA\BORING LOGS\21032.00 BORING LOGS.GPJ

EXISTING CONDITIONS

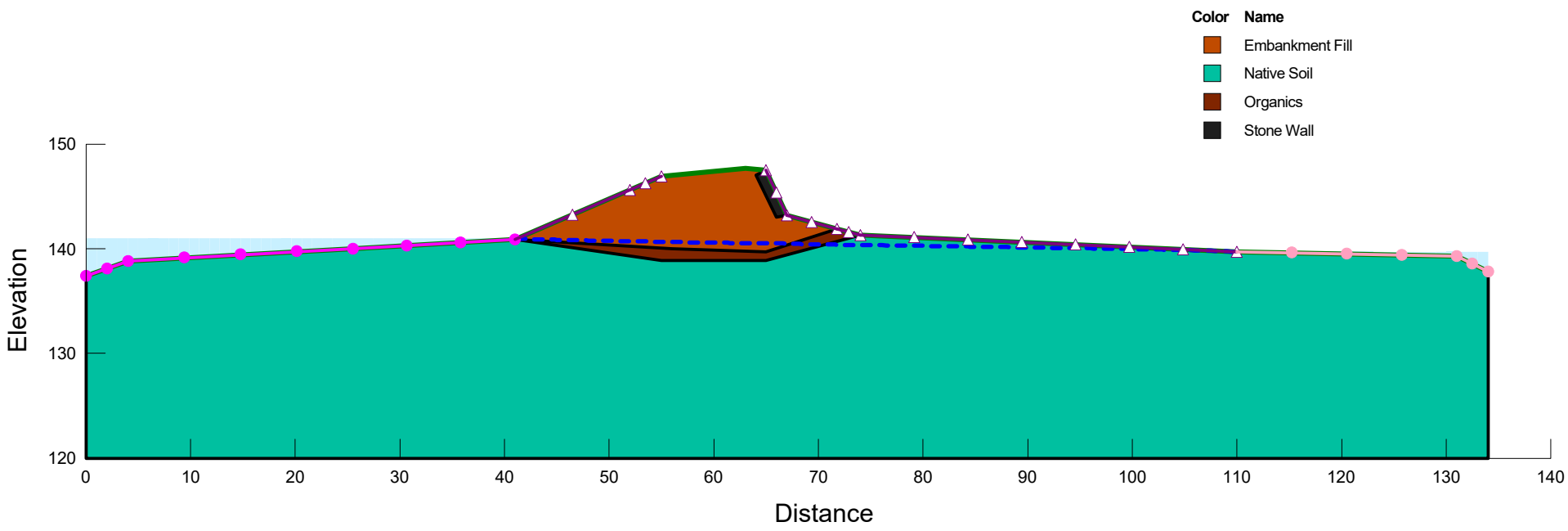
Danielson Maximum Pool



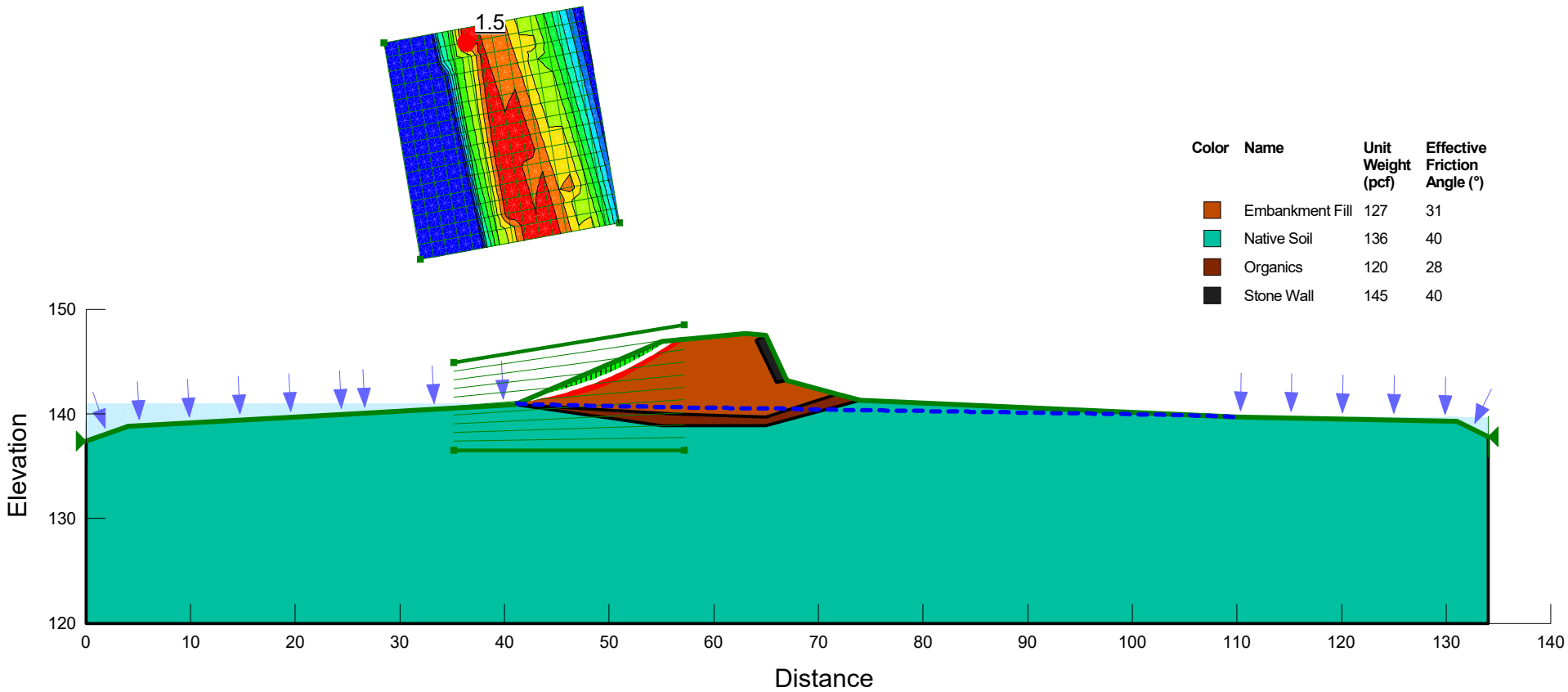
Downstream Slope - Maximum Pool



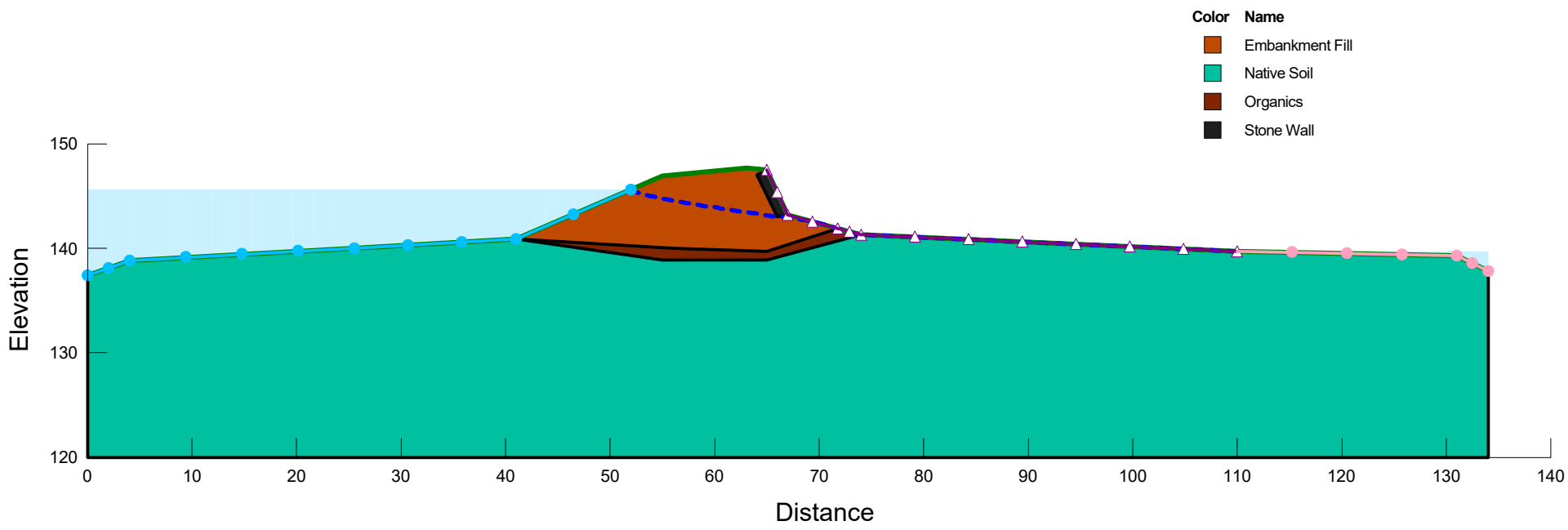
