TOWN OF DIGHTON

PLANNING BOARD
979 SOMERSET AVENUE
DIGHTON, MA 02715
Tel: (508) 669-6431, Ext. 114
Fax: (508) 669-4509

LEGAL NOTICE
DIGHTON PLANNING BOARD
June 5, 2024 at 7:00 PM
Old Town Hall
1111 Somerset Avenue
Dighton, MA 02715

Notice is hereby given the Dighton Planning Board will conduct a Public Hearing on the Modification of a Special Permit and Site Plan Review by GHTJA03, LLC (Grasshopper Energy) for a redesign of stormwater Basin 1 and submit maintenance items for stormwater Basin 3, for property located at 893 Brook Street being shown as Assessors Map 16, Lot 28, pursuant to Sections 4600, 5300 and 5400 of the Town of Dighton Zoning Bylaws.

Copies of the application and plan may be viewed in the Planning Board office during normal business hours or requested by email at keasterday@dighton-ma.gov. Any person wishing to be heard on the above application should appear at the time and place designated for the public hearing.

DIGHTON PLANNING BOARD
Jeff Carvalho, Chairman

RECEIVED
Town Clerk-Dighton, MA
MAY 07 2024
Time: 9:29 AM
By: SC

05-24

TOWN OF DIGHTON

PLANNING BOARD

PETITIONER
NAME &
ADDRESS GHTJA03

LOCATION (from Assessors' Office)
PLAT AND
LOT NOS. MAP 16 Parcel 28

PRESENT
ZONING R

First Record Date
Planning Board Use only

DATE OF THIS
DOCUMENT 5/16/24

FILE:
TITLE:

APPLICATION FOR SPECIAL PERMIT

File two (2) completed copies of this application. One (1) copy with the Planning Board and one (1) copy with the Town Clerk in accordance with the Zoning Bylaws. The filing fee as calculated by Appendix A, made payable to the Town of Dighton.

To the Dighton Planning Board:

PROJECT NAME: Brook Street Solar

SUBJECT PROPERTY ADDRESS: 893 Brook Street

ASSESSOR'S MAP/LOT(s): Map 16 - Parcel 28

ALL APPLICABLE ZONING DISTRICT: Residence & Agricultural (RA)

TITLE OF PLAN: Brook Street Solar; Basin 1 & 3 Repair

PLAN DATED: May 3, 2024

DESCRIBE WHAT IS PROPOSED FOR THIS PROPERTY:

Construct and maintain a 2.7+/- MWac Groundmounted Solar Photovoltaic Systems. The site is currently unde construction under a Special Permit issued by the Dighton Planning Board on January 16, 2019.

STATE THE EXACT NATURE OF ACTION OR RELIEF REQUESTED BY THIS APPLICATION AND CITE THE APPLICABLE BYLAW(s) AND/OR BYLAW SECTION(s):

The Applicant is seeking a major modification to the Special Permit issued by the Dighton Planning Board on January 16, 2019. The requested modification is to install a 4" subdrain and outlet toe the infiltration basin which has been installed at the site. Currently, the installed infiltration basin is not fully draining within 72-hours as required and the installation of the 4" drain will allow for the basin to slowly drain the stormwater runoff which cannot be infiltrated by the basin.

DESCRIBE HOW THIS APPLICATION MEETS THE CRITERIA FOR A SPECIAL PERMIT AS DESCRIBED IN THE APPLICABLE SECTION(s) OF THE DIGHTON ZONING BYLAWS:

The Application is for a minor change to the infiltration basin configuration and will not change the current approved use of the site.

THE UNDERSIGNED HEREBY CERTIFIES THAT THE INFORMATION ON THIS APPLICATION AND PLANS SUBMITTED HEREWITH IS CORRECT, AND THAT THE APPLICATION COMPLIES WITH ALL APPLICABLE PROVISIONS OF STATUTES, REGULATIONS AND BYLAWS TO THE BEST OF HIS/HER KNOWLEDGE.

THE ABOVE IS SUBSCRIBED TO AN EXECUTED BY THE UNDERSIGNED UNDER THE PENALTIES OF PERJURY IN ACCORDANCE WITH M.G.L. Ch. 268, §1-A.

RECEIVED
Town Clerk-Dighton, MA

Received by Town Clerk:
Date: MAY 07 2024
Time:
Time: 9:28 AM
By: SC

Received by Board of Health
Date:
Time:
Signature:

Applicant's Name: GHTJA03 LLC
Applicant's Address: 4 Bobbie Ct Manalapan NJ 07726
Applicant's Phone #: 416-477-0726
Signature:

Owner's name, address and signature for authorization (if other than applicant)
Owner's Name: Mike Andrews
Owner's Address: 135 Sherwood Lane Raynham MA 02767
Owner's Phone#: 774 501 7898
Signature:

Checklist of items to be submitted with application.

1.____ Application Form (x2)
2.____ Application Fee (please refer to Fee Schedule)
3.____ Project Review Fee & Completed W-9 (please refer to Fee Schedule)
4.____ Tax Status Application Form
5.____ Plans (See applicable Zoning Bylaws for Specific Requirements)
6. ____ Certified Abutters List

RECEIVED

MAY – 6 2024

By: Dighton Planning Board

May 6, 2024

Town of Dighton Planning Board
979 Somerset Avenue
Dighton, MA 02715

Re: Brook Street Solar-Commercial Solar Facility
Special Permit Modification
893 Brook Street, Dighton, MA
Assessor Map 16; Parcel 28

Members of the Planning Boad,

Level Design Group, L.L.C. (LDG), on behalf of the project developer, GHTJA03, LLC (Grasshopper Energy), is submitting a request for a major modification to the current issued special permit for the above-referenced parcel. The Town of Dighton Planning Board originally issued a special permit on January 16, 2019 for the development of a ground-mounted solar photovoltaic installation with a subsequent major modification for the installation of a Battery Energy Storage System (BESS) approved by the Board on March 2, 2022. The Board reviewed and approved an additional minor modification to reconfiguration of the site entrance driveway on January 6, 2021. Copies of all record-issued permits and plans are included with the application package.

The current request for a major modification to the issued special permit is for a redesign of stormwater Basin 1 which is currently retaining stormwater for a prolonged period. The original approved basin design was for a fully infiltrating stormwater basin with no pipe outlets which was intended to fully drain within 72 hours as required by current Massachusetts Stormwater Management Standards. The Applicant has been working with the Town of Dighton Stormwater Committee over the past three years on addressing issues with Basin 1 regarding its construction. The original site contractor installed the basin without the required inspections from the Stormwater Agent or the site engineer and chose to mine material from the floor of the basin and backfill that area with unsuitable materials (organic material, stumps, wood chips, etc.) to a depth ranging between 4'-12'. Since that time basin has been reconstructed to reflect the approved basin geometry and configuration along with removing all unsuitable material from the basin floor and backfilling it with clean sand.

Despite the corrective measures that have been implemented the basin is still retaining stormwater for a prolonged period and is not fully draining within 72 hours as required. The Dighton Stormwater Committee has recently enlisted the services of Weston & Sampson to review the basin and provide recommendations on how to repair the basin so that it will fully drain within 72 hours. Weston & Sampson have provided two review letters dated December 11, 2023, & March 15, 2024, addressed to the Town of Dighton Stormwater Committee with their findings and recommendations which are included with the application package. Based on a review of the findings and recommendations by Weston & Sampson, LDG has prepared an updated basin design with, supporting calculations, for the install the installation of a new 4" basin subdrain. The subdrain consists of a network of 4" perforated pipes set into the crushed stone basin floor which discharge via a 4" solid PVC pipe to be located within the existing rip-rap spillway. The 4" perforated subdrain will allow to basin to continue to function as an infiltrating basin with water being able to drain through the perforated pipes and basin floor. When the subsoil becomes saturated and can no longer infiltrate, stormwater will then drain slowly through the 4" pipe draining the basin down within 72 hours.

The requested major modification is to allow for the reconfiguration of stormwater Basin 1 as shown on the provided plan for the installation of the new subdrain and 4" piped discharge. The recommendations and calculations included are based on a drainage as-built survey prepared by LDG dated November 17, 2022. The drainage as-built survey

details existing as-built site grades within the basin footprints, installed outlets, and installed solar panel racking within the basin areas to provide an accurate representation of the stormwater basins as currently installed.

In addition to the requested modification of Basin 1, the design plan prepared by LDG also includes maintenance items recommended by Weston and Sampson to be completed for stormwater Basin 3. These items are not part of the request for the major permit modification as there is no proposed design change to Basin 3. The recommended maintenance includes some minor re-grading of the basin floor and adjusting the currently installed outlet pipe to match the regraded basin floor.

Enclosed please find the following:

- Five (5) copies of the Basin Repair Plan dated April 15, 2024
- Five (5) copies of supporting information
- Two (2) copies of the Application form
- Municipal Lien Certificate
- Certified Abutter List
- Filing Fee - $500.00 for Special Permit Modification
- Consultant Fee Deposit - The Applicant currently has a 53G Account with the Town for ongoing reviews with Weston and Sampson. Additional funds will be provided, if necessary, for any review work requested by the Planning Board.

If there are any questions before the hearing please do not hesitate to contact me.

Truly yours,
LEVEL DESIGN GROUP, LLC

Nicola Facendola

Nicola Facendola, P.E.
Principal

CC: Grasshopper Energy, Town of Dighton Fire Department, Building Department, Conservation Commission, Board of Health, and Highway Department

REQUEST TO MODIFY SPECIAL PERMIT

for

BROOK STREET SOLAR
COMMERCIAL PHOTOVOLTAIC SYSTEM
0 BROOK STREET
(AM 16, PARCEL 28)
DIGHTON, MASSACHUSETTS

MAY 6, 2024

Prepared By:
Level Design Group, L.L.C.
249 South Street, Unit 1
Plainville, MA 02762

Prepared For:
GJTJA03, LLC
1209 ORANGE STREET
WILMINGTON, DELAWARE 19801

LDG Project No.:
1817.00

LEVEL DESIGN GROUP
Civil Engineers & Land Surveyors

TABLE OF CONTENTS

May 6, 2024

Town of Dighton Planning Board
979 Somerset Avenue
Dighton, MA 02715

Re: Brook Street Solar-Commercial Solar Facility
Special Permit Modification
893 Brook Street, Dighton, MA
Assessor Map 16; Parcel 28

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LEVEL DESIGN GROUP, LLC

Nicola Facendola

Nicola Facendola, P.E.
Principal

CC: Grasshopper Energy, Town of Dighton Fire Department, Building Department, Conservation Commission, Board of Health, and Highway Department

PETITIONER
NAME &
ADDRESS

TOWN OF DIGHTON

PLANNING BOARD

LOCATION (from Assessors' Office)
PLAT AND
LOT NOS.

PRESENT
ZONING

First Record Date
Planning Board Use only

DATE OF THIS
DOCUMENT

FILE:
TITLE:

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To the Dighton Planning Board:

PROJECT NAME: Brook Street Solar

SUBJECT PROPERTY ADDRESS: 893 Brook Street

ASSESSOR'S MAP/LOT(s): Map 16 - Parcel 28

ALL APPLICABLE ZONING DISTRICT: Residence & Agricultural (RA)

TITLE OF PLAN: Brook Street Solar; Basin 1 & 3 Repair

PLAN DATED: May 3, 2024

DESCRIBE WHAT IS PROPOSED FOR THIS PROPERTY:

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100 Foxborough Blvd., Suite 250, Foxborough, MA 02035
Tel: 508.698.3034

December 11, 2023

Dighton Stormwater Committee
C/O Nancy Goulart, Chairwoman
1111 Somerset Avenue
Dighton, MA 02715

Re: 893 Brook Street Solar Field – Stormwater Basin Review

Dear Stormwater Committee:

In accordance with your request, Weston & Sampson has conducted its initial review of the stormwater basins that were constructed as part of the solar energy project located at 893 Brook Street. Our review has been conducted in response to concerns about long-term standing water in the basins, and especially with regard to the stormwater basin located at the northern end of the site that was intended to function as a stormwater infiltration basin. With this letter we are providing you with our findings from our review and recommendations for next steps.

Weston & Sampson received numerous documents that were produced through the life of the project going back to 2018. While all documents were reviewed, certain documents stood out due to their relevance to the issue at hand; these are listed as follows:

- A report entitled "Stormwater Report for Brook Street Solar Project" by Atlantic Design Engineers, Inc., 80 pages, dated 7/16/2018
- A report entitled "Stormwater Report Addendum 1 for Brook Street Solar Project" by Atlantic Design Engineers, Inc., 52 pages, dated 11/19/2018
- A report entitled "Stormwater Report Addendum 2 for Brook Street Solar Project" by Atlantic Design Engineers, Inc., 14 pages, dated 12/5/2018
- Plans entitled "Brook Street Solar Commercial Photovoltaic System" by Level Design Group, annotated "for construction," 10 sheets, dated 1/29/2021
- Plans entitled "Brook Street Solar Stormwater Basin Repair Plan" by Level Design Group, 3 sheets, dated 9/16/2022
- A plan entitled "Drainage As-Built, Brook Street Solar" by Level Design Group, 1 sheet, dated 11/17/2022
- A letter report from Level Design Group (LDG) to the Dighton Stormwater Committee, 50 pages, dated 2/27/2023
- A review letter prepared by Green International Affiliates, 3 pages, dated 6/22/2023

In general, a review of the documents listed above and others within the file indicate a history of various approvals, modifications of approvals, plan revisions and technical reviews leading up to present. Without listing a complete history, a timeline of certain key events is as follows:

7/16/2018	Date of Special Permit Application
11/1/2018	Test pits conducted onsite
11/19/2018	Stormwater Report Addendum #1 issued
12/5/2018	Stormwater Report Addendum #2 issued
1/16/2019	Site Plan Approval and Special Permit issued
2/10/2021	Stormwater Permit issued by the Board of Health
3/30/2022	Additional test pits were performed identifying unsuitable materials beneath the basins
9/16/2022	Plans issued for required basin repairs
10-11/2022	Basin repair construction activities were performed over October and November of 2022
11/17/2022	Stormwater as-built drawing was issued
12/21/2022	A site visit occurred to look at existing conditions, areas of basins were requested to be re-graded
2/22/2023	A site visit was conducted by LDG after 0.18-inches of rainfall
2/27/2023	LDG issued an as-built summary letter with stormwater calculations
6/7/2023	A site visit was conducted by Green International Affiliates

Findings

Based upon our review of the project documentation, we offer the following findings and comments. In the context of these findings, it should be noted that the site has two stormwater basins. The northern basin, located closest to Brook Street, is identified as "Basin 1" and the southerly basin is identified as "Basin 3," which is consistent with the nomenclature used for these basins throughout the project documentation.

