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PROFESSIONAL ENGINEERS // LAND SURVEYORS

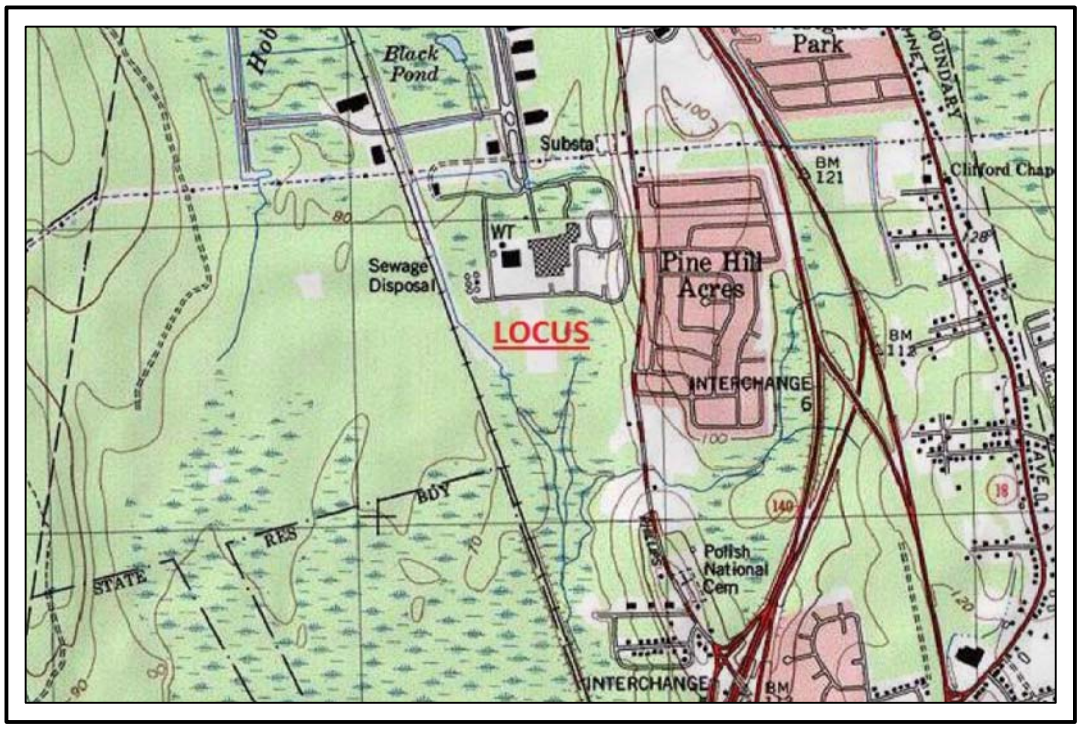
Hayward-Boynton & Williams
A THOMPSON FARLAND COMPANY

Cullinan Engineering
A THOMPSON FARLAND COMPANY

NOTICE OF INTENT

SITE PLAN

ASSESSORS MAP 134 – LOTS 456, 457, 458, & 459
50 DUCHAINE BLVD.
NEW BEDFORD, MASSACHUSETTS



PREPARED FOR:

PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

www.ThompsonFarland.com

(Main Office) 398 County Street, **New Bedford**, MA 02740 · P.508.717.3479 · F.508.717.3481
54 Longmeadow Road, **Taunton**, MA 02780 · P.508.822.9870
2 Canal Park, 5th Floor, **Cambridge**, MA 02141 · P.617.679.1601
241 Boston Post Road, West, 1st Floor, **Marlborough**, MA 01752 · P.508.832.5811

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STORMWATER MANAGEMENT REPORT

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54 Longmeadow Road, **Taunton**, MA 02780 · P.508.822.9870
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STORMWATER MANAGEMENT REPORT
AND
HYDROLOGIC ANALYSIS

Proposed Site Plan – 50 Duchaine Boulevard
(Assessors Map 134, Lots 456, 457, 458, and 459)
New Bedford, Massachusetts

Project Summary

The project area associated with this proposed development is located at the southern terminus of Duchaine Boulevard in the New Bedford Business Park in northern New Bedford. The site is comprised of several tax parcels, including Lots 456, 457, 458, and 459 on Assessor's Map 134, and consists of approximately fifty-eight (58) acres. The proposed project area comprises only a small portion of the total parcel area. Much of the parcel area, including the entire proposed project area, is located in the city's Industrial C zoning district. The site currently contains a large un-occupied warehouse style building with associated parking, loading, and landscaped areas. Access to the site is gained from a looped road off of Duchaine Boulevard, over which access easements have been provided.

The applicant is seeking permission to provide parking, loading, and drainage improvements to the project site. The applicant is proposing to install twenty-four (24) loading docks on the north side of the existing building, and to provide an additional forty-one (41) trailer parking spaces throughout the site. Proposed improvements also include seventy-one (71) new employee parking spaces. In order to attenuate the increased stormwater runoff generated by the proposed impervious site coverage and to provide the appropriate level of water quality treatment, additional stormwater management practices have been proposed. Proposed structural BMP's include sediment forebays and infiltration basins.

Methodology

Drainage computations were performed using the Natural Resources Conservation Services (NRCS) TR-20 method and HydroCAD® Drainage Calculation Software to determine the change in the existing and post-development runoff rates from each drainage area for the 2-, 10-, and 100-year 24 hour storm events. The limits of the work proposed to complete the project fall within an area subject to protection by the Wetlands Protection Act, therefor, compliance with DEP Stormwater Management Standards is required. Sketches of the existing and proposed watershed areas, HydroCAD® Report, and copies of the calculation sheets are included as appendices to this report.

Existing Conditions

The soils underlying the site are identified in the Natural Resources Conservation Service (NRCS) Soil Survey of Bristol County ***(see Exhibit D)***. The site soils are classified as 256B (Deerfield loamy sand, Hydrologic Soils Group [HSG] "A"), 651 (Udorthents, smoothed, HSG "A"), 39A (Scarboro mucky fine sandy loam, HSG "A/D"), and 51A (Swansea muck, HSG "B/D")

Soil testing was performed by Thompson Farland, Inc. under the direction of John Marchand, P.E. on November 25, 2015 to confirm the soil survey and determine the soil suitability for on-site stormwater management purposes.

The deep test-holes were performed to a depth of approximately 3-1/2 feet to 7-1/2 feet to determine the seasonal high groundwater elevation. Mottling was encountered at depths varying from 20" to 56", and standing water was encountered at all test holes. The locations of the testholes are shown on the site plan.

Stormwater Management Overview

Existing Conditions:

The project site has been divided into two existing subcatchment drainage areas, which discharge to one design point. The design point chosen for this site is the limit of the bordering vegetated wetlands surrounding the site to the east, south, and west. One subcatchment area is modeled which encompasses those portions of the site where stormwater runoff is allowed to shed toward the BVW un-attenuated. The second subcatchment area encompasses those areas where stormwater will be captured by the existing on-site drainage system which discharges to an existing stormwater "wet basin" at the south end of the site. Existing outlet controls have been incorporated into the model, and the outflow from the pond is combined with the uncontrolled runoff to the BVW to provide a total flow to the design point.

Proposed Conditions:

Under proposed conditions, nine subcatchment areas have been included in the drainage model. New paved areas behind (south of) the existing building sheds runoff overland toward two proposed infiltration basins, located between the existing driveway and the proposed paved area. Pretreatment is achieved through two sediment forebays at each basin. The new paved areas in front (north) of the existing building, where the proposed loading docks are located, shed runoff toward two proposed infiltration basins, located between the existing roadway and the proposed paved areas. Each of these basins is pretreated through two sediment forebays. A series of trench drains located in front of the proposed loading docks collect stormwater runoff and directs it to deep sump manhole structures, which discharge to one of two proposed 10,000 gallon pump chambers, which will discharge runoff toward the two infiltration basins between the road and the paved areas. Each of these infiltration basins will then

discharge toward another proposed infiltration basin, located between the existing driveway and the bordering vegetated wetland surrounding the site. Each of these basins is also designed to collect runoff from direct runoff from portions of the proposed paved surface.

The proposed infiltration basins have been designed in accordance with the DEP Stormwater Handbook. In accordance with the Stormwater Handbook, the rate mitigation facilities have been engineered to reduce post-development runoff rates from pre-development conditions.

Stormwater Management Standards

Standard 1:

- Under proposed conditions, there will be no new untreated discharges or erosion in wetland areas. Drainage outfalls from the two infiltration basins which discharge toward the existing BVW are provided with rip-rap spillways to help control velocity and erosion at the outlet. Stormwater discharges have been held below erodible velocities. This standard has been met.

Standard 2:

- The design of the stormwater system was designed for the post-development conditions to handle all storms' peak discharges and runoff volume to include the 2, 10, and 100-year storm events. The site drainage system was designed in consideration of the structural standards and techniques of the Best Management Practices (BMP) and Low Impact Development (LID) outlined in the "Stormwater Management Handbook".

  The results of site drainage calculations are presented in the following Table. The results are based upon evaluation of Pre-development conditions and the design of proposed surface drainage systems for the Post-development condition. These results show the Post-Development offsite runoff rates are reduced to less than the Pre-development conditions, thus meeting the BMP guidelines for this site development. This standard has been met.

Table 1 - Comparison of Pre- versus Post-Development Offsite Runoff Rate, cfs

Frequency Storm	2-Year	10-Year	100-Year
Pre-Development	4.89	12.13	26.29
Post-Development	3.39	10.94	24.20

*See ***Exhibit F*** for supporting hydrologic calculations

Standard 3:

- The proposed infiltration basins have been designed to recharge some of the anticipated stormwater runoff from the new impervious area. Those existing paved areas which are not to be disturbed as part of the proposed project have not been accounted for in the calculations for determining the required recharge volume. The required Recharge Volume has been calculated using the Static Method and calculations are provided in ***Exhibit G***. Drawdown Calculations have also been provided in ***Exhibit H***. This standard has been met.

Standard 4:

- The proposed stormwater management systems for this project have been designed to remove 80% of the average annual post construction load of Total Suspended Solids in accordance with this standard, as shown in calculations provided in ***Exhibit J***. Suitable practices for source control and pollution prevention have been identified in a long-term pollution prevention plan in ***Exhibit M***. Structural BMPs have been designed to capture the required water quality volume (***Exhibit I***) determined in accordance with the Stormwater Handbook. This standard has been met.

Standard 5:

- As a recycling facility, the proposed use is a Land Use with Higher Potential Pollutant Load. Stormwater discharges are proposed to be treated by the specific structural BMPs determined to be suitable for treating runoff from such land uses. Sediment Forebays and Infiltration Basins are appropriate BMPs for use with Land Uses with Higher Potential Pollutant Load. Stormwater treatment has been designed to provide 44% TSS removal prior to discharge to the infiltration BMPs, and BMPs have been designed to treat 1.0 inch of runoff times the total new impervious are at the post-development site. This standard has been met

Standard 6:

- The site does not discharge within the Zone II or IWPA of a public water supply, nor does it discharge near or to any critical areas. This standard does not apply.

Standard 7:

- This project is a partial re-development project. Much of the site is currently paved or covered with impervious cover. Those areas where new impervious coverage is proposed have been designed to meet all of the required Stormwater Standards. Those areas where existing impervious is proposed to remain will be allowed to maintain existing drainage patterns, where much of the runoff from the existing driveway area is directed through an existing piped drainage system to an existing stormwater basin at the rear of the site, which attenuates the runoff prior to discharge to the BVW. A limited amount of treatment is provided in this

existing drainage system. Due to the water table present on-site, it is not feasible to fully meet all Standards for the existing impervious conditions.

Standard 8:

- We have provided for Construction Period Pollution in accordance with the regulations. A formal Construction Period Pollution Prevention Plan will be submitted prior to construction.

Standard 9:

- A long-term operation and maintenance plan has been prepared to ensure that stormwater management systems function as designed. ***(Exhibit L)***

Standard 10:

- We are not proposing any illicit discharges as defined in the Stormwater Management Regulations. See attached letter in ***Exhibit N***

NOTICE OF INTENT

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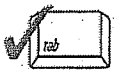
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File Number
Document Transaction Number
City/Town

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Note: Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

A. General Information

1. Project Location (**Note:** electronic filers will click on button to locate project site):

50 Duchaine Boulevard — a. Street Address
New Bedford — b. City/Town
02740 — c. Zip Code

Latitude and Longitude:
41°42'50" N — d. Latitude
70°57'05" W — e. Longitude

Map 134 — f. Assessors Map/Plat Number
Lots 456, 457, 458, and 459 — g. Parcel /Lot Number

2. Applicant:

a. First Name
b. Last Name
Parallel Products — c. Organization
401 Industry Road — d. Street Address
Louisville — e. City/Town
KY — f. State
40208 — g. Zip Code
h. Phone Number
i. Fax Number
j. Email Address

3. Property owner (required if different from applicant): ☐ Check if more than one owner

a. First Name
b. Last Name
Multilayer Coating Tech. — c. Organization
1 Cranberry Hill 750 Marrett Road, Suite 401 — d. Street Address
Lexington, — e. City/Town
MA — f. State
02421 — g. Zip Code
h. Phone Number
i. Fax Number
j. Email address

4. Representative (if any):

John — a. First Name
Marchand — b. Last Name
Thompson Farland, Inc. — c. Company
398 County Street — d. Street Address
New Bedford, — e. City/Town
MA — f. State
02740 — g. Zip Code
508-717-3479 — h. Phone Number
508-717-3481 — i. Fax Number
jmarchand@thompsonfarland.com — j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

1,000 — a. Total Fee Paid
487.50 — b. State Fee Paid
512.50 — c. City/Town Fee Paid

A. General Information (continued)

6. General Project Description:

Site improvements to existing developed site, including additional parking for employees, and addition trailer loading docks and parking spaces

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

1. ☐ Single Family Home
2. ☐ Residential Subdivision
3. ☒ Commercial/Industrial
4. ☐ Dock/Pier
5. ☐ Utilities
6. ☐ Coastal engineering Structure
7. ☐ Agriculture (e.g., cranberries, forestry)
8. ☐ Transportation
9. ☐ Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1. ☐ Yes ☐ No If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

a. County
b. Certificate # (if registered land)
c. Book
d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

1. ☒ Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
2. ☐ Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Bank	1. linear feet	2. linear feet
b. ☐ Bordering Vegetated Wetland	1. square feet	2. square feet
c. ☐ Land Under Waterbodies and Waterways	1. square feet 3. cubic yards dredged	2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☐ Bordering Land Subject to Flooding	1. square feet 3. cubic feet of flood storage lost	2. square feet 4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	1. square feet 2. cubic feet of flood storage lost	3. cubic feet replaced
f. ☐ Riverfront Area	1. Name of Waterway (if available) - **specify coastal or inland**	

2. Width of Riverfront Area (check one):

   ☐ 25 ft. - Designated Densely Developed Areas only

   ☐ 100 ft. - New agricultural projects only

   ☐ 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: _____ square feet

4. Proposed alteration of the Riverfront Area:

   a. total square feet _____ b. square feet within 100 ft. _____ c. square feet between 100 ft. and 200 ft. _____

5. Has an alternatives analysis been done and is it attached to this NOI? ☐ Yes ☐ No

6. Was the lot where the activity is proposed created prior to August 1, 1996? ☐ Yes ☐ No

3. ☐ Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Note: for coastal riverfront areas, please complete **Section B.2.f.** above.

B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	1. square feet 2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. ☐ Coastal Dunes	1. square feet	2. cubic yards dune nourishment

	Size of Proposed Alteration	Proposed Replacement (if any)
f. ☐ Coastal Banks	1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☐ Salt Marshes	1. square feet	2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	1. square feet 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	1. square feet	
k. ☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above	
	1. cubic yards dredged	
l. ☐ Land Subject to Coastal Storm Flowage	1. square feet	

4. ☐ Restoration/Enhancement
If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

5. ☐ Project Involves Stream Crossings

a. number of new stream crossings

b. number of replacement stream crossings

C. Other Applicable Standards and Requirements

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Notice of Intent – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

   a. ☐ Yes ☒ No **If yes, include proof of mailing or hand delivery of NOI to:**

   Natural Heritage and Endangered Species Program
   Division of Fisheries and Wildlife
   1 Rabbit Hill Road
   Westborough, MA 01581

   online (October 1, 2008)
   b. Date of map

   If *yes*, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.1.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

   c. Submit Supplemental Information for Endangered Species Review*

      1. ☐ Percentage/acreage of property to be altered:

         (a) within wetland Resource Area _____ percentage/acreage

         (b) outside Resource Area _____ percentage/acreage

      2. ☐ Assessor's Map or right-of-way plan of site

2. ☐ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

   (a) ☐ Project description (including description of impacts outside of wetland resource area & buffer zone)

   (b) ☐ Photographs representative of the site

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* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/). Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.

C. Other Applicable Standards and Requirements (cont'd)

(c) ☐ MESA filing fee (fee information available at http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_fee_schedule.htm). Make check payable to "Commonwealth of Massachusetts - NHESP" and ***mail to NHESP*** at above address

*Projects altering **10 or more acres** of land, also submit:*

(d) ☐ Vegetation cover type map of site

(e) ☐ Project plans showing Priority & Estimated Habitat boundaries

(f) OR Check One of the Following

1. ☐ Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_exemptions.htm; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. ☐ Separate MESA review ongoing. a. NHESP Tracking # b. Date submitted to NHESP

3. ☐ Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a. ☒ Not applicable – project is in inland resource area only b. ☐ Yes ☐ No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
1213 Purchase Street – 3rd Floor
New Bedford, MA 02740-6694
Email: DMF.EnvReview-South@state.ma.us

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: DMF.EnvReview-North@state.ma.us

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

C. Other Applicable Standards and Requirements (cont'd)

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?

   a. ☐ Yes ☒ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.

   b. ACEC

5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

   a. ☐ Yes ☒ No

6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?

   a. ☐ Yes ☒ No

7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?

   a. ☒ Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:

      1. ☐ Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)

      2. ☒ A portion of the site constitutes redevelopment

      3. ☐ Proprietary BMPs are included in the Stormwater Management System.

   b. ☐ No. Check why the project is exempt:

      1. ☐ Single-family house

      2. ☐ Emergency road repair

      3. ☐ Small Residential Subdivision (less than or equal to 4 single-family houses or less than equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

      or

D. Additional Information

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1. ☐ USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)

2. ☐ Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.

D. Additional Information (cont'd)

3. ☐ Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4. ☐ List the titles and dates for all plans and other materials submitted with this NOI.

a. Plan Title

b. Prepared By

c. Signed and Stamped by

d. Final Revision Date

e. Scale

f. Additional Plan or Document Title

g. Date

5. ☐ If there is more than one property owner, please attach a list of these property owners not listed on this form.

6. ☐ Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

7. ☐ Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.

8. ☐ Attach NOI Wetland Fee Transmittal Form

9. ☐ Attach Stormwater Report, if needed.

E. Fees

1. ☐ Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

928520 2. Municipal Check Number	12/03/15 3. Check date
928517 4. State Check Number	12/03/15 5. Check date
Parallel Products 6. Payor name on check: First Name	7. Payor name on check: Last Name

F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant — 2. Date: 12-3-15

3. Signature of Property Owner (if different) — 4. Date

5. Signature of Representative (if any) — 6. Date: 12-3-15

For Conservation Commission:
Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:
One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:
If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

WETLAND FEE TRANSMITTAL

www.ThompsonFarland.com

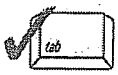
(Main Office) 398 County Street, **New Bedford**, MA 02740 · P.508.717.3479 · F.508.717.3481
54 Longmeadow Road, **Taunton**, MA 02780 · P.508.822.9870
2 Canal Park, 5th Floor, **Cambridge**, MA 02141 · P.617.679.1601
241 Boston Post Road, West, 1st Floor, **Marlborough**, MA 01752 · P.508.832.5811

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A. Applicant Information

1. Location of Project:

50 Duchaine Boulevard — a. Street Address
New Bedford — b. City/Town
925517 — c. Check number
487.50 — d. Fee amount

2. Applicant Mailing Address:

a. First Name
b. Last Name
Parallel Products of New England — c. Organization
401 Industry Road — d. Mailing Address
Louisville — e. City/Town
KY — f. State
40208 — g. Zip Code
h. Phone Number
i. Fax Number
j. Email Address

3. Property Owner (if different):

a. First Name
b. Last Name
Multilayer Coating Tech — c. Organization
1 Cranberry Hill 750 Marrett Road, Suite 401 — d. Mailing Address
Lexington — e. City/Town
MA — f. State
02421 — g. Zip Code
h. Phone Number
i. Fax Number
j. Email Address

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).

B. Fees

Fee should be calculated using the following process & worksheet. ***Please see Instructions before filling out worksheet.***

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract $12.50. To calculate the city/town share of the fee, divide the total fee in half and add $12.50.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Parking Lot (Category 2)	1	$500	$500
Source discharge (Category 2)	1	$500	$500

Step 5/Total Project Fee: $1,000

Step 6/Fee Payments:

Total Project Fee:	$1,000 — a. Total Fee from Step 5
State share of filing Fee:	$487.50 — b. 1/2 Total Fee **less** $12.50
City/Town share of filling Fee:	$512.50 — c. 1/2 Total Fee **plus** $12.50

C. Submittal Requirements

a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection
Box 4062
Boston, MA 02211

b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

EXHIBIT "C"

CERTIFIED ABUTTERS LIST

www.ThompsonFarland.com

(Main Office) 398 County Street, **New Bedford**, MA 02740 · P.508.717.3479 · F.508.717.3481
54 Longmeadow Road, **Taunton**, MA 02780 · P.508.822.9870
2 Canal Park, 5th Floor, **Cambridge**, MA 02141 · P.617.679.1601
241 Boston Post Road, West, 1st Floor, **Marlborough**, MA 01752 · P.508.832.5811

November 24, 2015
Dear Applicant,

Please find below the List of Abutters within 100 feet of the property known as 50 Duchaine Blvd (133-15). The current ownership listed herein must be checked and verified by the City of New Bedford Assessor's Office. Following said verification, the list shall be considered a Certified List of Abutters.

Please note that multiple listed properties with identical owner name and mailing address shall be considered duplicates, and shall require only 1 mailing. Additionally, City of New Bedford-Owned properties shall not require mailed notice.

Parcel	Location	Owner and Mailing Address
134-406	1844 PHILLIPS RD	CRAPO VICTORIA J, CRAPO DENNIS S 1844 PHILLIPS ROAD NEW BEDFORD, MA 02745
~~133-15~~ 131-5	100 DUCHAINE BLVD	~~MULTILAYER COATING TECHNOLOGIES LLC,~~ LOCAL LLC 1 ~~CRANBERRY HILL~~ 89 BLACKMAR ST. C/O ERIC DECOSTA LEXINGTON, MA 02421 NB, MA 02744
134-3	1885 PHILLIPS RD	COMMONWEALTH ELECTRIC CO, C/O PROPERTY TAX DEPARTMENT P O BOX ~~567~~ 270 ~~NORWOOD, MA 02062~~ HARTFORD, CT 06141
133-12	SAMUEL BARNETT BLVD R.ES	GREATER NEW BEDFORD, INDUSTRIAL FOUNDATION 227 UNION ST RM 607 NEW BEDFORD, MA 02740
134-16 ES	PHILLIPS RD	ABREU JOSEPH L, ~~101 PRINCETON STREET~~ 759 Belleville Ave. NEW BEDFORD, MA 02745
134E-9	993 PINE HILL DR	BATES GAIL A, 993 PINE HILL DRIVE NEW BEDFORD, MA 02745
134-342	1784 PHILLIPS RD	HATHAWAY ROBERT, C/O ROBERT J HATHAWAY 1784 PHILLIPS ROAD NEW BEDFORD, MA 02745
134E-3	81 RIDGEWOOD RD	GONSALVES JOAO M, GONSALVES JUDITH 81 RIDGEWOOD RD NEW BEDFORD, MA 02745
134F-31	97 IVY RD	BARBOSA LUISA P, 97 IVY RD NEW BEDFORD, MA 02745
134F-30	99 IVY RD	TAVARES JOSE, 99 IVY ROAD NEW BEDFORD, MA 02745
134F-29	109 BIRCHWOOD DR	TAYLOR BRUCE M, 109 BIRCHWOOD DR NEW BEDFORD, MA 02745
134D-83	90 HOLLY TREE LN	MEDINA GUILHERME E, MEDINA LAUDELINA 90 HOLLY TREE LANE NEW BEDFORD, MA 02745
132-884	1559 PHILLIPS RD	MONTAGUE JAMES M III, C/O CALIBER HOME LOANS P O BOX 24610 OKLAHOMA CITY, OK 73124

November 24, 2015
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Parcel	Location	Owner and Mailing Address
132-14	200 WELBY RD	WELBY ROAD LLC, 71 MAPLE STREET MANSFIELD, MA 02048
134D-2	PHILLIPS RD	CITY OF NEW BEDFORD, INTERCEPTING SEWER 131 WILLIAM ST NEW BEDFORD, MA 02740
132-57	RIGHT OF WAY	PENN CENTRAL CO, CONSOLIDATED RAIL CORP P O BOX 8097 PHILADELPHIA, PA 19101
132-4	1569 PHILLIPS RD	PIRES WALTER C, PIRES LENA 1569 PHILLIPS ROAD NEW BEDFORD, MA 02745
134D-82	89 HOLLY TREE LN	BARBOSA MARIA, BARBOSA STACEY 89 HOLLY TREE LANE NEW BEDFORD, MA 02745
134D-6	990 HILLCREST RD	BRYANT BARRY A "TRUSTEE", BRYANT FAMILY IRREVOCABLE SPECIAL NEEDS TRUST 990 HILLCREST RD NEW BEDFORD, MA 02745
134E-2	69 RIDGEWOOD RD	ST ONGE LAWRENCE A, ST ONGE JACQUELINE A 69 RIDGEWOOD ROAD NEW BEDFORD, MA 02745
134E-1	63 RIDGEWOOD RD	TRAVERS LORRAINE, 63 RIDGEWOOD ROAD NEW BEDFORD, MA 02745
134D-10	11 RIDGEWOOD RD	TREMBLAY DANIEL R JR, TREMBLAY KRYSTAL A 11 RIDGEWOOD ROAD NEW BEDFORD, MA 02745
134E-4	89 RIDGEWOOD RD	STUPALSKI VITALIA M, 89 RIDGEWOOD ROAD NEW BEDFORD, MA 02745
134F-32	95 IVY RD	BOUCHARD DENNIS P, BOUCHARD WANDA M 95 IVY ROAD NEW BEDFORD, MA 02745
134D-1	PHILLIPS RD	CITY OF NEW BEDFORD, 131 WILLIAM ST NEW BEDFORD, MA 02740
134D-15	55 RIDGEWOOD RD	DACOSTA DANIEL, DACOSTA RACHEL 55 RIDGEWOOD RD NEW BEDFORD, MA 02745