Rapid Drawdown from Maximum Pool



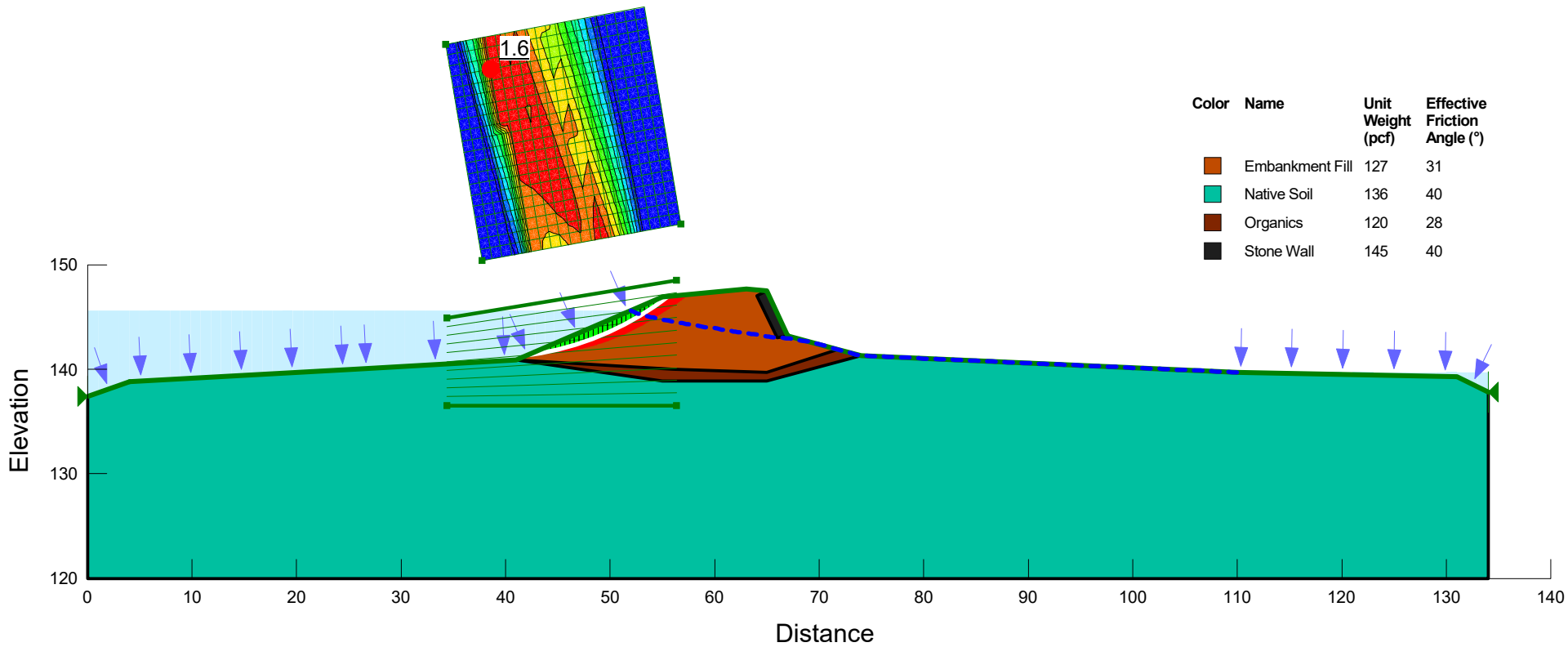
Upstream - Drawdown from Maximum Pool



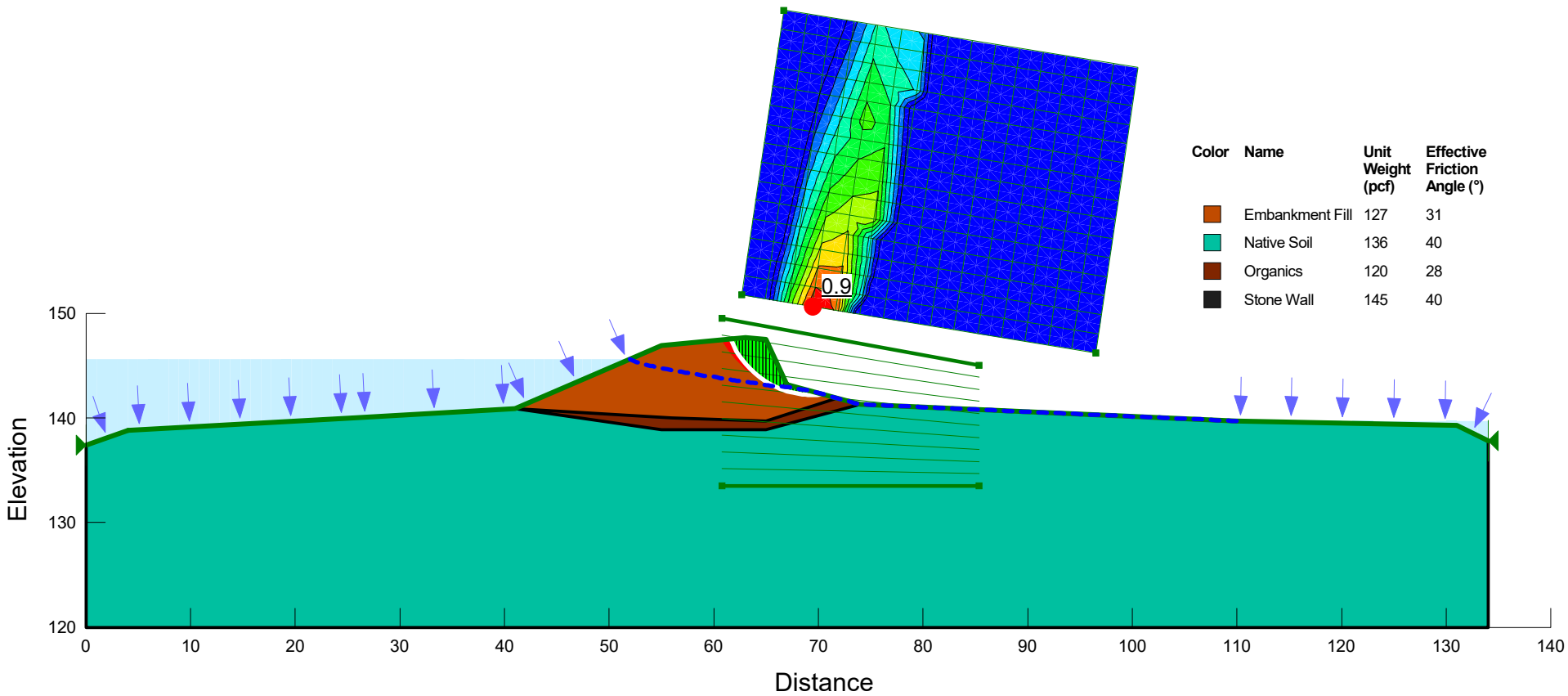
Danielson Normal Pool



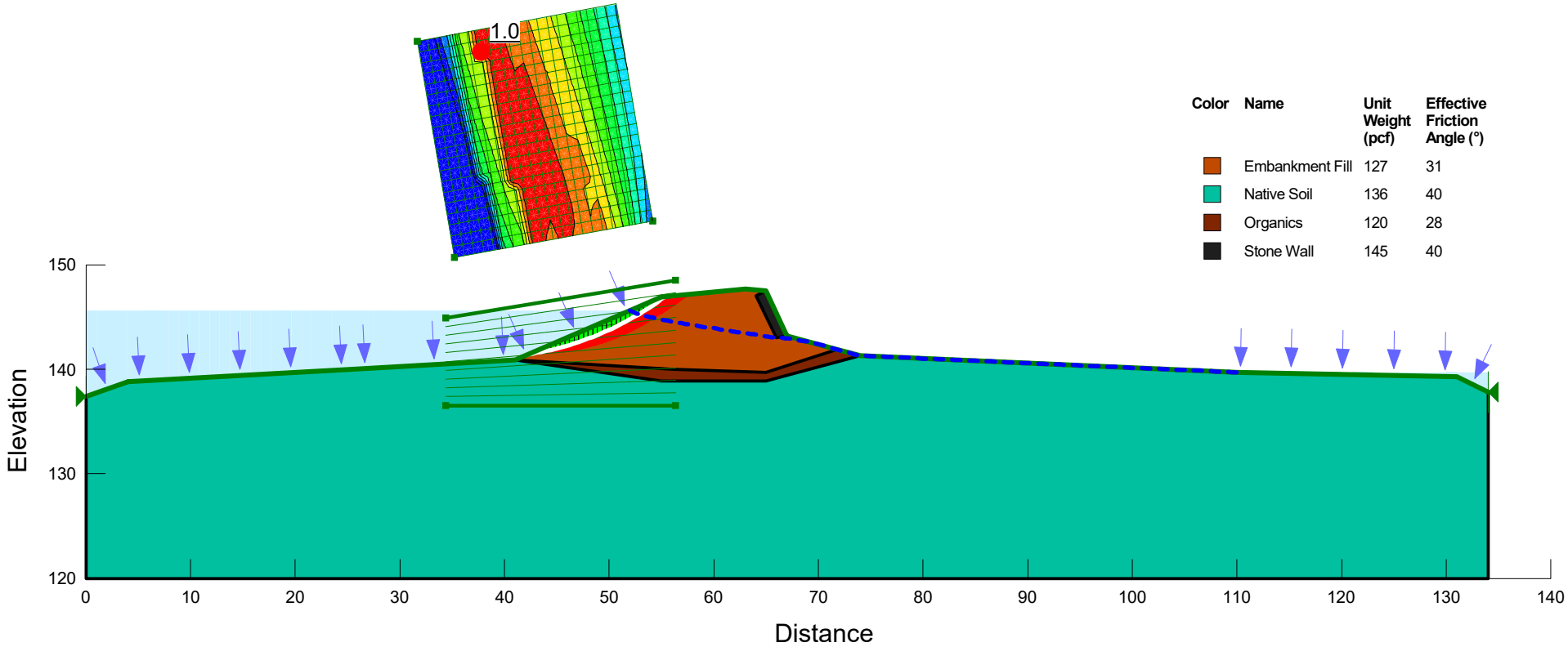
Upstream Slope - Normal Pool