1. The project documents indicate that the stormwater basins as currently constructed differ from the approved design. Some of these differences include the elevations of the basin bottoms, basin embankments, and spillway elevations. Additionally, Basin 3 had pipe outlets with differences between design and as-built elevations. The differences are reported below based on a review of the as-built drawings vs. two versions of the design drawings:

Basin 1	**Bottom Elev.**	**Embankment Elev.**	**Spillway Elev.**	
Design 1/29/2021	77	79.7	78	
Design 9/16/2022	77	79.7	78	
As-Built	76	79.2	78.7	
Basin 3	**Bottom Elev.**	**Embankment Elev.**	**Spillway Elev.**	**Outlet**
Design 1/29/2021	77	79.1	78	77.00/77.00 6" vertical pipe openings
Design 9/16/2022	77	79.1	78.05	77.00/77.00 6" vertical pipe openings
As-Built	76.5	78.8	78.5	77.60/77.55 6" horizontal elbow openings

Data above based on WSE observations of applicant materials

2. According to the as-built analysis (2/27/2023) Basin 1 is intended to perform as an infiltration basin with the intent that runoff entering the basin should infiltrate into underlying soil and infiltrate within 72 hours of entering the basin for storms. Storms that exceed the 25-year storm would result in some overflow at the spillway. The as-built analysis indicates that if this basin were performing as intended, it would perform somewhat better than the original design which allowed some overflow to occur at the 25-year event.

3. According to the as-built analysis (2/27/2023) Basin 3 is intended to perform as a detention basin with the runoff entering the basin slowly draining via pipe outlets until the basin is fully drained and left in a dry state. Under conditions wherein the basin performs as intended, no overflow should be expected over the spillway even in the 100-year storm event. This reflects better performance than the original design in which some overflow was allowed in the original design. That being said, the performance that is being reported in the as-built analysis may differ due to an issue noted in the following comment.

4. In performing a review of the Basin 3 outlet pipe elevations shown on the as-built plans as compared with the as-built analysis, a discrepancy was noted. The plans indicate that there are two 6-inch horizontal elbow openings at elevations of 77.6 and 77.55, whereas calculations in the analysis indicate that both are at elevations of 77.10. This means that Basin 3 would have less available storage than what is reflected in the as-built analysis and may discharge during smaller storms than indicated in applicant materials.

5. In reviewing various project documentation, as-built drawings and photographs, it appears that Basin 3 has an area in its northern half that was constructed at a lower elevation than the pipe elbow outlets. This seems to have resulted in standing water in the basin. Generally, a detention basin is required to be graded such that all runoff will drain into its outlets so that the basin can fully drain to a dry state. The as-built letter (2/27/2023) reports that basin floors were "re-worked," but the review letter by Green International Affiliates indicates that both basins still had sanding water during a site visit on June 7, 2023, which suggests that Basin 3 may still need to be properly re-graded to drain to its outlets.

6. The designs of both basins were reviewed relative to test pits presented in Stormwater Report Addendum #1. The as-built conditions of both stormwater basins appear to be such that the floors of both basins are higher in elevation than the reported seasonal high groundwater from the test pits, and there appears

to be at least two feet of separation between the reported seasonal high groundwater elevations and Basin 1, meets the Massachusetts requirements for infiltration basins.

7. Project documentation indicates what appears to have been a thoroughly inspected construction activity in fall 2022 involving the removal of unsuitable material that had been placed beneath the floor of each basin. This material was reportedly replaced with free-draining material (Title V sand), and the basins are presently topped off with a geotextile filter fabric and processed stone.

8. In its as-built letter, LDG indicates that a site visit was conducted on 2/22/2023 after a rain event of 0.18-inches from the previous day and no standing water was observed.

Conclusions and Recommendations

1. Basin 3 should be re-graded further to eliminate the presence of standing water. Additionally, the basin should be re-analyzed due to the inconsistency between as-built surveyed outlet elevations and the elevations reported in LDG's analysis to confirm that it will perform as required.

2. Based upon the performance issues associated with Basin 1, further site investigation may be warranted to verify the cause of the problem. In general, an infiltration basin that remains inundated for an extended period could be experiencing one or more of the following issues:

    a. The materials at the bottom of the basin could be clogged with fine sediment, creating a restrictive layer at or near the surface that slows or stops flow from occurring.
    b. The bottom of the basin could have been installed below the elevation of seasonal high groundwater.
    c. The material at or beneath the bottom of the basin could have been compacted during construction, reducing the hydraulic conductivity rate of the soil.
    d. The material at or beneath the bottom of the basin could be too fine-grained and could have a very low hydraulic conductivity rate.

    The potential issues listed above are ranked in order starting from the potential cause that we see as being most likely and ending with that which seems least likely based upon our review and the information that we have at this time. The issue of sediment clogging could be a likely factor given that the site has seen construction activity within the past year and may not be fully stabilized. The basin was reported to have performed acceptably in February 2023 but by June 2023 issues of standing water were observed; fine sediment could have accumulated within that intervening period. It is worth noting that LDG indicates that a layer of stone and filter fabric were used in the upper layer of the basin floor; filter fabric can sometimes act as a sediment trap, collecting fine sediment and creating a restrictive layer. Consequently, though no fine sediment may be visible on the surface, our first recommendation would be to remove material down to the filter fabric to see if the fabric has become clogged.

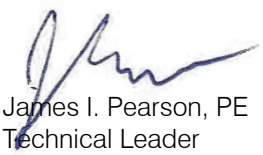
    If fabric clogging has not occurred, the need for additional excavation and/or testing should be discussed, or it may be necessary to consider the possibility that elevated groundwater could be a concern. It is acknowledged that the basin appears to have been built correctly relative to seasonal high groundwater estimates, and that those estimates were obtained using accepted practices, but if other possible causes are exhausted it may become necessary to review this issue further in which case we may recommend the installation of a monitoring well.

    Soil compaction and the presence of fine-grained soils were low on the list above due to several factors, such as original test pit data, the apparent level of care taken to remove and replace unsuitable materials in the basin, and the acceptable performance that was found to occur in February 2023. If further test pitting were to be conducted as discussed above, then these factors could be investigated further if warranted.

Weston & Sampson appreciates the opportunity to present our findings, and we look forward to discussing the next steps toward resolving the issues related to stormwater management at this project site. Please contact Jim Riordan if you have any questions. Jim Riordan may be reached at (401) 497-6705 or riordanj@wseinc.com.

Sincerely,

WESTON & SAMPSON ENGINEERS, INC.



James I. Pearson, PE
Technical Leader

M. James Riordan, LEED AP
Team Leader

March 15, 2024

100 Foxborough Blvd., Suite 250, Foxborough, MA 02035
Tel: 508.698.3034

Dighton Stormwater Committee
C/O Nancy Goulart, Chairwoman
1111 Somerset Avenue
Dighton, MA 02715

Re: 893 Brook Street Solar Field – Findings from Site Visit and Soil Testing

Dear Stormwater Committee:

In accordance with your request, Weston & Sampson has performed follow-up work subsequent to the initial document review that was presented in our letter dated December 11, 2023. This work has consisted of a visit to the site on February 6, 2024 and a review of the testing results that were performed on February 22, 2024 for materials sampled from that site. The test results were received by us on March 1, 2024 and consisted of nine separate soil grain size distribution reports, one for each sample taken.

Findings

In our initial review of the project documentation, it had appeared that a geotextile fabric layer had been installed in the bottom of the basin beneath a layer of stone. Upon visiting the site on the morning of February 6, we learned that there was no geotextile fabric or stone present at the surface of the basin. Surficial materials appeared to have a sandy consistency. Standing water at a depth of 2 to 4-inches was observed at the lower end of the basin. General reconnaissance was conducted around the periphery of the site to the north and east of the basin and no standing water was observed in those areas. The areas to the east of the basin slope steeply downward to elevations 5 to 7 feet below the basin floor elevation based on record drawings.

Two test pits were excavated onsite to depths of approximately 10 to 12 feet in depth. Test Pit #1 was excavated in the eastern end of the basin and Test Pit #2 was excavated in the western end of the basin. Both test pits encountered similar conditions. In both cases, a tan-colored sand material was encountered for nearly the entire depth. The upper 4 to 5 feet of material was loose and moist, with minimal cohesion and caving occurring throughout the excavation. From 4 to 5 feet and lower, the sand was heavily saturated, with heavy weeping occurring in the sides of the pit as excavation progressed. Both test pits were advanced to find material below the sand layer. At the bottom of each pit, a material that appeared to be a blue-gray clay with an organic odor was encountered. Samples were taken in each pit at the top, middle, and bottom of the test pits. In addition, a sample of the blue-gray clay material at the bottom of the test pits was taken at the base of each test pit. Finally, Test Pit #2 was expanded laterally to sample material approximately 4 to 5 feet down at the edge of the sand-fill area of the basin to characterize what seemed to be native material outside of the footprint of the basin.

Laboratory testing confirms that the sand material taken at the top, middle, and bottom of each test pit is of a very similar gradation of sand. The testing results for the “blue-gray clay” material at the base of each test pit indicates that it could fall either in the sandy loam or sandy clay loam classification; however, due to sampling methods it is believed that some of the overlying sand material may have been mixed in with the clay sample. Visual observation at the time of the site visit suggests that the underlying material is likely a clay loam or finer.

The laboratory results for the sample taken at the lateral edge of Test Pit #2 likewise also indicate a material that is either a sandy loam or sandy clay loam. Visual observations of the material onsite suggest that the material likely falls closer to the finer-grained end of that spectrum (i.e. sandy clay loam).

Conclusions and Recommendations

Based on the findings presented above as well as the findings presented in our previous initial document review letter, it appears that the material within the bottom of the stormwater basin is a very free-draining sand material that should be expected to allow stormwater infiltration to occur at a rapid rate;however, material 10 to 12 feet

below the basin as well as material around the periphery of the basin appears to be a finer grained material with a low hydraulic conductivity, meaning that stormwater would be expected to pass through these materials at a very slow rate. We believe that the problems with standing water in the basin that has been present for periods greater than 72 hours can likely be attributed to the low hydraulic conductivity of the materials below and surrounding the basin. During recent periods of significant rainfall events, we believe that the sand material became saturated with stormwater, at which point the hydraulic conductivity of the materials surrounding and beneath the basin became the controlling factor in how quickly the basin was able to infiltrate. Since these soils have a low hydraulic conductivity, the basin was unable to drain within the 72-hour period prescribed under the MA Stormwater Handbook.

It is anticipated that the conditions described above will likely recur during periods of frequent heavy rainfall. Site conditions do not appear to be favorable for the stormwater basin to function as an infiltration basin if it is expected to drain within 72 hours. Under the standards of the MA Stormwater Handbook, sites that are not adequate to support the installation of infiltration basins are generally allowed to seek waivers to allow infiltration only to the "maximum extent practicable." As such, we recommend that the Stormwater Committee allow the owner of the site to consider potential modifications to the stormwater management to the site that take into account a possible waiver request of this nature. It is the responsibility of the owner's engineer to determine what that modification would consist of, but one potential solution may include the conversion of the infiltration basin into a detention basin that allows for infiltration to the maximum extent practicable while also preventing standing water from occurring for periods greater than 72 hours. In considering any modifications to the basin, we believe the site owner's engineer should seek to ensure that all other standards that were met as part of the original design should continue to be met.

Weston & Sampson appreciates the opportunity to present our findings, and we look forward to discussing the next steps toward resolving the issues related to stormwater management at this project site. Please contact Jim Riordan if you have any questions. Jim Riordan may be reached at (401) 497-6705 or riordanj@wseinc.com.

Sincerely,

WESTON & SAMPSON ENGINEERS, INC.

James I. Pearson, PE
Technical Leader

M. James Riordan, LEED AP
Team Leader

DESCRIBE HOW THIS APPLICATION MEETS THE CRITERIA FOR A SPECIAL PERMIT AS DESCRIBED IN THE APPLICABLE SECTION(s) OF THE DIGHTON ZONING BYLAWS:

The Application is for a minor change to the infiltration basin configuration and will not change the current approved use of the site.

THE UNDERSIGNED HEREBY CERTIFIES THAT THE INFORMATION ON THIS APPLICATION AND PLANS SUBMITTED HEREWITH IS CORRECT, AND THAT THE APPLICATION COMPLIES WITH ALL APPLICABLE PROVISIONS OF STATUTES, REGULATIONS AND BYLAWS TO THE BEST OF HIS/HER KNOWLEDGE.

THE ABOVE IS SUBSCRIBED TO AN EXECUTED BY THE UNDERSIGNED UNDER THE PENALTIES OF PERJURY IN ACCORDANCE WITH M.G.L. Ch. 268, §1-A.

Received by Town Clerk:

Date: _____

Time: _____

Applicant's Name: GHTJA03 LLC

Applicant's Address: 4 Bobbie Ct Manalapan NJ 07726

Applicant's Phone #: 416-477-0726

Signature: _____

Owner's name, address and signature for authorization (if other than applicant)

Owner's Name: Mila Andrews

Owner's Address: 135 Sherwood Lane Raynham MA 02767

Owner's Phone#: 774 501 7895

Signature: _____

Received by Board of Health

Date: _____

Time: _____

Signature: _____

Checklist of items to be submitted with application.