November 24, 2015
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Parcel	Location	Owner and Mailing Address
134-318 45	PHILLIPS RD	COMMONWEALTH ELECTRIC CO, C/O PROPERTY TAX DEPARTMENT P O BOX ~~567~~ 270 ~~NORWOOD, MA 02062~~ HARTFORD, CT 06141
133-10	RIGHT OF WAY	PENN CENTRAL CO, CONSOLIDATED RAIL CORP P O BOX 8097 PHILADELPHIA, PA 19101
133-2	JOHN VERTENTE BLVD	COMMONWEALTH OF MASSACHUSETTS, 251 CAUSEWAY STREET BOSTON, MA 02114
134D-9	987 HILLCREST RD	CHERETA ANTONIETE, 987 HILLCREST RD NEW BEDFORD, MA 02745
134D-11	17 RIDGEWOOD RD	FERNANDES DONNA "TRS", RAYMOND AND FLORABELL SYLVIA IRREVOCABLE TRUST (THE) 17 RIDGEWOOD RD NEW BEDFORD, MA 02745
134D-12	27 RIDGEWOOD RD	LACHAPELLE LINDA A, 27 RIDGEWOOD RD NEW BEDFORD, MA 02745
134D-13	39 RIDGEWOOD RD	POYANT DONNA M, POYANT BERNARD G 39 RIDGEWOOD RD NEW BEDFORD, MA 02745
134D-14	47 RIDGEWOOD RD	SCHARD EDNA, 47 RIDGEWOOD RD NEW BEDFORD, MA 02745
134E-5	99 RIDGEWOOD RD	SEIFERT JEFFREY A, SEIFERT LORIE A 99 RIDGEWOOD ROAD NEW BEDFORD, MA 02745
134E-6	107 RIDGEWOOD RD	DUBOIS RAYMOND, DUBOIS DIANE C 107 RIDGEWOOD ROAD NEW BEDFORD, MA 02745
134E-7	115 RIDGEWOOD RD	CATOJO LENNY, 115 RIDGEWOOD ROAD NEW BEDFORD, MA 02745
134E-8	125 RIDGEWOOD RD	DEVLIN ROBERT, 125 RIDGEWOOD RD NEW BEDFORD, MA 02745
133-53	107 DUCHAINE BLVD	CITY OF NEW BEDFORD, 133 WILLIAM STREET NEW BEDFORD, MA 02740

November 24, 2015
Dear Applicant,

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Parcel	Location	Owner and Mailing Address
134F-68	112 BIRCHWOOD DR	LORANTOS GEORGE G JR, LORANTOS CHERYL 112 BIRCHWOOD DRIVE NEW BEDFORD, MA 02745
133-19	126 DUCHAINE BLVD	N E PLASTICS CORP, 310 SALEM ST WOBURN, MA 01801

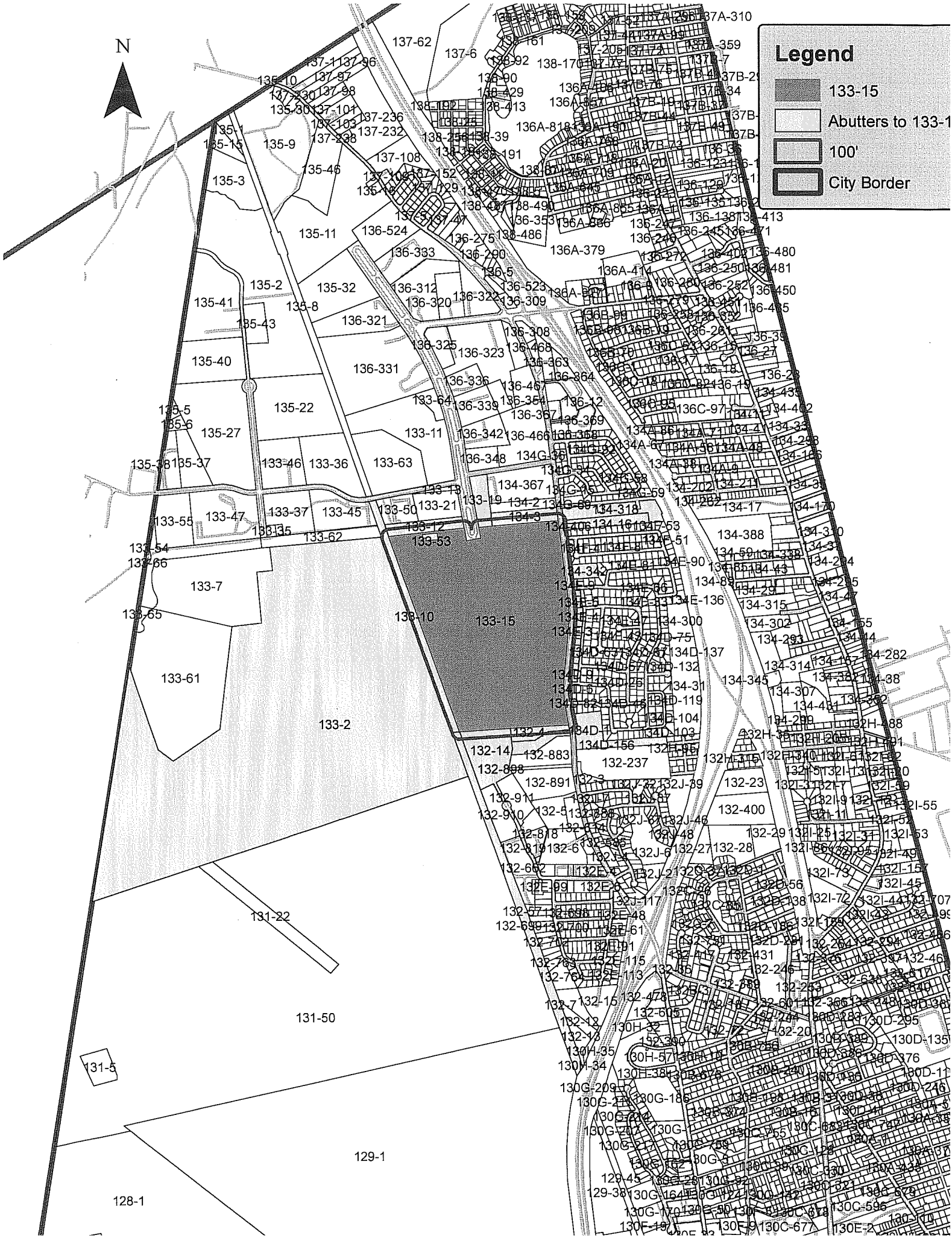

N
Legend
133-15
Abutters to 133-1
100'
City Border
133-15
133-2
133-7
133-61
131-22
131-50
131-5
129-1
128-1

EXHIBIT "C"

NOTIFICATION TO ABUTTERS

www.ThompsonFarland.com

(Main Office) 398 County Street, **New Bedford**, MA 02740 · P.508.717.3479 · F.508.717.3481
54 Longmeadow Road, **Taunton**, MA 02780 · P.508.822.9870
2 Canal Park, 5th Floor, **Cambridge**, MA 02141 · P.617.679.1601
241 Boston Post Road, West, 1st Floor, **Marlborough**, MA 01752 · P.508.832.5811

Notification to Abutters under the City of New Bedford Wetlands Ordinance

In Accordance with the City of New Bedford Wetlands Ordinance (New Bedford Code of Ordinances Sections 15-101 through 15-112) you are hereby notified of the following.

The name of the applicant is: Parallel Products of New England

The applicant has filed a Request for Determination of Applicability for the municipality of New Bedford, Massachsuetts seeking permission to remove, fill, dredge or alter an area subject to protection under the City of New Bedford Wetlands Ordinance (New Bedford Code of Ordinances Sections 15-101 through 15-112).

The address of the lot where the activity is proposed is: 50 Duchaine Boulevard
Assessor's Map 134; Lots 456, 457, 458, and 459
formerly part of Map 133; Lot 15A
Copies of the Request for Determination of Applicability may be examined at the New Bedford Conservation Commission, City Hall, 133 William St. Room 304 New Bedford, MA 02740 between the hours of 8:00 AM and 4:00 PM, Monday through Friday. For more information call (508) 991-6188.

Copies of the Request for Determination of Applicability may be obtained from either (check one) the applicant _____ or the applicant's representative ✓ by calling this telephone number 508-717-3479 between the hours of 8:00 AM and 4:00 PM on the following days of the week: Monday through Friday.

Information regarding the date, time and place of the public hearing may be obtained from New Bedford Conservation Commission by calling 508-991-6188 between the hours of 8:00 AM and 4:00 PM Monday through Friday.

Note: Notice of the Public hearing, including its date, time and place, will be posted in the City Hall not less than forty eight (48) hours in advance of the meeting.

Note: Notice of the Public Hearing including its date, time and place, will be published at least five (5) days in advance in the Standard Times.

Note: You may also contact the New Bedford Conservation Commission at 508-991-6188 for more information about this publication or the City of New Bedford Wetlands Ordinance

EXHIBIT "C"

AFFIDAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act

(to be submitted to the Massachusetts Department of Environmental Protection and the Conservation Commission when filing a Notice of Intent)

I, John Marchand hereby certify under the pains and penalties of perjury that on December 11, 2015, I gave notification to abutters in compliance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40, and the DEP Guide to Abutter Notification dated April 8, 1994, in connection with the following matter:

> A Notice of Intent filed under the Massachusetts Wetlands Protection Act by Parallel Products of New England with the New Bedford Conservation Commission on December 11, 2015 for property located at 50 Duchaine Boulevard.

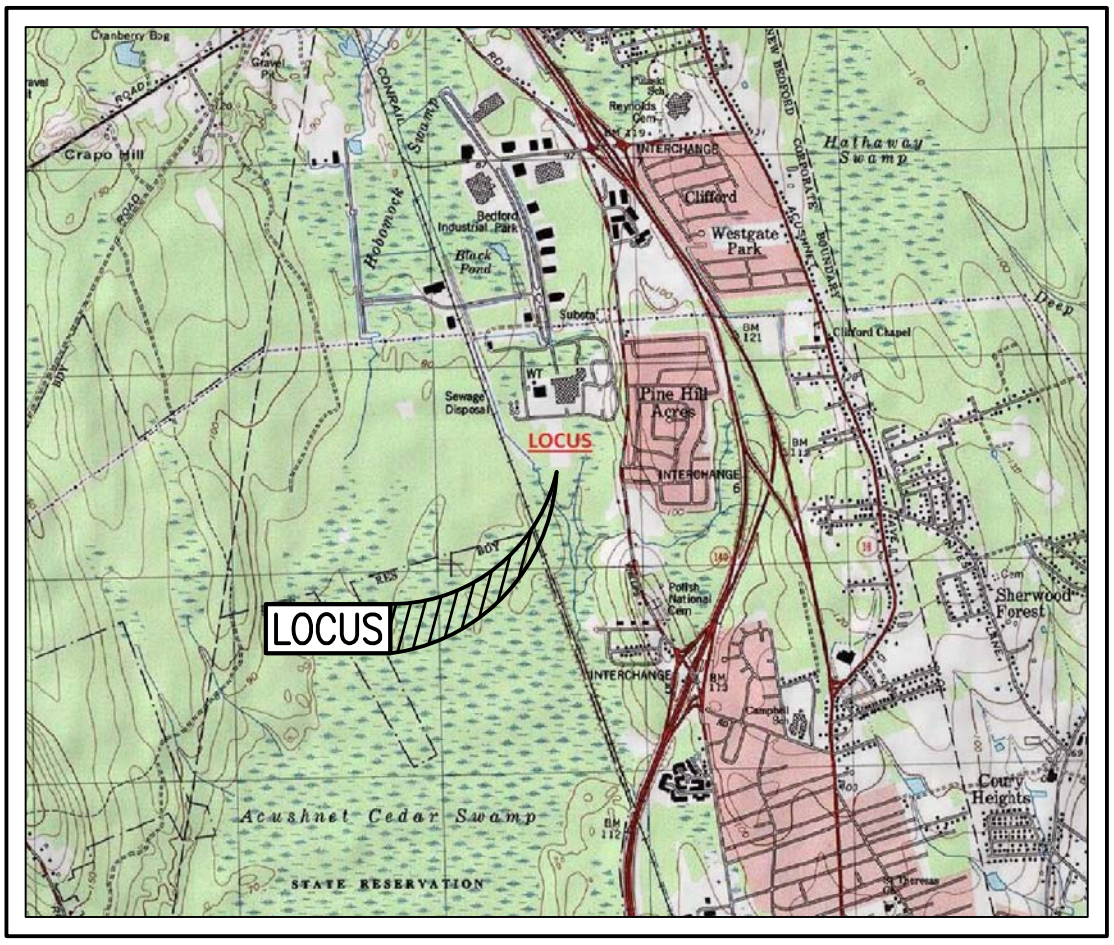
The form of the notification, and a list of the abutters to whom it was given and their addresses, are attached to this Affidavit of Service.

_____ _____

Name Date

EXHIBIT "A"

TOPO! VERSION 2.1.0



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241 Boston Post Road, West, 1st Floor, **Marlborough**, MA 01752 · P.508.832.5811

EXHIBIT "B"

FIRM MAP
PANEL # 25005C0379F

www.ThompsonFarland.com

(Main Office) 398 County Street, **New Bedford**, MA 02740 · P.508.717.3479 · F.508.717.3481
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EXHIBIT "C"

NHESP PRIORITY & ESTIMATED HABITAT MAP 2008

www.ThompsonFarland.com

(Main Office) 398 County Street, **New Bedford**, MA 02740 · P.508.717.3479 · F.508.717.3481
54 Longmeadow Road, **Taunton**, MA 02780 · P.508.822.9870
2 Canal Park, 5th Floor, **Cambridge**, MA 02141 · P.617.679.1601
241 Boston Post Road, West, 1st Floor, **Marlborough**, MA 01752 · P.508.832.5811

NRCS SOIL MAP

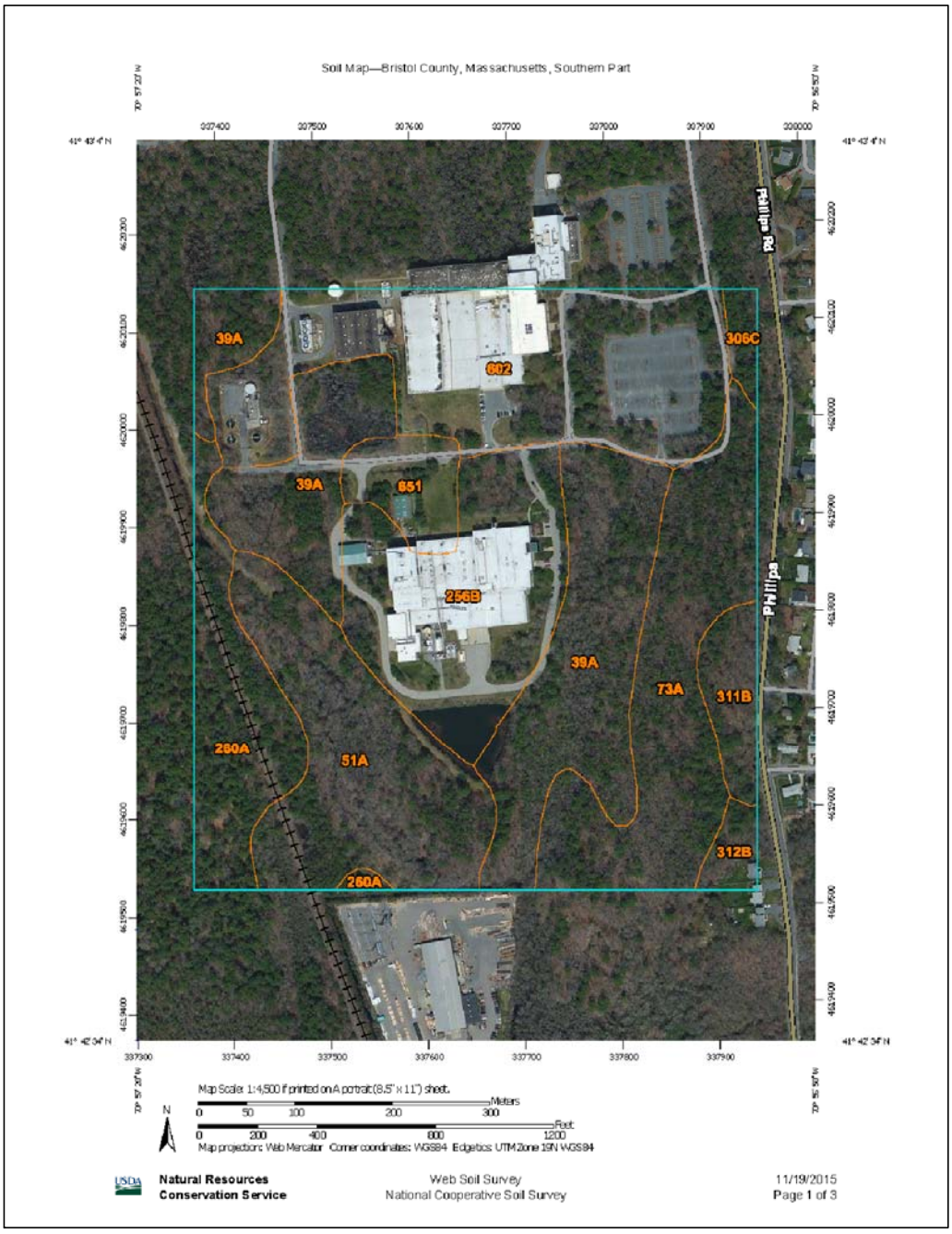


EXHIBIT "E"

STORMWATER REPORT CHECKLIST

www.ThompsonFarland.com

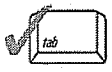
(Main Office) 398 County Street, **New Bedford**, MA 02740 · P.508.717.3479 · F.508.717.3481
54 Longmeadow Road, **Taunton**, MA 02780 · P.508.822.9870
2 Canal Park, 5th Floor, **Cambridge**, MA 02141 · P.617.679.1601
241 Boston Post Road, West, 1st Floor, **Marlborough**, MA 01752 · P.508.832.5811

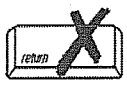
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.





A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

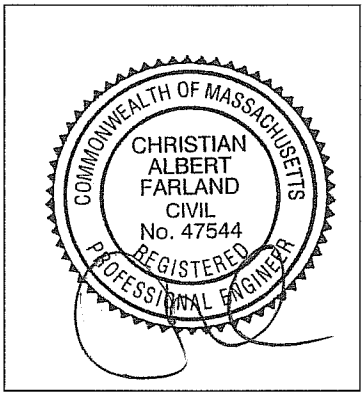
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



12/11/15

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☐ New development

☐ Redevelopment

☒ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☒ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☒ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☒ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☒ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☒ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☒ Redevelopment portion of mix of new and redevelopment.

☒ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☐ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☐ Estimated operation and maintenance budget; and
- ☐ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

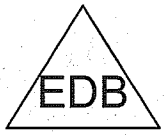
EXHIBIT "F"

HYDROLOGIC CALCULATIONS & WATERSHED PLANS

www.ThompsonFarland.com

(Main Office) 398 County Street, **New Bedford**, MA 02740 · P.508.717.3479 · F.508.717.3481
54 Longmeadow Road, **Taunton**, MA 02780 · P.508.822.9870
2 Canal Park, 5th Floor, **Cambridge**, MA 02141 · P.617.679.1601
241 Boston Post Road, West, 1st Floor, **Marlborough**, MA 01752 · P.508.832.5811

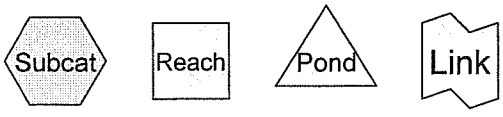
Tributary to Existing Drain Basin



Existing Detention Basin

Site Runoff to BVW

Tributary toward BVW



Drainage Diagram for 15500PRE
Prepared by {enter your company name here}, Printed 12/9/2015

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentS-1: Tributary toward BVW Runoff Area=407,426 sf 6.89% Impervious Runoff Depth=0.75"
Flow Length=431' Tc=17.1 min CN=66 Runoff=4.87 cfs 0.582 af

SubcatchmentS-2: Tributary to Existing Runoff Area=407,592 sf 67.69% Impervious Runoff Depth=2.09"
Flow Length=440' Tc=17.7 min CN=87 Runoff=16.18 cfs 1.632 af

Reach SR: Site Runoff to BVW Inflow=4.89 cfs 1.299 af
Outflow=4.89 cfs 1.299 af

Pond EDB: Existing Detention Basin Peak Elev=72.52' Storage=52,458 cf Inflow=16.18 cfs 1.632 af
Outflow=0.65 cfs 0.717 af

Total Runoff Area = 18.710 ac Runoff Volume = 2.214 af Average Runoff Depth = 1.42"
62.71% Pervious = 11.733 ac 37.29% Impervious = 6.978 ac

Summary for Subcatchment S-1: Tributary toward BVW

Runoff = 4.87 cfs @ 12.28 hrs, Volume= 0.582 af, Depth= 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	97,857	30	Woods, Good, HSG A
	153,758	77	Woods, Good, HSG D
	87,931	68	<50% Grass cover, Poor, HSG A
	22,306	89	<50% Grass cover, Poor, HSG D
*	20,990	98	Existing Pavement
*	3,802	98	Existing Roof
*	3,265	98	Existing Concrete
*	17,517	77	Gravel & Rubble Stockpiles
	407,426	66	Weighted Average
	379,369		Pervious Area
	28,057		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	50	0.0500	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.40"
6.7	200	0.0100	0.50		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.3	36	0.0010	2.32	9.28	**Channel Flow, CD** Area= 4.0 sf Perim= 10.0' r= 0.40' n= 0.011 Concrete pipe, straight & clean
0.4	40	0.0030	1.61	12.91	**Trap/Vee/Rect Channel Flow, DE** Bot.W=5.00' D=1.00' Z= 3.0 '/' Top.W=11.00' n= 0.040 Earth, cobble bottom, clean sides
0.4	45	0.0010	1.96	7.85	**Channel Flow, EF** Area= 4.0 sf Perim= 10.0' r= 0.40' n= 0.013 Concrete pipe, bends & connections
1.0	60	0.0400	1.00		**Shallow Concentrated Flow, FG** Woodland Kv= 5.0 fps
17.1	431	Total			

Summary for Subcatchment S-2: Tributary to Existing Drain Basin

Runoff = 16.18 cfs @ 12.24 hrs, Volume= 1.632 af, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	20,814	30	Woods, Good, HSG A
	99,053	68	<50% Grass cover, Poor, HSG A
	11,839	89	<50% Grass cover, Poor, HSG D
*	50,016	98	Exisitng Pavement
*	151,500	98	Existing Roof
*	14,215	98	Existing Concrete
*	60,155	98	Existing Basin @ Elev=71.7
	407,592	87	Weighted Average
	131,706		Pervious Area
	275,886		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	50	0.0150	0.06		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.40"
3.3	120	0.0150	0.61		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.2	45	0.0070	3.80	2.98	**Circular Channel (pipe), CD** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.8	225	0.0070	4.97	8.79	**Circular Channel (pipe), DE** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
17.7	440	Total			

Summary for Reach SR: Site Runoff to BVW

Inflow Area = 18.710 ac, 37.29% Impervious, Inflow Depth > 0.83" for 2-yr event
Inflow = 4.89 cfs @ 12.28 hrs, Volume= 1.299 af
Outflow = 4.89 cfs @ 12.28 hrs, Volume= 1.299 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Pond EDB: Existing Detention Basin

Inflow Area = 9.357 ac, 67.69% Impervious, Inflow Depth = 2.09" for 2-yr event
Inflow = 16.18 cfs @ 12.24 hrs, Volume= 1.632 af
Outflow = 0.65 cfs @ 16.83 hrs, Volume= 0.717 af, Atten= 96%, Lag= 275.3 min
Primary = 0.65 cfs @ 16.83 hrs, Volume= 0.717 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 72.52' @ 16.83 hrs Surf.Area= 66,160 sf Storage= 52,458 cf

Plug-Flow detention time= 518.2 min calculated for 0.716 af (44% of inflow)
Center-of-Mass det. time= 400.0 min (1,227.2 - 827.2)

Volume	Invert	Avail.Storage	Storage Description
#1	71.70'	155,808 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
71.70	60,155	952.0	0	0	60,155
72.00	63,529	1,023.0	18,550	18,550	71,318
73.00	68,606	1,069.0	66,051	84,602	79,047
74.00	73,838	1,080.0	71,206	155,808	81,213

Device	Routing	Invert	Outlet Devices
#1	Primary	72.01'	**12.0" x 3.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 72.00' S= 0.0033 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#2	Primary	73.30'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.65 cfs @ 16.83 hrs HW=72.52' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Barrel Controls 0.65 cfs @ 2.34 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentS-1: Tributary toward BVW Runoff Area=407,426 sf 6.89% Impervious Runoff Depth=1.59"
Flow Length=431' Tc=17.1 min CN=66 Runoff=11.81 cfs 1.242 af

SubcatchmentS-2: Tributary to Existing Runoff Area=407,592 sf 67.69% Impervious Runoff Depth=3.38"
Flow Length=440' Tc=17.7 min CN=87 Runoff=25.84 cfs 2.635 af

Reach SR: Site Runoff to BVW Inflow=12.13 cfs 2.833 af
Outflow=12.13 cfs 2.833 af

Pond EDB: Existing Detention Basin Peak Elev=72.89' Storage=76,785 cf Inflow=25.84 cfs 2.635 af
Outflow=1.67 cfs 1.592 af

Total Runoff Area = 18.710 ac Runoff Volume = 3.877 af Average Runoff Depth = 2.49"
62.71% Pervious = 11.733 ac 37.29% Impervious = 6.978 ac