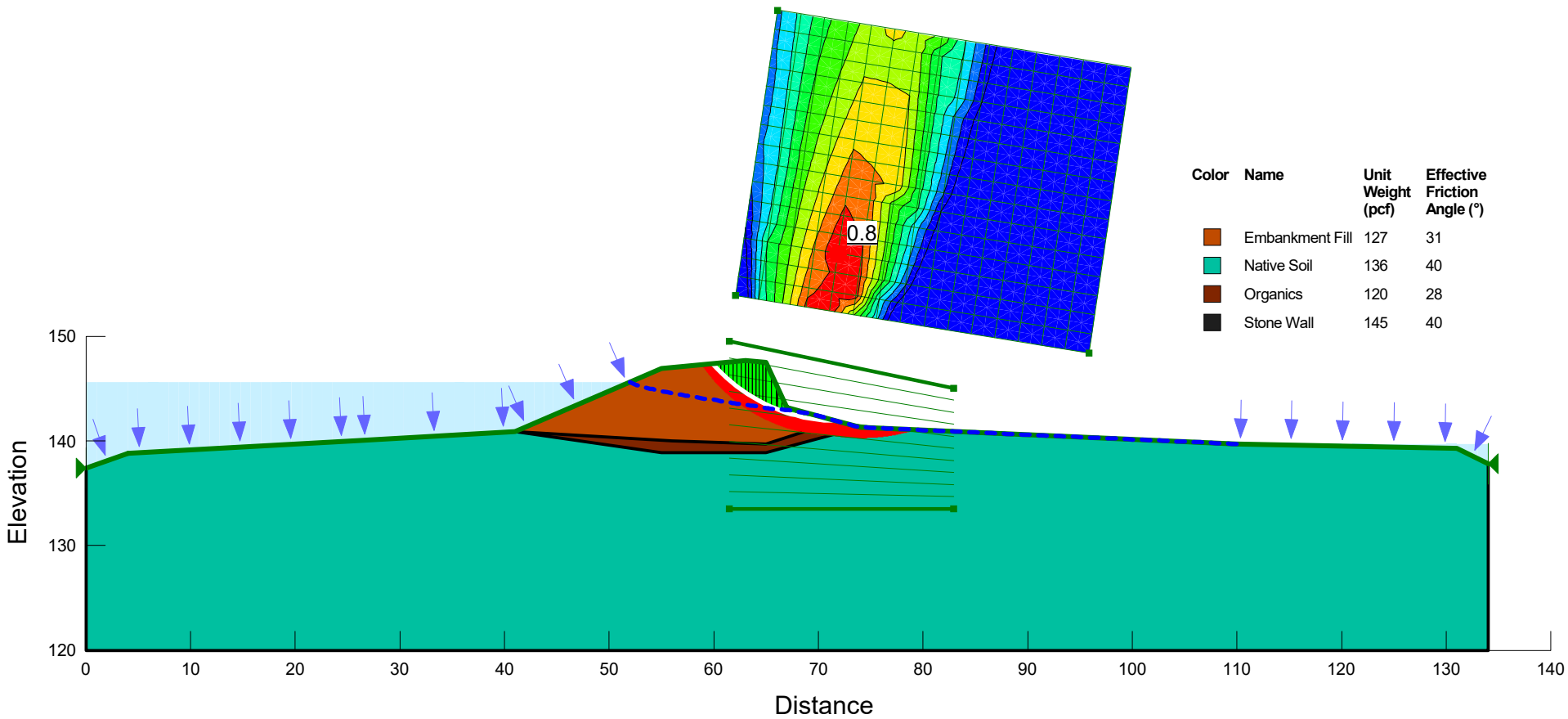
Downstream Slope - Normal Pool



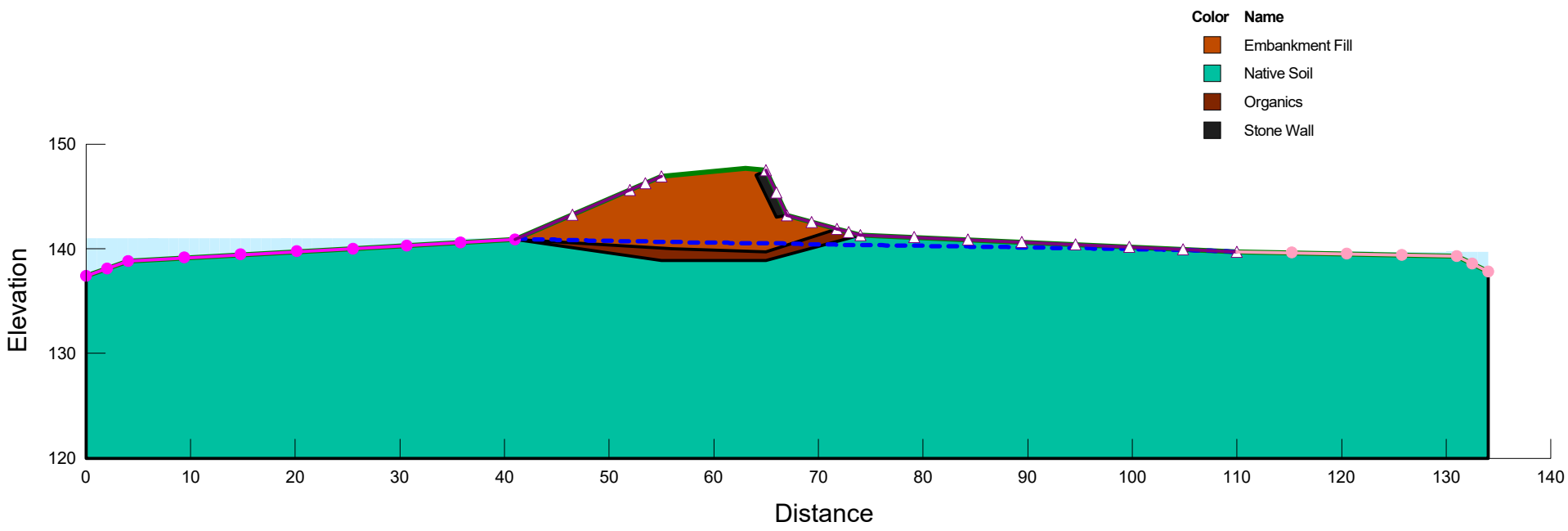
Upstream Slope Earthquake - Normal Pool



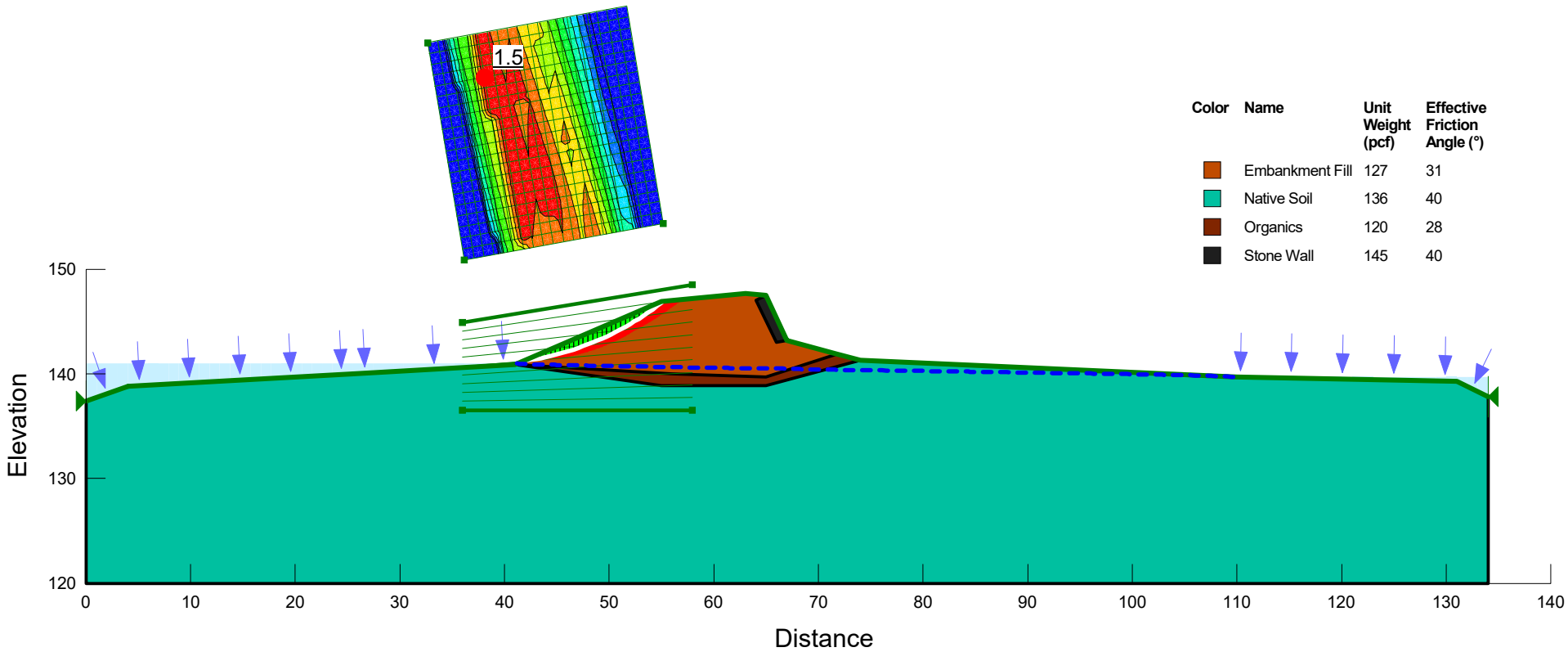
Downstream Slope Earthquake - Normal Pool