1. ____ Application Form (x2)
2. ____ Application Fee (please refer to Fee Schedule)
3. ____ Project Review Fee & Completed W-9 (please refer to Fee Schedule)
4. ____ Tax Status Application Form
5. ____ Plans (See applicable Zoning Bylaws for Specific Requirements)
6. ____ Certified Abutters List

20 Day Appeal expires on 2-6-2019

TOWN OF DIGHTON

PLANNING BOARD
979 SOMERSET AVENUE
DIGHTON, MA 02715
TEL: (508) 669-6636
FAX: (508) 669-4509

FINDINGS AND DECISION

RE: SPECIAL PERMIT & SITE PLAN REVIEW FOR GROUND-MOUNTED SOLAR PHOTOVOLTAIC INSTALLATION

APPLICANT: TJA SOLAR

DATE: JANUARY 16, 2019

1. On or about July 16, 2018, the TJA Solar (the "Applicant") submitted an application for a special permit with a site plan review for ground-mounted solar photovoltaic installation at property comprised of about ±8 acres of a ±19.6 acre tract of land at 0 Brook Street in Dighton, Massachusetts (the "Locus"), identified in the Assessor's records as Map 16, Lot 28. The owner-of-record of the Locus is Estates of Louise a Andrews.

2. On September 5, 2018, the Planning Board commenced a public hearing on the Application. Said public hearing was continued to October 3, 2018, October 26, 2018, November 28, 2018, December 5, 2018 and closed on December 19, 2018.

3. The proposal is to allow the installation and operation of a ±3MW Ground-Mounted Solar Photovoltaic Array in a Residential District in accordance with Section 4600 and 5400 of the Town of Dighton Zoning Bylaws.

4. Special Permit applications are accompanied by and augmented by Site Development Plans, entitled Site Development Plans for Brook Street Solar Project ("Plans"), Dighton, Massachusetts, dated July 16, 2018, last revised December 19, 2018, prepared by Atlantic Design Engineers, Inc., PO Box 1051, Sandwich, MA 02563.

FINDINGS

General

The Applicant proposes to construct a 3.4± MW Ground-Mounted Solar Photovoltaic Array Installation as shown on the Plans and described in the Special Permit Application. In accordance with Section 4600 of the Bylaw, where the Ground Mounted Solar

Photovoltaic Installation Array is located in a Residential District, a Special Permit is required, in addition to Site Plan Review.

Special Permit Criteria

The determination of the Planning Board shall include consideration of each of the following:

1. Social, economic or community needs which are served by the proposal;
2. Traffic flow and safety, including parking and loading;
3. Adequacy of utilities and other public services;
4. Neighborhood character and social structures;
5. Impacts on the natural environment; and
6. Potential fiscal impact, including impact on town services, tax base, and employment.

Specifically, as to the Special Permit request, the Board found as follows:

1. The project will have a positive impact on the general social, economic and community needs by providing a renewable energy source in town with added economic benefits to both the property owner and other employed by the work of the installation. Generally, an overall community benefit is realized with the addition of renewable energy sources.
2. There will be no adverse effect to the community or neighborhood from increased traffic flow or safety. Any such impact will be negligible over the long run.
3. There are adequate utilities and other public services.
4. There will be no impact to the neighborhood character and social structures. Indeed, the location of the facility will have little to no impact.
5. The installation will not have any meaningful negative impacts on the natural environment. However, the result of the use of the solar facility will have far reaching positive impacts; and
6. The Town will receive increased personal property tax revenue and there will be positive fiscal impacts to the tax base, and employment.

The Applicant meets the criteria of the Special Permit as set forth above, provided that the Applicant comply with the conditions hereof.

DECISION

The Planning Board, at its meeting of December 19, 2018, voted to Approve the Site Plan application and Special Permit for the proposed solar facility as shown on the Plans.

In view of the foregoing, the Planning Board hereby decides that the aforesaid proposed Ground Mounted Solar Photovoltaic Installation Array is proposed, as set forth on the Plans, in a manner consistent with the requirements of Section 4600 and 5400 of the Town of Dighton Zoning Bylaws in that it meets all requisite criteria. It is therefore

further determined, that subject to satisfaction of the conditions as set forth below that any perceived adverse effects of the proposed use will not outweigh its beneficial impacts to the Town of the neighborhood, in view of the particular characteristics of the site and of the proposal. Therefore, the Planning Board hereby grants a Special Permit for the installation and operation of a 3.4± MW Ground Mounted Solar Photovoltaic Installation Array in a Residential District subject to the Conditions:

CONDITIONS

1. The Applicant has agreed to obtain approval of the revised plan (dated December 19, 2018 relocating the entrance) from The Town's engineer, the Fire Chief and the Conservation Commission. No construction of the project may commence and no building permit may issued unless and until such approvals are provided.
2. The Applicant shall obtain approval of the Stormwater Report from the Board of Health prior to the issuance of a building permit.
3. The Applicant shall submit detail of electrical equipment pads and spill prevention measures to the Planning Board prior to the issuance of a building permit.
4. The Applicant shall submit the names and address of the system installer to the Planning Board prior to the issuance of a building permit.
5. The Applicant will work with the Building Department and comply with all requirements regarding signage and lighting in accordance with the Zoning Bylaws Section 3300 prior to the issuance of a building permit.
6. The Applicant is hereby granted a waiver of underground utilities in the area of the wetland crossing, provided that the Conservation Commission approves above-ground wires.
7. The Applicant further agrees to an additional $10,000 in landscape screening for the front of the property. The Applicant has agreed to a Landscape Performance Security Agreement prior to the issuance of a building permit. Such agreement shall be in the amount of $10,000.00, and shall be in a form approvable by the Board's counsel.
8. The Applicant has prepared and presented an Emergency Response Plan and the layout of the access drive to the Fire Chief. The Fire Chief's approval of said plan is required prior to the issuance of a building permit.
9. The Applicant has agreed to posting Decommissioning Security with the Town of Dighton in the estimated amount of $139,300.00 prior to the issuance of a building permit. The form of such security agreement is subject to the prior approval of the Board's counsel and final confirmation of the amount of such security.

10. The Applicant has agreed to install additional traffic signs on Pine and Brook Street in accordance with requirements and standards of the Highway Superintendent. Such signs shall be installed prior to the commencement of operation of the solar facility

11. The Applicant has agreed to submit a Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan for the Board's approval prior to the issuance of a building permit. The Board utilize the services of an engineer to review such plan, and the Applicant shall bear all costs for such review, pursuant to G.L. c. 44, s. 53G.

12. The Applicant has agreed to posting Security for the drainage system construction prior to the issuance of a building permit. The security agreement shall be in the amount of $30,000.00, and shall be in a form approvable by the Board's counsel.

DIGHTON PLANNING BOARD

Peter Bonvie, Jr., Chairman

Thomas Pires, Vice Chairman

Robert Boughner, Clerk

Joseph Figueiredo, Member

The following members of the Planning Board are in opposition to the grant of the special permit:

Robert Woods, Member

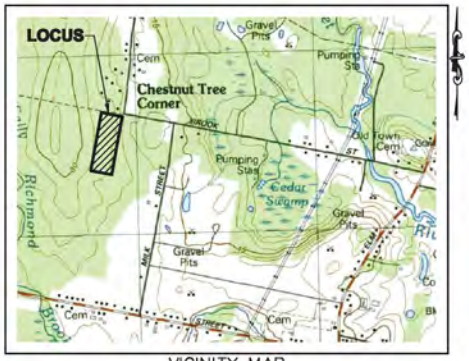
Filed with the Town Clerk on January 17, 2019.

Pamela J. Walker Assistant
Susana Medeiros, Town Clerk

RECEIVED
2019 JAN 17 AM 10:16
TOWN CLERK
DIGHTON, MA
BY

SITE DEVELOPMENT PLANS
FOR
BROOK STREET SOLAR PROJECT

DIGHTON, MASSACHUSETTS
DATE: JULY 16, 2018
REVISED: NOVEMBER 19, 2018
REVISED: DECEMBER 5, 2018
REVISED: DECEMBER 19, 2018



VICINITY MAP
1" = 1,500'

LOCUS MAP
1" = 1,200'

OVERALL LOCATION PLAN
SCALE: 1" = 200'

INDEX OF PLANS		
SHEET NO.	TITLE	SCALE
1	COVER SHEET	1" = 200'
2	OVERALL SITE DEVELOPMENT PLAN	1" = 80'
3	SITE DEVELOPMENT PLAN	1" = 40'
4	DETAILS PLAN	AS SHOWN
5	DETAILS PLAN	AS SHOWN

OWNER:
THE MANUAL & LOUISE TRUST
12 CYPRESS DR,
DARTMOUTH, MASSACHUSETTS 02747
PHONE NUMBER: 505-967-7905

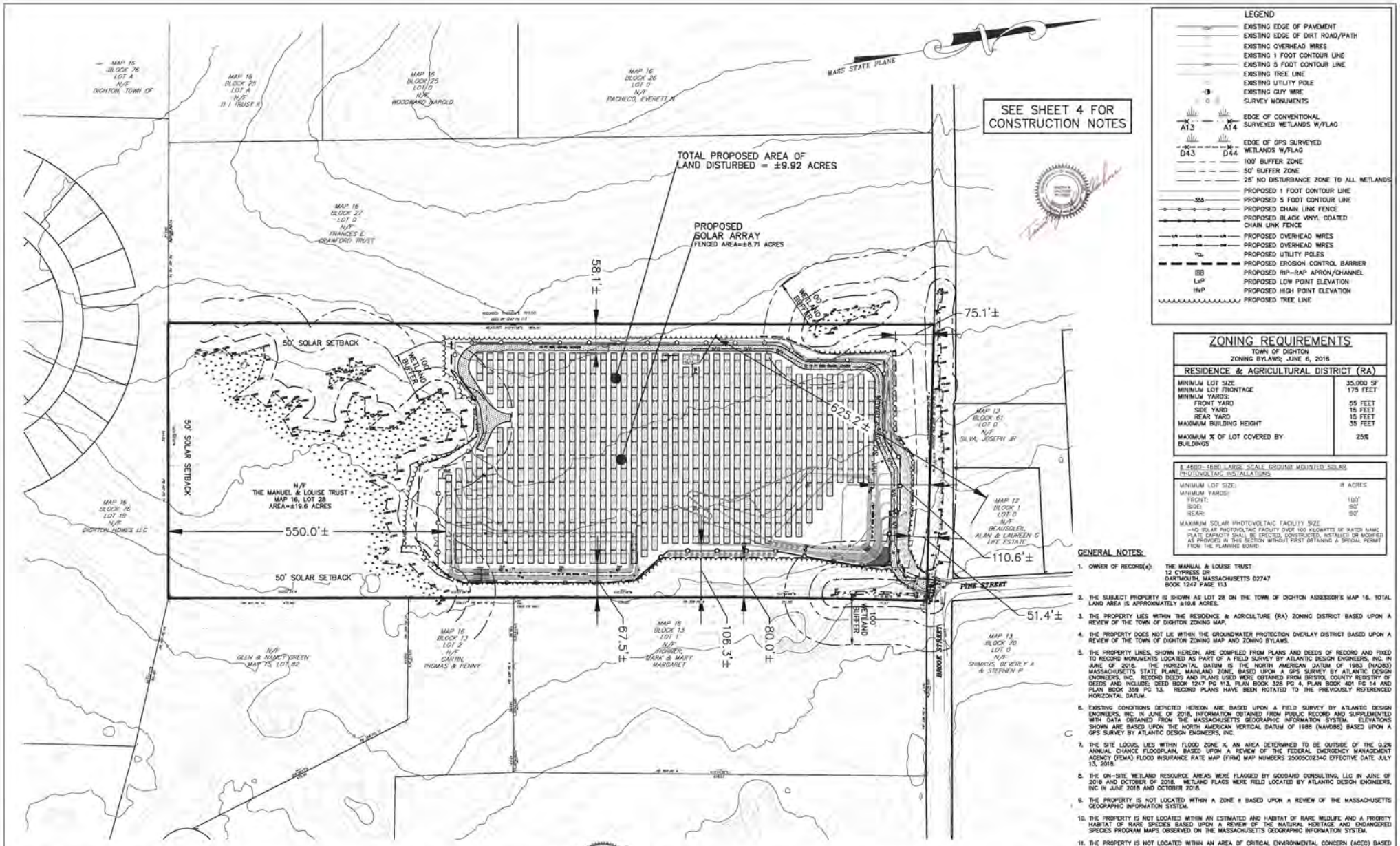
APPLICANT:
TJA SOLAR
150 JOHN VERTENTE BOULEVARD
NEW BEDFORD, MASSACHUSETTS 02745
PHONE NUMBER: (774) 573-5726

ENGINEER:
Atlantic®
DESIGN ENGINEERS, INC.
P.O. Box 1051, Sandwich, MA 02563
PHONE NUMBER: (508) 888-9282

FILE: 2992.01-STE-R3

Sheet	of
1	5

JOB NUMBER
2992.01



LEGEND

- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF DIRT ROAD/PATH
- EXISTING OVERHEAD WIRES
- EXISTING 1 FOOT CONTOUR LINE
- EXISTING 5 FOOT CONTOUR LINE
- EXISTING TREE LINE
- EXISTING UTILITY POLE
- EXISTING GUY WIRE
- SURVEY MONUMENTS
- EDGE OF CONVENTIONAL SURVEYED WETLANDS W/FLAG (A13 – A14)
- EDGE OF GPS SURVEYED WETLANDS W/FLAG (D43 – D44)
- 100' BUFFER ZONE
- 50' BUFFER ZONE
- 25' NO DISTURBANCE ZONE TO ALL WETLANDS
- PROPOSED 1 FOOT CONTOUR LINE
- PROPOSED 5 FOOT CONTOUR LINE
- PROPOSED CHAIN LINK FENCE
- PROPOSED BLACK VINYL COATED CHAIN LINK FENCE
- PROPOSED OVERHEAD WIRES
- PROPOSED OVERHEAD WIRES
- PROPOSED UTILITY POLES
- PROPOSED EROSION CONTROL BARRIER
- PROPOSED RIP-RAP APRON/CHANNEL
- LoP PROPOSED LOW POINT ELEVATION
- HiP PROPOSED HIGH POINT ELEVATION
- PROPOSED TREE LINE

ZONING REQUIREMENTS

TOWN OF DIGHTON
ZONING BYLAWS; JUNE 6, 2016

RESIDENCE & AGRICULTURAL DISTRICT (RA)	
MINIMUM LOT SIZE	35,000 SF
MINIMUM LOT FRONTAGE	175 FEET
MINIMUM YARDS:	
FRONT YARD	55 FEET
SIDE YARD	15 FEET
REAR YARD	15 FEET
MAXIMUM BUILDING HEIGHT	35 FEET
MAXIMUM % OF LOT COVERED BY BUILDINGS	25%

§ 4600- 4680 LARGE SCALE GROUND MOUNTED SOLAR PHOTOVOLTAIC INSTALLATIONS

MINIMUM LOT SIZE:	8 ACRES
MINIMUM YARDS:	
FRONT:	100'
SIDE:	50'
REAR:	50'

MAXIMUM SOLAR PHOTOVOLTAIC FACILITY SIZE
-NO SOLAR PHOTOVOLTAIC FACILITY OVER 100 KILOWATTS OR RATED NAME PLATE CAPACITY SHALL BE ERECTED, CONSTRUCTED, INSTALLED OR MODIFIED AS PROVIDED IN THIS SECTION WITHOUT FIRST OBTAINING A SPECIAL PERMIT FROM THE PLANNING BOARD.