Summary for Subcatchment S-1: Tributary toward BVW

Runoff = 11.81 cfs @ 12.26 hrs, Volume= 1.242 af, Depth= 1.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	97,857	30	Woods, Good, HSG A
	153,758	77	Woods, Good, HSG D
	87,931	68	<50% Grass cover, Poor, HSG A
	22,306	89	<50% Grass cover, Poor, HSG D
*	20,990	98	Existing Pavement
*	3,802	98	Existing Roof
*	3,265	98	Existing Concrete
*	17,517	77	Gravel & Rubble Stockpiles
	407,426	66	Weighted Average
	379,369		Pervious Area
	28,057		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	50	0.0500	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.40"
6.7	200	0.0100	0.50		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.3	36	0.0010	2.32	9.28	**Channel Flow, CD** Area= 4.0 sf Perim= 10.0' r= 0.40' n= 0.011 Concrete pipe, straight & clean
0.4	40	0.0030	1.61	12.91	**Trap/Vee/Rect Channel Flow, DE** Bot.W=5.00' D=1.00' Z= 3.0 '/' Top.W=11.00' n= 0.040 Earth, cobble bottom, clean sides
0.4	45	0.0010	1.96	7.85	**Channel Flow, EF** Area= 4.0 sf Perim= 10.0' r= 0.40' n= 0.013 Concrete pipe, bends & connections
1.0	60	0.0400	1.00		**Shallow Concentrated Flow, FG** Woodland Kv= 5.0 fps
17.1	431	Total			

Summary for Subcatchment S-2: Tributary to Existing Drain Basin

Runoff = 25.84 cfs @ 12.24 hrs, Volume= 2.635 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	20,814	30	Woods, Good, HSG A
	99,053	68	<50% Grass cover, Poor, HSG A
	11,839	89	<50% Grass cover, Poor, HSG D
*	50,016	98	Exisitng Pavement
*	151,500	98	Existing Roof
*	14,215	98	Existing Concrete
*	60,155	98	Existing Basin @ Elev=71.7
	407,592	87	Weighted Average
	131,706		Pervious Area
	275,886		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	50	0.0150	0.06		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.40"
3.3	120	0.0150	0.61		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.2	45	0.0070	3.80	2.98	**Circular Channel (pipe), CD** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.8	225	0.0070	4.97	8.79	**Circular Channel (pipe), DE** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
17.7	440	Total			

Summary for Reach SR: Site Runoff to BVW

Inflow Area = 18.710 ac, 37.29% Impervious, Inflow Depth > 1.82" for 10-yr event
Inflow = 12.13 cfs @ 12.26 hrs, Volume= 2.833 af
Outflow = 12.13 cfs @ 12.26 hrs, Volume= 2.833 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Pond EDB: Existing Detention Basin

Inflow Area = 9.357 ac, 67.69% Impervious, Inflow Depth = 3.38" for 10-yr event
Inflow = 25.84 cfs @ 12.24 hrs, Volume= 2.635 af
Outflow = 1.67 cfs @ 15.04 hrs, Volume= 1.592 af, Atten= 94%, Lag= 168.1 min
Primary = 1.67 cfs @ 15.04 hrs, Volume= 1.592 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 72.89' @ 15.04 hrs Surf.Area= 68,015 sf Storage= 76,785 cf

Plug-Flow detention time= 452.3 min calculated for 1.589 af (60% of inflow)
Center-of-Mass det. time= 349.9 min (1,163.5 - 813.6)

Volume	Invert	Avail.Storage	Storage Description
#1	71.70'	155,808 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
71.70	60,155	952.0	0	0	60,155
72.00	63,529	1,023.0	18,550	18,550	71,318
73.00	68,606	1,069.0	66,051	84,602	79,047
74.00	73,838	1,080.0	71,206	155,808	81,213

Device	Routing	Invert	Outlet Devices
#1	Primary	72.01'	**12.0" x 3.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 72.00' S= 0.0033 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#2	Primary	73.30'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.67 cfs @ 15.04 hrs HW=72.89' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 1.67 cfs @ 3.06 fps)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentS-1: Tributary toward BVW Runoff Area=407,426 sf 6.89% Impervious Runoff Depth=3.20"
Flow Length=431' Tc=17.1 min CN=66 Runoff=24.87 cfs 2.498 af

SubcatchmentS-2: Tributary to Existing Runoff Area=407,592 sf 67.69% Impervious Runoff Depth=5.48"
Flow Length=440' Tc=17.7 min CN=87 Runoff=41.06 cfs 4.273 af

Reach SR: Site Runoff to BVW Inflow=26.29 cfs 5.594 af
Outflow=26.29 cfs 5.594 af

Pond EDB: Existing Detention Basin Peak Elev=73.42' Storage=113,939 cf Inflow=41.06 cfs 4.273 af
Outflow=5.33 cfs 3.096 af

Total Runoff Area = 18.710 ac Runoff Volume = 6.770 af Average Runoff Depth = 4.34"
62.71% Pervious = 11.733 ac 37.29% Impervious = 6.978 ac

Summary for Subcatchment S-1: Tributary toward BVW

Runoff = 24.87 cfs @ 12.24 hrs, Volume= 2.498 af, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	97,857	30	Woods, Good, HSG A
	153,758	77	Woods, Good, HSG D
	87,931	68	<50% Grass cover, Poor, HSG A
	22,306	89	<50% Grass cover, Poor, HSG D
*	20,990	98	Existing Pavement
*	3,802	98	Existing Roof
*	3,265	98	Existing Concrete
*	17,517	77	Gravel & Rubble Stockpiles
	407,426	66	Weighted Average
	379,369		Pervious Area
	28,057		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	50	0.0500	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.40"
6.7	200	0.0100	0.50		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.3	36	0.0010	2.32	9.28	**Channel Flow, CD** Area= 4.0 sf Perim= 10.0' r= 0.40' n= 0.011 Concrete pipe, straight & clean
0.4	40	0.0030	1.61	12.91	**Trap/Vee/Rect Channel Flow, DE** Bot.W=5.00' D=1.00' Z= 3.0 '/' Top.W=11.00' n= 0.040 Earth, cobble bottom, clean sides
0.4	45	0.0010	1.96	7.85	**Channel Flow, EF** Area= 4.0 sf Perim= 10.0' r= 0.40' n= 0.013 Concrete pipe, bends & connections
1.0	60	0.0400	1.00		**Shallow Concentrated Flow, FG** Woodland Kv= 5.0 fps
17.1	431	Total			

Summary for Subcatchment S-2: Tributary to Existing Drain Basin

Runoff = 41.06 cfs @ 12.24 hrs, Volume= 4.273 af, Depth= 5.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	20,814	30	Woods, Good, HSG A
	99,053	68	<50% Grass cover, Poor, HSG A
	11,839	89	<50% Grass cover, Poor, HSG D
*	50,016	98	Exisitng Pavement
*	151,500	98	Existing Roof
*	14,215	98	Existing Concrete
*	60,155	98	Existing Basin @ Elev=71.7
	407,592	87	Weighted Average
	131,706		Pervious Area
	275,886		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	50	0.0150	0.06		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.40"
3.3	120	0.0150	0.61		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.2	45	0.0070	3.80	2.98	**Circular Channel (pipe), CD** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.8	225	0.0070	4.97	8.79	**Circular Channel (pipe), DE** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
17.7	440	Total			

Summary for Reach SR: Site Runoff to BVW

Inflow Area = 18.710 ac, 37.29% Impervious, Inflow Depth > 3.59" for 100-yr event
Inflow = 26.29 cfs @ 12.25 hrs, Volume= 5.594 af
Outflow = 26.29 cfs @ 12.25 hrs, Volume= 5.594 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Pond EDB: Existing Detention Basin

Inflow Area = 9.357 ac, 67.69% Impervious, Inflow Depth = 5.48" for 100-yr event
Inflow = 41.06 cfs @ 12.24 hrs, Volume= 4.273 af
Outflow = 5.33 cfs @ 13.16 hrs, Volume= 3.096 af, Atten= 87%, Lag= 55.3 min
Primary = 5.33 cfs @ 13.16 hrs, Volume= 3.096 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 73.42' @ 13.16 hrs Surf.Area= 70,785 sf Storage= 113,939 cf

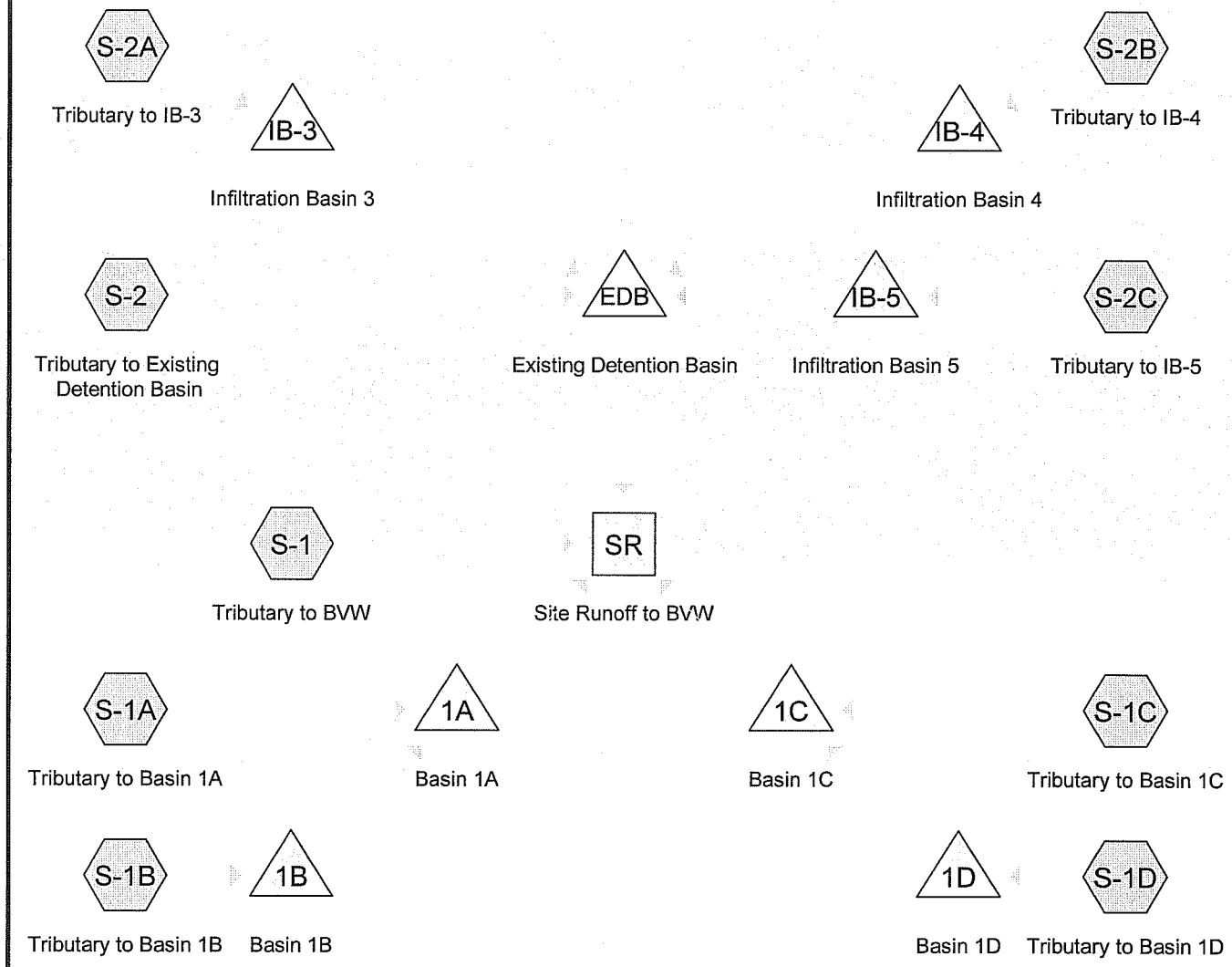
Plug-Flow detention time= 393.2 min calculated for 3.091 af (72% of inflow)
Center-of-Mass det. time= 305.8 min (1,106.1 - 800.2)

Volume	Invert	Avail.Storage	Storage Description
#1	71.70'	155,808 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
71.70	60,155	952.0	0	0	60,155
72.00	63,529	1,023.0	18,550	18,550	71,318
73.00	68,606	1,069.0	66,051	84,602	79,047
74.00	73,838	1,080.0	71,206	155,808	81,213

Device	Routing	Invert	Outlet Devices
#1	Primary	72.01'	**12.0" x 3.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 72.00' S= 0.0033 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#2	Primary	73.30'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=5.33 cfs @ 13.16 hrs HW=73.42' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 3.24 cfs @ 4.12 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 2.09 cfs @ 0.87 fps)



Subcat Reach Pond Link

Drainage Diagram for 15500POST

Prepared by {enter your company name here}, Printed 12/9/2015

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentS-1: Tributaryto BVW Runoff Area=215,970 sf 1.37% Impervious Runoff Depth=0.89"
Flow Length=170' Tc=18.7 min CN=69 Runoff=3.21 cfs 0.370 af

SubcatchmentS-1A: Tributaryto Basin 1A Runoff Area=53,106 sf 72.43% Impervious Runoff Depth=1.70"
Tc=15.0 min CN=82 Runoff=1.83 cfs 0.173 af

SubcatchmentS-1B: Tributaryto Basin 1B Runoff Area=55,369 sf 82.88% Impervious Runoff Depth=2.18"
Tc=6.0 min CN=88 Runoff=3.23 cfs 0.231 af

SubcatchmentS-1C: Tributaryto Basin 1C Runoff Area=21,735 sf 65.25% Impervious Runoff Depth=1.93"
Tc=6.0 min CN=85 Runoff=1.13 cfs 0.080 af

SubcatchmentS-1D: Tributaryto Basin 1D Runoff Area=60,384 sf 89.82% Impervious Runoff Depth=2.54"
Tc=6.0 min CN=92 Runoff=4.02 cfs 0.294 af

SubcatchmentS-2: Tributaryto Existing Runoff Area=322,676 sf 88.32% Impervious Runoff Depth=2.64"
Flow Length=580' Tc=9.6 min CN=93 Runoff=19.62 cfs 1.629 af

SubcatchmentS-2A: Tributaryto IB-3 Runoff Area=28,680 sf 78.33% Impervious Runoff Depth=1.93"
Tc=6.0 min CN=85 Runoff=1.49 cfs 0.106 af

SubcatchmentS-2B: Tributaryto IB-4 Runoff Area=36,412 sf 84.44% Impervious Runoff Depth=2.26"
Tc=6.0 min CN=89 Runoff=2.20 cfs 0.158 af

SubcatchmentS-2C: Tributaryto IB-5 Runoff Area=20,685 sf 52.89% Impervious Runoff Depth=0.95"
Tc=6.0 min CN=70 Runoff=0.48 cfs 0.037 af

Reach SR: Site Runoff to BVW Inflow=3.39 cfs 1.107 af
Outflow=3.39 cfs 1.107 af

Pond 1A: Basin 1A Peak Elev=77.06' Storage=3,519 cf Inflow=3.75 cfs 0.248 af
Discarded=0.90 cfs 0.241 af Primary=0.38 cfs 0.008 af Outflow=1.28 cfs 0.248 af

Pond 1B: Basin 1B Peak Elev=77.15' Storage=1,317 cf Inflow=3.23 cfs 0.231 af
Discarded=0.50 cfs 0.155 af Primary=2.01 cfs 0.076 af Outflow=2.51 cfs 0.231 af

Pond 1C: Basin 1C Peak Elev=76.48' Storage=2,989 cf Inflow=4.02 cfs 0.266 af
Discarded=1.23 cfs 0.266 af Primary=0.00 cfs 0.000 af Outflow=1.23 cfs 0.266 af

Pond 1D: Basin 1D Peak Elev=77.13' Storage=675 cf Inflow=4.02 cfs 0.294 af
Discarded=0.54 cfs 0.108 af Primary=2.96 cfs 0.185 af Outflow=3.49 cfs 0.294 af

Pond EDB: Existing Detention Basin Peak Elev=72.53' Storage=53,070 cf Inflow=19.62 cfs 1.632 af
Outflow=0.67 cfs 0.729 af

Pond IB-3: Infiltration Basin 3 Peak Elev=77.95' Storage=1,249 cf Inflow=1.49 cfs 0.106 af
Discarded=0.35 cfs 0.106 af Primary=0.00 cfs 0.000 af Outflow=0.35 cfs 0.106 af

Pond IB-4: Infiltration Basin 4 Peak Elev=78.54' Storage=1,925 cf Inflow=2.20 cfs 0.158 af
Discarded=0.57 cfs 0.154 af Primary=0.19 cfs 0.003 af Outflow=0.76 cfs 0.158 af

Pond IB-5: Infiltration Basin 5 Peak Elev=76.65' Storage=356 cf Inflow=0.48 cfs 0.037 af
Discarded=0.12 cfs 0.037 af Primary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.037 af

Total Runoff Area = 18.710 ac Runoff Volume = 3.077 af Average Runoff Depth = 1.97"
38.05% Pervious = 7.120 ac 61.95% Impervious = 11.591 ac

Summary for Subcatchment S-1: Tributary to BVW

Runoff = 3.21 cfs @ 12.28 hrs, Volume= 0.370 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	19,797	30	Woods, Good, HSG A
	149,036	77	Woods, Good, HSG D
	21,859	39	>75% Grass cover, Good, HSG A
	22,312	80	>75% Grass cover, Good, HSG D
*	2,966	98	Proposed Pavement
	215,970	69	Weighted Average
	213,004		Pervious Area
	2,966		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	50	0.0120	0.06		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.40"
4.0	120	0.0100	0.50		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
18.7	170	Total			

Summary for Subcatchment S-1A: Tributary to Basin 1A

Runoff = 1.83 cfs @ 12.21 hrs, Volume= 0.173 af, Depth= 1.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	14,159	39	>75% Grass cover, Good, HSG A
	484	80	>75% Grass cover, Good, HSG D
	35,113	98	Paved parking & roofs
*	3,350	98	Concrete
	53,106	82	Weighted Average
	14,643		Pervious Area
	38,463		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry, Assumed**

Summary for Subcatchment S-1B: Tributary to Basin 1B

Runoff = 3.23 cfs @ 12.09 hrs, Volume= 0.231 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

Area (sf)	CN	Description
9,480	39	>75% Grass cover, Good, HSG A
45,889	98	Paved parking & roofs
55,369	88	Weighted Average
9,480		Pervious Area
45,889		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Subcatchment S-1C: Tributary to Basin 1C

Runoff = 1.13 cfs @ 12.09 hrs, Volume= 0.080 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	3,717	39	>75% Grass cover, Good, HSG A
	3,836	80	>75% Grass cover, Good, HSG D
	11,729	98	Paved parking & roofs
*	1,901	98	Roof
*	552	98	Concrete
	21,735	85	Weighted Average
	7,553		Pervious Area
	14,182		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Subcatchment S-1D: Tributary to Basin 1D

Runoff = 4.02 cfs @ 12.09 hrs, Volume= 0.294 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	6,146	39	>75% Grass cover, Good, HSG A
	52,337	98	Paved parking & roofs
*	1,901	98	Roof
	60,384	92	Weighted Average
	6,146		Pervious Area
	54,238		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Subcatchment S-2: Tributary to Existing Detention Basin

Runoff = 19.62 cfs @ 12.13 hrs, Volume= 1.629 af, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	26,226	39	>75% Grass cover, Good, HSG A
	11,454	80	>75% Grass cover, Good, HSG D
*	67,096	98	Pavement
*	151,500	98	Existing Roof
*	6,245	98	Concrete
*	60,155	98	Existing Basin @ Elev=71.7
	322,676	93	Weighted Average
	37,680		Pervious Area
	284,996		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0250	0.11		**Sheet Flow, AB** Grass: Dense n= 0.240 P2= 3.40"
0.8	95	0.0170	1.96		**Shallow Concentrated Flow, BC** Grassed Waterway Kv= 15.0 fps
1.5	435	0.0070	4.97	8.79	**Circular Channel (pipe), CD** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
9.6	580	Total			

Summary for Subcatchment S-2A: Tributary to IB-3

Runoff = 1.49 cfs @ 12.09 hrs, Volume= 0.106 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	6,216	39	>75% Grass cover, Good, HSG A
*	22,464	98	Pavement
	28,680	85	Weighted Average
	6,216		Pervious Area
	22,464		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Subcatchment S-2B: Tributary to IB-4

Runoff = 2.20 cfs @ 12.09 hrs, Volume= 0.158 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	5,665	39	>75% Grass cover, Good, HSG A
*	30,747	98	Pavement
	36,412	89	Weighted Average
	5,665		Pervious Area
	30,747		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Subcatchment S-2C: Tributary to IB-5

Runoff = 0.48 cfs @ 12.10 hrs, Volume= 0.037 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	9,745	39	>75% Grass cover, Good, HSG A
*	10,940	98	Pavement
	20,685	70	Weighted Average
	9,745		Pervious Area
	10,940		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Reach SR: Site Runoff to BVW

Inflow Area = 18.710 ac, 61.95% Impervious, Inflow Depth > 0.71" for 2-yr event
Inflow = 3.39 cfs @ 12.30 hrs, Volume= 1.107 af
Outflow = 3.39 cfs @ 12.30 hrs, Volume= 1.107 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Summary for Pond 1A: Basin 1A

Inflow Area = 2.490 ac, 77.76% Impervious, Inflow Depth = 1.20" for 2-yr event
Inflow = 3.75 cfs @ 12.17 hrs, Volume= 0.248 af
Outflow = 1.28 cfs @ 12.51 hrs, Volume= 0.248 af, Atten= 66%, Lag= 20.5 min
Discarded = 0.90 cfs @ 12.51 hrs, Volume= 0.241 af
Primary = 0.38 cfs @ 12.51 hrs, Volume= 0.008 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 77.06' @ 12.51 hrs Surf.Area= 4,702 sf Storage= 3,519 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 36.1 min (849.3 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	9,038 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	2,771	327.0	0	0	2,771
77.00	3,779	346.0	3,262	3,262	3,843
77.10	5,354	412.0	454	3,716	7,824
78.00	6,489	429.0	5,321	9,038	9,023

Device	Routing	Invert	Outlet Devices
#1	Primary	77.00'	**10.0' long x 11.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64
#2	Discarded	76.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.90 cfs @ 12.51 hrs HW=77.06' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.90 cfs)

Primary OutFlow Max=0.38 cfs @ 12.51 hrs HW=77.06' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.38 cfs @ 0.62 fps)

Summary for Pond 1B: Basin 1B

Inflow Area = 1.271 ac, 82.88% Impervious, Inflow Depth = 2.18" for 2-yr event
Inflow = 3.23 cfs @ 12.09 hrs, Volume= 0.231 af
Outflow = 2.51 cfs @ 12.15 hrs, Volume= 0.231 af, Atten= 22%, Lag= 3.9 min
Discarded = 0.50 cfs @ 12.15 hrs, Volume= 0.155 af
Primary = 2.01 cfs @ 12.15 hrs, Volume= 0.076 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 77.15' @ 12.15 hrs Surf.Area= 2,605 sf Storage= 1,317 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 18.9 min (831.4 - 812.6)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	3,790 cf	**Custom Stage Data (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	806	121.0	0	0	806
77.00	1,199	140.0	996	996	1,222
77.10	2,570	241.0	184	1,180	4,284
78.00	3,243	257.0	2,610	3,790	4,956

Device	Routing	Invert	Outlet Devices
#1	Primary	76.42'	**18.0" x 62.0' long Culvert** RCP, mitered to conform to fill, Ke= 0.700 Outlet Invert= 76.00' S= 0.0068 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#2	Discarded	76.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.50 cfs @ 12.15 hrs HW=77.15' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.50 cfs)

Primary OutFlow Max=2.01 cfs @ 12.15 hrs HW=77.15' TW=76.49' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.01 cfs @ 3.46 fps)

Summary for Pond 1C: Basin 1C

Inflow Area = 1.885 ac, 83.32% Impervious, Inflow Depth = 1.69" for 2-yr event
Inflow = 4.02 cfs @ 12.11 hrs, Volume= 0.266 af
Outflow = 1.23 cfs @ 12.48 hrs, Volume= 0.266 af, Atten= 69%, Lag= 22.3 min
Discarded = 1.23 cfs @ 12.48 hrs, Volume= 0.266 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 76.48' @ 12.48 hrs Surf.Area= 6,437 sf Storage= 2,989 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 15.4 min (787.8 - 772.4)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	14,736 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	5,919	356.0	0	0	5,919
77.00	7,014	375.0	6,459	6,459	7,083
77.10	7,881	358.0	744	7,203	8,075
78.00	8,869	374.0	7,533	14,736	9,064

Device	Routing	Invert	Outlet Devices
#1	Primary	77.25'	**10.0' long x 11.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64
#2	Discarded	76.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.23 cfs @ 12.48 hrs HW=76.48' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 1.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=0.00' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 1D: Basin 1D

Inflow Area = 1.386 ac, 89.82% Impervious, Inflow Depth = 2.54" for 2-yr event
Inflow = 4.02 cfs @ 12.09 hrs, Volume= 0.294 af
Outflow = 3.49 cfs @ 12.13 hrs, Volume= 0.294 af, Atten= 13%, Lag= 2.7 min
Discarded = 0.54 cfs @ 12.13 hrs, Volume= 0.108 af
Primary = 2.96 cfs @ 12.13 hrs, Volume= 0.185 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 77.13' @ 12.13 hrs Surf.Area= 2,805 sf Storage= 675 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 9.5 min (805.1 - 795.6)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	3,603 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	277	108.0	0	0	277
77.00	642	130.0	447	447	710
77.10	2,776	416.0	158	605	13,137
78.00	3,919	454.0	2,998	3,603	15,797

Device	Routing	Invert	Outlet Devices
#1	Discarded	76.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	76.37'	**12.0" x 62.0' long Culvert X 2.00**
			RCP, mitered to conform to fill, Ke= 0.700
			Outlet Invert= 76.00' S= 0.0060 '/' Cc= 0.900
			n= 0.013 Concrete pipe, bends & connections

Discarded OutFlow Max=0.54 cfs @ 12.13 hrs HW=77.12' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.54 cfs)