Drawdown from Normal Pool

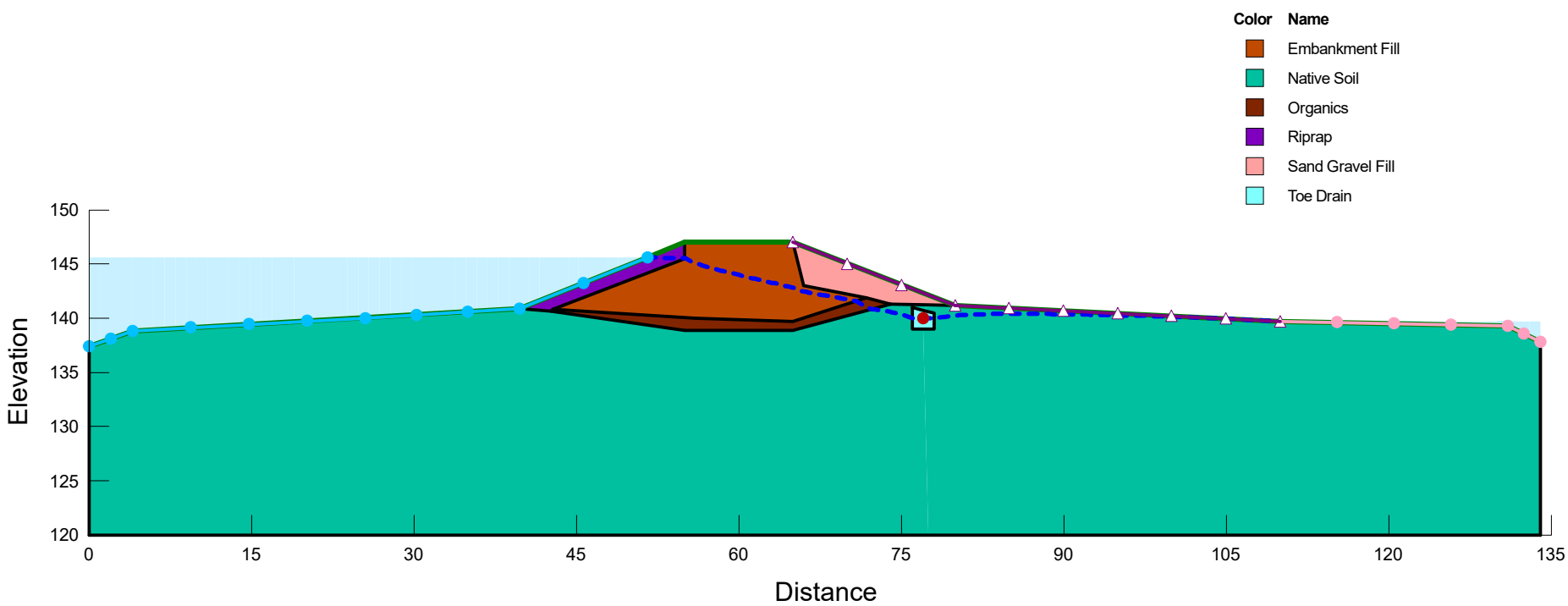


Upstream Slope - Drawdown from Normal Pool

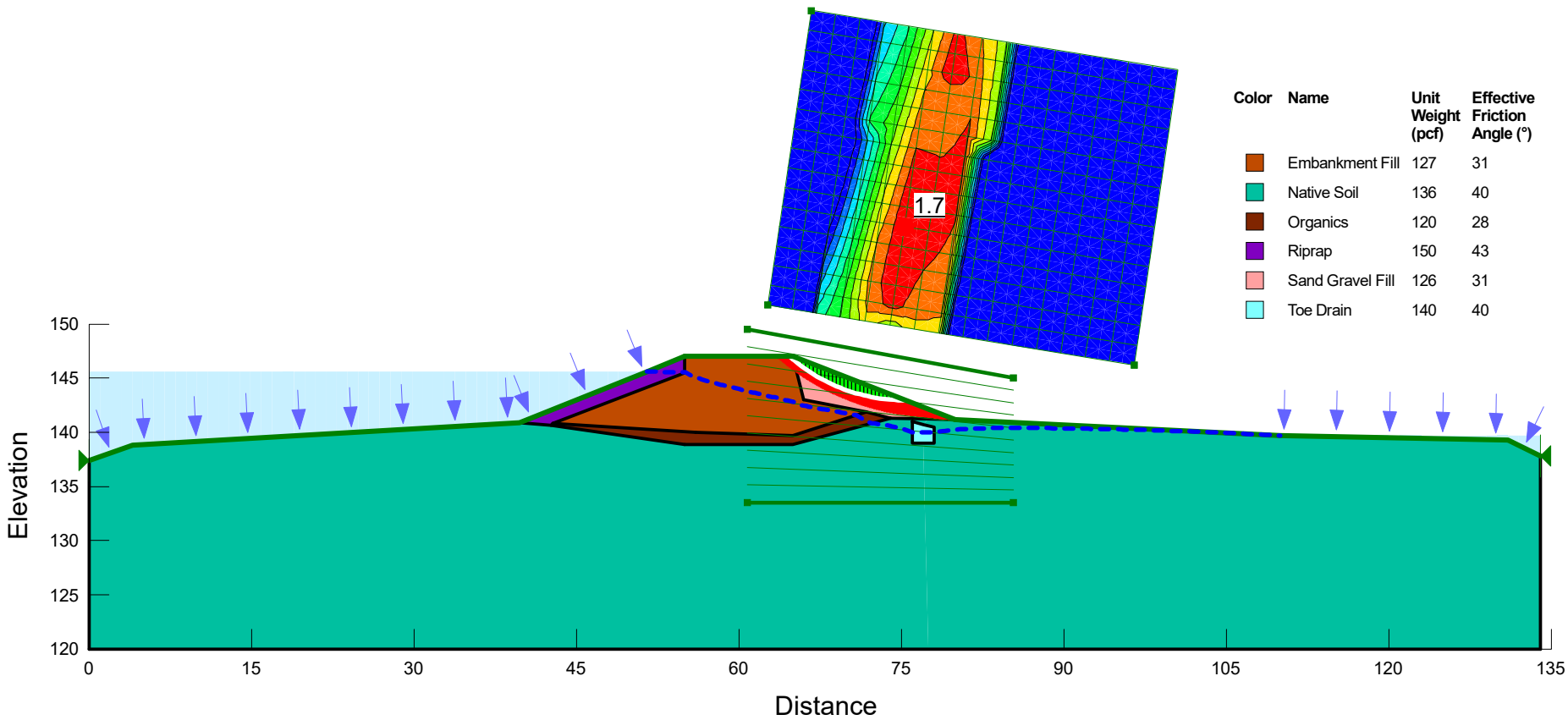


PROPOSED CONDITIONS

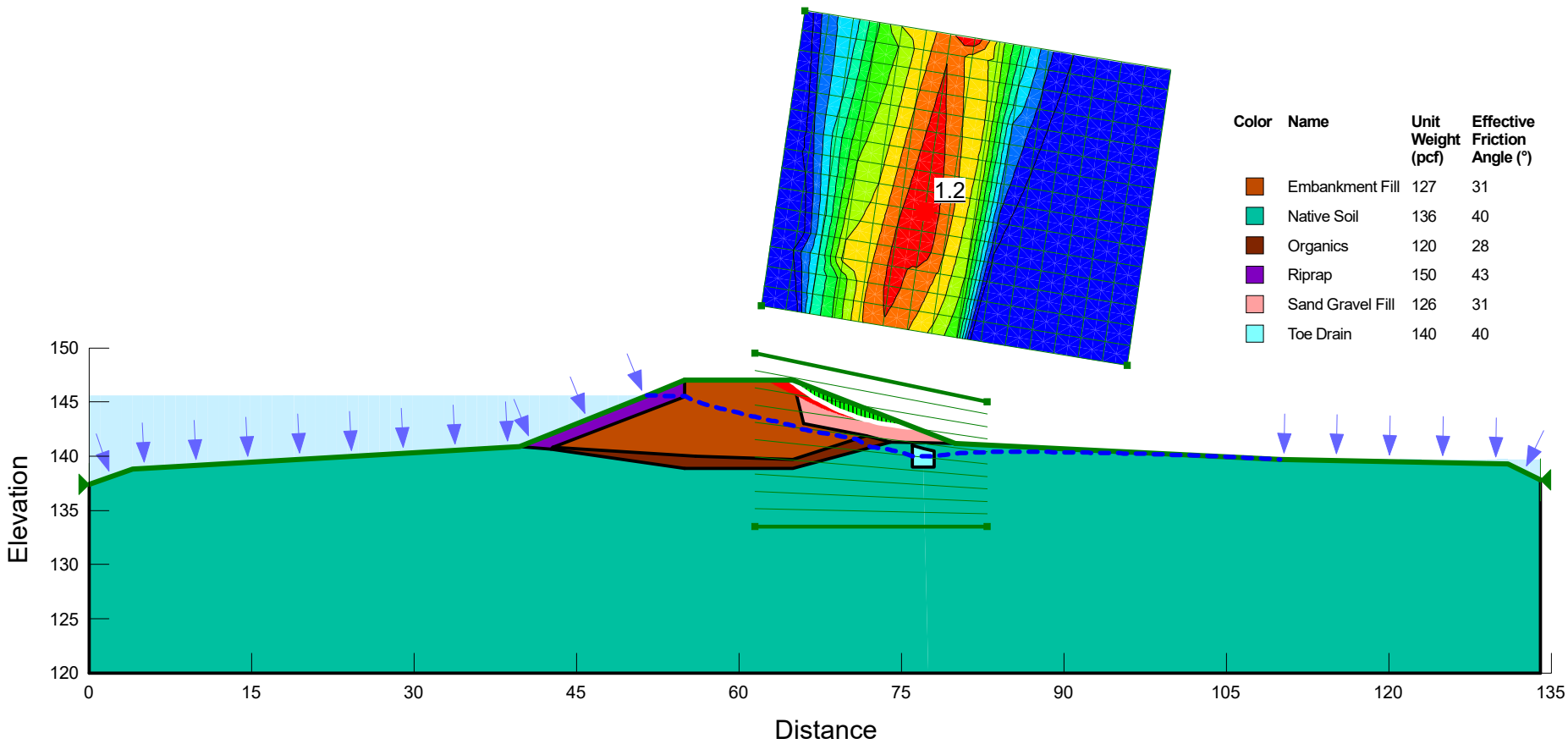