GENERAL NOTES:

1. OWNER OF RECORD(s): THE MANUAL & LOUISE TRUST
   12 CYPRESS DR
   DARTMOUTH, MASSACHUSETTS 02747
   BOOK 1247 PAGE 113
2. THE SUBJECT PROPERTY IS SHOWN AS LOT 28 ON THE TOWN OF DIGHTON ASSESSOR'S MAP 16. TOTAL LAND AREA IS APPROXIMATELY ±19.6 ACRES.
3. THE PROPERTY LIES WITHIN THE RESIDENCE & AGRICULTURE (RA) ZONING DISTRICT BASED UPON A REVIEW OF THE TOWN OF DIGHTON ZONING MAP.
4. THE PROPERTY DOES NOT LIE WITHIN THE GROUNDWATER PROTECTION OVERLAY DISTRICT BASED UPON A REVIEW OF THE TOWN OF DIGHTON ZONING MAP AND ZONING BYLAWS.
5. THE PROPERTY LINES, SHOWN HEREON, ARE COMPILED FROM PLANS AND DEEDS OF RECORD AND FIXED TO RECORD MONUMENTS LOCATED AS PART OF A FIELD SURVEY BY ATLANTIC DESIGN ENGINEERS, INC. IN JUNE OF 2018. THE HORIZONTAL DATUM IS THE NORTH AMERICAN DATUM OF 1983 (NAD83) MASSACHUSETTS STATE PLANE, MAINLAND ZONE, BASED UPON A GPS SURVEY BY ATLANTIC DESIGN ENGINEERS, INC. RECORD DEEDS AND PLANS USED WERE OBTAINED FROM BRISTOL COUNTY REGISTRY OF DEEDS AND INCLUDE; DEED BOOK 1247 PG 113, PLAN BOOK 328 PG 4, PLAN BOOK 401 PG 14 AND PLAN BOOK 359 PG 13. RECORD PLANS HAVE BEEN ROTATED TO THE PREVIOUSLY REFERENCED HORIZONTAL DATUM.
6. EXISTING CONDITIONS DEPICTED HEREON ARE BASED UPON A FIELD SURVEY BY ATLANTIC DESIGN ENGINEERS, INC. IN JUNE OF 2018, INFORMATION OBTAINED FROM PUBLIC RECORD AND SUPPLEMENTED WITH DATA OBTAINED FROM THE MASSACHUSETTS GEOGRAPHIC INFORMATION SYSTEM. ELEVATIONS SHOWN ARE BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) BASED UPON A GPS SURVEY BY ATLANTIC DESIGN ENGINEERS, INC.
7. THE SITE LOCUS, LIES WITHIN FLOOD ZONE X, AN AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN, BASED UPON A REVIEW OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBERS 25005C0234C EFFECTIVE DATE JULY 13, 2018.
8. THE ON-SITE WETLAND RESOURCE AREAS WERE FLAGGED BY GODDARD CONSULTING, LLC IN JUNE OF 2018 AND OCTOBER OF 2018. WETLAND FLAGS WERE FIELD LOCATED BY ATLANTIC DESIGN ENGINEERS, INC IN JUNE 2018 AND OCTOBER 2018.
9. THE PROPERTY IS NOT LOCATED WITHIN A ZONE II BASED UPON A REVIEW OF THE MASSACHUSETTS GEOGRAPHIC INFORMATION SYSTEM.
10. THE PROPERTY IS NOT LOCATED WITHIN AN ESTIMATED AND HABITAT OF RARE WILDLIFE AND A PRIORITY HABITAT OF RARE SPECIES BASED UPON A REVIEW OF THE NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM MAPS OBSERVED ON THE MASSACHUSETTS GEOGRAPHIC INFORMATION SYSTEM.
11. THE PROPERTY IS NOT LOCATED WITHIN AN AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC) BASED UPON A REVIEW OF THE MASSACHUSETTS GEOGRAPHIC INFORMATION SYSTEM.

FILE: 2992.01-SITE-RD

Atlantic® DESIGN ENGINEERS, INC.
P.O. Box 1051, Sandwich, MA 02563 (508) 888 – 9282

Designed by :
Drawn by :
Checked by :
Survey chk. by :
Approved by :

SCALE
SCALE 1" = 80'
0 20 40 80 160

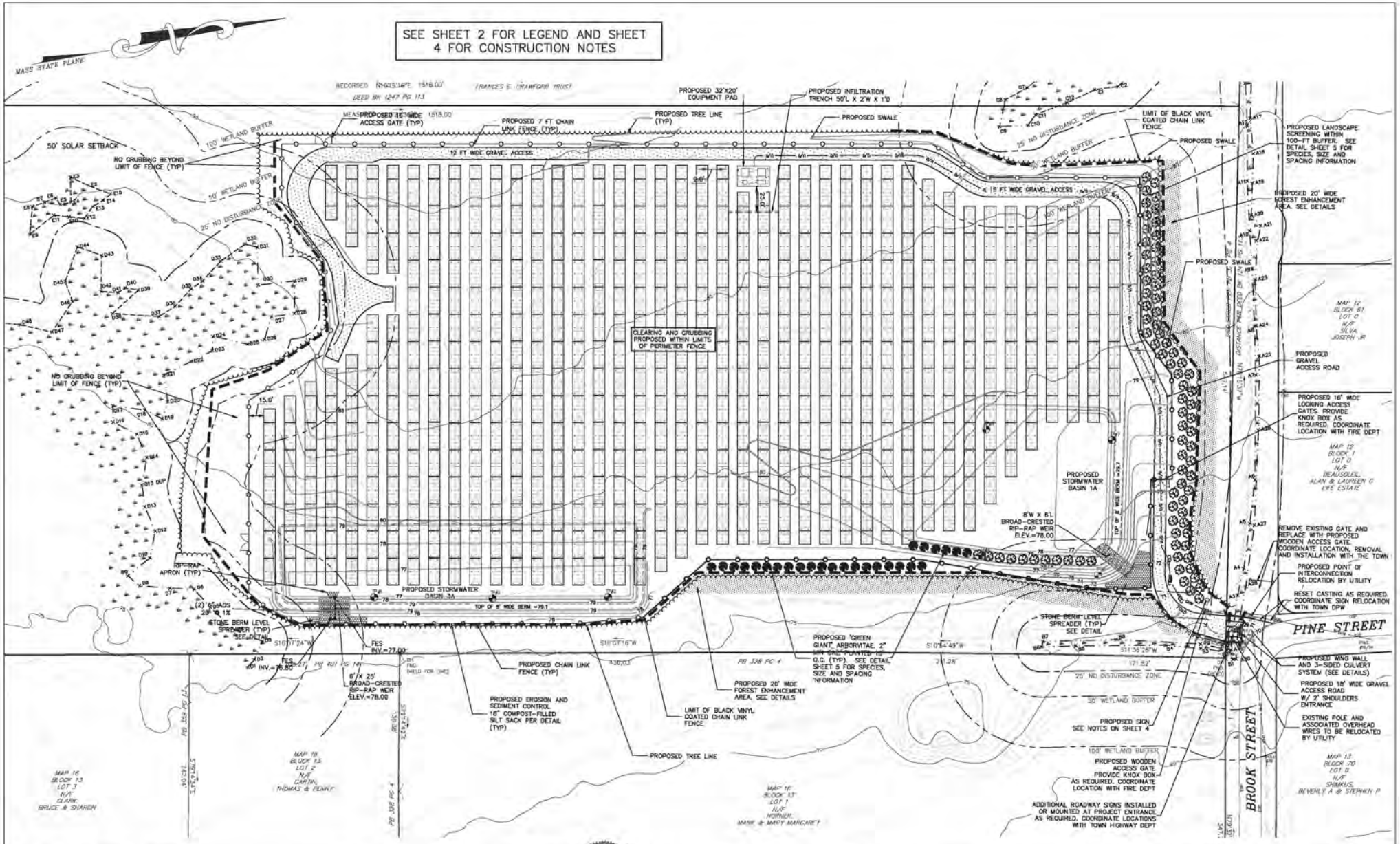
DATE

NO.	BY	DATE	REVISION
3	CMK	12-19-18	REVISED W/ ALTERNATIVE ACCESS
2	CMK	12-5-18	REVISED PER REVIEW COMMENTS
1	PMJ	11-19-18	REVISED PER REVIEW COMMENTS

PREPARED FOR:
TJA SOLAR
150 JOHN VERTENTE BOULEVARD
NEW BEDFORD, MASSACHUSETTS 02745

OVERALL SITE DEVELOPMENT PLAN
FOR
BROOK STREET SOLAR PROJECT
DIGHTON, MASSACHUSETTS
JULY 16, 2018

Sheet 2 of 5
JOB NUMBER 2992.01



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P.O. Box 1051, Sandwich, MA 02563 (508) 888 – 9282

Designed by :
Drawn by :
Checked by :
Survey chk. By :
Approved by :

SCALE
SCALE 1" = 40'
0 20 40 80

DATE

NO.	BY	DATE	REVISION
3	CMK	12-19-18	REVISED W/ ALTERNATIVE ACCESS
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TJA SOLAR
150 JOHN VERTENTE BOULEVARD
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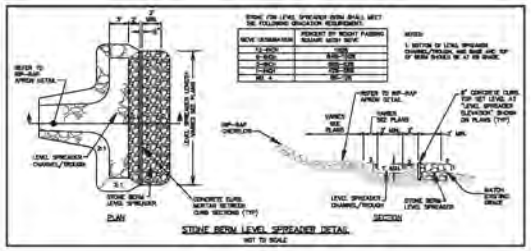
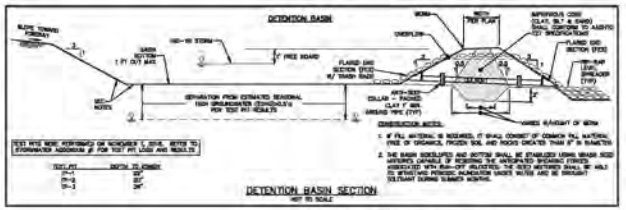
SITE DEVELOPMENT PLAN
FOR
BROOK STREET SOLAR PROJECT
DIGHTON, MASSACHUSETTS
JULY 16, 2018

Sheet 3 of 5
JOB NUMBER 2992.01

FILE: 2992.01-SITE-R3





EROSION CONTROL NOTES:

1. PRIOR TO DEMOBILIZATION SITE WORK OR EARTHWORK OPERATIONS, INSTALL EROSION CONTROL BARRIERS AND MAINTAIN THROUGHOUT CONSTRUCTION.
2. ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION, UNLESS WORK WITHIN THE PERIMETER OF FENCE SHALL BE SEEDED WITHIN 7 DAYS OF EARTH DISTURBANCE. ALL DISTURBED AREAS OUTSIDE OF THE PERIMETER FENCE SHALL BE SEEDED WITHIN 14 DAYS OF EARTH DISTURBANCE.
3. ALL MATERIALS AND STOCKPILES SHALL BE STORED ON LEVEL AREAS OUTSIDE OF ANY FLOOD ZONES, WETLANDS OR BUFFER ZONE AREAS. ALL STOCKPILES SHALL BE SURROUNDED BY STRAWBALES. SHALL HAVE SIDE SLOPES NO GREATER THAN 50% AND SHALL BE SEEDED OR COVERED IF LEFT UNDISTURBED FOR TWO WEEKS OR MORE.
4. SEDIMENTATION CONTROL DEVICES AND EROSION CONTROL BARRIERS SHALL BE INSPECTED WEEKLY AND MAINTAINED AS NECESSARY IMMEDIATELY ALL PHASES OF CONSTRUCTION AND PROMPTLY AFTER EACH RAINFALL.
5. ANY SLOPE STEEPER AND 2:1 SHALL BE EQUIPPED WITH ADDITIONAL EROSION CONTROL MEASURES.
6. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTITUTED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER AND/OR THE TOWN.
7. SOIL COMPACTION MUST OCCUR ON RE-USED AMY AREAS THAT DO NOT DEVELOP WITHIN A PERIOD OF ONE YEAR AT NO ADDITIONAL EXPENSE TO THE OWNER.
8. SEASONAL STOCKPILES SHALL NOT BE LOCATED WITHIN THE LIMITS OF THE EXISTING PROPOSED MATERIALS(UNLESS SWITCH TEMPORARILY OR PERMANENT) OR THOSE AREAS SUBJECT TO STORM WATER FLOW.
9. SEDIMENT CONTROL DEVICES AND EROSION CONTROL BARRIERS MAY BE REMOVED ONLY AFTER THE SITE HAS BEEN STABILIZED.
10. ALL DISTURBED OR EXPOSED AREAS WHICH REMAIN DISTURBED BUT INACTIVE FOR AT LEAST 14 DAYS SHALL RECEIVE TEMPORARY SEEDING IN ACCORDANCE WITH THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES. ALL AREAS TO BE LEFT DORMANT SHALL BE SEEDED/MULCHED AS NECESSARY. A MIXTURE OF ANNUAL RYEGRASS AND PERENNIAL RYEGRASS SHALL BE USED IN ACCORDANCE WITH THE MASSACHUSETTS EROSION CONTROL GUIDELINES.
11. EARTHWORK ACTIVITY ON THE SITE SHALL BE DONE IN A MANNER SUCH THAT RUNOFF IS DIRECTED AWAY FROM ADJOINING STRUCTURES, PROPERTY, ETC.
12. SOIL COMPACTION SHALL OCCUR ON SITE AT ALL TIMES. DIVERSIONS, STRAWBALES AND EXTRA SILTATION FENCING FOR INSTALLATION AT THE DIRECTION OF THE ENGINEER OR THE PLANNING BOARD TO MITIGATE ANY CONDITIONS.
13. NOTES TO CONSTRUCTION DETAILS FOR ADDITIONAL EROSION CONTROL MEASURES.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TIMING, RELOCATION AND AUGMENTATION OF EROSION CONTROL DEVICES AS THE PROJECT PROGRESSES AND AS DIRECTED BY THE ENGINEER.
15. THE CONTRACTOR SHALL MINIMIZE THE AREA OF DISTURBED SOIL, UNLESS AGREED TO WITH SITE MODIFICATIONS/INSTALLATIONS. PROPOSED DISTURBANCE IS LIMITED TO AREAS WITHIN THE PERIMETER FENCE. EFFORTS SHALL BE MADE TO LIMIT THE TIME OF EXPOSURE OF DISTURBED AREAS.