Primary OutFlow Max=2.96 cfs @ 12.13 hrs HW=77.12' TW=76.26' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 2.96 cfs @ 3.22 fps)

Summary for Pond EDB: Existing Detention Basin

Inflow Area = 9.377 ac, 85.48% Impervious, Inflow Depth = 2.09" for 2-yr event
Inflow = 19.62 cfs @ 12.13 hrs, Volume= 1.632 af
Outflow = 0.67 cfs @ 15.99 hrs, Volume= 0.729 af, Atten= 97%, Lag= 231.8 min
Primary = 0.67 cfs @ 15.99 hrs, Volume= 0.729 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 72.53' @ 15.99 hrs Surf.Area= 66,207 sf Storage= 53,070 cf

Plug-Flow detention time= 529.9 min calculated for 0.729 af (45% of inflow)
Center-of-Mass det. time= 410.3 min (1,204.2 - 793.8)

Volume	Invert	Avail.Storage	Storage Description
#1	71.70'	155,808 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
71.70	60,155	952.0	0	0	60,155
72.00	63,529	1,023.0	18,550	18,550	71,318
73.00	68,606	1,069.0	66,051	84,602	79,047
74.00	73,838	1,080.0	71,206	155,808	81,213

Device	Routing	Invert	Outlet Devices
#1	Primary	72.01'	**12.0" x 3.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 72.00' S= 0.0033 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#2	Primary	73.30'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.67 cfs @ 15.99 hrs HW=72.53' TW=0.00' (Dynamic Tailwater)
├**1=Culvert** (Barrel Controls 0.67 cfs @ 2.37 fps)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond IB-3: Infiltration Basin 3

Inflow Area = 0.658 ac, 78.33% Impervious, Inflow Depth = 1.93" for 2-yr event
Inflow = 1.49 cfs @ 12.09 hrs, Volume= 0.106 af
Outflow = 0.35 cfs @ 12.50 hrs, Volume= 0.106 af, Atten= 77%, Lag= 24.9 min
Discarded = 0.35 cfs @ 12.50 hrs, Volume= 0.106 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 77.95' @ 12.50 hrs Surf.Area= 1,810 sf Storage= 1,249 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 26.0 min (849.5 - 823.4)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	5,410 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
77.00	887	316.0	0	0	887
78.00	1,874	341.0	1,350	1,350	2,235
78.10	3,518	524.0	265	1,615	14,831
79.00	4,956	541.0	3,795	5,410	16,350

Device	Routing	Invert	Outlet Devices
#1	Primary	74.00'	**12.0" x 35.0' long Culvert** RCP, sq.cut end projecting, Ke= 0.500 Outlet Invert= 73.65' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#2	Device 1	78.50'	**24.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	77.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.35 cfs @ 12.50 hrs HW=77.95' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.35 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=77.00' TW=71.70' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.00 cfs of 5.98 cfs potential flow)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond IB-4: Infiltration Basin 4

Inflow Area = 0.836 ac, 84.44% Impervious, Inflow Depth = 2.26" for 2-yr event
Inflow = 2.20 cfs @ 12.09 hrs, Volume= 0.158 af
Outflow = 0.76 cfs @ 12.37 hrs, Volume= 0.158 af, Atten= 65%, Lag= 17.3 min
Discarded = 0.57 cfs @ 12.37 hrs, Volume= 0.154 af
Primary = 0.19 cfs @ 12.37 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 78.54' @ 12.37 hrs Surf.Area= 2,988 sf Storage= 1,925 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 33.6 min (842.2 - 808.7)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	3,430 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
77.00	303	165.0	0	0	303
78.00	877	197.0	565	565	1,242
78.10	2,434	430.0	159	724	12,868
79.00	3,617	446.0	2,705	3,430	14,051

Device	Routing	Invert	Outlet Devices
#1	Discarded	77.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	74.50'	**12.0" x 40.0' long Culvert** RCP, sq.cut end projecting, Ke= 0.500 Outlet Invert= 74.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#3	Device 2	78.50'	**24.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.57 cfs @ 12.37 hrs HW=78.54' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.57 cfs)

Primary OutFlow Max=0.19 cfs @ 12.37 hrs HW=78.54' TW=72.32' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 0.19 cfs of 7.05 cfs potential flow)
↑—**3=Orifice/Grate** (Weir Controls 0.19 cfs @ 0.68 fps)

Summary for Pond IB-5: Infiltration Basin 5

Inflow Area = 0.475 ac, 52.89% Impervious, Inflow Depth = 0.95" for 2-yr event
Inflow = 0.48 cfs @ 12.10 hrs, Volume= 0.037 af
Outflow = 0.12 cfs @ 12.54 hrs, Volume= 0.037 af, Atten= 74%, Lag= 26.2 min
Discarded = 0.12 cfs @ 12.54 hrs, Volume= 0.037 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 76.65' @ 12.54 hrs Surf.Area= 648 sf Storage= 356 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 18.4 min (889.7 - 871.3)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	4,136 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	448	89.0	0	0	448
77.00	769	114.0	601	601	864
77.10	1,343	151.0	104	706	1,645
78.00	1,773	167.0	1,398	2,103	2,074
79.00	2,304	186.0	2,033	4,136	2,636

Device	Routing	Invert	Outlet Devices
#1	Discarded	76.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	76.00'	**12.0" x 32.0' long Culvert** RCP, sq.cut end projecting, Ke= 0.500 Outlet Invert= 75.68' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections

#3 Device 2 78.50' **12.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.12 cfs @ 12.54 hrs HW=76.65' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=71.70' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.00 cfs)
↑—**3=Orifice/Grate** (Controls 0.00 cfs)

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentS-1: Tributaryto BVW Runoff Area=215,970 sf 1.37% Impervious Runoff Depth=1.81"
Flow Length=170' Tc=18.7 min CN=69 Runoff=7.07 cfs 0.749 af

SubcatchmentS-1A: Tributaryto Basin 1A Runoff Area=53,106 sf 72.43% Impervious Runoff Depth=2.90"
Tc=15.0 min CN=82 Runoff=3.13 cfs 0.295 af

SubcatchmentS-1B: Tributaryto Basin 1B Runoff Area=55,369 sf 82.88% Impervious Runoff Depth=3.48"
Tc=6.0 min CN=88 Runoff=5.08 cfs 0.369 af

SubcatchmentS-1C: Tributaryto Basin 1C Runoff Area=21,735 sf 65.25% Impervious Runoff Depth=3.18"
Tc=6.0 min CN=85 Runoff=1.85 cfs 0.132 af

SubcatchmentS-1D: Tributaryto Basin 1D Runoff Area=60,384 sf 89.82% Impervious Runoff Depth=3.89"
Tc=6.0 min CN=92 Runoff=6.02 cfs 0.450 af

SubcatchmentS-2: Tributaryto Existing Runoff Area=322,676 sf 88.32% Impervious Runoff Depth=4.00"
Flow Length=580' Tc=9.6 min CN=93 Runoff=29.10 cfs 2.470 af

SubcatchmentS-2A: Tributaryto IB-3 Runoff Area=28,680 sf 78.33% Impervious Runoff Depth=3.18"
Tc=6.0 min CN=85 Runoff=2.44 cfs 0.175 af

SubcatchmentS-2B: Tributaryto IB-4 Runoff Area=36,412 sf 84.44% Impervious Runoff Depth=3.58"
Tc=6.0 min CN=89 Runoff=3.42 cfs 0.249 af

SubcatchmentS-2C: Tributaryto IB-5 Runoff Area=20,685 sf 52.89% Impervious Runoff Depth=1.89"
Tc=6.0 min CN=70 Runoff=1.03 cfs 0.075 af

Reach SR: Site Runoff to BVW Inflow=10.94 cfs 2.357 af
Outflow=10.94 cfs 2.357 af

Pond 1A: Basin 1A Peak Elev=77.25' Storage=4,519 cf Inflow=5.45 cfs 0.453 af
Discarded=1.06 cfs 0.343 af Primary=3.13 cfs 0.110 af Outflow=4.19 cfs 0.453 af

Pond 1B: Basin 1B Peak Elev=77.43' Storage=2,142 cf Inflow=5.08 cfs 0.369 af
Discarded=0.54 cfs 0.211 af Primary=2.59 cfs 0.158 af Outflow=3.12 cfs 0.369 af

Pond 1C: Basin 1C Peak Elev=76.92' Storage=5,894 cf Inflow=5.72 cfs 0.440 af
Discarded=1.33 cfs 0.440 af Primary=0.00 cfs 0.000 af Outflow=1.33 cfs 0.440 af

Pond 1D: Basin 1D Peak Elev=77.31' Storage=1,219 cf Inflow=6.02 cfs 0.450 af
Discarded=0.58 cfs 0.143 af Primary=4.11 cfs 0.307 af Outflow=4.69 cfs 0.450 af

Pond EDB: Existing Detention Basin Peak Elev=72.86' Storage=75,367 cf Inflow=30.61 cfs 2.512 af
Outflow=1.61 cfs 1.497 af

Pond IB-3: Infiltration Basin 3 Peak Elev=78.22' Storage=2,062 cf Inflow=2.44 cfs 0.175 af
Discarded=0.71 cfs 0.175 af Primary=0.00 cfs 0.000 af Outflow=0.71 cfs 0.175 af

Pond IB-4: Infiltration Basin 4 Peak Elev=78.69' Storage=2,382 cf Inflow=3.42 cfs 0.249 af
Discarded=0.61 cfs 0.208 af Primary=1.72 cfs 0.042 af Outflow=2.33 cfs 0.249 af

Pond IB-5: Infiltration Basin 5 Peak Elev=77.23' Storage=884 cf Inflow=1.03 cfs 0.075 af
Discarded=0.27 cfs 0.075 af Primary=0.00 cfs 0.000 af Outflow=0.27 cfs 0.075 af

Total Runoff Area = 18.710 ac Runoff Volume = 4.964 af Average Runoff Depth = 3.18"
38.05% Pervious = 7.120 ac 61.95% Impervious = 11.591 ac

Summary for Subcatchment S-1: Tributary to BVW

Runoff = 7.07 cfs @ 12.28 hrs, Volume= 0.749 af, Depth= 1.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	19,797	30	Woods, Good, HSG A
	149,036	77	Woods, Good, HSG D
	21,859	39	>75% Grass cover, Good, HSG A
	22,312	80	>75% Grass cover, Good, HSG D
*	2,966	98	Proposed Pavement
	215,970	69	Weighted Average
	213,004		Pervious Area
	2,966		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	50	0.0120	0.06		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.40"
4.0	120	0.0100	0.50		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
18.7	170	Total			

Summary for Subcatchment S-1A: Tributary to Basin 1A

Runoff = 3.13 cfs @ 12.21 hrs, Volume= 0.295 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	14,159	39	>75% Grass cover, Good, HSG A
	484	80	>75% Grass cover, Good, HSG D
	35,113	98	Paved parking & roofs
*	3,350	98	Concrete
	53,106	82	Weighted Average
	14,643		Pervious Area
	38,463		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry, Assumed**

Summary for Subcatchment S-1B: Tributary to Basin 1B

Runoff = 5.08 cfs @ 12.09 hrs, Volume= 0.369 af, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

Area (sf)	CN	Description
9,480	39	>75% Grass cover, Good, HSG A
45,889	98	Paved parking & roofs
55,369	88	Weighted Average
9,480		Pervious Area
45,889		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Subcatchment S-1C: Tributary to Basin 1C

Runoff = 1.85 cfs @ 12.09 hrs, Volume= 0.132 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	3,717	39	>75% Grass cover, Good, HSG A
	3,836	80	>75% Grass cover, Good, HSG D
	11,729	98	Paved parking & roofs
*	1,901	98	Roof
*	552	98	Concrete
	21,735	85	Weighted Average
	7,553		Pervious Area
	14,182		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Subcatchment S-1D: Tributary to Basin 1D

Runoff = 6.02 cfs @ 12.08 hrs, Volume= 0.450 af, Depth= 3.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	6,146	39	>75% Grass cover, Good, HSG A
	52,337	98	Paved parking & roofs
*	1,901	98	Roof
	60,384	92	Weighted Average
	6,146		Pervious Area
	54,238		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Subcatchment S-2: Tributary to Existing Detention Basin

Runoff = 29.10 cfs @ 12.13 hrs, Volume= 2.470 af, Depth= 4.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	26,226	39	>75% Grass cover, Good, HSG A
	11,454	80	>75% Grass cover, Good, HSG D
*	67,096	98	Pavement
*	151,500	98	Existing Roof
*	6,245	98	Concrete
*	60,155	98	Existing Basin @ Elev=71.7
	322,676	93	Weighted Average
	37,680		Pervious Area
	284,996		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0250	0.11		**Sheet Flow, AB** Grass: Dense n= 0.240 P2= 3.40"
0.8	95	0.0170	1.96		**Shallow Concentrated Flow, BC** Grassed Waterway Kv= 15.0 fps
1.5	435	0.0070	4.97	8.79	**Circular Channel (pipe), CD** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
9.6	580	Total			

Summary for Subcatchment S-2A: Tributary to IB-3

Runoff = 2.44 cfs @ 12.09 hrs, Volume= 0.175 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	6,216	39	>75% Grass cover, Good, HSG A
*	22,464	98	Pavement
	28,680	85	Weighted Average
	6,216		Pervious Area
	22,464		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Subcatchment S-2B: Tributary to IB-4

Runoff = 3.42 cfs @ 12.09 hrs, Volume= 0.249 af, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	5,665	39	>75% Grass cover, Good, HSG A
*	30,747	98	Pavement
	36,412	89	Weighted Average
	5,665		Pervious Area
	30,747		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Subcatchment S-2C: Tributary to IB-5

Runoff = 1.03 cfs @ 12.09 hrs, Volume= 0.075 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	9,745	39	>75% Grass cover, Good, HSG A
*	10,940	98	Pavement
	20,685	70	Weighted Average
	9,745		Pervious Area
	10,940		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Reach SR: Site Runoff to BVW

Inflow Area = 18.710 ac, 61.95% Impervious, Inflow Depth > 1.51" for 10-yr event
Inflow = 10.94 cfs @ 12.30 hrs, Volume= 2.357 af
Outflow = 10.94 cfs @ 12.30 hrs, Volume= 2.357 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Summary for Pond 1A: Basin 1A

Inflow Area = 2.490 ac, 77.76% Impervious, Inflow Depth = 2.18" for 10-yr event
Inflow = 5.45 cfs @ 12.18 hrs, Volume= 0.453 af
Outflow = 4.19 cfs @ 12.33 hrs, Volume= 0.453 af, Atten= 23%, Lag= 9.0 min
Discarded = 1.06 cfs @ 12.33 hrs, Volume= 0.343 af
Primary = 3.13 cfs @ 12.33 hrs, Volume= 0.110 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 77.25' @ 12.33 hrs Surf.Area= 5,532 sf Storage= 4,519 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 30.2 min (830.6 - 800.4)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	9,038 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	2,771	327.0	0	0	2,771
77.00	3,779	346.0	3,262	3,262	3,843
77.10	5,354	412.0	454	3,716	7,824
78.00	6,489	429.0	5,321	9,038	9,023

Device	Routing	Invert	Outlet Devices
#1	Primary	77.00'	**10.0' long x 11.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64
#2	Discarded	76.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.06 cfs @ 12.33 hrs HW=77.25' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 1.06 cfs)

Primary OutFlow Max=3.13 cfs @ 12.33 hrs HW=77.25' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 3.13 cfs @ 1.27 fps)

Summary for Pond 1B: Basin 1B

Inflow Area = 1.271 ac, 82.88% Impervious, Inflow Depth = 3.48" for 10-yr event
Inflow = 5.08 cfs @ 12.09 hrs, Volume= 0.369 af
Outflow = 3.12 cfs @ 12.12 hrs, Volume= 0.369 af, Atten= 38%, Lag= 2.3 min
Discarded = 0.54 cfs @ 12.22 hrs, Volume= 0.211 af
Primary = 2.59 cfs @ 12.12 hrs, Volume= 0.158 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 77.43' @ 12.22 hrs Surf.Area= 2,818 sf Storage= 2,142 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 18.8 min (818.2 - 799.4)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	3,790 cf	**Custom Stage Data (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	806	121.0	0	0	806
77.00	1,199	140.0	996	996	1,222
77.10	2,570	241.0	184	1,180	4,284
78.00	3,243	257.0	2,610	3,790	4,956

Device	Routing	Invert	Outlet Devices
#1	Primary	76.42'	**18.0" x 62.0' long Culvert** RCP, mitered to conform to fill, Ke= 0.700 Outlet Invert= 76.00' S= 0.0068 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#2	Discarded	76.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.54 cfs @ 12.22 hrs HW=77.43' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.54 cfs)

Primary OutFlow Max=2.59 cfs @ 12.12 hrs HW=77.36' TW=76.91' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 2.59 cfs @ 3.16 fps)

Summary for Pond 1C: Basin 1C

Inflow Area = 1.885 ac, 83.32% Impervious, Inflow Depth = 2.80" for 10-yr event
Inflow = 5.72 cfs @ 12.12 hrs, Volume= 0.440 af
Outflow = 1.33 cfs @ 12.55 hrs, Volume= 0.440 af, Atten= 77%, Lag= 25.9 min
Discarded = 1.33 cfs @ 12.55 hrs, Volume= 0.440 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 76.92' @ 12.55 hrs Surf.Area= 6,922 sf Storage= 5,894 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 30.5 min (801.1 - 770.6)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	14,736 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	5,919	356.0	0	0	5,919
77.00	7,014	375.0	6,459	6,459	7,083
77.10	7,881	358.0	744	7,203	8,075
78.00	8,869	374.0	7,533	14,736	9,064

Device	Routing	Invert	Outlet Devices
#1	Primary	77.25'	**10.0' long x 11.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64
#2	Discarded	76.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.33 cfs @ 12.55 hrs HW=76.92' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 1.33 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=0.00' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 1D: Basin 1D

Inflow Area = 1.386 ac, 89.82% Impervious, Inflow Depth = 3.89" for 10-yr event
Inflow = 6.02 cfs @ 12.08 hrs, Volume= 0.450 af
Outflow = 4.69 cfs @ 12.15 hrs, Volume= 0.450 af, Atten= 22%, Lag= 3.8 min
Discarded = 0.58 cfs @ 12.15 hrs, Volume= 0.143 af
Primary = 4.11 cfs @ 12.15 hrs, Volume= 0.307 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 77.31' @ 12.15 hrs Surf.Area= 3,027 sf Storage= 1,219 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 9.7 min (793.7 - 784.0)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	3,603 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	277	108.0	0	0	277
77.00	642	130.0	447	447	710
77.10	2,776	416.0	158	605	13,137
78.00	3,919	454.0	2,998	3,603	15,797

Device	Routing	Invert	Outlet Devices
#1	Discarded	76.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	76.37'	**12.0" x 62.0' long Culvert X 2.00** RCP, mitered to conform to fill, Ke= 0.700 Outlet Invert= 76.00' S= 0.0060 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections

Discarded OutFlow Max=0.58 cfs @ 12.15 hrs HW=77.31' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=4.11 cfs @ 12.15 hrs HW=77.31' TW=76.54' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 4.11 cfs @ 3.46 fps)

Summary for Pond EDB: Existing Detention Basin

Inflow Area = 9.377 ac, 85.48% Impervious, Inflow Depth = 3.21" for 10-yr event
Inflow = 30.61 cfs @ 12.13 hrs, Volume= 2.512 af
Outflow = 1.61 cfs @ 14.40 hrs, Volume= 1.497 af, Atten= 95%, Lag= 136.2 min
Primary = 1.61 cfs @ 14.40 hrs, Volume= 1.497 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 72.86' @ 14.40 hrs Surf.Area= 67,908 sf Storage= 75,367 cf

Plug-Flow detention time= 468.2 min calculated for 1.497 af (60% of inflow)
Center-of-Mass det. time= 365.8 min (1,147.8 - 782.1)

Volume	Invert	Avail.Storage	Storage Description
#1	71.70'	155,808 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
71.70	60,155	952.0	0	0	60,155
72.00	63,529	1,023.0	18,550	18,550	71,318
73.00	68,606	1,069.0	66,051	84,602	79,047
74.00	73,838	1,080.0	71,206	155,808	81,213

Device	Routing	Invert	Outlet Devices
#1	Primary	72.01'	**12.0" x 3.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 72.00' S= 0.0033 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#2	Primary	73.30'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.61 cfs @ 14.40 hrs HW=72.86' TW=0.00' (Dynamic Tailwater)
├**1=Culvert** (Barrel Controls 1.61 cfs @ 3.02 fps)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond IB-3: Infiltration Basin 3

Inflow Area = 0.658 ac, 78.33% Impervious, Inflow Depth = 3.18" for 10-yr event
Inflow = 2.44 cfs @ 12.09 hrs, Volume= 0.175 af
Outflow = 0.71 cfs @ 12.43 hrs, Volume= 0.175 af, Atten= 71%, Lag= 20.7 min
Discarded = 0.71 cfs @ 12.43 hrs, Volume= 0.175 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 78.22' @ 12.43 hrs Surf.Area= 3,701 sf Storage= 2,062 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 29.7 min (838.8 - 809.1)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	5,410 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
77.00	887	316.0	0	0	887
78.00	1,874	341.0	1,350	1,350	2,235
78.10	3,518	524.0	265	1,615	14,831
79.00	4,956	541.0	3,795	5,410	16,350

Device	Routing	Invert	Outlet Devices
#1	Primary	74.00'	**12.0" x 35.0' long Culvert** RCP, sq.cut end projecting, Ke= 0.500 Outlet Invert= 73.65' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#2	Device 1	78.50'	**24.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	77.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.71 cfs @ 12.43 hrs HW=78.22' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.71 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=77.00' TW=71.70' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.00 cfs of 5.98 cfs potential flow)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond IB-4: Infiltration Basin 4

Inflow Area = 0.836 ac, 84.44% Impervious, Inflow Depth = 3.58" for 10-yr event
Inflow = 3.42 cfs @ 12.09 hrs, Volume= 0.249 af
Outflow = 2.33 cfs @ 12.17 hrs, Volume= 0.249 af, Atten= 32%, Lag= 5.0 min
Discarded = 0.61 cfs @ 12.17 hrs, Volume= 0.208 af
Primary = 1.72 cfs @ 12.17 hrs, Volume= 0.042 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 78.69' @ 12.17 hrs Surf.Area= 3,185 sf Storage= 2,382 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 31.4 min (827.3 - 795.8)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	3,430 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
77.00	303	165.0	0	0	303
78.00	877	197.0	565	565	1,242
78.10	2,434	430.0	159	724	12,868
79.00	3,617	446.0	2,705	3,430	14,051

Device	Routing	Invert	Outlet Devices
#1	Discarded	77.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	74.50'	**12.0" x 40.0' long Culvert** RCP, sq.cut end projecting, Ke= 0.500 Outlet Invert= 74.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#3	Device 2	78.50'	**24.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.61 cfs @ 12.17 hrs HW=78.69' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.61 cfs)

Primary OutFlow Max=1.72 cfs @ 12.17 hrs HW=78.69' TW=72.46' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 1.72 cfs of 7.20 cfs potential flow)
↑—**3=Orifice/Grate** (Weir Controls 1.72 cfs @ 1.43 fps)

Summary for Pond IB-5: Infiltration Basin 5

Inflow Area = 0.475 ac, 52.89% Impervious, Inflow Depth = 1.89" for 10-yr event
Inflow = 1.03 cfs @ 12.09 hrs, Volume= 0.075 af
Outflow = 0.27 cfs @ 12.50 hrs, Volume= 0.075 af, Atten= 74%, Lag= 24.7 min
Discarded = 0.27 cfs @ 12.50 hrs, Volume= 0.075 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 77.23' @ 12.50 hrs Surf.Area= 1,401 sf Storage= 884 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 34.5 min (884.4 - 849.9)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	4,136 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	448	89.0	0	0	448
77.00	769	114.0	601	601	864
77.10	1,343	151.0	104	706	1,645
78.00	1,773	167.0	1,398	2,103	2,074
79.00	2,304	186.0	2,033	4,136	2,636

Device	Routing	Invert	Outlet Devices
#1	Discarded	76.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	76.00'	**12.0" x 32.0' long Culvert** RCP, sq.cut end projecting, Ke= 0.500 Outlet Invert= 75.68' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections

#3 Device 2 78.50' **12.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.27 cfs @ 12.50 hrs HW=77.23' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.27 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=71.70' (Dynamic Tailwater)
└**2=Culvert** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentS-1: Tributary to BVW Runoff Area=215,970 sf 1.37% Impervious Runoff Depth=3.51"
Flow Length=170' Tc=18.7 min CN=69 Runoff=14.10 cfs 1.452 af

SubcatchmentS-1A: Tributary to Basin 1A Runoff Area=53,106 sf 72.43% Impervious Runoff Depth=4.92"
Tc=15.0 min CN=82 Runoff=5.25 cfs 0.499 af

SubcatchmentS-1B: Tributary to Basin 1B Runoff Area=55,369 sf 82.88% Impervious Runoff Depth=5.59"
Tc=6.0 min CN=88 Runoff=7.97 cfs 0.592 af

SubcatchmentS-1C: Tributary to Basin 1C Runoff Area=21,735 sf 65.25% Impervious Runoff Depth=5.25"
Tc=6.0 min CN=85 Runoff=2.99 cfs 0.218 af

SubcatchmentS-1D: Tributary to Basin 1D Runoff Area=60,384 sf 89.82% Impervious Runoff Depth=6.05"
Tc=6.0 min CN=92 Runoff=9.13 cfs 0.699 af

SubcatchmentS-2: Tributary to Existing Runoff Area=322,676 sf 88.32% Impervious Runoff Depth=6.17"
Flow Length=580' Tc=9.6 min CN=93 Runoff=43.80 cfs 3.810 af

SubcatchmentS-2A: Tributary to IB-3 Runoff Area=28,680 sf 78.33% Impervious Runoff Depth=5.25"
Tc=6.0 min CN=85 Runoff=3.94 cfs 0.288 af

SubcatchmentS-2B: Tributary to IB-4 Runoff Area=36,412 sf 84.44% Impervious Runoff Depth=5.71"
Tc=6.0 min CN=89 Runoff=5.31 cfs 0.398 af