Danielson Proposed Normal Pool



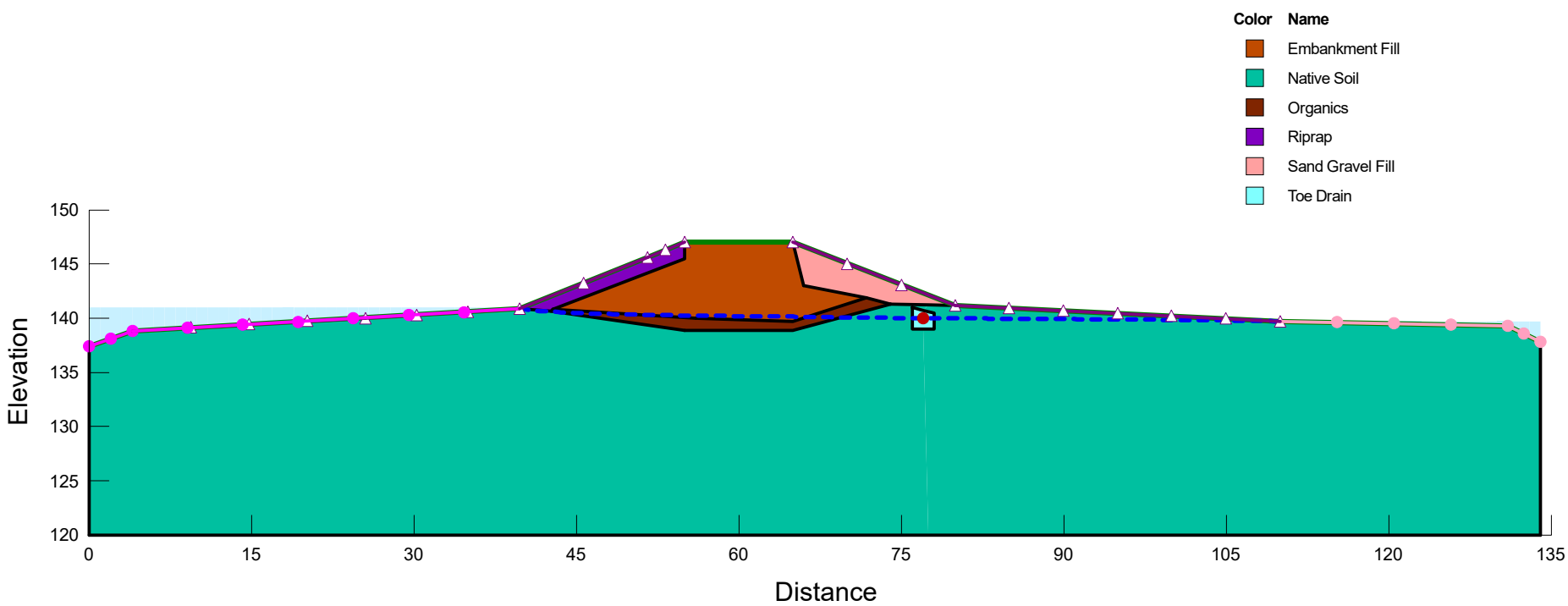
Proposed Downstream Slope - Normal Pool



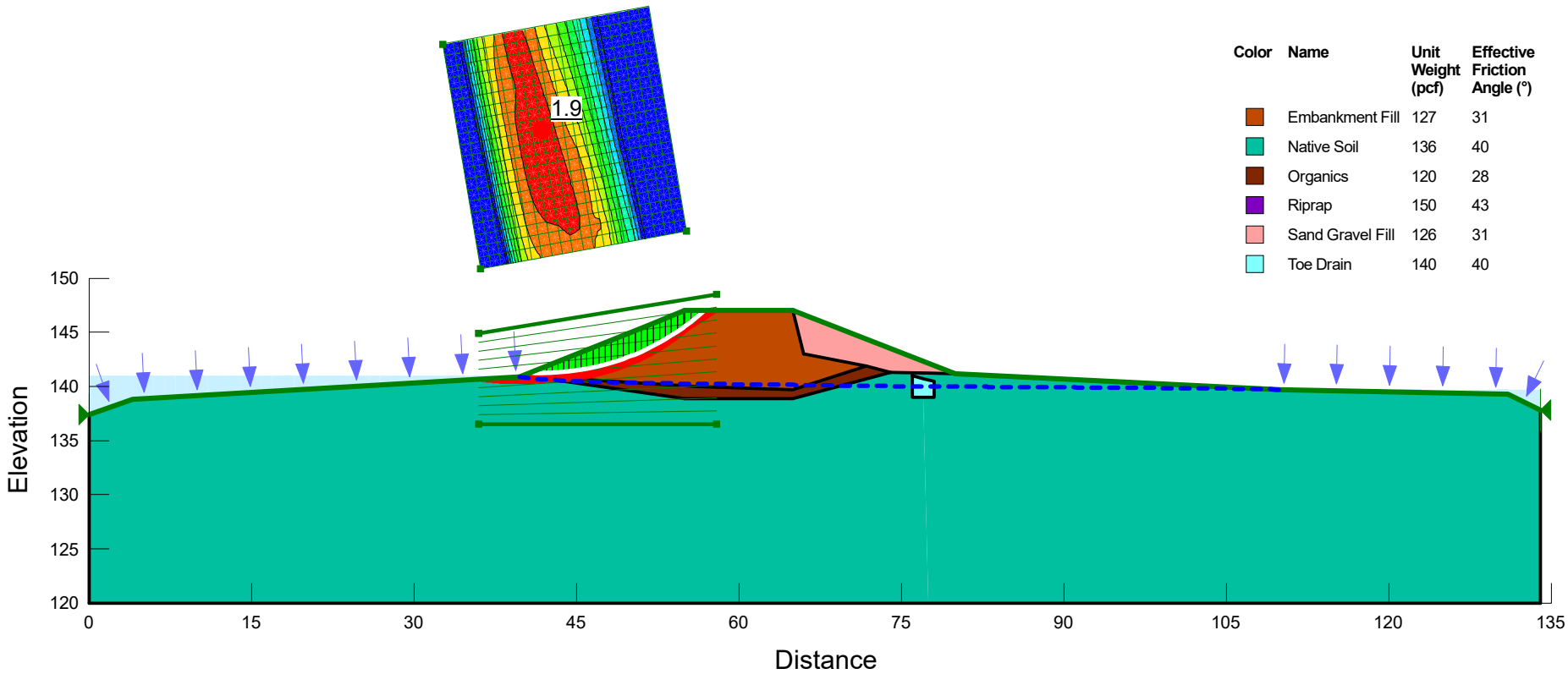
Proposed Downstream Slope Earthquake - Normal Pool