CONSTRUCTION PERIOD STORMWATER OPERATION AND MAINTENANCE:

GENERAL:

EROSION CONTROL BARRIERS

EROSION CONTROL BARRIERS (STRAWBALES, SILT FENCE, ETC.) SHOULD BE INSPECTED IMMEDIATELY AFTER EACH RUN-OFF PRODUCING RAINFALL EVENT AND AT LEAST DAILY DURING PROLONGED RAINFALL. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN THE LEVEL OF DEPOSITION REACHES APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER. SEDIMENT SHOULD BE DISPOSED OF IN A SUITABLE AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURAL OR VEGETATIVE MEANS.

STORMWATER BASINS:

AFTER EACH MAJOR STORM EVENT (2" OR GREATER) DURING CONSTRUCTION AND FOR ONE (ONE) YEAR AFTER CONSTRUCTION TO ENSURE PROPER STABILIZATION AND FUNCTION. INSPECTION SHOULD BE PERFORMED AT LEAST ONCE FOR YEAR DURING WET WEATHER TO ENSURE THE SYSTEM IS DRAINING PROPERLY. CHECK FOR ACCUMULATION OF SEDIMENT AND PONDING OF WATER. IF PONDING WATER IS VISIBLE BEING THE BASIN FOR MORE THAN DAYS AFTER A STORM CHECK, NOTIFY THE ENGINEER FOR ADDITIONAL RESEARCH. REMOVE SEDIMENT SHOULD BE DISPOSED OF IN A SUITABLE AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURAL OR VEGETATIVE MEANS. INSPECT SYSTEM ON A DRY, AND AT LEAST EVERY 5 YEARS AFTER CONSTRUCTION.

INF-RAP APRONS, SPREADERS AND FLUMES INLETS:

INSPECT AFTER EVERY MAJOR STORM EVENT (2" OR GREATER) DURING CONSTRUCTION AND FOR THE FIRST TWO MONTHS AFTER CONSTRUCTION TO ENSURE PROPER STABILIZATION AND FUNCTION. INSPECTION SHOULD BE PERFORMED AT LEAST ONCE FOR YEAR DURING WET WEATHER TO ENSURE THE SYSTEM IS DRAINING PROPERLY. CHECK FOR ACCUMULATION OF SEDIMENT AND PONDING OF WATER. IF PONDING WATER IS VISIBLE BEING THE BASIN FOR MORE THAN DAYS AFTER A STORM CHECK, NOTIFY THE ENGINEER FOR ADDITIONAL RESEARCH. REMOVE SEDIMENT SHOULD BE DISPOSED OF IN A SUITABLE AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURAL OR VEGETATIVE MEANS. INSPECT INF-RAP APRONS FOR SIGNS OF EROSION, SEDIMENT OR SIGNS OF FAILURE.

INFILTRATION TRENCH:

INSPECT AFTER EVERY MAJOR STORM EVENT (2" OR GREATER) DURING CONSTRUCTION AND FOR ONE FIRST TWO MONTHS AFTER CONSTRUCTION TO ENSURE PROPER STABILIZATION AND FUNCTION. INSPECTION SHOULD BE PERFORMED AT LEAST ONCE FOR YEAR DURING WET WEATHER TO ENSURE THE SYSTEM IS DRAINING PROPERLY. CHECK FOR ACCUMULATION OF SEDIMENT AND TRASH. REMOVE DEBRIS WHEN NECESSARY AT THE TIME OF INSPECTION. ACCUMULATED SEDIMENT SHALL BE REMOVED AT LEAST ONCE A YEAR OR BEFORE IT OCCUPIES 10% OF INITIAL INFILTRATION VOLUME FIRST. SEDIMENT SHALL BE DISPOSED OF IN A SUITABLE AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURAL OR VEGETATIVE MEANS. INSPECT INF-RAP APRONS FOR SIGNS OF EROSION SEDIMENT OR SIGNS OF FAILURE.

NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER INSPECTION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL FACILITIES UNTIL THE PROJECT CONSTRUCTION IS COMPLETED. THE CONTRACTOR SHALL TURN OVER ALL EROSION AND SEDIMENT CONTROL FACILITIES TO THE OWNER UPON COMPLETION OF CONSTRUCTION, IMMEDIATELY PRIOR TO TURNING OVER OPERATION AND MAINTENANCE RESPONSIBILITY TO THE PROJECT PROPONENT.
2. UPON COMPLETION OF CONSTRUCTION, THE OPERATION AND MAINTENANCE OF ALL COMPONENTS OF THE STORMWATER MANAGEMENT SYSTEM WILL BE THE RESPONSIBILITY OF THE SYSTEM OWNER:

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NEW BEDFORD, MA 02745

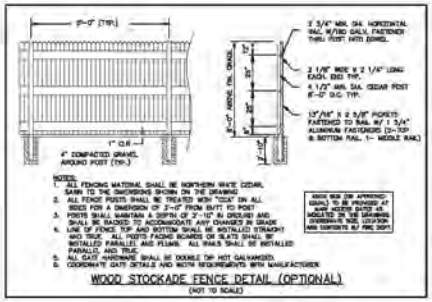
3. DISPOSAL OF ACCUMULATED SEDIMENT AND HYDROCARBONS TO BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL GUIDELINES AND REGULATIONS.
4. THERE SHALL BE NO ILLICIT DISCHARGE OF ANY WASTE OR WASTE WATER INTO THE STORMWATER MANAGEMENT SYSTEM. THE OWNER SHALL BE RESPONSIBLE FOR FACILITY WALL BE MAINTAINED IN A MANNER AS TO PREVENT ANY DISCHARGE OF WASTE OR WASTE WATER INTO STORMWATER MANAGEMENT SYSTEM. ANY SPILLS OF OIL, GREASE, PRODUCTS RELATED TO VEHICLE MAINTENANCE SHALL BE PROMPTLY DISPOSED OF BY SITE.
5. HYDRANTS ARE NOT ALLOWED FOR VEGETATION MAINTENANCE.

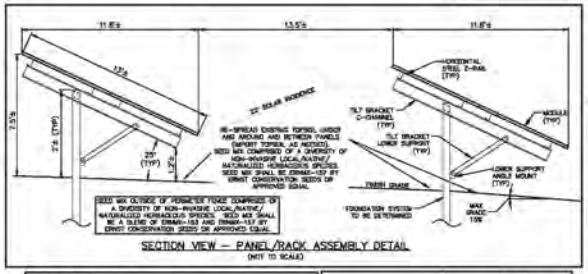
FRONT ENTRANCE SIGNAGE SHALL INCLUDE:

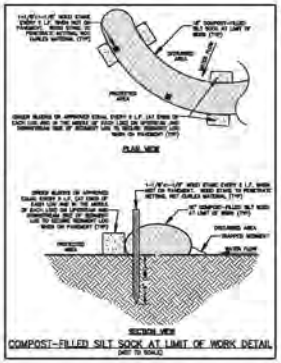
1. OWNER SHALL PROVIDE A 24 HOUR EMERGENCY CONTACT PHONE NUMBER AND ADDRESS FOR ANY POTENTIAL EMERGENCIES ON THE SITE.
2. OWNER SHALL PROVIDE INFORMATION ABOUT THE FACILITY AND THE HAZARDS OF RENEWABLE ENERGY
3. NO ADVERTISING (EXCEPT FOR REASONABLE IDENTIFICATION OF THE MANUFACTURER) SHALL BE PERMITTED ON THE SITE.
4. SIGNAGE REQUIREMENTS TO BE DETERMINED BY THE BUILDING INSPECTOR AND SHALL CONFORM WITH THE CODE OF THE STATE OF MASSACHUSETTS.
5. FINAL SIGNAGE INFORMATION SHALL BE SUBMITTED TO THE BOARD PRIOR TO THE SIGNAGE OF A BUILDING PERMIT

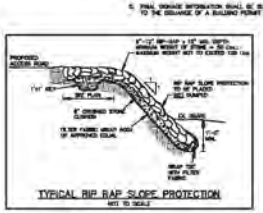
CONSTRUCTION NOTES:

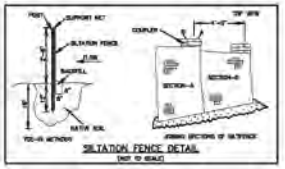
1. THE PROPERTY LINES, ZONING HEREON, ARE COMPILED FROM PLANS AND DEEDS OF RECORD AND FIXED TO RECORD MONUMENTS LOCATED, AS PART OF A FIELD SURVEY BY ATLANTIC DESIGN ENGINEERS, INC. IN JUNE OF 2018. THE HORIZONTAL DATUM IS THE NORTH AMERICAN DATUM OF 1983 (2002) MASSACHUSETTS STATE PLANE MAINLAND ZONE, BASED UPON A GPS SURVEY BY ATLANTIC DESIGN ENGINEERS, INC. RECORD DEEDS AND PLANS USED WERE OBTAINED FROM THE BRISTOL COUNTY REGISTRY OF DEEDS. THE VERTICAL DATUM IS NAVD 1988 (US FEET) PLAN SCALE 1"=40' FOR FIELD SURVEY AND 1"=100' FOR PLAN SHEETS. 2003 FEMA FIRM MAP NUMBER 25005C0091G, EFFECTIVE DATE JULY 16, 2014 INDICATES THAT THE SITE LIES WITHIN ZONE X (UNSHADED) AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.
2. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS SHOWN AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES THAT MAY BE FOUND IN THE PLANS.
3. CONTRACTOR SHALL VERIFY ALL CRITICAL ELEVATIONS AND WIDTHS PRIOR TO CONSTRUCTION.
4. WHERE AN EXISTING PUBLIC UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DOCUMENTED AND THE INFORMATION FURNISHED TO THE UTILITY COMPANY AND ENGINEER FOR RESOLUTION OF THE CONFLICT.
5. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS PART OF THIS SURVEY. NO STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND OR ENCLOSED CONDITIONS WHICH MAY AFFECT THE USE OR DEVELOPMENT OF THIS PROPERTY.
6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY, THE TOWN OF BLACKSTONE DEPARTMENT OF PUBLIC WORKS, AND ALL UTILITY COMPANIES A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION ACTIVITIES FOR LOCATION OF ALL UNDERGROUND UTILITIES AND UTILITY COMPANY APPROVALS.
7. ALL BUILDING SURFACES, AND SUBSURFACE IMPROVEMENTS ON AREAS ADJACENT TO SITE ARE NOT NECESSARILY SHOWN HEREON.
8. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY AND SHALL ARE NOT RESPONSIBILITY ASSUMED BY THE OWNER OR ITS REPRESENTATIVES. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL UTILITIES BEFORE THE COMMENCEMENT OF CONSTRUCTION WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES THAT MIGHT OCCUR BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
9. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENTS OF ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES WITH THE UTILITY COMPANY, IF NECESSARY. IF ANY INTERRUPTIONS IN SERVICE ARE NECESSARY TO ABUTTING PROPERTY OWNERS, A MINIMUM OF 48 HOURS NOTICE SHALL BE GIVEN.
10. THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL MEASURES IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND ALL APPLICABLE MASSACHUSETTS HIGHWAY DEPARTMENT REQUIREMENTS FOR ALL WORK WITHIN PUBLIC STREETS.
11. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
12. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL REQUIRED INSPECTIONS AND/OR CERTIFICATIONS ARE PERFORMED BY OTHERS AND/OR ENGINEER AND COMPLETED PRIOR TO INSTALLATION, BACKFILLING, AND/OR/ED BUILDING FOUNDATIONS AND THE FINAL CONNECTION OF SERVICES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL SURVEY CONTROL POINTS, AND REESTABLISHING NECESSARY POINTS THE PROGRESS OF WORK.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ADEQUATE RECORDS OF THE LOCATION AND ELEVATION OF ALL WORK INSTALLED.
15. THE CONTRACTOR SHALL IDENTIFY AND MAINTAIN ALL SAFETY MEASURES REQUIRED BY LAW AND GOOD CONSTRUCTION PRACTICE, INCLUDING, BUT NOT LIMITED TO BARRICADES, SIGNS AND NIGHTTIME LIGHTING AS REQUIRED FOR DETAIL, AND ANY OTHER MEANS AS DIRECTED BY THE TOWN. NO TRENCHES ARE TO REMAIN OPEN OVERNIGHT
16. THE CONTRACTOR SHALL KEEP THE PREMISES FREE FROM THE ACCUMULATION OF WASTE MATERIAL AND OTHER DEBRIS RESULTING FROM THE WORK. AT THE OWN COMPLETION OF THE WORK, ALL WASTE MATERIAL AND DEBRIS SHALL BE REMOVED AND CARTED AWAY AND SHALL PROVIDE ALL FINISHING AND CLEANING AS MAY BE NECESSARY TO LEAVE THE PREMISES IN A NEAT AND ORDERLY CONDITION SATISFACTORY TO THE OWNER. ALL DISCARDED MATERIALS, RUBBISH OR EXCESS EARTH SHALL BE COLLECTED AND REMOVED FROM THE SITE.
17. ALL WORK SHALL BE DONE IN STRICT COMPLIANCE WITH ALL APPROVED PERMITS AND WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES, STANDARDS, ORDINANCES, RULES AND REGULATIONS.
18. THE CONTRACTOR SHALL NOTIFY THE PLANNING BOARD ON THE DESIGNATED AGENT AND THE ZONING ENGINEER AND INSPECTOR AT LEAST TWO WORKING DAYS BEFORE EACH OF THE FOLLOWING EVENTS:
   1) PRE-CONSTRUCTION CONFERENCE
   2) EROSION AND SEDIMENT CONTROL MEASURES ARE IN PLACE AND STABILIZED
   3) SITE CLEARING HAS BEEN SUBSTANTIALLY COMPLETED;
   4) STORMWATER MANAGEMENT SYSTEM HAS BEEN SUBSTANTIALLY COMPLETED;
   5) FINAL GRADING HAS BEEN SUBSTANTIALLY COMPLETED;
   6) CLOSE OF THE CONSTRUCTION SEASON;
   7) FINAL LANDSCAPING (PERMANENT STABILIZATION) AND PROJECT FINAL COMPLETION.
19. CONTRACTOR SHALL OBTAIN FROM THE OWNER THE FOLLOWING INFORMATION REQUIRED TO BE INCLUDED/LISTED ON THE FRONT ENTRANCE SIGNAGE: ADDENDUM: THE OWNER AND PROVIDE A 24 HOUR EMERGENCY CONTACT PHONE NUMBER AND SIGNS OF ANY DANGERS.
   1) EDUCATIONAL SIGNS PROVIDING INFORMATION ABOUT THE FACILITY AND THE HAZARDS OF RENEWABLE ENERGY
   2) TO INCLUDE ANY ADVERTISING (EXCEPT FOR REASONABLE IDENTIFICATION OF THE MANUFACTURER).