SubcatchmentS-2C: Tributary to IB-5 Runoff Area=20,685 sf 52.89% Impervious Runoff Depth=3.62"
Tc=6.0 min CN=70 Runoff=2.01 cfs 0.143 af

Reach SR: Site Runoff to BVW Inflow=24.20 cfs 4.590 af
Outflow=24.20 cfs 4.590 af

Pond 1A: Basin 1A Peak Elev=77.45' Storage=5,661 cf Inflow=9.83 cfs 0.811 af
Discarded=1.11 cfs 0.490 af Primary=7.89 cfs 0.322 af Outflow=8.99 cfs 0.811 af

Pond 1B: Basin 1B Peak Elev=77.87' Storage=3,420 cf Inflow=7.97 cfs 0.592 af
Discarded=0.60 cfs 0.281 af Primary=4.76 cfs 0.312 af Outflow=5.36 cfs 0.592 af

Pond 1C: Basin 1C Peak Elev=77.38' Storage=9,420 cf Inflow=8.30 cfs 0.710 af
Discarded=1.57 cfs 0.680 af Primary=1.13 cfs 0.030 af Outflow=2.70 cfs 0.710 af

Pond 1D: Basin 1D Peak Elev=77.65' Storage=2,316 cf Inflow=9.13 cfs 0.699 af
Discarded=0.66 cfs 0.208 af Primary=5.62 cfs 0.492 af Outflow=6.29 cfs 0.699 af

Pond EDB: Existing Detention Basin Peak Elev=73.38' Storage=111,103 cf Inflow=47.74 cfs 3.924 af
Outflow=4.22 cfs 2.786 af

Pond IB-3: Infiltration Basin 3 Peak Elev=78.67' Storage=3,873 cf Inflow=3.94 cfs 0.288 af
Discarded=0.84 cfs 0.282 af Primary=0.18 cfs 0.006 af Outflow=1.03 cfs 0.288 af

Pond IB-4: Infiltration Basin 4 Peak Elev=78.83' Storage=2,844 cf Inflow=5.31 cfs 0.398 af
Discarded=0.65 cfs 0.289 af Primary=3.94 cfs 0.108 af Outflow=4.59 cfs 0.398 af

Pond IB-5: Infiltration Basin 5 Peak Elev=78.02' Storage=2,140 cf Inflow=2.01 cfs 0.143 af
Discarded=0.34 cfs 0.143 af Primary=0.00 cfs 0.000 af Outflow=0.34 cfs 0.143 af

Total Runoff Area = 18.710 ac Runoff Volume = 8.100 af Average Runoff Depth = 5.20"
38.05% Pervious = 7.120 ac 61.95% Impervious = 11.591 ac

Summary for Subcatchment S-1: Tributary to BVW

Runoff = 14.10 cfs @ 12.26 hrs, Volume= 1.452 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	19,797	30	Woods, Good, HSG A
	149,036	77	Woods, Good, HSG D
	21,859	39	>75% Grass cover, Good, HSG A
	22,312	80	>75% Grass cover, Good, HSG D
*	2,966	98	Proposed Pavement
	215,970	69	Weighted Average
	213,004		Pervious Area
	2,966		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	50	0.0120	0.06		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.40"
4.0	120	0.0100	0.50		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
18.7	170	Total			

Summary for Subcatchment S-1A: Tributary to Basin 1A

Runoff = 5.25 cfs @ 12.20 hrs, Volume= 0.499 af, Depth= 4.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	14,159	39	>75% Grass cover, Good, HSG A
	484	80	>75% Grass cover, Good, HSG D
	35,113	98	Paved parking & roofs
*	3,350	98	Concrete
	53,106	82	Weighted Average
	14,643		Pervious Area
	38,463		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry, Assumed**

Summary for Subcatchment S-1B: Tributary to Basin 1B

Runoff = 7.97 cfs @ 12.08 hrs, Volume= 0.592 af, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

Area (sf)	CN	Description
9,480	39	>75% Grass cover, Good, HSG A
45,889	98	Paved parking & roofs
55,369	88	Weighted Average
9,480		Pervious Area
45,889		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Subcatchment S-1C: Tributary to Basin 1C

Runoff = 2.99 cfs @ 12.09 hrs, Volume= 0.218 af, Depth= 5.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	3,717	39	>75% Grass cover, Good, HSG A
	3,836	80	>75% Grass cover, Good, HSG D
	11,729	98	Paved parking & roofs
*	1,901	98	Roof
*	552	98	Concrete
	21,735	85	Weighted Average
	7,553		Pervious Area
	14,182		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Subcatchment S-1D: Tributary to Basin 1D

Runoff = 9.13 cfs @ 12.08 hrs, Volume= 0.699 af, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	6,146	39	>75% Grass cover, Good, HSG A
	52,337	98	Paved parking & roofs
*	1,901	98	Roof
	60,384	92	Weighted Average
	6,146		Pervious Area
	54,238		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Subcatchment S-2: Tributary to Existing Detention Basin

Runoff = 43.80 cfs @ 12.13 hrs, Volume= 3.810 af, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	26,226	39	>75% Grass cover, Good, HSG A
	11,454	80	>75% Grass cover, Good, HSG D
*	67,096	98	Pavement
*	151,500	98	Existing Roof
*	6,245	98	Concrete
*	60,155	98	Existing Basin @ Elev=71.7
	322,676	93	Weighted Average
	37,680		Pervious Area
	284,996		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0250	0.11		**Sheet Flow, AB** Grass: Dense n= 0.240 P2= 3.40"
0.8	95	0.0170	1.96		**Shallow Concentrated Flow, BC** Grassed Waterway Kv= 15.0 fps
1.5	435	0.0070	4.97	8.79	**Circular Channel (pipe), CD** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
9.6	580	Total			

Summary for Subcatchment S-2A: Tributary to IB-3

Runoff = 3.94 cfs @ 12.09 hrs, Volume= 0.288 af, Depth= 5.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	6,216	39	>75% Grass cover, Good, HSG A
*	22,464	98	Pavement
	28,680	85	Weighted Average
	6,216		Pervious Area
	22,464		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Subcatchment S-2B: Tributary to IB-4

Runoff = 5.31 cfs @ 12.08 hrs, Volume= 0.398 af, Depth= 5.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	5,665	39	>75% Grass cover, Good, HSG A
*	30,747	98	Pavement
	36,412	89	Weighted Average
	5,665		Pervious Area
	30,747		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Subcatchment S-2C: Tributary to IB-5

Runoff = 2.01 cfs @ 12.09 hrs, Volume= 0.143 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	9,745	39	>75% Grass cover, Good, HSG A
*	10,940	98	Pavement
	20,685	70	Weighted Average
	9,745		Pervious Area
	10,940		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 Minimum**

Summary for Reach SR: Site Runoff to BVW

Inflow Area = 18.710 ac, 61.95% Impervious, Inflow Depth > 2.94" for 100-yr event
Inflow = 24.20 cfs @ 12.26 hrs, Volume= 4.590 af
Outflow = 24.20 cfs @ 12.26 hrs, Volume= 4.590 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Summary for Pond 1A: Basin 1A

Inflow Area = 2.490 ac, 77.76% Impervious, Inflow Depth = 3.91" for 100-yr event
Inflow = 9.83 cfs @ 12.18 hrs, Volume= 0.811 af
Outflow = 8.99 cfs @ 12.25 hrs, Volume= 0.811 af, Atten= 8%, Lag= 4.3 min
Discarded = 1.11 cfs @ 12.25 hrs, Volume= 0.490 af
Primary = 7.89 cfs @ 12.25 hrs, Volume= 0.322 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 77.45' @ 12.25 hrs Surf.Area= 5,782 sf Storage= 5,661 cf

Plug-Flow detention time=(not calculated: outflow precedes inflow)
Center-of-Mass det. time=26.0 min (814.7 - 788.7)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	9,038 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	2,771	327.0	0	0	2,771
77.00	3,779	346.0	3,262	3,262	3,843
77.10	5,354	412.0	454	3,716	7,824
78.00	6,489	429.0	5,321	9,038	9,023

Device	Routing	Invert	Outlet Devices
#1	Primary	77.00'	**10.0' long x 11.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64
#2	Discarded	76.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.11 cfs @ 12.25 hrs HW=77.45' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 1.11 cfs)

Primary OutFlow Max=7.88 cfs @ 12.25 hrs HW=77.45' TW=0.00' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 7.88 cfs @ 1.75 fps)

Summary for Pond 1B: Basin 1B

Inflow Area = 1.271 ac, 82.88% Impervious, Inflow Depth = 5.59" for 100-yr event
Inflow = 7.97 cfs @ 12.08 hrs, Volume= 0.592 af
Outflow = 5.36 cfs @ 12.15 hrs, Volume= 0.592 af, Atten= 33%, Lag= 3.9 min
Discarded = 0.60 cfs @ 12.17 hrs, Volume= 0.281 af
Primary = 4.76 cfs @ 12.15 hrs, Volume= 0.312 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 77.87' @ 12.17 hrs Surf.Area= 3,148 sf Storage= 3,420 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 18.8 min (805.2 - 786.3)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	3,790 cf	**Custom Stage Data (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	806	121.0	0	0	806
77.00	1,199	140.0	996	996	1,222
77.10	2,570	241.0	184	1,180	4,284
78.00	3,243	257.0	2,610	3,790	4,956

Device	Routing	Invert	Outlet Devices
#1	Primary	76.42'	**18.0" x 62.0' long Culvert** RCP, mitered to conform to fill, Ke= 0.700 Outlet Invert= 76.00' S= 0.0068 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#2	Discarded	76.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.60 cfs @ 12.17 hrs HW=77.87' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.60 cfs)

Primary OutFlow Max=4.76 cfs @ 12.15 hrs HW=77.86' TW=77.37' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 4.76 cfs @ 3.49 fps)

Summary for Pond 1C: Basin 1C

Inflow Area = 1.885 ac, 83.32% Impervious, Inflow Depth = 4.52" for 100-yr event
Inflow = 8.30 cfs @ 12.11 hrs, Volume= 0.710 af
Outflow = 2.70 cfs @ 12.48 hrs, Volume= 0.710 af, Atten= 67%, Lag= 22.1 min
Discarded = 1.57 cfs @ 12.48 hrs, Volume= 0.680 af
Primary = 1.13 cfs @ 12.48 hrs, Volume= 0.030 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 77.38' @ 12.48 hrs Surf.Area= 8,178 sf Storage= 9,420 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 39.9 min (811.5 - 771.6)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	14,736 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	5,919	356.0	0	0	5,919
77.00	7,014	375.0	6,459	6,459	7,083
77.10	7,881	358.0	744	7,203	8,075
78.00	8,869	374.0	7,533	14,736	9,064

Device	Routing	Invert	Outlet Devices
#1	Primary	77.25'	**10.0' long x 11.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64
#2	Discarded	76.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.57 cfs @ 12.48 hrs HW=77.38' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 1.57 cfs)

Primary OutFlow Max=1.13 cfs @ 12.48 hrs HW=77.38' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.13 cfs @ 0.90 fps)

Summary for Pond 1D: Basin 1D

Inflow Area = 1.386 ac, 89.82% Impervious, Inflow Depth = 6.05" for 100-yr event
Inflow = 9.13 cfs @ 12.08 hrs, Volume= 0.699 af
Outflow = 6.29 cfs @ 12.15 hrs, Volume= 0.699 af, Atten= 31%, Lag= 3.7 min
Discarded = 0.66 cfs @ 12.17 hrs, Volume= 0.208 af
Primary = 5.62 cfs @ 12.14 hrs, Volume= 0.492 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 77.65' @ 12.17 hrs Surf.Area= 3,452 sf Storage= 2,316 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 10.3 min (783.0 - 772.7)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	3,603 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	277	108.0	0	0	277
77.00	642	130.0	447	447	710
77.10	2,776	416.0	158	605	13,137
78.00	3,919	454.0	2,998	3,603	15,797

Device	Routing	Invert	Outlet Devices
#1	Discarded	76.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	76.37'	**12.0" x 62.0' long Culvert X 2.00**
			RCP, mitered to conform to fill, Ke= 0.700
			Outlet Invert= 76.00' S= 0.0060 '/' Cc= 0.900
			n= 0.013 Concrete pipe, bends & connections

Discarded OutFlow Max=0.66 cfs @ 12.17 hrs HW=77.65' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.66 cfs)

Primary OutFlow Max=5.62 cfs @ 12.14 hrs HW=77.64' TW=76.92' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 5.62 cfs @ 3.65 fps)

Summary for Pond EDB: Existing Detention Basin

Inflow Area = 9.377 ac, 85.48% Impervious, Inflow Depth = 5.02" for 100-yr event
Inflow = 47.74 cfs @ 12.13 hrs, Volume= 3.924 af
Outflow = 4.22 cfs @ 13.05 hrs, Volume= 2.786 af, Atten= 91%, Lag= 55.2 min
Primary = 4.22 cfs @ 13.05 hrs, Volume= 2.786 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 73.38' @ 13.05 hrs Surf.Area= 70,576 sf Storage= 111,103 cf

Plug-Flow detention time= 421.9 min calculated for 2.786 af (71% of inflow)
Center-of-Mass det. time= 333.0 min (1,104.1 - 771.1)

Volume	Invert	Avail.Storage	Storage Description
#1	71.70'	155,808 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
71.70	60,155	952.0	0	0	60,155
72.00	63,529	1,023.0	18,550	18,550	71,318
73.00	68,606	1,069.0	66,051	84,602	79,047
74.00	73,838	1,080.0	71,206	155,808	81,213

Device	Routing	Invert	Outlet Devices
#1	Primary	72.01'	**12.0" x 3.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 72.00' S= 0.0033 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#2	Primary	73.30'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.22 cfs @ 13.05 hrs HW=73.38' TW=0.00' (Dynamic Tailwater)
├**1=Culvert** (Barrel Controls 3.08 cfs @ 3.92 fps)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.14 cfs @ 0.71 fps)

Summary for Pond IB-3: Infiltration Basin 3

Inflow Area = 0.658 ac, 78.33% Impervious, Inflow Depth = 5.25" for 100-yr event
Inflow = 3.94 cfs @ 12.09 hrs, Volume= 0.288 af
Outflow = 1.03 cfs @ 12.45 hrs, Volume= 0.288 af, Atten= 74%, Lag= 22.1 min
Discarded = 0.84 cfs @ 12.45 hrs, Volume= 0.282 af
Primary = 0.18 cfs @ 12.45 hrs, Volume= 0.006 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 78.67' @ 12.45 hrs Surf.Area= 4,402 sf Storage= 3,873 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 39.5 min (834.6 - 795.1)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	5,410 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
77.00	887	316.0	0	0	887
78.00	1,874	341.0	1,350	1,350	2,235
78.10	3,518	524.0	265	1,615	14,831
79.00	4,956	541.0	3,795	5,410	16,350

Device	Routing	Invert	Outlet Devices
#1	Primary	74.00'	**12.0" x 35.0' long Culvert** RCP, sq.cut end projecting, Ke= 0.500 Outlet Invert= 73.65' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#2	Device 1	78.50'	**24.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	77.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.84 cfs @ 12.45 hrs HW=78.67' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.84 cfs)

Primary OutFlow Max=0.18 cfs @ 12.45 hrs HW=78.67' TW=73.27' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.18 cfs of 7.72 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.18 cfs @ 1.41 fps)

Summary for Pond IB-4: Infiltration Basin 4

Inflow Area = 0.836 ac, 84.44% Impervious, Inflow Depth = 5.71" for 100-yr event
Inflow = 5.31 cfs @ 12.08 hrs, Volume= 0.398 af
Outflow = 4.59 cfs @ 12.13 hrs, Volume= 0.398 af, Atten= 14%, Lag= 2.8 min
Discarded = 0.65 cfs @ 12.13 hrs, Volume= 0.289 af
Primary = 3.94 cfs @ 12.13 hrs, Volume= 0.108 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 78.83' @ 12.13 hrs Surf.Area= 3,379 sf Storage= 2,844 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 29.5 min (812.7 - 783.2)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	3,430 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
77.00	303	165.0	0	0	303
78.00	877	197.0	565	565	1,242
78.10	2,434	430.0	159	724	12,868
79.00	3,617	446.0	2,705	3,430	14,051

Device	Routing	Invert	Outlet Devices
#1	Discarded	77.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	74.50'	**12.0" x 40.0' long Culvert** RCP, sq.cut end projecting, Ke= 0.500 Outlet Invert= 74.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#3	Device 2	78.50'	**24.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.65 cfs @ 12.13 hrs HW=78.83' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.65 cfs)

Primary OutFlow Max=3.94 cfs @ 12.13 hrs HW=78.83' TW=72.81' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 3.94 cfs of 7.33 cfs potential flow)
↑—**3=Orifice/Grate** (Weir Controls 3.94 cfs @ 1.89 fps)

Summary for Pond IB-5: Infiltration Basin 5

Inflow Area = 0.475 ac, 52.89% Impervious, Inflow Depth = 3.62" for 100-yr event
Inflow = 2.01 cfs @ 12.09 hrs, Volume= 0.143 af
Outflow = 0.34 cfs @ 12.58 hrs, Volume= 0.143 af, Atten= 83%, Lag= 29.4 min
Discarded = 0.34 cfs @ 12.58 hrs, Volume= 0.143 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 78.02' @ 12.58 hrs Surf.Area= 1,783 sf Storage= 2,140 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 58.2 min (889.1 - 830.9)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	4,136 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

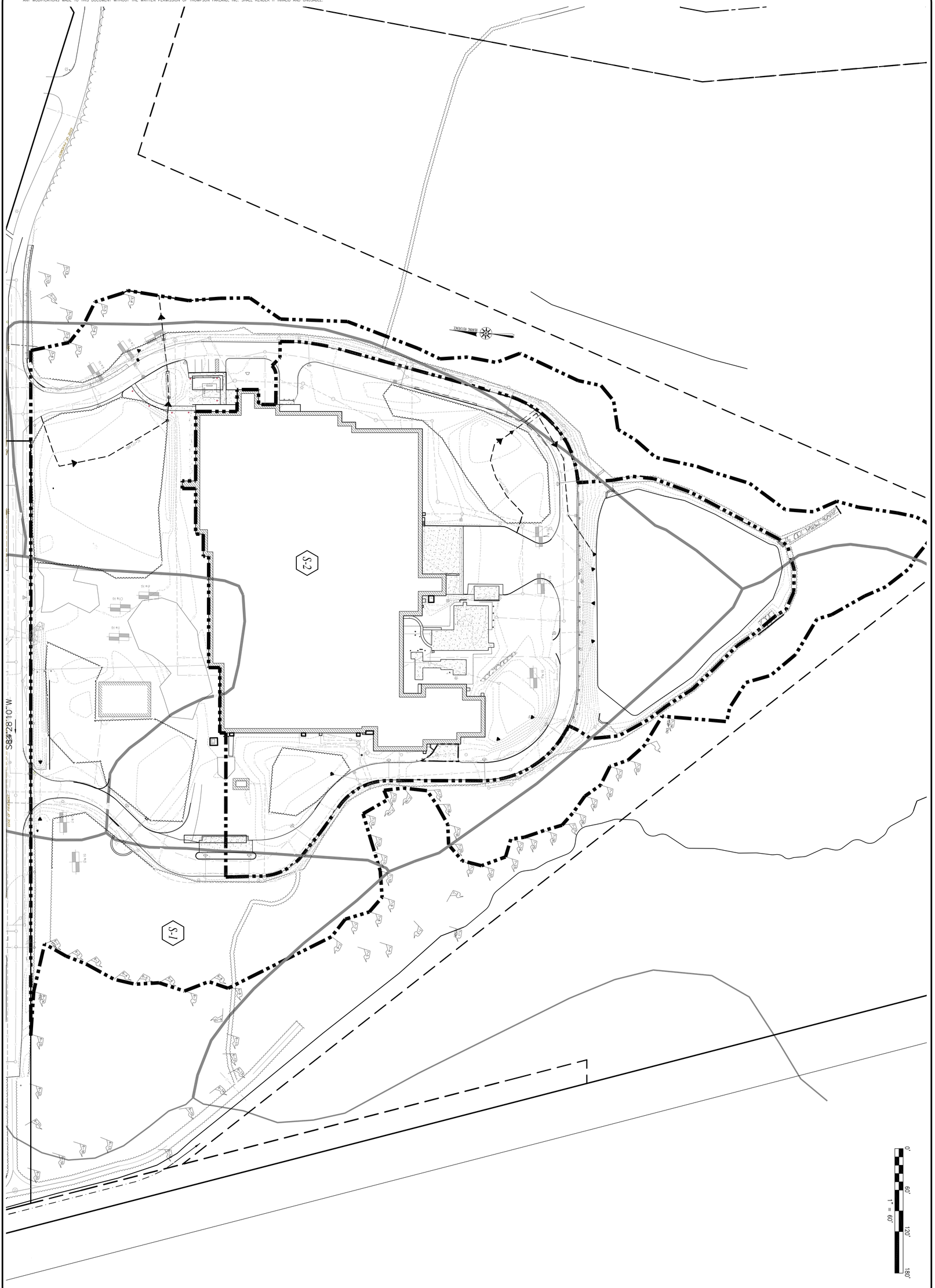
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	448	89.0	0	0	448
77.00	769	114.0	601	601	864
77.10	1,343	151.0	104	706	1,645
78.00	1,773	167.0	1,398	2,103	2,074
79.00	2,304	186.0	2,033	4,136	2,636

Device	Routing	Invert	Outlet Devices
#1	Discarded	76.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	76.00'	**12.0" x 32.0' long Culvert** RCP, sq.cut end projecting, Ke= 0.500 Outlet Invert= 75.68' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections

#3 Device 2 78.50' **12.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.34 cfs @ 12.58 hrs HW=78.02' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.34 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=71.70' (Dynamic Tailwater)
└**2=Culvert** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Controls 0.00 cfs)



SITE PLAN

50 DUCHAINE BLVD

ASSESSORS MAP 134 LOTS 456, 457, 458, & 459
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

PRE-DEVELOPMENT DRAINAGE MAP
SHEET 3a OF 7

LATEST REVISION:
JOB NO. 15-500
SCALE: 1"=60'
DECEMBER 11, 2015

CHECKED BY: CAF
DESIGNED BY: CAF
DRAWN BY: JKM

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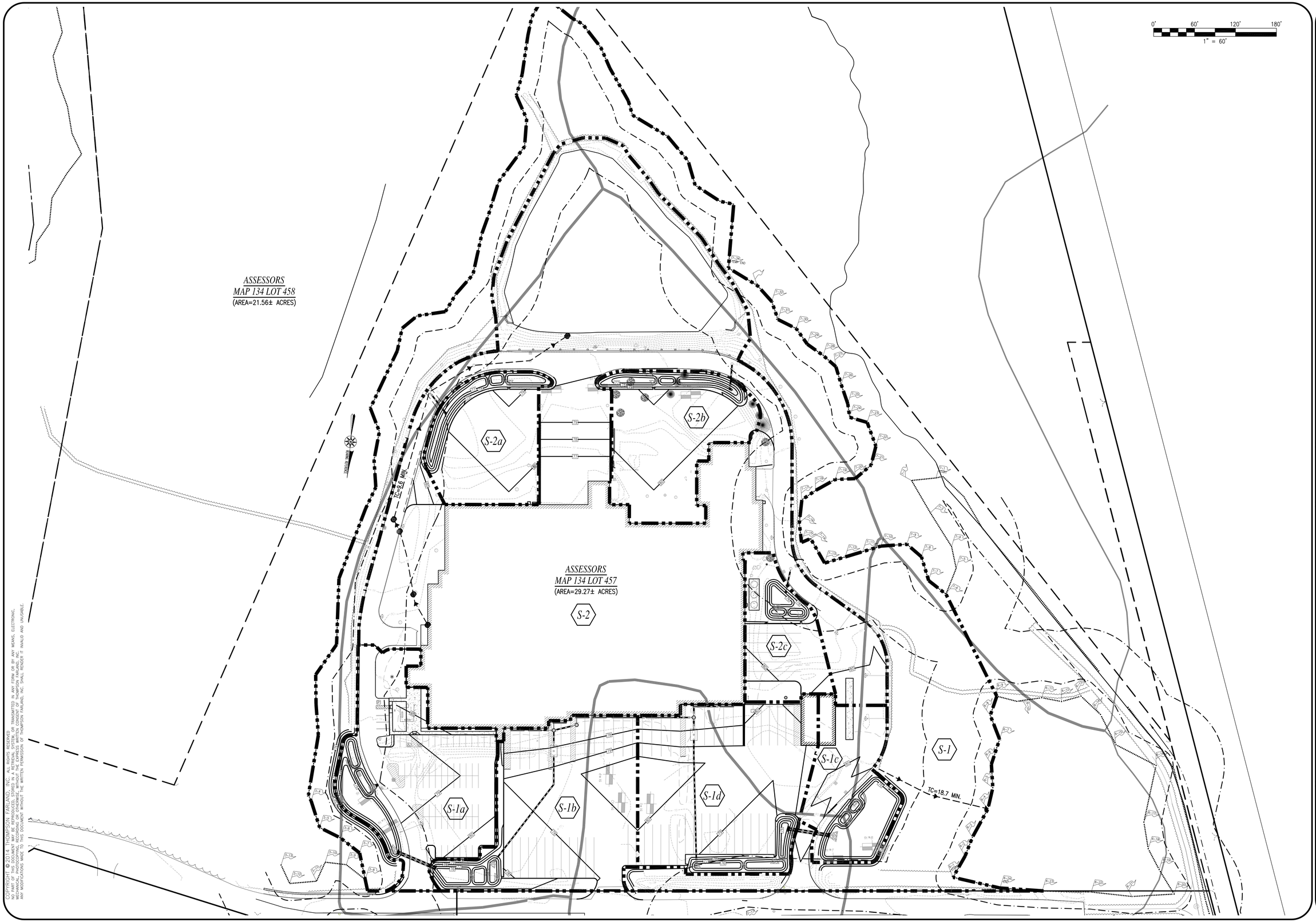
REVISIONS



REVISIONS

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DRAWN BY: JKM

DESIGNED BY: CAF

CHECKED BY: CAF

SITE PLAN

50 DUCHAINE BLVD
ASSESSORS MAP 133 LOT 15A
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

DECEMBER 11, 2015

SCALE: 1"=60'

JOB NO. 15-500

LATEST REVISION:

POST-DEVELOPMENT
DRAIANGE MAP

SHEET 5A OF 7

EXHIBIT "G"

GROUNDWATER RECHARGE CALCULATIONS

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2 Canal Park, 5th Floor, **Cambridge**, MA 02141 · P.617.679.1601
241 Boston Post Road, West, 1st Floor, **Marlborough**, MA 01752 · P.508.832.5811

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RECHARGE CALCULATIONS

REQUIRED:

Recharge Volume Required ("A" Soils) = [Net Impervious Area x (Recharge Depth/12)]
= [200,162 sf x (0.60"/12)]
= 10,008 cf (Required Volume)

Recharge Volume Required ("D" Soils) = [Impervious Area x (Recharge/12)]
= [780 sf x (0.10"/12)]
= 7 cf (Required Volume)

Total Required Recharge Volume = 10,015 cf

STATIC METHOD:

- Assume the entire Required Recharge Volume is discharged to the infiltration device before infiltration begins.