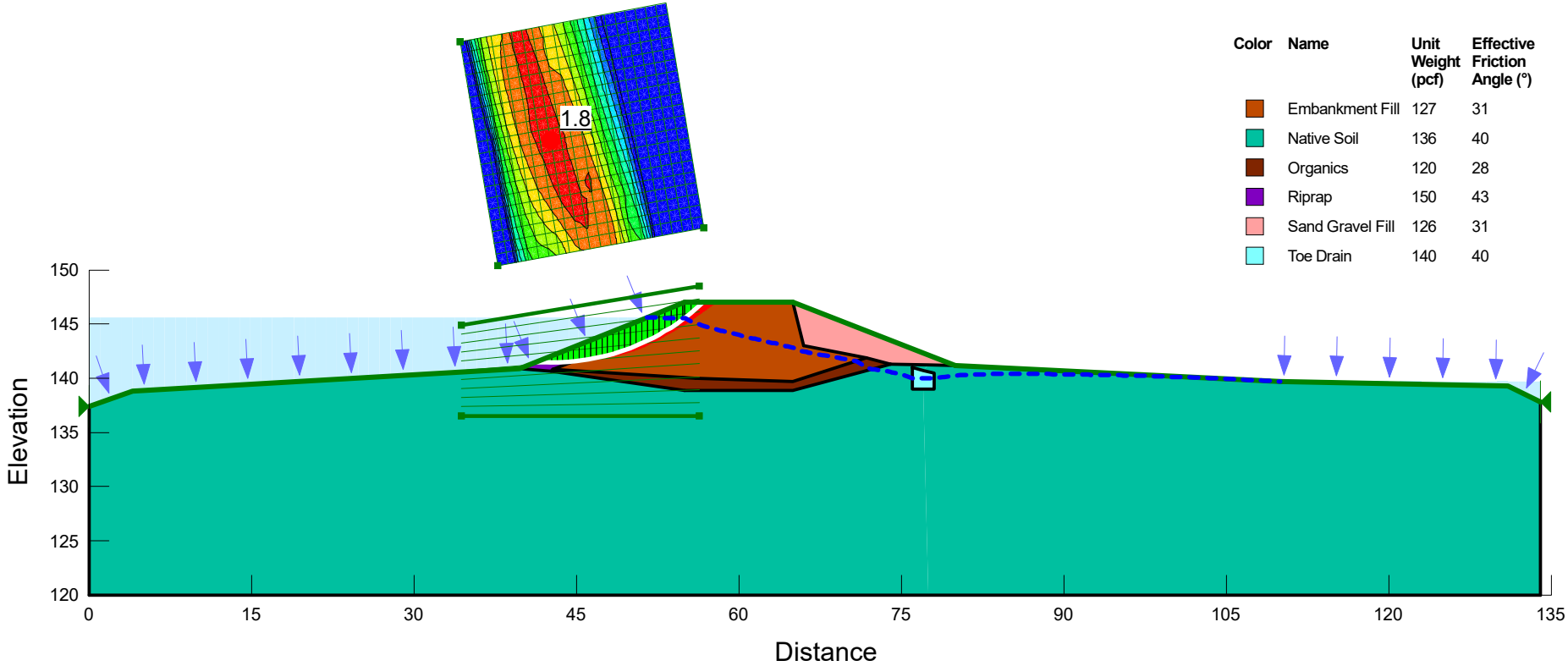
Proposed Drawdown from Normal Pool



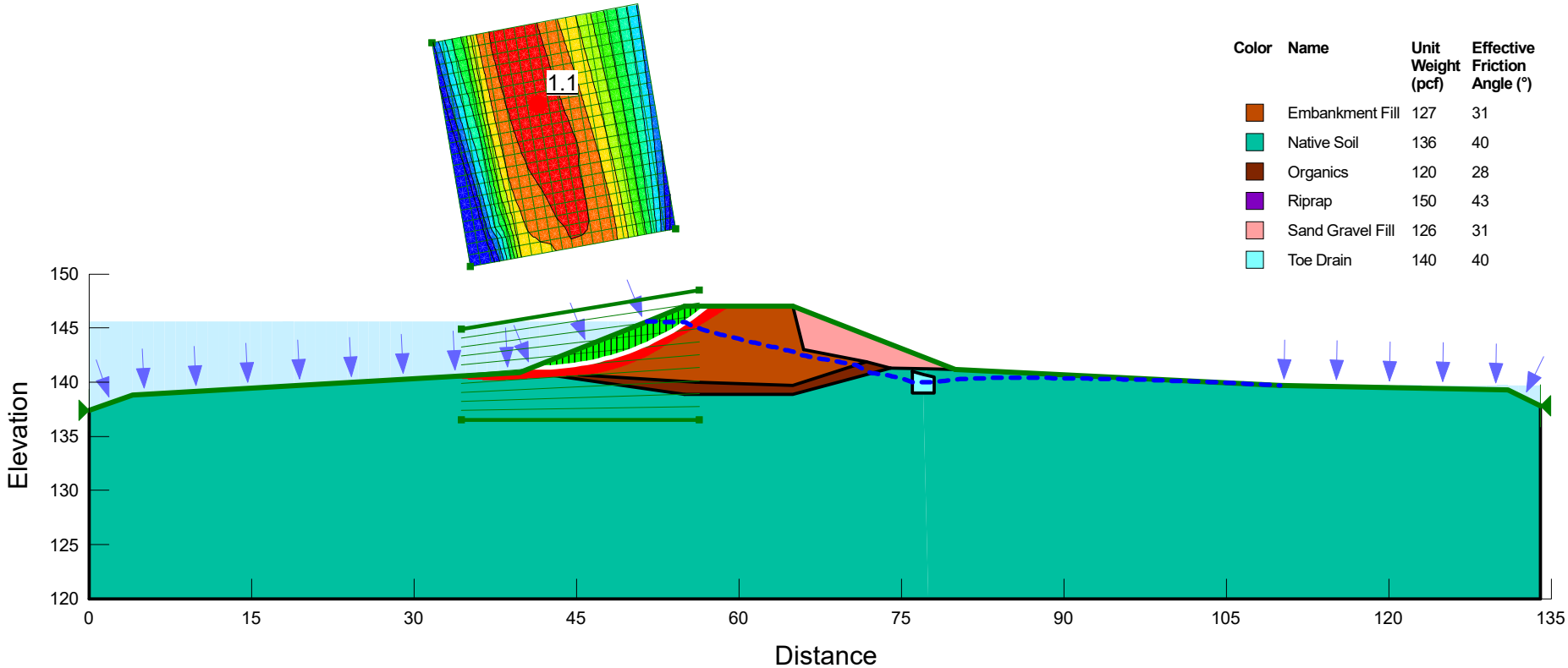
Proposed Upstream Slope - Drawdown from Normal Pool