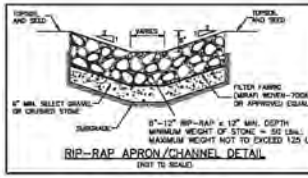


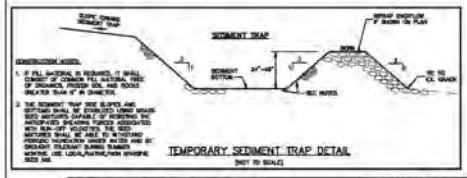


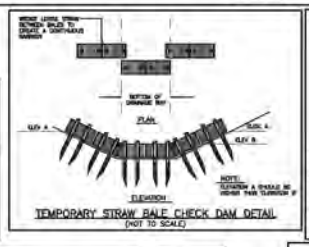


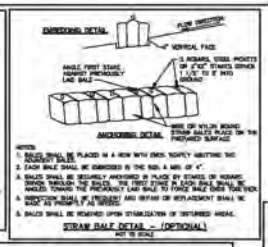


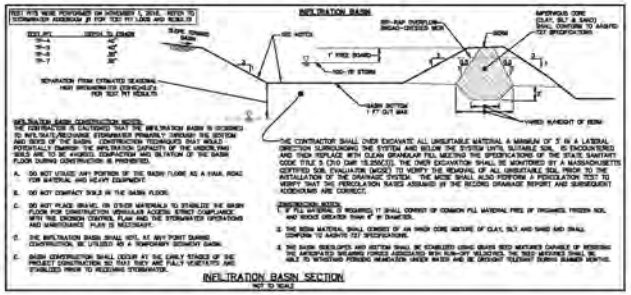


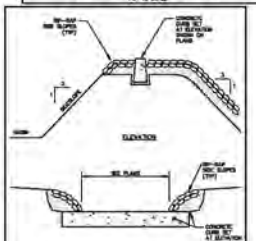


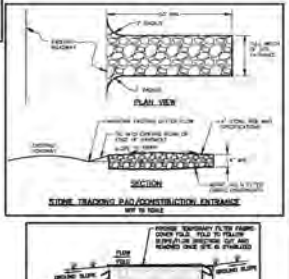


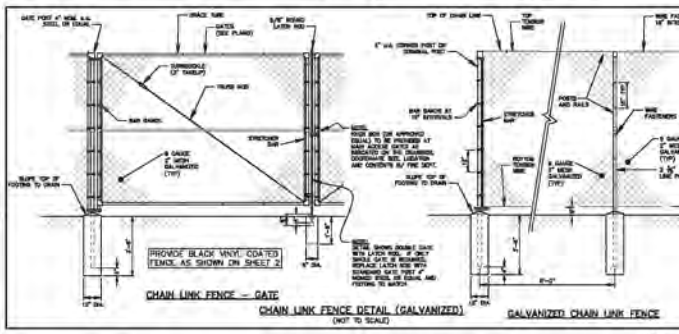












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Approved by :			

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DATE:

NO.	BY	DATE	REVISION
3	CMK	12-19-18	REVISED W/ ALTERNATIVE ACCESS
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1	PMJ	11-19-18	REVISED PER REVIEW COMMENTS

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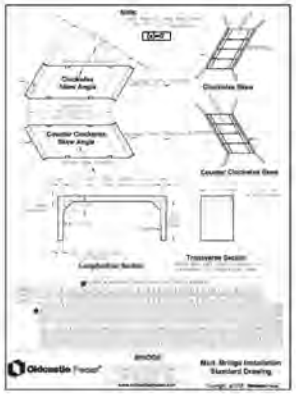
PREPARED FOR:
TJA SOLAR
150 JOHN VERTENTE BOULEVARD
NEW BEDFORD, MASSACHUSETTS 02745

DETAIL SHEET
FOR
BROOK STREET SOLAR PROJECT
DIGHTON, MASSACHUSETTS
JULY 16, 2018

Sheet 4 of 5
JOB NUMBER 2992.01



CULVERT DETAIL
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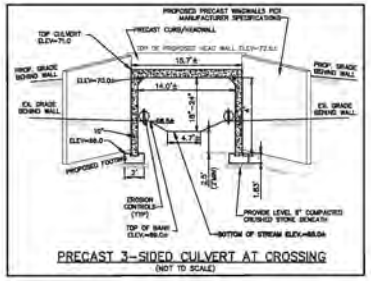
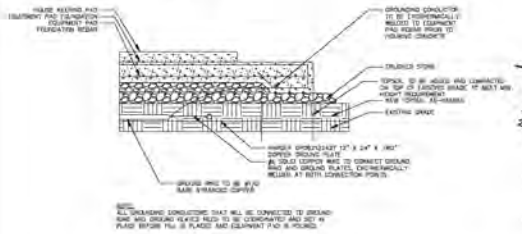
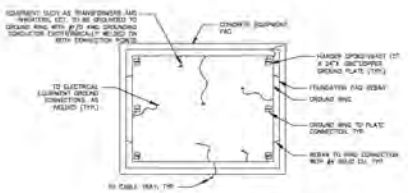


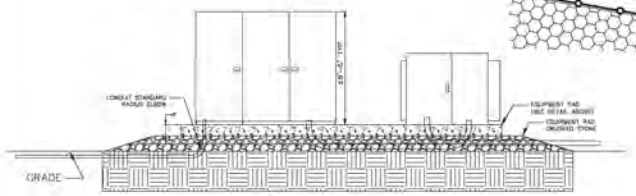
PRECAST 3-SIDED CULVERT AT CROSSING
(NOT TO SCALE)



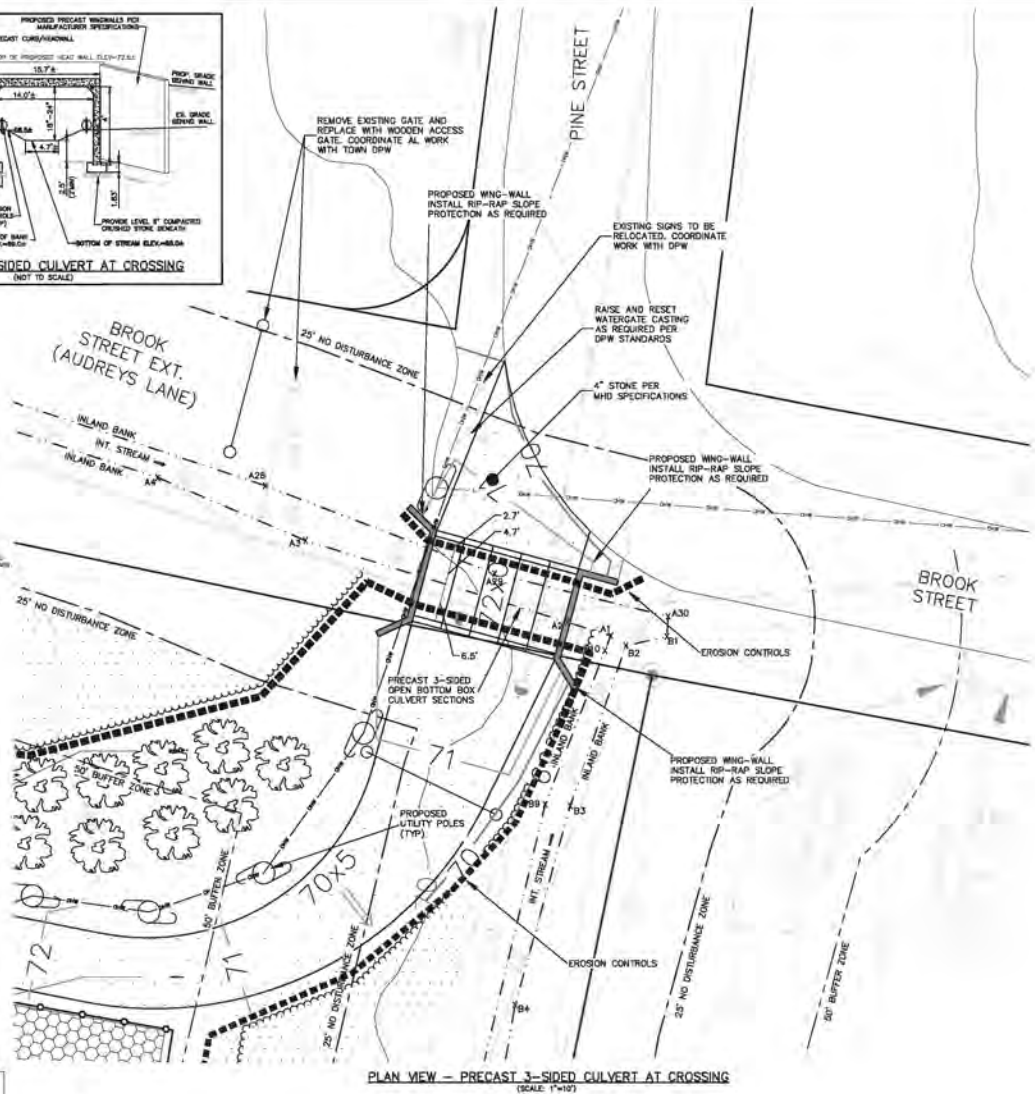
TYPICAL EQUIPMENT PAD DETAIL



TYPICAL EQUIPMENT PAD PLAN VIEW



TYPICAL EQUIPMENT PAD ELEVATION



PLAN VIEW – PRECAST 3-SIDED CULVERT AT CROSSING
(SCALE: 1"=10')

LANDSCAPE SCREENING PLANT LIST (OUTSIDE OF 100-FOOT BUFFER)

NUMBER	SPECIES	SIZE	SPACING
33	"GREEN GIANT" ARBORVITAE Thuja occidentalis x 'Green Giant'	7-9FT	8-10FT O.C.

NOTES:
1) NUMBERS AND SIZES ARE APPROXIMATE AND BASED ON ASSUMED SIZE AND REQUIREMENTS OF SCREENING AREAS. SPECIFIC NUMBER MAY VARY AND IS CONTINGENT ON THE CREATION OF ADEQUATE VISUAL SCREENING. PLANTING SIZES MAY BE INCREASED/REDUCED DEPENDENT ON SITE CONDITIONS AS REQUIRED TO MAXIMIZE SCREENING EFFECTIVENESS.
2) SPECIFIC PLACEMENT OF SCREENING PLANTINGS WILL BE DETERMINED BY A QUALIFIED LANDSCAPE DESIGNER TO MAXIMIZE SCREENING EFFECTIVENESS AND ENSURE SUCCESSFUL ESTABLISHMENT OF PLANTINGS.
3) THE EFFECTIVENESS OF THE SCREENING INSTALLED WILL BE RE-EVALUATED DURING THE NON FOLIAR SEASON BY A QUALIFIED WETLAND SCIENTIST OR LANDSCAPE DESIGNER. AREAS WHERE ADDITIONAL SCREENING IS REQUIRED WILL BE IDENTIFIED AND SCREENING WILL BE INSTALLED IN THE TARGETED AREAS.

LANDSCAPE SCREENING PLANT LIST (WITHIN 100-FOOT BUFFER)

NUMBER	SPECIES	SIZE	SPACING
25	ARBORVITAE Thuja occidentalis	7-9FT	8-10FT O.C.
20	WHITE PINE Pinus strobus	7-9FT	8-10FT O.C.
23	HEMLOCK Tsuga canadensis	7-9FT	8-10FT O.C.

NOTES:
1) NUMBERS AND SIZES ARE APPROXIMATE AND BASED ON ASSUMED SIZE AND REQUIREMENTS OF SCREENING AREAS. SPECIFIC NUMBER MAY VARY AND IS CONTINGENT ON THE CREATION OF ADEQUATE VISUAL SCREENING. PLANTING SIZES MAY BE INCREASED/REDUCED DEPENDING ON SITE CONDITIONS AS REQUIRED TO MAXIMIZE SCREENING EFFECTIVENESS.
2) SPECIFIC PLACEMENT OF SCREENING PLANTINGS WILL BE DETERMINED BY A QUALIFIED LANDSCAPE DESIGNER/WETLAND SCIENTIST TO MAXIMIZE SCREENING EFFECTIVENESS AND ENSURE SUCCESSFUL ESTABLISHMENT OF PLANTINGS.
3) THE EFFECTIVENESS OF THE SCREENING INSTALLED WILL BE RE-EVALUATED DURING THE NON FOLIAR SEASON BY A QUALIFIED WETLAND SCIENTIST OR LANDSCAPE DESIGNER. AREAS WHERE ADDITIONAL SCREENING IS REQUIRED WILL BE IDENTIFIED AND SCREENING WILL BE INSTALLED IN THE TARGETED AREAS.
4) SPECIES MAY BE SUBSTITUTED WITH CONSERVATION COMMISSION APPROVAL.