PROVIDED:

Infiltration Basin #1A:

- Cumulative Volume below the lowest outlet = 3,262 c.f.

Infiltration Basin #1B:

- Cumulative Volume below the lowest outlet = 398 c.f.

Infiltration Basin #1C:

- Cumulative Volume below the lowest outlet = 8,397 c.f.

Infiltration Basin #1D:

- Cumulative Volume below the lowest outlet = 116 c.f.

Infiltration Basin #3:

- Cumulative Volume below the lowest outlet = 3,143 c.f.
-

Infiltration Basin #4:

- Cumulative Volume below the lowest outlet = 1,796 c.f.

Infiltration Basin #5:

- Cumulative Volume below the lowest outlet = 3,053 c.f.

Total Recharge Volume Provided = 20,165 cf

DRAWDOWN CALCULATIONS

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2 Canal Park, 5th Floor, **Cambridge**, MA 02141 · P.617.679.1601
241 Boston Post Road, West, 1st Floor, **Marlborough**, MA 01752 · P.508.832.5811

$$Time_{drawdown} = \frac{Rv}{(K)(Bottom\ Area)}$$

Where:

Rv = Required Storage Volume = (F)(impervious area)

K = Saturated Hydraulic Conductivity For "Static" and "Simple Dynamic" Methods, use Rawls Rate (see Table 2.3.3).

For "Dynamic Field" Method, use 50% of the in-situ saturated hydraulic conductivity.

$$Time_{drawdown} = \frac{Rv}{(K)(Bottom\ Area)} = 1.27\ hours$$

Rv = 10,015 C.F.
K = 8.27 inch/hr.
BA = 11,411 S.F.

A	sand	**0.6-inch**
B	loam	**0.35-inch**
C	silty loam	**0.25-inch**
D	clay	**0.1-inch**

Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate Inches/Hour
Sand	A	8.27
Loamy Sand	A	2.41
Sandy Loam	B	1.02
Loam	B	0.52
Silt Loam	C	0.27
Sandy Clay Loam	C	0.17
Clay Loam	D	0.09
Silty Clay Loam	D	0.06
Sandy Clay	D	0.05
Silty Clay	D	0.04
Clay	D	0.02

EXHIBIT "I"

WATER QUALITY VOLUME CALCULATIONS

www.ThompsonFarland.com

(Main Office) 398 County Street, **New Bedford**, MA 02740 · P.508.717.3479 · F.508.717.3481
54 Longmeadow Road, **Taunton**, MA 02780 · P.508.822.9870
2 Canal Park, 5th Floor, **Cambridge**, MA 02141 · P.617.679.1601
241 Boston Post Road, West, 1st Floor, **Marlborough**, MA 01752 · P.508.832.5811

THOMPSONFARLAND
PROFESSIONAL ENGINEERS // LAND SURVEYORS

Hayward-Boynton & Williams
A THOMPSON FARLAND COMPANY

WATER QUALITY VOLUME CALCULATIONS:

REQUIRED VOLUME:

Water Quality Volume Required = (1.0”/12) x (Total Impervious Area)
Water Quality Volume Required = (1.0”/12) x (200,942 sf) = 16,745 cf

PROVIDED:

Infiltration Basin #1A:

- Cumulative Volume below the lowest outlet = 3,262 c.f.

Infiltration Basin #1B:

- Cumulative Volume below the lowest outlet = 398 c.f.

Infiltration Basin #1C:

- Cumulative Volume below the lowest outlet = 8,397 c.f.

Infiltration Basin #1D:

- Cumulative Volume below the lowest outlet = 116 c.f.

Infiltration Basin #3:

- Cumulative Volume below the lowest outlet = 3,143 c.f.
-

Infiltration Basin #4:

- Cumulative Volume below the lowest outlet = 1,796 c.f.

Infiltration Basin #5:

- Cumulative Volume below the lowest outlet = 3,053 c.f.

Total Recharge Volume Provided = 20,165 cf

20,165 cf (Provided) >>> 16,745 cf (Required)

EXHIBIT "J"

TSS REMOVAL CALCULATIONS

www.ThompsonFarland.com

(Main Office) 398 County Street, **New Bedford**, MA 02740 · P.508.717.3479 · F.508.717.3481
54 Longmeadow Road, **Taunton**, MA 02780 · P.508.822.9870
2 Canal Park, 5th Floor, **Cambridge**, MA 02141 · P.617.679.1601
241 Boston Post Road, West, 1st Floor, **Marlborough**, MA 01752 · P.508.832.5811

INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: Infiltration Basin *Same for all Infiltration Basins

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Sediment Forebay #1	0.25	1.00	0.25	0.75
Infiltration Basin	0.80	0.75	0.60	0.15
(w/ forebay #2)	0.00	0.15	0.00	0.15
	0.00	0.15	0.00	0.15
	0.00	0.15	0.00	0.15

Total TSS Removal = 85%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: Parallel Products
Prepared By: JKM
Date: 12/11/2015

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed
1. From MassDEP Stormwater Handbook Vol. 1

EXHIBIT "K"

SEDIMENT FOREBAY SIZING CALCULATIONS

www.ThompsonFarland.com

(Main Office) 398 County Street, **New Bedford**, MA 02740 · P.508.717.3479 · F.508.717.3481
54 Longmeadow Road, **Taunton**, MA 02780 · P.508.822.9870
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SEDIMENT FOREBAY SIZING CALCULATIONS

CONTRIBUTING AREA TO FOREBAY #1 AT INFILTRATION BASIN #1A

Impervious Area = 38,463 S.F.

REQUIRED VOLUME OF SEDIMENT FOREBAY = VOLUME PRODUCED BY 0.1" RUNOFF/IMPERVIOUS ACRE

= 0.1 "/ACRE x 1 ACRE / 43,560 S.F. X 38,463 S.F.

= 0.088 INCHES OF RUNOFF

TOTAL VOLUME PRODUCED = 0.088 INCHES X 1 FT / 12 IN X 38,463 S.F.

= 283 C.F.

PROVIDED VOLUME OF SEDIMENT FOREBAY

BOTTOM FOREBAY EL. = 76.00 AREA = 276 S.F.
FOREBAY BERM EL. = 77.00 AREA = 552 S.F.

VOLUME PROVIDED = 414 C.F.

CONTRIBUTING AREA TO FOREBAY #2 AT INFILTRATION BASIN #1A

Impervious Area = 38,463 S.F.

REQUIRED VOLUME OF SEDIMENT FOREBAY = VOLUME PRODUCED BY 0.1" RUNOFF/IMPERVIOUS ACRE

= 0.1 "/ACRE x 1 ACRE / 43,560 S.F. X 38,463 S.F.

= 0.088 INCHES OF RUNOFF

TOTAL VOLUME PRODUCED = 0.088 INCHES X 1 FT / 12 IN X 38,463 S.F.

= 283 C.F.

PROVIDED VOLUME OF SEDIMENT FOREBAY

BOTTOM FOREBAY EL. = 76.00 AREA = 281 S.F.
FOREBAY BERM EL. = 77.00 AREA = 562 S.F.

VOLUME PROVIDED = 422 C.F.

CONTRIBUTING AREA TO FOREBAY #1 AT INFILTRATION BASIN #1B

Impervious Area = 45,889 s.f.

REQUIRED VOLUME OF SEDIMENT FOREBAY = VOLUME PRODUCED BY 0.1" RUNOFF/IMPERVIOUS ACRE

= 0.1 "/ACRE x 1 ACRE / 43,560 S.F. X 45,889 S.F.

= 0.105 INCHES OF RUNOFF

TOTAL VOLUME PRODUCED = 0.105 INCHES X 1 FT / 12 IN X 45,889 S.F.

= 403 C.F.

PROVIDED VOLUME OF SEDIMENT FOREBAY

BOTTOM FOREBAY EL. = 76.00 AREA = 319 S.F.
FOREBAY BERM EL. = 77.00 AREA = 585 S.F.

VOLUME PROVIDED = 452 C.F.

CONTRIBUTING AREA TO FOREBAY #2 AT INFILTRATION BASIN #1B

Impervious Area = 45,889 s.f.

REQUIRED VOLUME OF SEDIMENT FOREBAY = VOLUME PRODUCED BY 0.1" RUNOFF/IMPERVIOUS ACRE

= 0.1 "/ACRE x 1 ACRE / 43,560 S.F. X 45,889 S.F.

= 0.105 INCHES OF RUNOFF

TOTAL VOLUME PRODUCED = 0.105 INCHES X 1 FT / 12 IN X 45,889 S.F.

= 403 C.F.

PROVIDED VOLUME OF SEDIMENT FOREBAY

BOTTOM FOREBAY EL. = 76.00 AREA = 298 S.F.
FOREBAY BERM EL. = 77.00 AREA = 525 S.F.

VOLUME PROVIDED = 412 C.F.

CONTRIBUTING AREA TO FOREBAY #1 AT INFILTRATION BASIN #1C

Impervious Area = 14,182 s.f.

REQUIRED VOLUME OF SEDIMENT FOREBAY = VOLUME PRODUCED BY 0.1" RUNOFF/IMPERVIOUS ACRE

= 0.1 "/ACRE x 1 ACRE / 43,560 S.F. X 14,182 S.F.

= 0.033 INCHES OF RUNOFF

TOTAL VOLUME PRODUCED = 0.033 INCHES X 1 FT / 12 IN X 14,182 S.F.

= 38 C.F.

PROVIDED VOLUME OF SEDIMENT FOREBAY

BOTTOM FOREBAY EL. = 76.00 AREA = 772 S.F.
FOREBAY BERM EL. = 77.00 AREA = 1,084 S.F.

VOLUME PROVIDED = 928 C.F.

CONTRIBUTING AREA TO FOREBAY #2 AT INFILTRATION BASIN #1C

Impervious Area = 14,182 s.f.

REQUIRED VOLUME OF SEDIMENT FOREBAY = VOLUME PRODUCED BY 0.1" RUNOFF/IMPERVIOUS ACRE

= 0.1 "/ACRE x 1 ACRE / 43,560 S.F. X 14,182 S.F.

= 0.033 INCHES OF RUNOFF

TOTAL VOLUME PRODUCED = 0.033 INCHES X 1 FT / 12 IN X 14,182 S.F.

= 38 C.F.

PROVIDED VOLUME OF SEDIMENT FOREBAY

BOTTOM FOREBAY EL. = 76.00 AREA = 772 S.F.
FOREBAY BERM EL. = 77.00 AREA = 1,084 S.F.

VOLUME PROVIDED = 928 C.F.

CONTRIBUTING AREA TO FOREBAY #1 AT INFILTRATION BASIN #1D

Impervious Area = 54,238 s.f.

REQUIRED VOLUME OF SEDIMENT FOREBAY = VOLUME PRODUCED BY 0.1" RUNOFF/IMPERVIOUS ACRE

= 0.1 "/ACRE x 1 ACRE / 43,560 S.F. X 54,238 S.F.

= 0.125 INCHES OF RUNOFF

TOTAL VOLUME PRODUCED = 0.125 INCHES X 1 FT / 12 IN X 54,238 S.F.

= 563 C.F.

PROVIDED VOLUME OF SEDIMENT FOREBAY

BOTTOM FOREBAY EL. = 76.00 AREA = 527 S.F.
FOREBAY BERM EL. = 77.00 AREA = 995 S.F.

VOLUME PROVIDED = 761 C.F.

CONTRIBUTING AREA TO FOREBAY #2 AT INFILTRATION BASIN #1D

Impervious Area = 54,238 s.f.

REQUIRED VOLUME OF SEDIMENT FOREBAY = VOLUME PRODUCED BY 0.1" RUNOFF/IMPERVIOUS ACRE

= 0.1 "/ACRE x 1 ACRE / 43,560 S.F. X 54,238 S.F.

= 0.125 INCHES OF RUNOFF

TOTAL VOLUME PRODUCED = 0.125 INCHES X 1 FT / 12 IN X 54,238 S.F.

= 563 C.F.

PROVIDED VOLUME OF SEDIMENT FOREBAY

BOTTOM FOREBAY EL. = 76.00 AREA = 501 S.F.
FOREBAY BERM EL. = 77.00 AREA = 896 S.F.

VOLUME PROVIDED = 699 C.F.

CONTRIBUTING AREA TO FOREBAY #1 AT INFILTRATION BASIN #3

Impervious Area = 22,464 s.f.

REQUIRED VOLUME OF SEDIMENT FOREBAY = VOLUME PRODUCED BY 0.1" RUNOFF/IMPERVIOUS ACRE

= 0.1 "/ACRE x 1 ACRE / 43,560 S.F. X 22,464 S.F.

= 0.052 INCHES OF RUNOFF

TOTAL VOLUME PRODUCED = 0.052 INCHES X 1 FT / 12 IN X 22,464 S.F.

= 97 C.F.

PROVIDED VOLUME OF SEDIMENT FOREBAY

BOTTOM FOREBAY EL. = 77.00 AREA = 561 S.F.
FOREBAY BERM EL. = 78.00 AREA = 1,014 S.F.

VOLUME PROVIDED = 788 C.F.

CONTRIBUTING AREA TO FOREBAY #2 AT INFILTRATION BASIN #3

Impervious Area = 22,464 s.f.

REQUIRED VOLUME OF SEDIMENT FOREBAY = VOLUME PRODUCED BY 0.1" RUNOFF/IMPERVIOUS ACRE

= 0.1 "/ACRE x 1 ACRE / 43,560 S.F. X 22,464 S.F.

= 0.052 INCHES OF RUNOFF

TOTAL VOLUME PRODUCED = 0.052 INCHES X 1 FT / 12 IN X 22,464 S.F.

= 97 C.F.

PROVIDED VOLUME OF SEDIMENT FOREBAY

BOTTOM FOREBAY EL. = 77.00 AREA = 168 S.F.
FOREBAY BERM EL. = 78.00 AREA = 343 S.F.

VOLUME PROVIDED = 256 C.F.

CONTRIBUTING AREA TO FOREBAY #1 AT INFILTRATION BASIN #4

Impervious Area = 30,747 s.f.

REQUIRED VOLUME OF SEDIMENT FOREBAY = VOLUME PRODUCED BY 0.1" RUNOFF/IMPERVIOUS ACRE

= 0.1 "/ACRE x 1 ACRE / 43,560 S.F. X 30,747 S.F.

= 0.071 INCHES OF RUNOFF

TOTAL VOLUME PRODUCED = 0.071 INCHES X 1 FT / 12 IN X 30,747 S.F.

= 181 C.F.

PROVIDED VOLUME OF SEDIMENT FOREBAY

BOTTOM FOREBAY EL. = 77.00 AREA = 485 S.F.
FOREBAY BERM EL. = 78.00 AREA = 1,024 S.F.

VOLUME PROVIDED = 755 C.F.

CONTRIBUTING AREA TO FOREBAY #2 AT INFILTRATION BASIN #4

Impervious Area = 30,747 s.f.

REQUIRED VOLUME OF SEDIMENT FOREBAY = VOLUME PRODUCED BY 0.1" RUNOFF/IMPERVIOUS ACRE

= 0.1 "/ACRE x (1 ACRE / 43,560 S.F.) X 30,747 S.F.

= 0.071 INCHES OF RUNOFF

TOTAL VOLUME PRODUCED = 0.071 INCHES X (1 FT / 12 IN) X 30,747 S.F.

= 181 C.F.

PROVIDED VOLUME OF SEDIMENT FOREBAY

BOTTOM FOREBAY EL. = 77.00 AREA = 116 S.F.
FOREBAY BERM EL. = 78.00 AREA = 282 S.F.

VOLUME PROVIDED = 199 C.F.

CONTRIBUTING AREA TO FOREBAY #1 AT INFILTRATION BASIN #5

Impervious Area = 10,940 s.f.

REQUIRED VOLUME OF SEDIMENT FOREBAY = VOLUME PRODUCED BY 0.1" RUNOFF/IMPERVIOUS ACRE

= 0.1 "/ACRE x (1 ACRE / 43,560 S.F.) X 10,940 S.F.

= 0.025 INCHES OF RUNOFF

TOTAL VOLUME PRODUCED = 0.025 INCHES X (1 FT / 12 IN) X 10,940 S.F.

= 23 C.F.

PROVIDED VOLUME OF SEDIMENT FOREBAY

BOTTOM FOREBAY EL. = 76.00 AREA = 106 S.F.
FOREBAY BERM EL. = 77.00 AREA = 268 S.F.

VOLUME PROVIDED = 187 C.F.

CONTRIBUTING AREA TO FOREBAY #2 AT INFILTRATION BASIN #5

Impervious Area = 10,940 s.f.

REQUIRED VOLUME OF SEDIMENT FOREBAY = VOLUME PRODUCED BY 0.1" RUNOFF/IMPERVIOUS ACRE

= 0.1 "/ACRE x (1 ACRE / 43,560 S.F.) X 10,940 S.F.

= 0.025 INCHES OF RUNOFF

TOTAL VOLUME PRODUCED = 0.025 INCHES X (1 FT / 12 IN) X 10,940 S.F.

= 23 C.F.

PROVIDED VOLUME OF SEDIMENT FOREBAY

BOTTOM FOREBAY EL. = 76.00 AREA = 106 S.F.
FOREBAY BERM EL. = 77.00 AREA = 268 S.F.

VOLUME PROVIDED = 187 C.F.

EXHIBIT "L"

LONG TERM OPERATION & MAINTENANCE PLAN

www.ThompsonFarland.com

(Main Office) 398 County Street, **New Bedford**, MA 02740 · P.508.717.3479 · F.508.717.3481
54 Longmeadow Road, **Taunton**, MA 02780 · P.508.822.9870
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Cullinan Engineering
A THOMPSON FARLAND COMPANY

Long Term Operation and Maintenance Plan

Proposed "Site Plan"
50 Duchaine Boulevard
New Bedford, MA

December 11, 2015

Owner:

Multilayer Coating Tech.
1 Cranberry Hill
750 Marrett Road, Suite 401
Lexington, MA 02421

Prepared For:

Parallel Products of New England
401 Industry Road
Louisville, KY 40208

Prepared By:

John Marchand, P.E.
Thompson Farland, Inc.
Project No. 15-500

Street Sweeping

The parking lot will be inspected and maintained by the owner.

It shall be the responsibility of the owner to:

Inspections:

Inspect sediment deposit accumulations on the parking lots quarterly.

Maintenance:

Sweep parking lots at least annually.

Dispose of the accumulated sediment and hydrocarbons in accordance with local, state, and federal guidelines and regulations.

Stone/ Rip Rap Areas

The owner of the rip rap areas shall be the owner.

The rip rap areas are to be inspected and maintained by the owner.

It shall be the responsibility of the owner to:

Inspections:

Inspect the rip rapped areas quarterly.

Maintenance:

Remove accumulated sediment, trash, leaves and debris at least annually. Check for signs of erosion and repair as need. Replace any damaged areas with new rip rap of the same size.

Dispose of the accumulated sediment and hydrocarbons in accordance with local, state, and federal guidelines and regulations.

Infiltration Basin

The owner of the basins shall be the owner.

The basins are to be inspected and maintained by the owner.

It shall be the responsibility of the owner to:

Inspections:

Inspect to basins quarterly and after major storms (>3.2" of rain in 24 hours)

Inspect fore-bay quarterly.

Inspect basins for settlement, subsidence, erosion, cracking or tree growth on the embankment, condition of stone; sediment accumulation around the outlet or within the basin; and erosion within the basin and banks.

Inspect outlet structures and/ or outlet pipes for evidence of clogging, sediment deposits or signs of erosion around the structure/ pipe.

Ensure that the basins are operating as designed. If inspection shows that a basin fails to fully drain within 72 hours following a storm event, then the responsible party shall retain a Registered Professional Civil Engineer licensed in the state of Massachusetts to assess the reason for infiltration/ detention failure and recommend corrective action for restoring the intended functions. For a wet pond, fully drained means that the ponding level in the basin is at or below the lowest elevation of the outlet structure. For an infiltration basin, fully drained means that there is no ponding occurring in the infiltration basin.

Inspect emergency spillways for signs of erosion.

Maintenance:

When mowing the basin and forebay, mow the buffer area, side slopes, and basin bottom. Remove grass clippings and accumulated debris. Mow three times per year in May, July and September.

Remove accumulated trash, leaves, debris in basin and forebay every month between April and November of each year. Inspect areas in February of each year, if possible, to determine whether the aforementioned services are required.

If the infiltration basin is ponding in areas or not infiltrating as designed, use deep tilling to break up clogged surfaces, and re-vegetate immediately.

Replace stone in forebay and at all pipe ends once every five (5) years or when sediment depth is excessive.

Do not store snow in basin area.

Remove sediment from the basin and forebay as necessary and at least once every 5 years but wait until the floor of the basin is thoroughly dry. After removing sediment, replace any vegetation damaged during clean-out by either re-seeding or re-sodding.

Dispose of the accumulated sediment and hydrocarbons in accordance with local, state, and federal guidelines and regulations.

Drain Lines

After construction, the drain lines shall be inspected after every major storm for the first few months to ensure proper functions. Presence of accumulated sand and silt would indicate more frequent maintenance of the pre-treatment devices is required. Thereafter, the drain lines shall be inspected at least once per year. Accumulated silt shall be removed by a vactor truck or other method preferred.

EXHIBIT "M"

LONG TERM POLLUTION PREVENTION PLAN

www.ThompsonFarland.com

(Main Office) 398 County Street, **New Bedford**, MA 02740 · P.508.717.3479 · F.508.717.3481
54 Longmeadow Road, **Taunton**, MA 02780 · P.508.822.9870
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PROFESSIONAL ENGINEERS // LAND SURVEYORS

Hayward-Boynton & Williams
A THOMPSON FARLAND COMPANY

Cullinan Engineering
A THOMPSON FARLAND COMPANY

Long Term Pollution Prevention Plan

Site Plan
50 Duchaine Boulevard
New Bedford, MA 02740

December 11, 2015

Owner:

Multilayer Coating Technologies, LLC
1 Cranberry Hill
750 Marrett Road, Suite 401
Lexington, MA 02421

Prepared For:

Parallel Products
401 Industry Road
Louisville, KY 40208

Prepared By:

Christian A. Farland, P.E.
Thompson Farland, Inc.
Project No. 15-500

Long Term Pollution Prevention Plan

This Long Term Pollution Prevention Plan serves to outline good housekeeping practices in order to prevent pollution of the wetland resource areas and surrounding environment. The Long Term Operation & Maintenance Plan shall be taken as part of this document as it is a critical part of this plan and shall be adhered to. Proper operation and maintenance records shall be kept on file at all times.

Snow disposal shall be carried out by the owner. The owner should follow DEP guideline #BRPG 01-01 for all snow removal requirements.

The following areas shall be avoided for snow disposal:

- Avoid dumping the snow in the bordering vegetated wetlands.
- Avoid dumping of snow on top of storm drain catch basins or in stormwater drainage swales or ditches. Snow combined with sand and debris may block a storm drainage system, causing localized flooding. A high volume of sand, sediment, and litter released from melting snow also may be quickly transported through the system into surface water.

In the event of oil, gasoline or other hazardous waste spill on-site, the City of New Bedford Fire Department, DEP and the Conservation Agent shall be notified immediately. Any catch basin that may be affected by the spill shall be covered immediately to prevent any contamination into the drainage system. Proper cleanup and disposal of hazardous wastes must follow all applicable local and state regulations and must be carried out by a qualified contractor.

The maintenance of all individual lawns, gardens and landscaped areas shall be performed by the owner. The site is not located within or near an Area of Critical Environmental Concern. However, good housekeeping practices should include proper storage and minimal use of cleaning products and fertilizers.

ILLICIT DISCHARGE STATEMENT

December 6, 2014

New Bedford Conservation Commission
John Radcliffe, Chairman
City Hall, Room 304
133 William Street
New Bedford, MA 02740

RE: Site Plan, 50 Duchaine Boulevard
Illicit Discharge Compliance Statement (IDCS)

Dear Mr. Radcliffe,

As required, we are submitting this Illicit Discharge Compliance Statement verifying that no illicit discharges exist on the site or are proposed. We have included in the pollution prevention plan measures to prevent illicit discharges to the stormwater management system, including wastewater discharges and discharges of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease.

The site plan identifies the location of any systems for conveying wastewater and/or groundwater on the site and show that there are no connections between the stormwater and wastewater management systems and the location of any measures taken to prevent the entry of illicit discharges into the stormwater management system.

Please feel free to contact us if you should need any further information.

Very Truly Yours,

THOMPSON FARLAND, INC.