Proposed Upstream Slope - Normal Pool

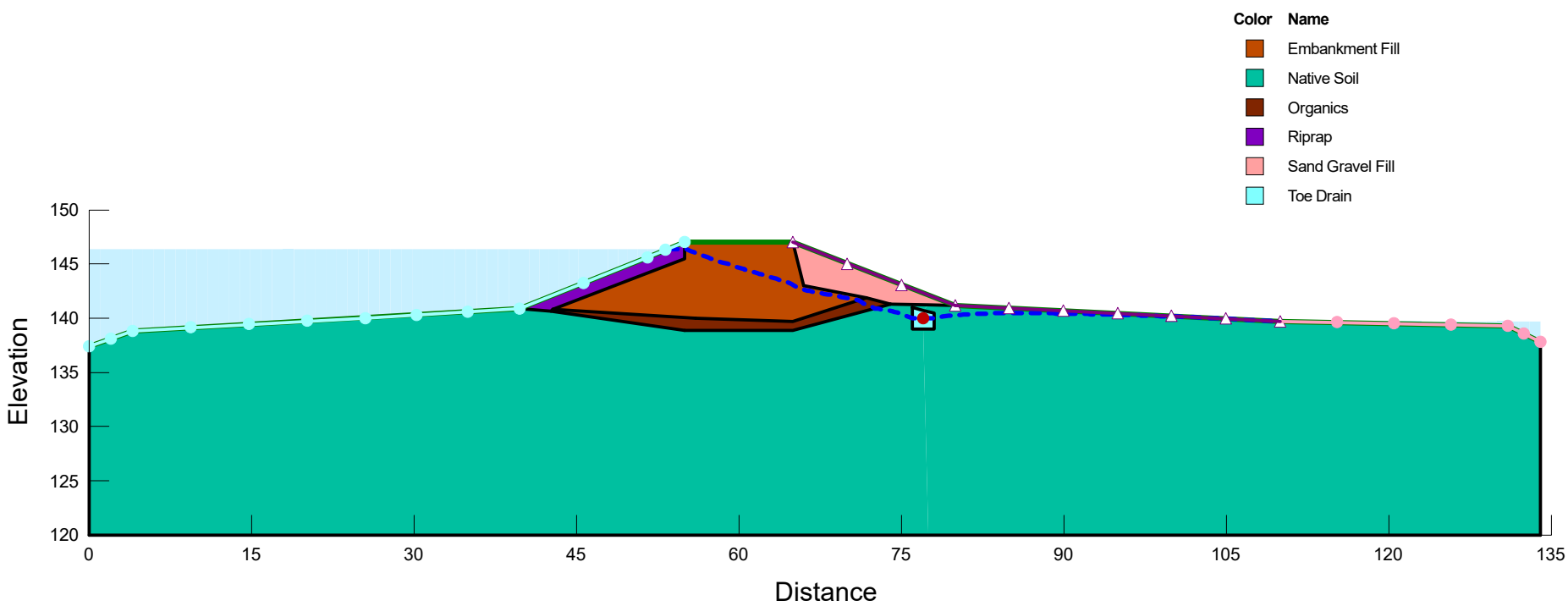


Proposed Upstream Slope Earthquake - Normal Pool

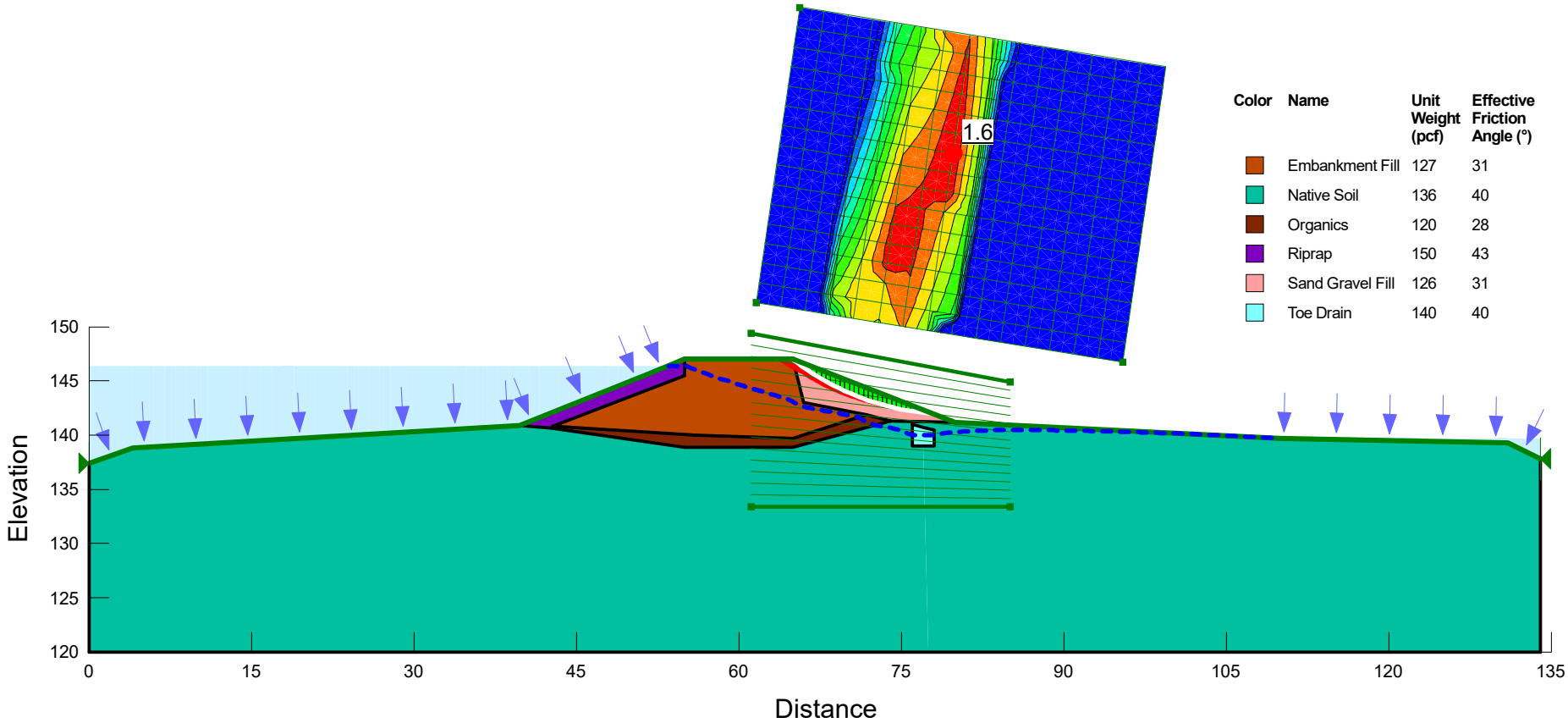


Color	Name	Unit Weight (pcf)	Effective Friction Angle (°)
	Embankment Fill	127	31
	Native Soil	136	40
	Organics	120	28
	Riprap	150	43
	Sand Gravel Fill	126	31
	Toe Drain	140	40