FOREST ENHANCEMENT AREAS (14,000 SF±)

NUMBER	SPECIES	SIZE	SPACING
30	WITCH HAZEL Hamamelis virginiana	2-3FT	8-10FT O.C.
16	WHITE PINE Pinus strobus	4-5FT	6-20FT O.C.
19	RED MAPLE Acer rubrum	4-5FT	8-20FT O.C.
50	COMMON SERVICEBERRY Amelanchier arborea	4-5FT	4-10FT O.C.

NOTES:
1) SPECIES, NUMBERS AND SIZES ARE APPROXIMATE AND BASED ON ASSUMED SIZE AND REQUIREMENTS OF SCREENING AREAS. SPECIFIC NUMBER MAY VARY AND IS CONTINGENT ON THE CREATION OF ADEQUATE VISUAL SCREENING. PLANTING SIZES MAY BE INCREASED/REDUCED DEPENDING ON SITE CONDITIONS AS REQUIRED TO MAXIMIZE SCREENING EFFECTIVENESS.
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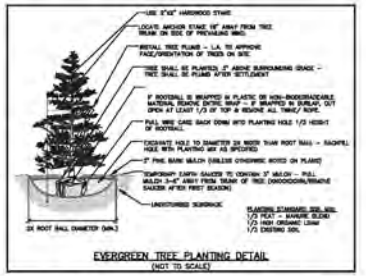
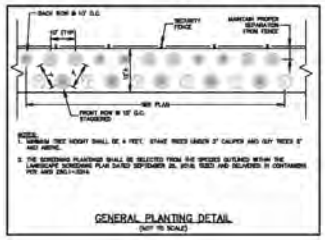


EVERGREEN TREE PLANTING DETAIL
(NOT TO SCALE)



GENERAL PLANTING DETAIL
(NOT TO SCALE)

FILE: 2992.01-DET-R3

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Approved by :			

SCALE: AS NOTED

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NO.	BY	DATE	REVISION
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PREPARED FOR:
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150 JOHN VERTENTE BOULEVARD
NEW BEDFORD, MASSACHUSETTS 02745

DETAIL SHEET
FOR
BROOK STREET SOLAR PROJECT
DIGHTON, MASSACHUSETTS
JULY 16, 2018

Sheet 5 of 5
JOB NUMBER 2992.01

TOWN OF DIGHTON

PLANNING BOARD
979 SOMERSET AVENUE
DIGHTON, MA 02715
Tel: (508) 669-6431, Ext. 114
Fax: (508) 669-4509

FINDINGS AND DECISION

RE: MODIFICATION OF A SPECIAL PERMIT & SITE PLAN REVIEW

APPLICANT: GHTJA03, LLC
d/b/a GRASSHOPPER ENERGY, CORP.
4 BOBBIE CT
MANALAPAN, NJ 07726

LOCATION: 0 BROOK STREET
ASSESSORS MAP 16, LOT 28

DATE:

1. On or about September 28, 2021, GHTJA03, LLC (the "Applicant") submitted an application for a modification of a special permit and a site plan review to include the addition of Sungrow BESS Energy Storage System, reconfiguration of the array racking layout, addition of two new utility poles and adjustment of the pole configuration, and as-built modification to the installed box culvert at 0 Brook Street in Dighton, Massachusetts (the "Locus"), identified in the Assessor's records as Map 16, Lot 28. The owner-of-record of the Locus is The Manuel & Louise Andrews Trust.

2. On October 20, 2021, the Planning Board commenced a public hearing on the Application. Said public hearing was continued to November 17, 2021, December 1, 2021, December 15, 2021, January 19, 2022, February 2, 2022, March 2, 2022 and closed on March 2, 2022.

3. The proposal is to allow the installation of seven (7) 19.87'W x 8.00'D x 9.5'H containers on a 32' x 20' crushed stone equipment pad and operation of Sungrow BESS Energy Storage System, a modification of the panel and racking configuration to provide adequate space and clearance for the Sungrow BESS Energy Storage System, a modification of the utility pole configuration for a total of six (6) new utility poles to be installed at the site and a modification to the installed three-sided box culvert in a Residential District in accordance with Section 4600, 5300 and 5400 of the Town of Dighton Zoning Bylaws.

4. Special Permit and Site Plan applications are accompanied by and augmented by Site Development Plans, entitled Brook Street Solar Commercial Photovoltaic System, 0 Brook Street Dighton, Massachusetts ("Plans"), dated January 29, 2021

and revised on September 28, 2021, prepared by Level Design Group, 249 South Street, Unit 1, Plainville, MA 02762.

FINDINGS

General

The Applicant proposes to modify the original Special Permit and Site Plan approved on January 16, 2019 to install seven (7) 19.87'W x 8.00'D x 9.5'H containers on a 32' x 20' crushed stone equipment pad and operate Sungrow BESS Energy Storage System, modify the panel and racking configuration to provide adequate space and clearance for the Sungrow BESS Energy Storage System, modify the utility pole configuration for a total of six (6) new utility poles to be installed at the site and modify the installed three-sided box culvert in a Residential District in accordance with Section 4600, 5300 and 5400 where the Ground Mounted Solar Photovoltaic Installation Array is located in a Residential District, a Special Permit is required, in addition to Site Plan Review.

Special Permit Criteria

The determination of the Planning Board shall include consideration of each of the following:

1. Social, economic or community needs which are served by the proposal;
2. Traffic flow and safety, including parking and loading;
3. Adequacy of utilities and other public services;
4. Neighborhood character and social structures;
5. Impacts on the natural environment; and
6. Potential fiscal impact, including impact on town services, tax base, and employment.

Specifically, as to the Special Permit request, the Board found as follows:

1. The project will have a positive impact on the general social, economic and community needs by providing a renewable energy source in town with added economic benefits to both the property owner and other employed by the work of the installation. Generally, an overall community benefit is realized with the addition of renewable energy sources.
2. There will be no adverse effect to the community or neighborhood from increased traffic flow or safety. Any such impact will be negligible over the long run.
3. There are adequate utilities and other public services.
4. There will be no impact to the neighborhood character and social structures. Indeed, the location of the facility will have little to no impact.
5. The installation will not have any meaningful negative impacts on the natural environment. However, the result of the use of the solar facility will have far reaching positive impacts; and

6. The Town will receive increased personal property tax revenue and there will be positive fiscal impacts to the tax base, and employment.

The Applicant meets the criteria of the Special Permit as set forth above, provided that the Applicant comply with the conditions hereof.

DECISION

The Planning Board, at its meeting of March 2, 2022, voted to Approve the Modification to the Special Permit and Site Plan for the solar facility as shown on the Plans.

In view of the foregoing, the Planning Board hereby decides that the aforesaid proposed modification proposed, as set forth on the Plans, in a manner consistent with the requirements of Section 4600, 5300 and 5400 of the Town of Dighton Zoning Bylaws in that it meets all requisite criteria. It is therefore further determined, that subject to satisfaction of the conditions as set forth below that any perceived adverse effects of the proposed use will not outweigh its beneficial impacts to the Town of the neighborhood, in view of the particular characteristics of the site and of the proposal. Therefore, the Planning Board hereby grants a modification to the Special Permit and a Site Plan to include the addition of a Sungrows BESS Energy Storage System, reconfiguration of the array racking layout, addition of two new utility poles and adjustment of the pole configuration, and as-built modification to the installed box culvert in a Residential District subject to the Conditions:

CONDITIONS

1. The Applicant shall obtain approval of the revised panel and racking configuration extending into a portion of Stormwater Basin 1A from the Stormwater Committee prior to the issuance of Grid Interconnection.
2. The Applicant shall obtain approval of the Sungrow BESS Energy Storage System from the Stormwater Committee prior to the issuance of Certificate of Completion.
3. The Applicant shall supply the Fire Department access to municipal maintained public water supply within 800 feet of the center point of the Sungrow BESS Energy Storage System modules, but at no time should be located any closer than 100 feet from nearest Sungrow BESS Energy Storage System. Adequate water supply shall be determined by the applicable public water supplier and the Dighton Fire Chief.
4. The Applicant shall provide the following setbacks in order to secure public safety concerns from the Sungrow BESS Energy Storage System:
    a. No less than 200 feet from any property line
    b. No less than 100 feet from the tree line/vegetative buffer

5. The Applicant shall adhere to the following relative to Hazardous Materials:

    a. Before work begins on the Sungrow BESS Energy Storage System, the Applicant/Owner will advise the Planning Board, Building Commissioner and Dighton Fire Chief in writing of all toxic substances used in relation to the Sungrow BESS Energy Storage System. The Sungrow BESS Energy Storage System must include secondary containment and other safety features satisfactory to the Planning Board, Building Commissioner and Dighton Fire Chief, who whereby are authorized to approve (or deny) administratively the design of the Sungrow BESS Energy Storage System, such approval shall not to be unreasonably denied if the Sungrow BESS Energy Storage System conforms to industry best practices, including without limitation applicable National Fire Protection Association standards, for ensuring safety of the public and the environment. The Planning Board may retain the services of a consultant to aid in such review, with the costs thereof to be borne by the Applicant/Owner in accordance with MGL Ch. 44, Sec. 53G. Said features must be adequate to prevent the release of any toxic substances from the Sungrow BESS Energy Storage System from any cause, including without limitation fire or explosion, to the extent that such release would, or could reasonably be expected to, adversely affect the health, property, drinking water, or inhalable air of any person or property surrounding the site of the Solar or Sungrow BESS Energy Storage System. The height of the Sungrow BESS Energy Storage System unit should not exceed ten-feet (10') in height above the surrounding grade level. The plans for the Sungrow BESS Energy Storage System shall be presented and approved prior to the commencement of any site work to verify compliance with this condition.

    b. In order to protect water supplies and preserve public safety associated Sungrow BESS Energy Storage System should not be located in the Zone 1 of any public water supply and should be located above the 100-year flood plain. The Sungrow BESS Energy Storage System must be located within a structure with the following features: an acid resistant membrane floor for potential leaks of hazardous materials; a temperature and humidity-maintained environment; a smoke/fire detection system, UL approved monitoring system, fire alarm fire suppression system, a thermal runaway system, and a local disconnect point or emergency shutdown feature.

    The building and systems must be approved by the Dighton Fire Chief and must be designed and installed in accordance with all applicable State codes and safety requirements, as well as, safety measures recommended by the National Fire Protection Association. Applicant/Owner will provide specialized emergency response funding for training of Dighton Fire Department staff prior to grid inter connection. Periodic inspections

to ensure the integrity of the batteries, other equipment, and the containment systems, be required as conditions of the special permit and the site plan review.

Sungrow BESS Energy Storage System must number only those needed to support the solar installation at the site. Spent, expired or damaged Battery Energy Storage System must be immediately removed from the site.

6. The Applicant shall submit an Emergency Response Plan for the Sungrow BESS Energy Storage System. Specialized emergency response personnel will be retained or employed for technical assistance by the Applicant/Owner to respond to certain kinds of incidents, including but not limited to, electrical and chemical fires, as well as, include remote monitoring systems which alert the facility owner and local emergency personnel to any problems or unusual conditions occurring on-site. The Applicant/Owner will cooperate with local emergency services to develop an Emergency Response Plan for the construction period and operations period. Such Plan must be approved by the Dighton Fire Chief prior to the commencement of work on the Property.

7. The Applicant shall submit a Battery Energy Storage System Operation & Maintenance Plan for the Sungrow BESS Energy Storage System. The Applicant shall submit a complete Operation and Maintenance Plan, including but not limited to, inspection schedules, warranties for all monitoring and protection equipment, warranties, service life and operational life, to the Planning Board and Dighton Fire Chief prior to the commencement of construction.

8. The Applicant shall submit Annual Reporting which certifies compliance with the requirements of this bylaw, the Sungrow BESS Energy Storage System, and the approved site plan including control of vegetation, noise standards, and adequacy of road access. The Annual Report shall also provide information on the maintenance completed during the course of the year and the amount of electricity generated and stored by the facility. The Annual Report shall be submitted to the Board of Selectmen, Planning Board, Dighton Fire Chief, Emergency Management Director, Building Commissioner, Board of Health, Stormwater Committee and the Conservation Commission no later than 45 days after the end of each calendar year.

9. The Applicant shall provide a form of surety for the Sungrow BESS Energy Storage System, either through a cash deposit, passbook agreement, lender's agreement, bond or other form of surety approved by the Planning Board to cover the cost of removal in the event the Town must remove the installation and remediate the landscape, said surety to be secured by an agreement in an amount and form determined to be reasonable by the Planning Board. The Applicant shall submit a fully inclusive estimate of the costs associated with removal, prepared by

a qualified engineer, said amount to be subject to peer review. The amount shall include contingency as well as a mechanism for calculating increased removal costs due to inflation.

DIGHTON PLANNING BOARD

Timothy Rhines, Chairman

Robert J. Woods, Vice Chairman

Joseph Figueiredo, Clerk

Jeff Carvalho, Member

Christopher Cunha, Member

The following members of the Planning Board are in opposition to the grant of the special permit:

_____ _____

_____ _____

Filed with the Town Clerk on _____, 20____.