Christian A. Farland

Christian A. Farland , P.E., LEED AP
Principal Engineer and President

cc: Client
File

SITE PLAN

www.ThompsonFarland.com

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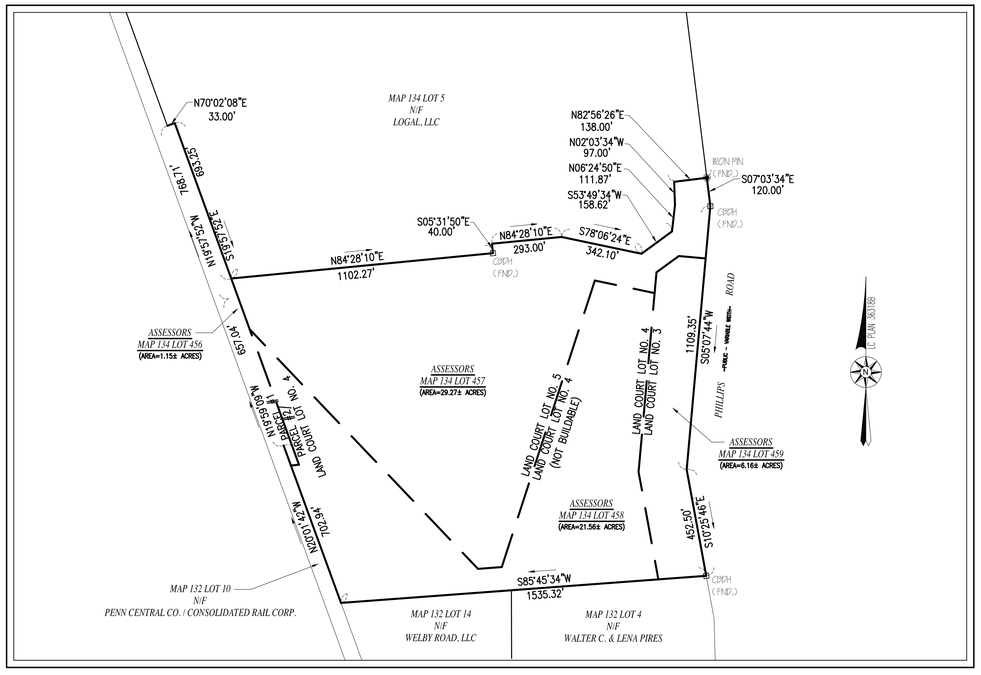
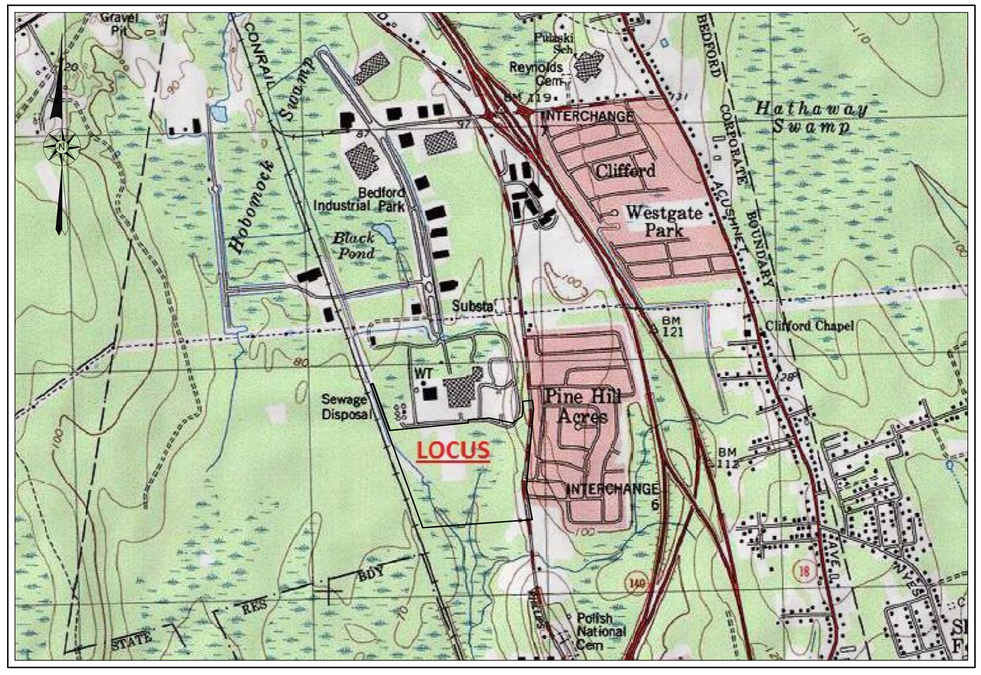
SITE PLAN
50 DUCHAINE BOULEVARD
ASSESSORS MAP #134 LOTS #456, 457, 458, & 459
NEW BEDFORD, MASSACHUSETTS



— OVERALL SITE MAP —
SCALE: 1"=300'



— AREA MAP —
SCALE: 1"=1,000'±

— ZONING DATA —
DISTRICT: INDUSTRIAL C

DESCRIPTION	REQUIRED	EXISTING	PROVIDED
LOT AREA	0 S.F.	58.14 AC	58.14 AC
LOT FRONTAGE	0 FT	1681.85 FT	1681.85 FT
FRONT SETBACK	25 FT	756 FT	756 FT
SIDE SETBACK	25 FT	219 FT	219 FT
REAR SETBACK	25 FT	522 FT	522 FT
BUILDING HEIGHT (MAXIMUM)	100 FT	<100 FT	<100 FT
BUILDING COVERAGE (MAXIMUM)	50 %	6.0 %	6.0 %
LOT COVERAGE (MAXIMUM)	80 %	10.5 %	18.4 %

— PARKING REQUIREMENT —
PRINCIPAL USE: LIQUID WASTE DISPOSAL & RECYCLING
(FOR PARKING REGULATION PURPOSES: BUSINESS ENGAGED IN WAREHOUSING & DISTRIBUTION)

REQUIREMENT	REQUIRED	PROVIDED
1 SPACE PER 1,500 S.F. OF G.F.A. UP TO 15,000 S.F. THEREAFTER, ON ADDITIONAL SPACE FOR EACH 5,000 S.F. OR PORTION THEREOF IN EXCESS OF 15,000 S.F., PLUS ONE SPACE FOR EACH VEHICLE UTILIZED IN THE BUSINESS.	41 SPACES	71 SPACES
WHEN 51-75 TOTAL PARKING SPACES ARE PROVIDED, 3 MUST BE ACCESSIBLE SPACES. ONE IN EVERY EIGHT ACCESSIBLE SPACES, BUT NOT LESS THAN ONE, SHALL BE VAN ACCESSIBLE	3 ACCESSIBLE, 1 VAN ACCESSIBLE	3 ACCESSIBLE, 2 VAN ACCESSIBLE

— INDEX —

RECORD OWNER:
ASSESSORS MAP 134
LOTS 456, 457, 458, & 459
MULITLAYER COATING TECH.
1 CRANBERRY HILL
750 MARRETT RD., SUITE 401
LEXINGTON, MA 02421
LEGAL REF: 22029

REVISIONS

CHRISTIAN ALBERT FARLAND No. 47544 CIVIL REGISTERED COMMONWEALTH OF MASSACHUSETTS

THOMPSONFARLAND
PROFESSIONAL ENGINEERS // LAND SURVEYORS
www.ThompsonFarland.com
(MAIN OFFICE) 396 COUNTY STREET, NEW BEDFORD, MA 02740 P.508.717.3479
NEW BEDFORD | TAUNTON | CAMBRIDGE | MARLBOROUGH

DRAWN BY: JKM
DESIGNED BY: CAF
CHECKED BY: CAF

SITE PLAN
50 DUCHAINE BLVD
ASSESSORS MAP 134 LOTS 456, 457, 458, & 459
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

DECEMBER 11, 2015
SCALE: AS NOTED
JOB NO. 15-500
LATEST REVISION:

COVER SHEET

SHEET 1 OF 7

GENERAL CONSTRUCTION NOTES

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY, AND "DIG SAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLAN.
2. PROPERTY LINE INFORMATION TAKEN FROM:
   - PLAN ENTITLED: "PLAN OF LAND IN NEW BEDFORD, MASS., SURVEYED FOR POLAROID CORPORATION", DATED JUNE 10, 1969 BY TIBBETS ENGINEERING CORP. (PLAN BOOK 81, PAGE 78), AND
   - LAND COURT PLAN 36318C, ENTITLED "SUBDIVISION PLAN OF LAND IN NEW BEDFORD", BY CULLINAN ENGINEERING CO., INC., SURVEYORS, DATED JANUARY 6, 2009 (LAND COURT CERTIFICATE OF TITLE NO. 22029).
3. TOPOGRAPHIC SURVEY PERFORMED BY THOMPSON FARLAND, INC. IN SEPTEMBER 2015.
4. WETLAND DELINEATION PERFORMED BY BOB GRAY OF SABATIA INC. IN JULY 2007.
5. VERTICAL ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 AND HORIZONTAL LOCATIONS REFER TO THE NORTH AMERICAN DATUM (NAD) OF 1983.
6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL STANDARDS AND REGULATIONS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCH MARKS NECESSARY FOR THE WORK.
8. WHERE PROPOSED PAVEMENT AND WALKS ARE TO MEET EXISTING, THE CONTRACTOR SHALL SAWCUT A NEAT LINE AND MATCH GRADE. SEAL ALL JOINTS WITH HOT BITUMINOUS ASPHALT JOINT SEALER.
9. CURBING TO BE AS INDICATED ON THE PLANS.
10. ALL EXISTING TREES, SHRUBS AND GROUND COVER WHERE NATURAL GRADE IS TO BE RETAINED SHALL BE KEPT IN THEIR EXISTING STATE UNLESS REMOVAL IS REQUIRED FOR CONSTRUCTION PURPOSES.
11. ALL AREAS DISTURBED BY CONSTRUCTION AND NOT TO BE PAVED OR OTHERWISE TREATED AS NOTED ON PLAN SHALL BE TREATED WITH 4" OF LOAM, SEEDED AND HAY MULCHED FOR EROSION CONTROL.
12. SITE IMPROVEMENTS SHALL CONFORM TO A.D.A. SPECIFICATIONS.
13. LIGHTING SHALL BE DIRECTED ON SITE AND AWAY FROM TRAFFIC INTERFERENCE.
14. TEST PITS AND/OR BORINGS WERE TAKEN FOR THE PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY. THEY DO NOT NECESSARILY SHOW THE NATURE OF ALL MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
15. THE CONTRACTOR SHALL PROTECT AND/OR CAP OFF ALL EXISTING ON-SITE UTILITY SERVICES ACCORDING TO THE LOCAL AUTHORITY'S SPECIFICATIONS. SERVICES SHALL BE CAPPED OFF WHERE SAME ENTER THE PERIMETER OF THE PROPERTY LINE.
16. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL CONSTRUCTION DOCUMENTS, SPECIFICATIONS AND SITE CONDITIONS PRIOR TO BIDDING AND PRIOR TO CONSTRUCTION.
17. ANY DISCREPANCIES BETWEEN DRAWINGS, SPECIFICATIONS AND SITE CONDITIONS SHALL BE REPORTED IMMEDIATELY TO THE OWNER'S REPRESENTATIVE FOR CLARIFICATION AND RESOLUTION PRIOR TO BIDDING OR CONSTRUCTION.
18. THESE PLANS ARE PERMITTING PLANS AND SHALL NOT TO BE USED FOR CONSTRUCTION. A FINAL SET OF STAMPED PLANS FOR CONSTRUCTION WILL BE ISSUED AFTER RECEIVING FINAL APPROVAL FROM THE LOCAL AND/OR STATE DEPARTMENTS.
19. ANY MINOR MODIFICATIONS (AS DETERMINIED BY THE CITY ENGINEER) TO THE INFORMATION SHOWN ON THE APPROVED SITE PLANS SHALL BE SUBMITTED TO THE CITY ENGINEER AS A MINOR PLAN REVISION FOR APPROVAL PRIOR TO WORK BEING PERFORMED.
20. ANY WORK AND MATERIAL WITHIN THE CITY RIGHT-OF-WAY SHALL CONFORM TO THE CITY OF NEW BEDFORD REQUIREMENTS.
21. ALL HANDICAP PARKING, RAMPS, AND ACCESS SHALL CONFORM TO AAB & MAAB REQUIREMENTS.
22. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO CONSTRUCTION. EROSION CONTROL SHALL CONFORM TO CITY OF NEW BEDFORD CONSERVATION COMMISSION REQUIREMENTS AS STATED IN THE ORDER OF CONDITIONS.
23. ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO MUTCD REQUIREMENTS.
24. THE CONTRACTOR SHALL OBTAIN A STREET DISTURBANCE & OBSTRUCTION PERMIT PRIOR TO ANY CONSTRUCTION WITHIN THE RIGHT OF WAY.
25. ALL WATER AND SEWER MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE CITY OF NEW BEDFORD REQUIREMENTS.
26. ALL WATER AND SEWER CONSTRUCTION SHALL BE INSPECTED BY THE CITY OF NEW BEDFORD BEFORE BEING BACKFILLED.
27. THE CITY SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO THE REQUIRED INSPECTIONS.

CONSTRUCTION SEQUENCING NOTES

1. CONSTRUCT TEMPORARY AND PERMANENT EROSION CONTROL FACILITIES. EROSION CONTROL FACILITIES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING.
2. TREE PROTECTION FENCE SHALL BE INSTALLED AND APPROVED BY THE OWNER REPRESENTATIVE PRIOR TO ANY EARTH MOVING.
3. ALL PERMANENT DITCHES AND SWALES ARE TO BE STABILIZED WITH VEGETATION OR RIP RAP PRIOR TO DIRECTING RUNOFF TO THEM.
4. CLEAR CUT, DEMOLISH AND DISPOSE OF EXISTING SITE ELEMENTS NOT TO REMAIN.
5. STORMWATER SHALL NOT BE DIRECTED TOWARDS THE INFILTRATION BASINS UNTIL THE ENTIRE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.
6. GRADE AND GRAVEL ALL PAVED AREAS. ALL PROPOSED PAVED AREAS SHALL BE STABILIZED IMMEDIATELY AFTER GRADING.
7. BEGIN ALL PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED IMMEDIATELY AFTER THEIR CONSTRUCTION.
8. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT FENCES AND MULCH AND SEED AS REQUIRED.
9. FINISH PAVING ALL HARD SURFACE AREAS.
10. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
11. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
12. REMOVE TEMPORARY EROSION CONTROL MEASURES.
13. THE CONSTRUCTION SEQUENCE SHALL BE CONFINED TO THE LIMIT OF WORK AS SHOWN ON THE DRAWINGS.
14. UPON COMPLETION OF CONSTRUCTION THE OWNER SHALL AGREE TO MAINTAIN AND CLEAN ALL DRAINAGE STRUCTURES AS REQUIRED.

SITE PREPARATION NOTES

1. WITHIN THE LIMIT OF WORK LINE AS NOTED ON THE SITE PLANS, REMOVE AND DISCARD ALL CONCRETE PAVEMENT, BITUMINOUS CONCRETE PAVEMENT, BRICK PAVEMENT, TOP SOIL, MULCH, TRASH, DEAD TREES AND STUMPS, SHRUBBERY, CHAIN LINK FENCE POSTS, RAILS, FABRIC, GATES, FOOTINGS AND ALL APPURTENANCES, BOLLARDS, POSTS, CONCRETE FOOTINGS AND FOUNDATIONS, WALLS AND CURBS UNLESS OTHERWISE NOTED.
2. THE OWNER'S REPRESENTATIVE SHALL BE CONSULTED AND WILL REVIEW THE WORK ON SITE WITH THE CONTRACTOR BEFORE ANY WORK SHALL COMMENCE.
3. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND REPORT ANY DISCREPANCIES BETWEEN PLANS AND ACTUAL CONDITIONS TO THE OWNER'S REPRESENTATIVE PRIOR TO STARTING WORK.
4. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING CONDITIONS TO REMAIN THAT ARE DUE TO CONTRACTOR OPERATIONS.
5. ALL ITEMS TO BE REMOVED THAT ARE NOT STOCKPILED FOR LATER REUSE ON THE PROJECT OR DELIVERED TO THE OWNER SHALL BE LEGALLY DISPOSED OF OFF SITE BY THE CONTRACTOR.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS EFFORTS OF THE DEMOLITION WITH ALL TRADES.
7. THE CONTRACTOR SHALL COORDINATE ALL ADJUSTMENT OR ABANDONMENT OF UTILITIES WITH THE RESPECTIVE UTILITY COMPANY.
8. THE CONTRACTOR SHALL MAINTAIN OR ADJUST TO NEW FINISH GRADES AS NECESSARY ALL UTILITY AND SITE STRUCTURES SUCH AS LIGHT POLES, SIGN POLES, MANHOLES, CATCH BASINS, HAND HOLES, WATER AND GAS GATES, HYDRANTS, ETC., FROM MAINTAINED UTILITY AND SITE SYSTEMS UNLESS OTHERWISE NOTED OR DIRECTED BY THE OWNER'S REPRESENTATIVE.

UTILITY AND GRADING NOTES

1. ALL ON-SITE STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE PIPE (HDPE) OR RCP, UNLESS NOTED OTHERWISE.
2. HDPE PIPE SHALL CONFORM WITH AASHTO DESIGNATIONS M294 AND M252, SHALL BE MANUFACTURED WITH HIGH DENSITY POLYETHYLENE PLASTIC AND SHALL BE ADS N-12 PIPE AS MANUFACTURED BY ADVANCE DRAINAGE SYSTEM, INC. OR HANCOR HI Q PIPE AS MANUFACTURED BY HANCOR, INC. OR APPROVED EQUAL UNLESS OTHERWISE NOTED OR DETAILED.
3. BEFORE THE DEVELOPMENT SITE IS GRADED, THE AREA OF THE DRAINAGE BASINS SHOULD BE FENCED OFF TO PREVENT HEAVY EQUIPMENT FROM COMPACTING THE UNDERLYING SOIL.
4. WHERE PROPOSED GRADES MEET EXISTING GRADES, CONTRACTOR SHALL BLEND GRADES TO PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING AND NEW WORK. PONDING AT TRANSITION AREAS WILL NOT BE ALLOWED.
5. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM ALL BUILDING FOUNDATIONS AND STRUCTURES.
6. MAXIMUM SLOPE IN DISTURBED AREAS SHALL NOT EXCEED 3:1 , UNLESS OTHERWISE NOTED.
7. CONTRACTOR SHALL VERIFY EXISTING GRADES AND NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES.
8. CONTRACTOR SHALL ADJUST UTILITY ELEMENT MEANT TO BE FLUSH WITH GRADE THAT IS AFFECTED BY SITE WORK OR GRADE CHANGES, WHETHER SPECIFICALLY NOTED ON PLANS OR NOT.
9. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE OWNER'S REPRESENTATIVE FOR RESOLUTION OF THE CONFLICT.
10. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF ALL GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
11. THE LOCATION, SIZE, DEPTH AND SPECIFICATIONS FOR CONSTRUCTION OF PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY AND APPROVED BY THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE AND ELECTRICAL). FINAL DESIGN AND LOCATIONS AT THE BUILDING WILL BE PROVIDED BY THE ARCHITECT. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE UTILITY CONNECTIONS WITH THE RESPECTIVE COMPANIES PRIOR TO ANY UTILITY CONSTRUCTION.

LAYOUT AND MATERIAL NOTES

1. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL CONSTRUCTION DOCUMENTS, SPECIFICATIONS AND SITE CONDITIONS PRIOR TO BIDDING AND PRIOR TO CONSTRUCTION.
2. ANY DISCREPANCIES BETWEEN DRAWINGS, SPECIFICATIONS AND SITE CONDITIONS SHALL BE REPORTED IMMEDIATELY TO THE OWNER'S REPRESENTATIVE FOR CLARIFICATION AND RESOLUTION PRIOR TO BIDDING OR CONSTRUCTION.
3. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND ALL DETAILS CONTIGUOUS TO THE BUILDING INCLUDING SIDEWALKS, RAMPS, UTILITY ENTRANCE LOCATIONS, WALL PACKS, CONCRETE DOOR PADS, ROOF DRAINS, ETC.
4. ACCESSIBLE CURB RAMPS SHALL BE PER THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD AND THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES, WHICHER IS MORE STRINGENT.
5. THE FOLLOWING LAYOUT CRITERIA SHALL CONTROL UNLESS OTHERWISE NOTED ON THE PLAN:
   ALL DIMENSIONS ARE TO OUTSIDE FACE OF BUILDING.
   ALL DIMENSIONS ARE TO FACE OF CURB AT GUTTER LINE.
   ALL DIMENSIONS ARE TO CENTER OF PAVEMENT MARKINGS.
   ALL TIES TO PROPERTY LINES ARE PERPENDICULAR TO THE PROPERTY LINE UNLESS OTHERWISE NOTED.

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE CONSERVATION COMMISSION SHALL BE NOTIFIED, AT LEAST 72 HOURS PRIOR TO ANY LAND DISTURBANCE.
2. A COPY OF THE SOIL EROSION AND SEDIMENT CONTROL PLAN MUST BE MAINTAINED ON THE PROJECT SITE DURING CONSTRUCTION.
3. SOIL EROSION AND SEDIMENT CONTROL PRACTICES IN THE PLAN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
4. ALL APPLICABLE SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN PLACE PRIOR TO ANY DEMOLITION GRADING OPERATIONS AND/OR INSTALLATION OF PROPOSED STRUCTURES OR UTILITIES.
5. ALL APPLICABLE SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE LEFT IN PLACE UNTIL CONSTRUCTION IS COMPLETED AND/OR THE AREA IS STABILIZED.
6. ALL SOIL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED AND MAINTAINED ON A REGULAR BASIS AND AFTER EVERY STORM EVENT.
7. THE MAINTENANCE OF SOIL EROSION AND SEDIMENT CONTROL MEASURES AND FACILITIES DURING AND IMMEDIATELY AFTER CONSTRUCTION RESTS WITH THE GENERAL CONTRACTOR. UPON ACCEPTANCE OF THE PROJECT, THE OWNER SHALL BECOME RESPONSIBLE FOR MAINTENANCE OF ANY REMAINING MEASURES AND FACILITIES.
8. OFF SITE SEDIMENT DISTURBANCE MAY REQUIRE ADDITIONAL CONTROL MEASURES TO BE DETERMINED BY THE ENGINEER.
9. THE CONSERVATION COMMISSION AND/OR ENGINEER MAY REQUIRE ADDITIONAL SOIL EROSION MEASURES TO BE INSTALLED, AS DIRECTED BY THE DISTRICT INSPECTOR.
10. ADJOINING PROPERTIES SHALL BE PROTECTED FROM EXCAVATION AND FILLING OPERATIONS AT ALL TIMES.
11. THE CONTRACTOR SHALL UTILIZE ALL METHODS NECESSARY TO PREVENT BLOWING AND MOVEMENT OF DUST FROM THE EXPOSED SOIL SURFACES.
12. PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES.
13. A CRUSHED STONE TIRE CLEANING PAD WILL BE INSTALLED WHEREVER A CONSTRUCTION ENTRANCE EXISTS. SEE LOCATION DETAIL ON PLAN.
14. ALL CATCH BASIN INLETS SHALL BE PROTECTED DURING CONSTRUCTION AS DETAILED ON THE PLAN, IF APPLICABLE.
15. ALL STORM DRAINAGE OUTLETS SHALL BE PROTECTED AS REQUIRED HEREON BEFORE DISCHARGE POINTS BECOME OPERATIONAL.
16. THE SITE SHALL AT ALL TIMES BE GRADED AND MAINTAINED SUCH THAT ALL STORMWATER RUNOFF IS DIVERTED TO SOIL EROSION AND SEDIMENT CONTROL FACILITIES.
17. LAND AREAS EXPOSED AT ANY ONE TIME AND THE LENGTH OF EXPOSURE SHALL BE KEPT TO A PRACTICAL MINIMUM. THEY SHALL BE LEFT IN A NEAT AND FINISHED APPEARANCE AND PROTECTED FROM EROSION.
18. ANY DISTURBED AREA THAT WILL BE LEFT EXPOSED FOR MORE THAN SIXTY (60) DAYS AND NOT SUBJECT TO CONSTRUCTION TRAFFIC SHALL IMMEDIATELY RECEIVE A TEMPORARY SEEDING AND FERTILIZATION. IF THE SEASON PROHIBITS TEMPORARY SEEDING, THE DISTRIBUTED AREAS SHALL BE MULCHED.
19. ALL CRITICAL AREAS SUBJECT TO EROSION SHALL RECEIVE A TEMPORARY SEEDING AND BE MULCHED IN ACCORDANCE WITH THE SPECIFICATIONS IMMEDIATELY FOLLOWING ROUGH GRADING.
20. IMMEDIATELY AFTER COMPLETION OF STRIPPING AND STOCKPILING OF TOPSOIL, SEED THE STOCKPILE WITH ANNUAL RYE GRASS. STABILIZE TOPSOIL STOCKPILES WITH STRAW MULCH FOR PROTECTION IF THE SEASON DOES NOT PERMIT THE APPLICATION AND ESTABLISHMENT OF TEMPORARY SEEDING.
21. SOIL STOCKPILES ARE NOT TO BE LOCATED WITHIN FIFTY (50) FEET OF WETLANDS, THE FLOODPLAIN, SLOPE, ROADWAY OR DRAINAGE FACILITIES. THE BASE OF ALL STOCKPILES SHALL BE PROTECTED BY A HAY BALE BARRIER OR SEDIMENT FENCE. LOCATIONS ARE DELINEATED ON THE PLAN.
22. MAXIMUM SIDE SLOPES OF ALL EXPOSED SURFACES SHALL NOT BE CONSTRUCTED STEEPER THAN 3:1 UNLESS OTHERWISE APPROVED BY THE DISTRICT.
23. ALL AREAS NOT STABILIZED BY CONSTRUCTION, SODDING OR LANDSCAPING SHALL BE SEEDED AND STABILIZED IN ACCORDANCE WITH THE SEEDING AND MULCHING SPECIFICATIONS.
24. MULCHING IS REQUIRED ON ALL SEEDED AREAS TO INSURE AGAINST EROSION BEFORE GRASS IS ESTABLISHED TO PROMOTE EARLIER VEGETATIVE COVER.
25. ALL DEWATERING OPERATIONS MUST DISCHARGE DIRECTLY INTO A SEDIMENT FILTRATION DEVICE. THE SEDIMENT FILTER MUST BE CAPABLE OF FILTERING THE SEDIMENT AND BE PLACED SO AS NOT TO CAUSE EROSION OF THE DOWNSTREAM AREA.