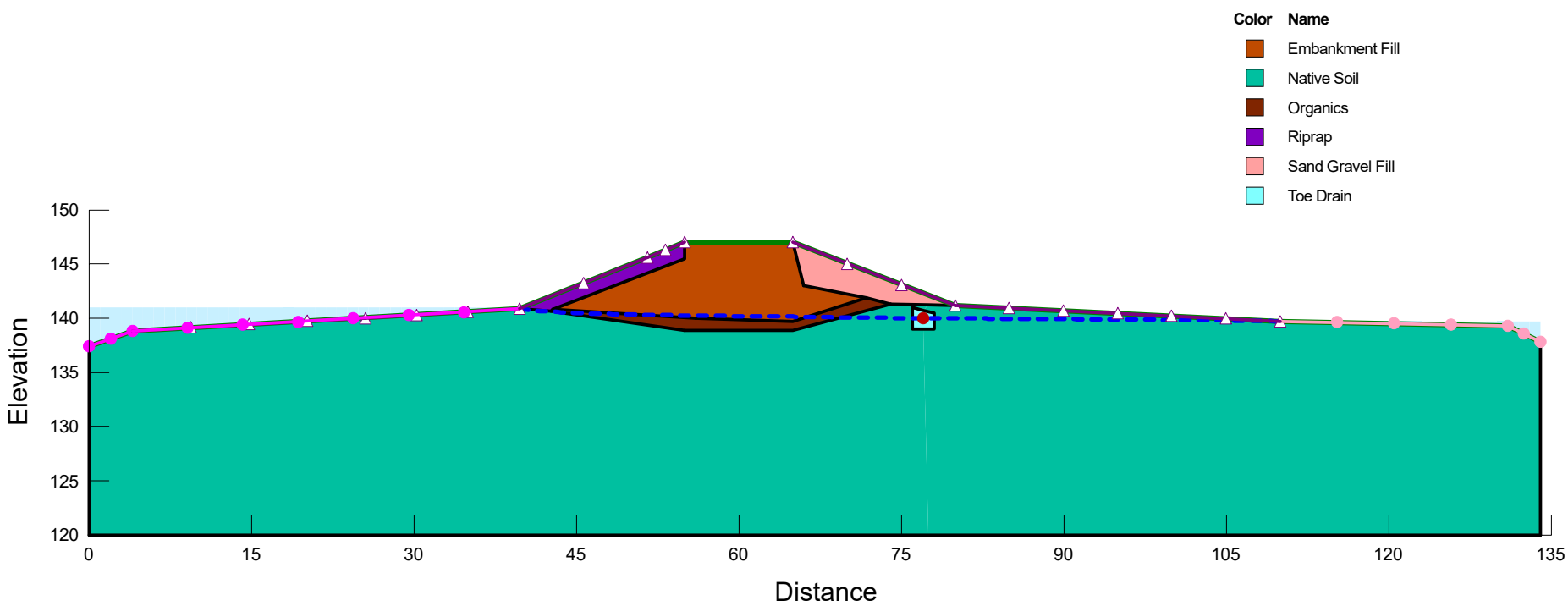
Proposed Maximum Pool



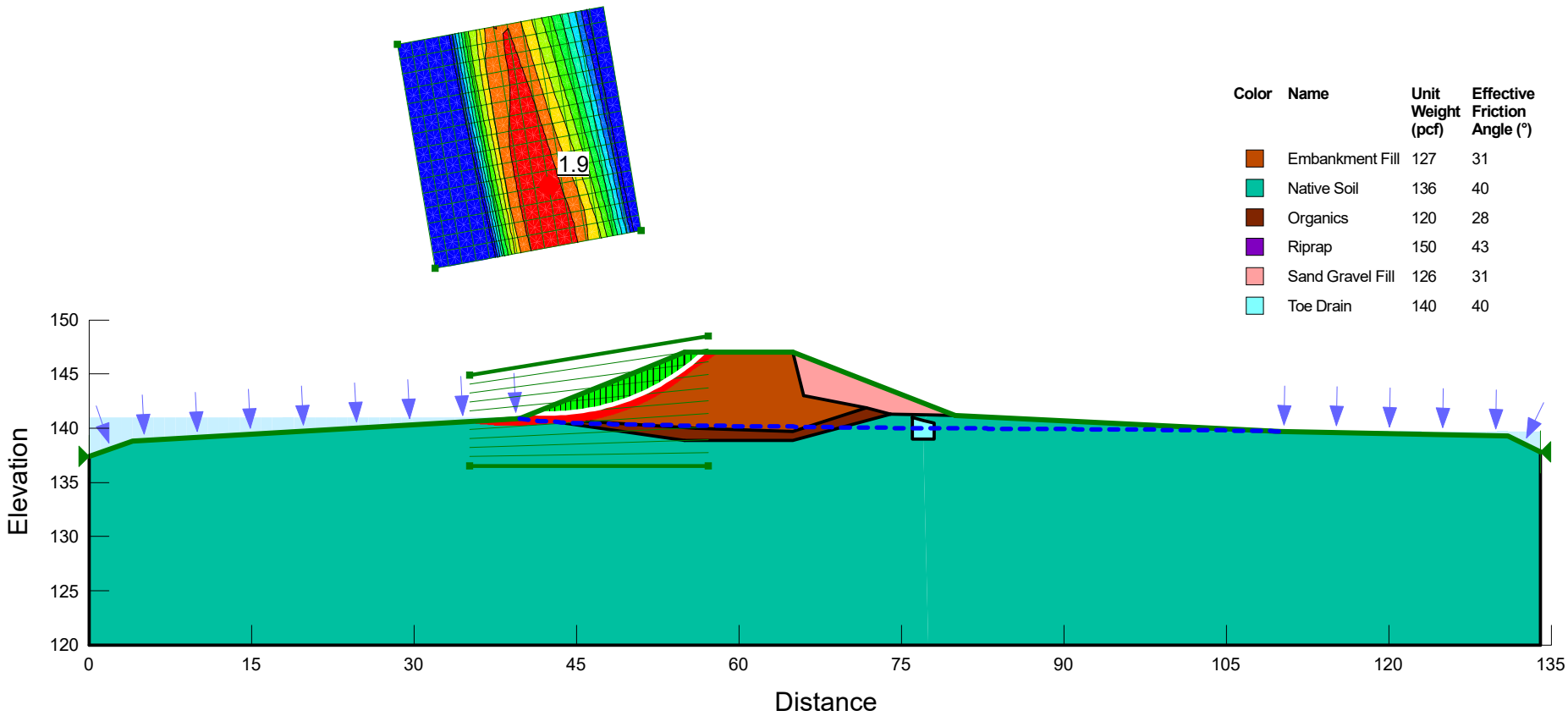
Proposed Downstream Slope - MP



Proposed Rapid Drawdown from Maximum Pool



Proposed Upstream Slope - Drawdown from Maximum Pool



APPENDIX F
Previous Reports and References

Danielson Mill Dam

Medfield, Massachusetts

PREVIOUS REPORTS AND REFERENCES

The following documents were identified within the dam safety database or reference as part of this work:

1. "Poor Condition Follow-Up Inspection", Prepared by Pare Corporation, dated July 8, 2021.
2. "Phase I Inspection/Evaluation Report" for Danielson Mill Dam, prepared by Pare Corporation, dated June 30, 2020.
3. "Hazard Potential Classification Review" for Danielson Mill Dam, Prepared by Pare Corporation, dated February 2020.
4. "Emergency Action Plan" for Danielson Mill Dam, prepared by Pare Corporation, dated December 2020.
5. "Poor Condition Follow-Up Inspection", Prepared by Pare Corporation, dated December 3, 2020.
6. "Poor Condition Follow-Up Inspection", Prepared by Pare Corporation, dated February 28, 2020.
7. "Poor Condition Follow-Up Inspection", Prepared by Pare Corporation, dated August 23, 2019.
8. "Poor Condition Follow-Up Inspection", Prepared by Tighe & Bond, Inc., dated October 18, 2017.
9. "Phase I Inspection/Evaluation Report" for Danielson Mill Dam, prepared by Polaris Consultants, LLC, dated November 24, 2014.

During the development of the report Pare also reviewed available information included within the following databases:

1. MADCR – Dams Viewer Database http://maps.massgis.state.ma.us/dams/viewer.htm

The following references were utilized during the preparation of this report and the development of the recommendations presented herein:

1. "Design of Small Dams", United States Department of the Interior Bureau of Reclamation, 1987.
2. "ER 110-2-106 - Recommended Guidelines for Safety Inspection of Dams", Department of the Army, September 26, 1979.
3. "Guidelines for Reporting the Performance of Dams" National Performance of Dams Program, October 1994.
4. 302 CMR: Department of Conservation and Recreation Section 10.00 Dam Safety
5. Massachusetts State Building Code Sec. 1612.4.9
6. Massachusetts Wetlands Protection Act Regulations 310 CMR 10.

APPENDIX G
Report Limitations
Danielson Mill Dam
Medfield, Massachusetts

REPORT LIMITATIONS

Use of Report

1. The applicability of other environmental permits (ie., NOI, PGP, Water Quality Certificate, etc.) needs to be determined prior to undertaking maintenance activities that may occur within resource areas under the jurisdiction of MADEP, the local conservation commission or other regulatory agency.

2. This report has been prepared for the exclusive use of the Town of Medfield for specific application to the Danielson Mill Dam site in accordance with generally accepted engineering practices. No other warranty, expressed or implied, is made.

3. This report has been prepared for this project by Pare. This report is for preliminary evaluation purposes only and is not necessarily sufficient to support design or repairs or recommendations or to prepare an accurate bid.

Hydrologic & Hydraulic Model Limitations

1. The H&H results discussed herein as well as the conclusions that have been drawn from those results are based on the assumed model conditions and H&H processes and procedures that were used. Some of the processes involved with H&H analyses are theoretical and subject to engineering judgment and estimation.

2. Variations between the assumed model conditions and actual event conditions (rainfall, ground surface conditions, debris clogging, etc.) are likely; as such, deviations between model results and actual conditions are likely.

APPENDIX H
Common Dam Safety Definitions

Danielson Mill Dam

Medfield, Massachusetts

COMMON DAM SAFETY DEFINITIONS

For a comprehensive list of dam engineering terminology and definitions refer to 302 CMR10.00 Dam Safety, or other reference published by FERC, Dept. of the Interior Bureau of Reclamation, or FEMA. Please note should discrepancies between definitions exits, those definitions included within 302 CMR 10.00 govern for dams located within the Commonwealth of Massachusetts.

Orientation

Upstream – Shall mean the side of the dam that borders the impoundment.

Downstream – Shall mean the high side of the dam, the side opposite the upstream side.

Right – Shall mean the area to the right when looking in the downstream direction.

Left – Shall mean the area to the left when looking in the downstream direction.

Dam Components

Dam – Shall mean any artificial barrier, including appurtenant works, which impounds or diverts water.

Embankment – Shall mean the fill material, usually earth or rock, placed with sloping sides, such that it forms a permanent barrier that impounds water.

Crest – Shall mean the top of the dam, usually provides a road or path across the dam.

Abutment – Shall mean that part of a valley side against which a dam is constructed. An artificial abutment is sometimes constructed as a concrete gravity section, to take the thrust of an arch dam where there is no suitable natural abutment.

Appurtenant Works – Shall mean structures, either in dams or separate therefrom. including but not be limited to, spillways; reservoirs and their rims; low level outlet works; and water conduits including tunnels, pipelines, or penstocks, either through the dams or their abutments.

Spillway – Shall mean a structure over or through which water flows are discharged. If the flow is controlled by gates or boards, it is a controlled spillway; if the fixed elevation of the spillway crest controls the level of the impoundment, it is an uncontrolled spillway.

Size Classification

(as listed in Commonwealth of Massachusetts, 302 CMR 10.00 *Dam Safety*)

Large – structure with a height greater than 40 feet or a storage capacity greater than 1,000 acre-feet.

Intermediate – structure with a height between 15 and 40 feet or a storage capacity of 50 to 1,000 acre-feet.

Small – structure with a height between 6 and 15 feet and a storage capacity of 15 to 50 acre-feet.

Non-Jurisdictional – structure less than 6 feet in height or having a storage capacity of less than 15 acre-feet.

Hazard Classification

(as listed in Commonwealth of Massachusetts, 302 CMR 10.00 *Dam Safety*)

High Hazard (Class I) – Shall mean dams located where failure will likely cause loss of life and serious damage to home(s), industrial or commercial facilities, important public utilities, main highway(s) or railroad(s).

Significant Hazard (Class II) – Shall mean dams located where failure may cause loss of life and damage to home(s), industrial or commercial facilities, secondary highway(s) or railroad(s), or cause the interruption of the use or service of relatively important facilities.

Low Hazard (Class III) – Dams located where failure may cause minimal property damage to others .Loss of life is not expected.

General

EAP – Emergency Action Plan - Shall mean a predetermined plan of action to be taken to reduce the potential for property damage and/or loss of life in an area affected by an impending dam break.

O&M Manual – Operations and Maintenance Manual; Document identifying routine maintenance and operational procedures under normal and storm conditions.

Normal Pool – Shall mean the elevation of the impoundment during normal operating conditions.

Acre-foot – Shall mean a unit of volumetric measure that would cover one acre to a depth of one foot. It is equal to 43,560 cubic feet. One million U.S. gallons = 3.068 acre feet

Height of Dam – Shall mean the vertical distance from the lowest portion of the natural ground, including any stream channel, along the downstream toe of the dam to the crest of the dam.

Spillway Design Flood (SDF) – Shall mean the flood used in the design of a dam and its appurtenant works particularly for sizing the spillway and outlet works, and for determining maximum temporary storage and height of dam requirements.

Condition Rating

Unsafe - Major structural, operational, and maintenance deficiencies exist under normal operating conditions.

Poor - Significant structural, operation and maintenance deficiencies are clearly recognized for normal loading conditions.

Fair - Significant operational and maintenance deficiencies, no structural deficiencies. Potential deficiencies exist under unusual loading conditions that may realistically occur. Can be used when uncertainties exist as to critical parameters.

Satisfactory - Minor operational and maintenance deficiencies. Infrequent hydrologic events would probably result in deficiencies.

Good - No existing or potential deficiencies recognized. Safe performance is expected under all loading including SDF