LEGEND

EXISTING		PROPOSED
101	CONTOUR LINE	101
101.1	SPOT GRADE	+101.1
EOP	EDGE OF PAVEMENT	EOP
VGC	VERTICAL GRANITE CURB	VGC
SGC	SLOPED GRANITE CURB	SGC
VCC	VERTICAL CONCRETE CURB	VCC
BCC	BITUMINOUS CONCRETE CURB	BCC
CCB	CAPE COD BERM	CCB
	STONE WALL	
X X	CHAIN LINK FENCE	X X
	IRON FENCE	
	POST & RAIL FENCE	
	STOCKADE FENCE	
	GUARD RAIL	
	HAY BALES	
W W	WATER LINE	W W
	FIRE HYDRANT	
	POST INDICATOR VALVE	
	WATER GATE	
	WATER METER PIT	
	IRRIGATION HAND HOLE	
	WELL	
S S	SEWER LINE	
	SEWER MANHOLE	
G G	GAS LINE	
GM	GAS METER	
	GAS GATE	
D D	DRAIN LINE	
	DRAIN MANHOLE	
	CATCH BASIN	
OHW OHW	OVERHEAD WIRES	
E/C E/C	ELECTRIC, TELEPHONE & CABLE	
	UTILITY POLE	
	GUY WIRE	

DETAIL NUMBER

1/2 SAMPLE DETAIL

NOT TO SCALE

NUMBER REFERENCES WHAT SHEET THE DETAIL IS ON

REVISIONS

CHRISTIAN ALBERT FARLAND No. 47544 CIVIL REGISTERED COMMONWEALTH OF MASSACHUSETTS

THOMPSONFARLAND
PROFESSIONAL ENGINEERS // LAND SURVEYORS
www.ThompsonFarland.com
(MAIN OFFICE) 396 COUNTY STREET, NEW BEDFORD, MA 02740 P.508.717.3479
NEW BEDFORD | TAUNTON | CAMBRIDGE | MARLBOROUGH

DRAWN BY: JKM

DESIGNED BY: CAF

CHECKED BY: CAF

SITE PLAN
50 DUCHAINE BLVD
ASSESSORS MAP 134 LOTS 456, 457, 458, & 459
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

DECEMBER 11, 2015

SCALE: N.T.S.

JOB NO. 15-500

LATEST REVISION:

NOTES & LEGEND

SHEET 2 OF 7

ASSESSORS
MAP 134 LOT 458
(AREA=21.56± ACRES)

SEE INSERT "A"

BENCHMARK
MAG NAIL (SET)
ELEV.=79.70

BENCHMARK
MAG NAIL (SET)
ELEV.=79.40

ASSESSORS
MAP 134 LOT 457
(AREA=29.27± ACRES)

ASSESSORS MAP 134 LOT 456
PARCEL #2: LAND COURT LOT NO. 4 (NON BUILDABLE)
(AREA=1.15± ACRES)

PARCEL #1
LAND COURT LOT NO. 4 (NON BUILDABLE)
LAND COURT LOT NO. 5

APPROXIMATE LOCATION OF EXISTING UN-NAMED PERENNIAL STREAM

CITY OF NEW BEDFORD DRAINAGE, WATER, AND SEWER EASEMENT

RESTRICTED COVENANT AREA DOC. NO. 97647

EXISTING BUILDING
± 50 DUCHAINE BLVD.
BLDG FOOTPRINT = 191,500 SF.±
SLAB ELEVATION = 81.0±

BUILDING

MECHANICAL SHED

SPOIL PILE

STONE RETAINING WALL

LIMIT OF CLEARANCE

LIMIT OF CLEARING

FRENCH DRAIN

LOADING ZONE

RETAINING WALL

WOODEN BENCH

FLAG

SIGN

FENCE

GUARDRAIL

8" DIP F.P.

8" SPRINKLER

6" DIP F.P.

6" SPRINKLER

8" DIP FIRE PROTECTION

6" SANDPIPE

12" WATER MAINS

16" SEWER MAINS

WATER MAIN EASEMENT "C"

WATER MAIN EASEMENT "A"

ACCESS EASEMENT No. 2

ACCESS EASEMENT No. 3

ACCESS EASEMENT No. 5

WATER MAIN EASEMENT "A"

293.00'
N84°28'10"E

40.00'
N05°31'50"W

1102.27'
N84°28'10"E

657.04'
N19°59'50"W

521.7'

219.1'

INSERT "A"

BP INV.
12" RCP INV.=72.00
12" RCP INV.=72.01
20'W ± WEIR OUTLET
WEIR=73.5

REVISIONS

CHRISTIAN ALBERT FARLAND
No. 47544
CIVIL
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

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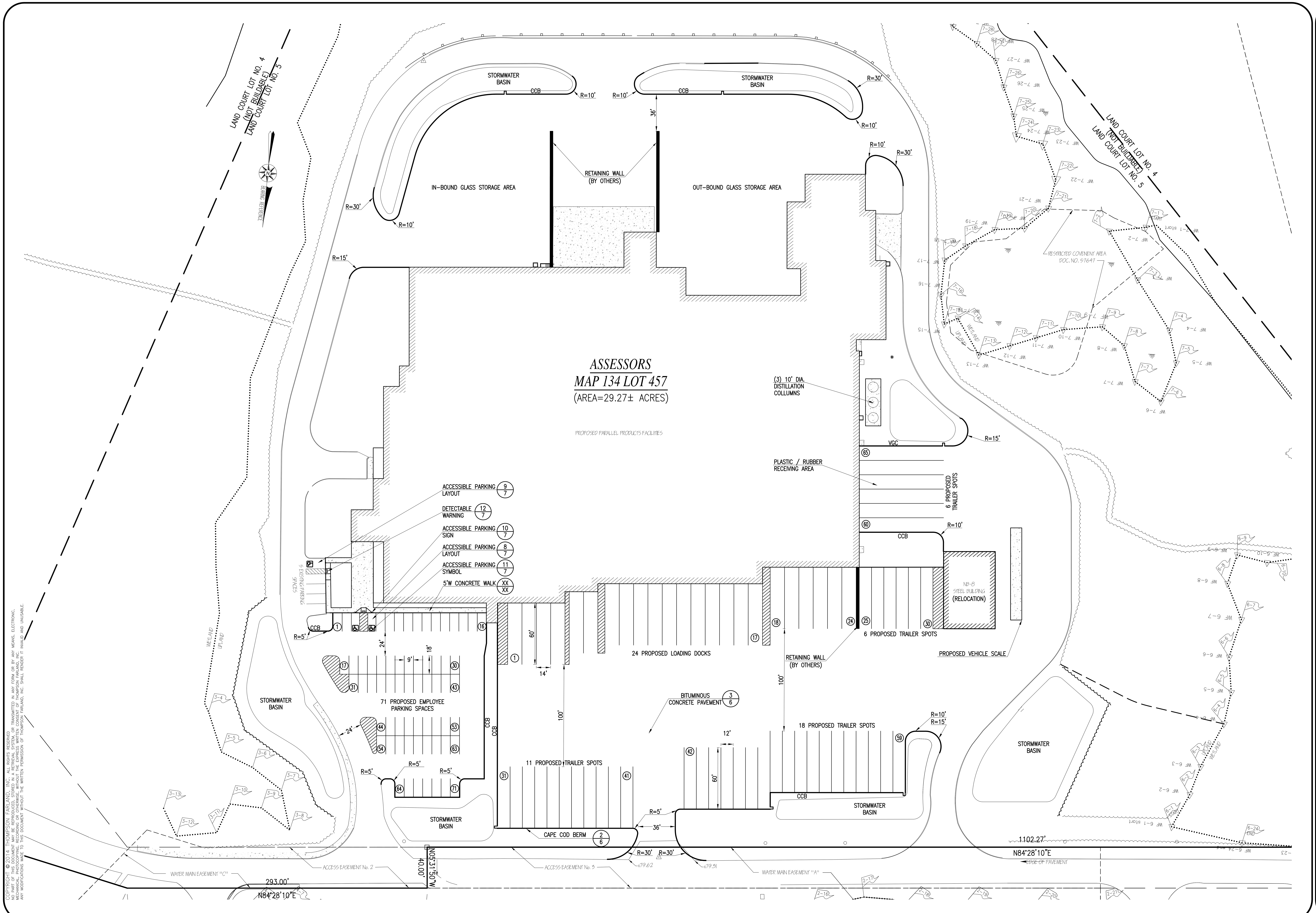
SITE PLAN
50 DUCHAINE BLVD
ASSESSORS MAP 134 LOTS 456, 457, 458, & 459
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

DECEMBER 11, 2015
SCALE:1" = 50'
JOB NO. 15-500
LATEST REVISION:

EXISTING CONDITIONS

SHEET 3 OF 7



REVISIONS

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50 DUCHAINE BLVD
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NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

DECEMBER 11, 2015
SCALE: 1"=40'
JOB NO. 15-500
LATEST REVISION:

LAYOUT

SHEET 4 OF 7

35'-12" RCP
S=0.01 FT/FT

FOREBAY #2
BOTTOM=77.00
BERM=78.00

FOREBAY #1
BOTTOM=77.00
BERM=78.00

+78.98

+78.36

+80.90

33'-12" RCP
S=0.01 FT/FT

LAWN CB-4
BEEHIVE
GRATE=78.50
12" INV=74.50

LAND COURT LOT NO. 4
(NOT BUILDABLE)
LAND COURT LOT NO. 5

+79.27
+79.50

+79.43
+79.50

FOREBAY #1
BOTTOM=77.00
BERM=78.00

FOREBAY #2
BOTTOM=77.00
BERM=78.00

INFILTRATION BASIN-3 (14/7)
BOTTOM ELEV.=77.00
TOP ELEV.=79.00
FOREBAY BERM=78.00

LAWN CB-3 (5/6)
BEEHIVE
GRATE=78.50
12" INV=74.00

(14/7) INFILTRATION BASIN-4
BOTTOM ELEV.=77.00
TOP ELEV.=79.00
FOREBAY BERM=78.00

+79.50

+80.43

+78.40

+80.30

+80.15

+80.75

+80.69

+80.46

+80.68

+80.39

+81.00

+80.25

+80.10

LAND COURT LOT NO. 4
(NOT BUILDABLE)
LAND COURT LOT NO. 5

32'-12" CLASS V RCP
S=0.01 FT/FT

WETLAND

WETLAND

WETLAND

WETLAND

ASSESSORS
MAP 134 LOT 457
(AREA=29.27± ACRES)

(14/7) INFILTRATION BASIN-5
BOTTOM ELEV.=76.00
TOP ELEV.=79.00
FOREBAY BERM=78.00

LAWN CB-5 (5/6)
BEEHIVE
GRATE=78.50
12" INV=76.00

+79.73

+79.27

+79.07

FOREBAY #1
BOTTOM=76.00
BERM=77.00

FOREBAY #2
BOTTOM=76.00
BERM=77.00

+79.74

+80.40

EXISTING BUILDING
SLAB EL.=81±

PROPOSED PARALLEL PRODUCTS FACILITIES

LOCATION OF PROPOSED SWITCH BOARD

LOCATION OF PROPOSED TRANSFORMERS

+79.89

TEMPORARY STOCKPILE LOCATION. OTHER TEMPORARY STOCKPILE LOCATIONS MAY BE UTILIZED, PROVIDED AN EROSION CONTROL BARRIER IS INSTALLED AT THE BASE OF THE STOCKPILE

(13/7) STAKED STRAW WATTLES

(6/6) DEEP SUMP MANHOLE

CONC. TRENCH DRAIN (7/6)

(6/6) DEEP SUMP MANHOLE

8" PVC SANITARY INV.=75.18

NB-8
STEEL BUILDING
(RELOCATION)

ETC

ETC

ETC

ETC

FLARED END
(2) 12"
INV.=76.37

+79.48

+79.28

+79.76

+80.15

10,000 GALLON PUMP CHAMBER (15/7)

(14/7) INFILTRATION BASIN-2A
BOTTOM=76.00
TOP BERM=78.00
FOREBAY BERM=77.00

+80.75

+80.61

+80.25

STAKED STRAW WATTLES (13/7)

FOREBAY #2
BOTTOM=76.00
BERM=77.00

FOREBAY #1
BOTTOM=76.00
BERM=77.00

FOREBAY #2
BOTTOM=76.00
BERM=77.00

FOREBAY #1
BOTTOM=76.00
BERM=77.00

(14/7) INFILTRATION BASIN-1A
BOTTOM=76.00
TOP BERM=78.00

+79.40
(2) 62'-12" CLASS V RCP
S=0.007 FT/FT

+79.03

+79.56

(15/7) 10,000 GALLON PUMP CHAMBER

+78.35

FLARED END
(2) 12"
INV.=76.42

FLARED END
(2) 12"
INV.=76.00

+79.03

+79.41

+78.98

+79.24

+78.10

+77.87

+79.72

+79.41

+77.85

(14/7) INFILTRATION BASIN-2A
BOTTOM=76.00
TOP BERM=78.00
FOREBAY BERM=77.00

FLARED END
(2) 12"
INV.=76.00

(2) 62'-12" CLASS V RCP
S=0.006 FT/FT

1102.27'

N84°28'10"E

342.10'

S78°06'24"E

293.00'

N05°31'50"W

40.00'

(14/7) INFILTRATION BASIN-1B
BOTTOM=76.00
TOP BERM=78.00
FOREBAY BERM=77.00

FOREBAY #1
BOTTOM=76.00
BERM=77.00

FOREBAY #2
BOTTOM=76.00
BERM=77.00

FOREBAY #1
BOTTOM=76.00
BERM=77.00

FOREBAY #2
BOTTOM=76.00
BERM=77.00

REVISIONS

COMMONWEALTH OF MASSACHUSETTS
CHRISTIAN ALBERT FARLAND
No. 47544
CIVIL
REGISTERED PROFESSIONAL ENGINEER

THOMPSONFARLAND
PROFESSIONAL ENGINEERS // LAND SURVEYORS
www.ThompsonFarland.com
(MAIN OFFICE) 396 COUNTY STREET, NEW BEDFORD, MA 02740 P.508.717.3479
NEW BEDFORD | TAUNTON | CAMBRIDGE | MARLBOROUGH

DRAWN BY: JKM

DESIGNED BY: CAF

CHECKED BY: CAF

SITE PLAN

50 DUCHAINE BLVD

ASSESSORS MAP 134 LOTS 456, 457, 458, & 459
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

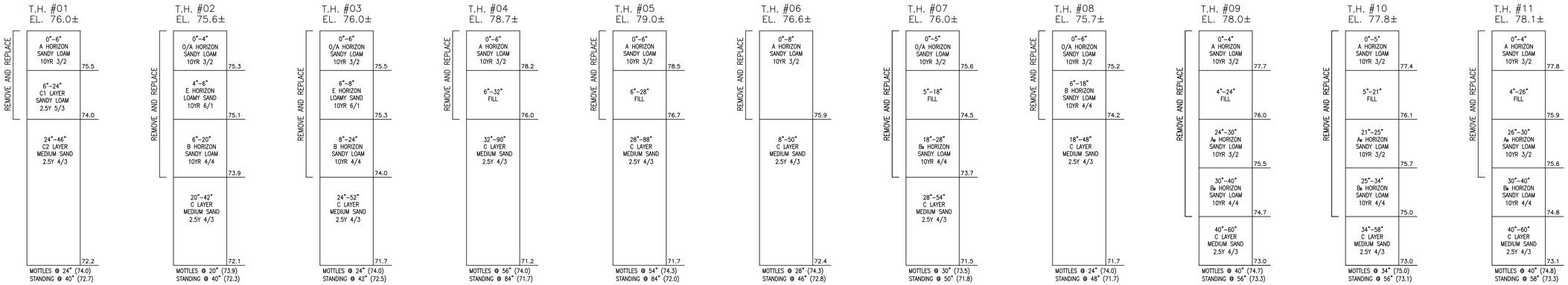
DECEMBER 11, 2015

SCALE: 1"=40'

JOB NO. 15-500

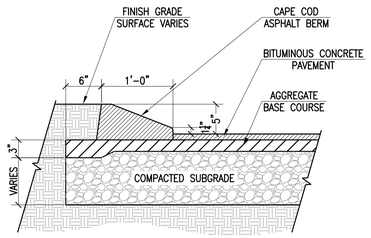
LATEST REVISION:

GRADING & UTILITY



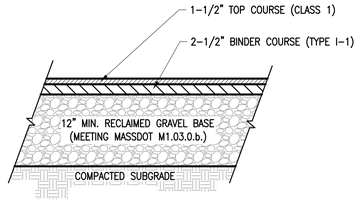
1/6 SOIL PROFILES

NOT TO SCALE



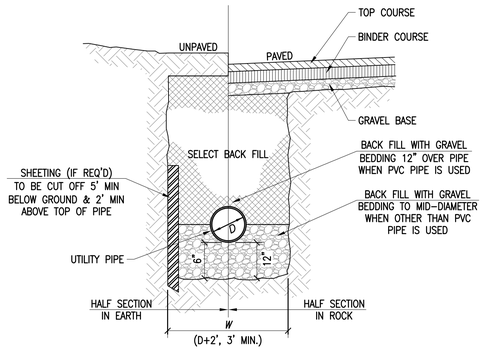
2/6 BITUMINIOUS CONCRETE CAPE COD BERM

NOT TO SCALE



3/6 BITUMINOUS CONCRETE PAVEMENT – RECLAIMED

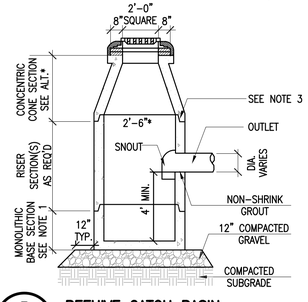
NOT TO SCALE



4/6 UTILITY TRENCH

NOT TO SCALE

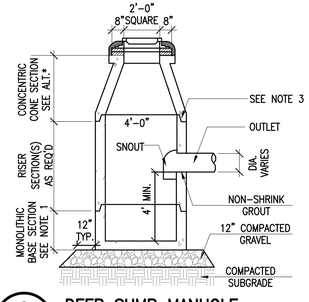
NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS–20 LOADING.
2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 1" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. CATCH BASIN FRAME SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR. (2 BRICK COURSES MIN. 5 BRICK COURSES MAX.)
5. FRAME AND GRATE TO BE EQUAL TO NEENAH R–2560 E–1 BEEHIVE STYLE.



5/6 BEEHIVE CATCH BASIN

NOT TO SCALE

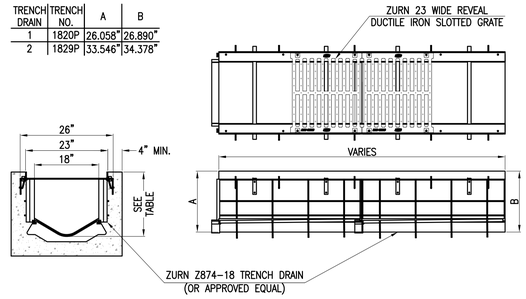
NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS–20 LOADING.
2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 1" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. MANHOLE FRAME SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR. (2 BRICK COURSES MIN. 5 BRICK COURSES MAX.)



6/6 DEEP SUMP MANHOLE

NOT TO SCALE

TRENCH DRAIN	TRENCH NO.	A	B
1	1820P	26.058"	26.890"
2	1829P	33.546"	34.378"



7/6 TRENCH DRAIN DETAIL

NOT TO SCALE

REVISIONS

CHRISTIAN ALBERT FARLAND No. 47544 CIVIL
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DRAWN BY: JKM
DESIGNED BY: CAF
CHECKED BY: CAF

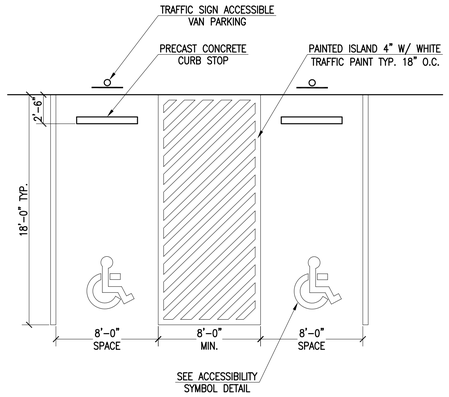
SITE PLAN
50 DUCHAINE BLVD
ASSESSORS MAP 134 LOTS 136, 137, 138, & 139
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

DECEMBER 3, 2015
SCALE: N.T.S.
JOB NO. 15–500
LATEST REVISION:

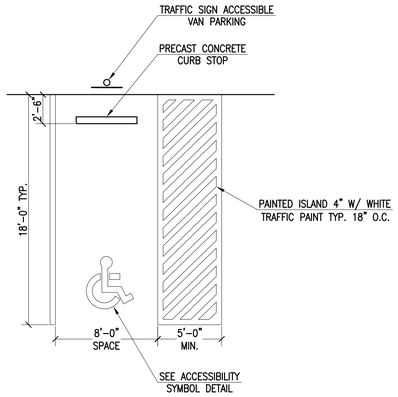
DETAIL

SHEET 6 OF 7



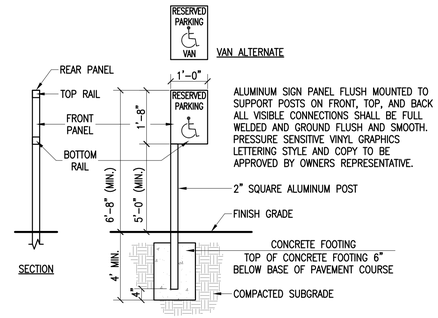
8/7 ACCESSIBLE PARKING LAYOUT

NOT TO SCALE



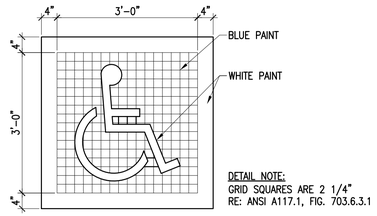
9/7 ACCESSIBLE PARKING LAYOUT

NOT TO SCALE



10/7 ACCESSIBLE PARKING SIGN

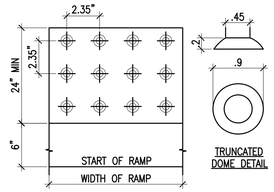
NOT TO SCALE



11/7 ACCESSIBLE PARKING SYMBOL

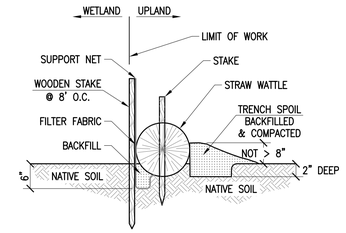
NOT TO SCALE

NOTES:
1. COLOR OF TACTILE DETECTABLE WARNINGS SHALL BE YELLOW.
2. CONTRACTOR SHALL INSTALL TILE PER MANUFACTURER'S SPECIFICATIONS
3. PREFERRED PRODUCT SHALL BE REPLACEABLE (WET-SET) COMPOSITE TACTILE BY ADA SOLUTIONS, INC. FOR PRICING QUOTATIONS, PLACING ORDERS, AND FURTHER INFORMATION, CALL JON MEHLMAN, EAST REGIONAL ACCOUNT DIRECTOR FOR ADA SOLUTIONS, INC. AT (800) 372-0519 or (978) 262-9900. DETAILED INFORMATION IS AVAILABLE AT www.adatile.com.



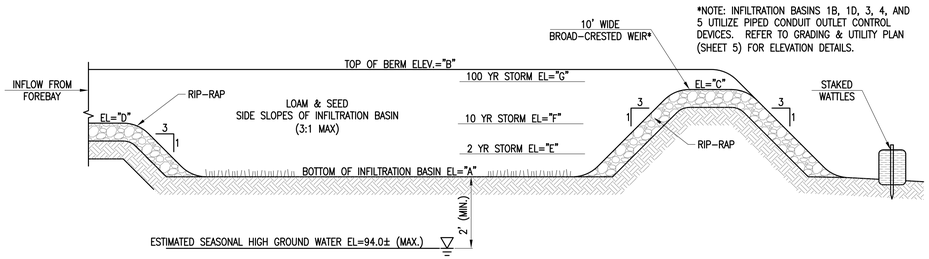
12/7 DETECTABLE WARNING DETAIL

NOT TO SCALE



13/7 STAKED STRAW WATTLE WITH SILT FENCE

NOT TO SCALE

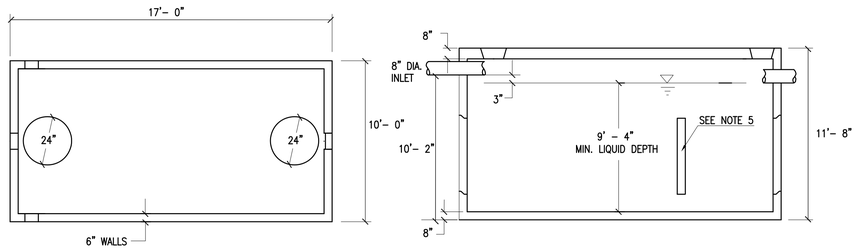


*NOTE: INFILTRATION BASINS 1B, 1D, 3, 4, AND 5 UTILIZE PIPED CONDUIT OUTLET CONTROL DEVICES. REFER TO GRADING & UTILITY PLAN (SHEET 5) FOR ELEVATION DETAILS.

INFILTRATION BASIN	"A"	"B"	"C"	"D"	"E"	"F"	"G"
1A	76.00	78.00	77.00	77.00	77.06	77.25	77.45
1B	76.00	78.00	*	77.00	77.15	77.43	77.87
1C	76.00	78.00	77.25	77.00	76.48	76.92	77.38
1D	76.00	78.00	*	77.00	77.13	77.31	77.65
3	77.00	79.00	*	78.00	77.95	78.22	78.67
4	77.00	79.00	*	78.00	78.54	78.69	78.83
5	76.00	79.00	*	78.00	76.65	77.23	78.02

14/7 INFILTRATION BASIN

NOT TO SCALE



NOTES:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS
2. ALL REINFORCEMENT PER ASTM C1227
3. DESIGNED FOR H-20 LOADING, COVER 1-5 FEET.
4. TONGUE AND GROOVE JOINT SEALED WITH BUTYL RESIN. INLET HEIGHT MAY INCREASE SLIGHTLY DUE TO BUTYL RESIN USED.
5. SPANNERS USED IN CENTER SECTION FOR TANKS GREATER THAN 7,000 GALLONS.
6. CONSTRUCTION SHALL BE WATERTIGHT.
7. A MIN. 24" DIA. MANHOLE FRAME & COVER TO GRADE OVER THE INLET AND OUTLET SHALL BE PROVIDED.

15/7 10,000 GALLON PUMP CHAMBER

NOT TO SCALE

REVISIONS

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DETAIL

SHEET 7 OF 7