Mark Pacheco, Town Clerk

RECEIVED
2022 MAR 17 AM 8:39
TOWN CLERK
DIGHTON, MA
BY:

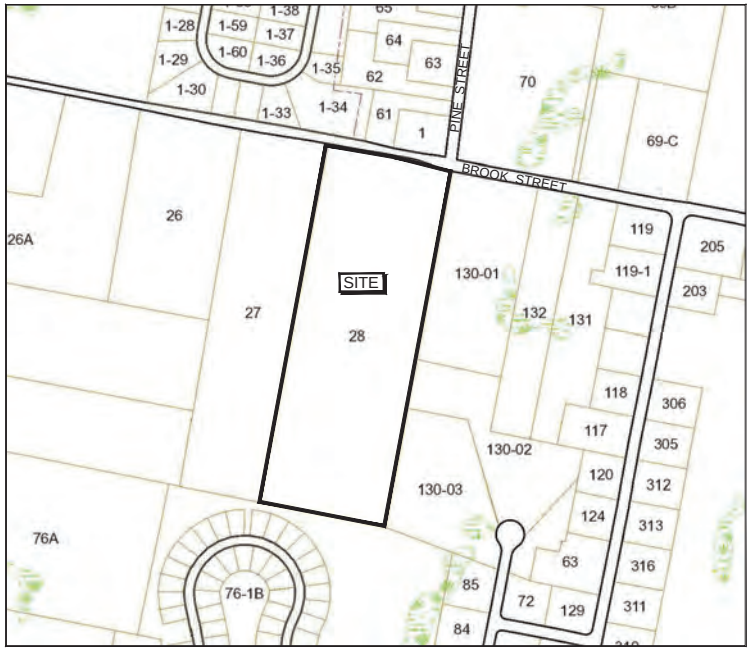
BROOK STREET SOLAR

COMMERCIAL PHOTOVOLTAIC SYSTEM

0 BROOK STREET

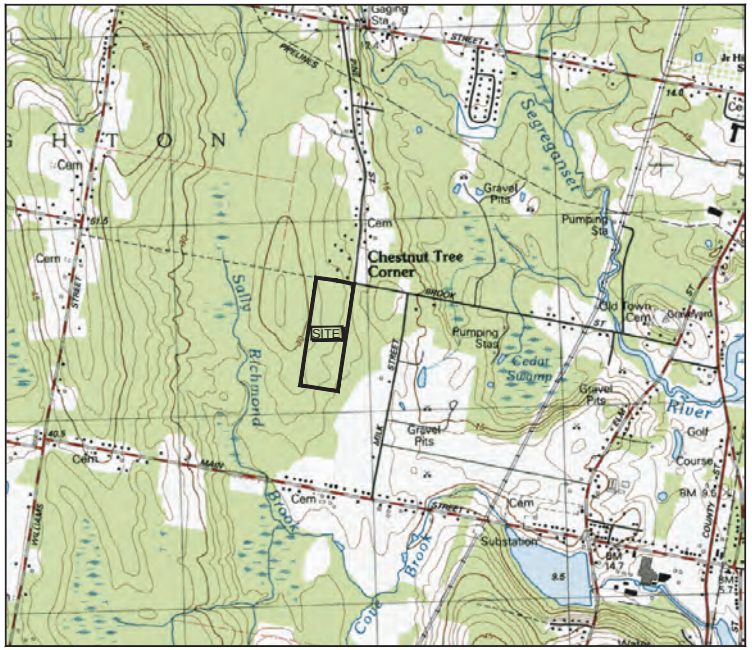
DIGHTON, MASSACHUSETTS

NO	DATE	REVISIONS
1	01/29/2021	ISSUE FOR CONSTRUCTION
2	09/28/2021	SPECIAL PERMIT MODIFICATION



USGS MAP

SCALE: 1"= 250'±



ASSESSORS MAP

SCALE: 1"= 1,00'±

DEVELOPER:

GHTJA03 LLC
1209 ORANGE STREET
WILMINGTON, DELAWARE 19801

OWNER:

THE MANUAL & LOUISE ANDREWS TRUST
12 CYPRESS DRIVE
DARTMOUTH, MA 02747

CIVIL ENGINEER:

LEVEL

CIVIL ENGINEERING / LAND SURVEYING
249 SOUTH STREET
UNIT 1
PLAINVILLE, MA 02762
TEL. (508) 695-2221 FAX. (508) 695-2219

PROPERTY ADDRESS:

0 BROOK STREET
DIGHTON, MASSACHUSETTS

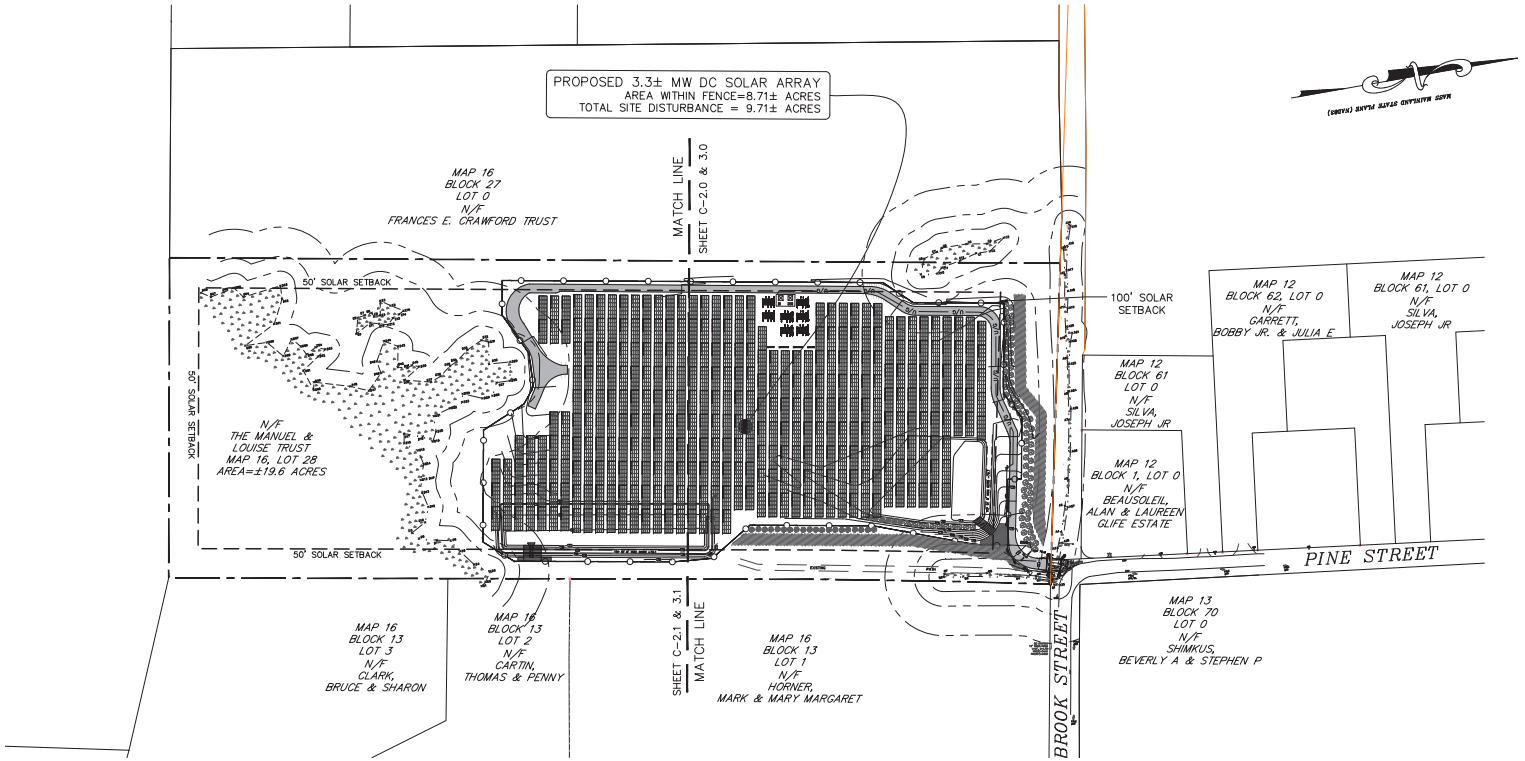
ASSESSORS MAP/PARCEL:

MAP 16 - PARCEL 28

ZONING DISTRICT:

RESIDENCE & AGRICULTURAL (RA)

DRAWING LIST:



REFERENCE NOTES:

1. EXISTING SITE CONDITIONS WERE OBTAINED FROM THE APPROVED PROJECT PLAN SET ENTITLED "SITE DEVELOPMENT PLANS FOR BROOK STREET SOLAR PROJECT DIGHTON, MASSACHUSETTS"; DATED JULY 16, 2018 AND REVISED THROUGH DECEMBER 19, 2018. PREPARED BY ATLANTIC DESIGN ENGINEERS, INC.
2. ON-SITE WETLANDS RESOURCE AREA DELINEATION BY GODDARD CONSULTING, INC IN JUNE, 2018. ADDITIONAL DELINEATION WAS PREFORMED IN OCTOBER, 2018. RESOURCE AREA DELINEATION FLAGS WERE FIELD LOCATED BY ATLANTIC DESIGN ENGINEERS, INC. IN JUNE, 2018 AND ADDITIONALLY IN OCTOBER, 2018.
3. THIS CONSTRUCTION PLAN SET IS BASED ON THE APPROVE PROJECT SITE PLAN SET ENTITLED "SITE DEVELOPMENT PLANS FOR BROOK STREET SOLAR PROJECT DIGHTON, MASSACHUSETTS"; DATED JULY 16, 2018 AND REVISED THROUGH DECEMBER 19, 2018. PREPARED BY ATLANTIC DESIGN ENGINEER, INC. AS APPROVED BY THE TOWN OF DIGHTON PLANNING BOARD FOR SPECIAL PERMIT DATED JANUARY 17, 2018 AND IN ACCORDANCE WITH AN ORDER OF CONDITIONS (MADEP FILE # 017-0401 ISSUED BY THE TOWN OF DIGHTON CONSERVATION COMMISSION ISSUED DECEMBER 19, 2018.
4. LEVEL DESIGN GROUP, LLC HAS MADE NO CHANGES TO APPROVED SITE DRAINAGE, CLEARING LIMITS, EROSION CONTROLS AND CONSTRUCTION REQUIREMENTS AS DETAILED IN THE APPROVED SITE PLAN. CHANGES TO THE ABOVE REFERENCE SITE PLAN INCLUDE FINAL SITING AND ORIENTATION OF THE PROPOSED SOLAR PANEL RACKING AND PLACEMENT REQUIRED GROUND EQUIPMENT AND BATTERY STORAGE PADS BASED ON FINAL ELECTRICAL DESIGN REQUIREMENTS OF THE PROPOSED GROUND MOUNTED SOLAR ARRAY.
5. THE HORIZONTAL DATUM OF THIS PLAN SET IS BASED ON MASS. GRID SYSTEM, NAD83, ELEVATIONS ON THIS PLAN REFER TO NAVD88.

GENERAL NOTES:

1. THE LOCATION OF EXISTING UTILITIES IS APPROXIMATE, THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. NOTIFY "DIG-SAFE" AT 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO ANY SITE DEMOLITION OR EXCAVATION.
2. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES IN THE DESIGN PLANS PRIOR TO THE START OF CONSTRUCTION AND SHALL VERIFY EXISTING GROUND ELEVATIONS THROUGHOUT THE SITE AND IN THE AREA OF PROPOSED STOMRWATER MANAGEMENT SITE FEATURES TO ENSURE PROPER WORKING CONDITION OF THE INSTALLED STORMWATER MANAGEMENT SYSTEM AS RELATED TO SURROUNDING SITE GRADES.
3. CONTRACTOR IS REQUIRED TO MANAGE STORMWATER RUNOFF DURING THE CONSTRUCTION PROCESS IN ACCORDANCE WITH THE EROSION CONTROL NOTES AND PROCEDURES DETAILED WITHIN THIS SITE PLAN AND THE CORRESPONDING STORMWATER POLLUTION PREVENTION PLAN. ALL COSTS ASSOCIATED WITH REPAIRS AND CORRECTIVE ACTIONS REQUIRED TO PROPERLY MANAGE STORMWATER RUNOFF SHALL BE THE RESPONSIBILITY OF THE SITE CONTRACTOR.
4. ALL EXISTING PAVEMENT SHALL BE SAWCUT PRIOR TO REMOVAL.
5. ALL EXISTING PAVEMENT, CURB, WALKS, UTILITIES, LIGHT POLES, TREES, SHRUBS, ETC., SHALL BE REMOVED FROM THE AREAS TO BE DEVELOPED. ALL SUCH ITEMS NOT WITHIN THE WORK AREA SHALL BE PROTECTED AND UNDISTURBED.
6. ALL DISTURBED AREAS NOT RECEIVING IMPROVEMENTS SHALL BE LOAMED AND SEEDED.
7. ALL CONSTRUCTION AND CONSTRUCTION ACTIVITIES SHALL CONFORM TO STATE AND LOCAL REQUIREMENTS AND ALL PROJECT PERMITS ISSUED. INCLUDING BUT NOT LIMITED TO THE TOWN OF DIGHTON, THE COMMONWEALTH OF MASSACHUSETTS AND ANY OTHER AGENCIES HAVING JURISDICTION.
8. THE LOCATION AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE AND UTILITY OWNED ELECTRIC SERVICES SHALL BE INSTALLED ACCORDANCE WITH CURRENT UTILITY COMPANY REQUIREMENT.
9. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS PART OF THIS SURVEY. NO STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND CONTAINERS OR FACILITIES THAT MAY AFFECT THE USE OR DEVELOPMENT OF THE SITE.
10. CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL REQUIRED INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY COMPANIES ARE COMPLETED PRIOR TO THE INSTALLATION, BACKFILLING, AND FINAL CONNECTION OF THE SERVICES.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL SURVEY CONTROL POINTS AND BENCHMARKS NECESSARY FOR THE PROPOSED WORK.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ADEQUATE RECORDS OF THE LOCATIONS AND ELEVATION OF ALL STRUCTURES INSTALLED AND/OR WORK COMPLETED.

CONSTRUCTION NOTES:

1. ALL DAILY VEHICLE PARKING SHALL OCCUR WITHIN THE LIMIT OF SITE CLEARING AND WITHIN EROSION CONTROL BARRIERS. NO ADDITIONAL SOIL DISTURBANCE OR SITE CLEARING SHALL OCCUR TO ACCOMMODATE DAILY PARKING. NO PARKING OF PERSONAL VEHICLES BY DAILY WORKFORCE SHALL OCCUR ALONG THE PUBLIC ROAD RIGHT OF WAY OR SHARED RESIDENTIAL SEGMENT OF THE ACCESS DRIVE.
2. SOLAR ARRAY DEVELOPMENT AREA WITHIN SECURITY FENCE:
   - ALL TREES AND SHRUBS TO BE CLEARED AND STUMPS TO BE REMOVED
   - ANY RE-GRADING TO BE MINIMAL AS FOLLOWS:
     a. EXISTING GRASSY VEGETATION WITHIN AREA OF CONSTRUCTION TO REMAIN DURING SOLAR ARRAY INSTALLATION.
     b. AREA TO BE SCARIFIED AND SEEDED AFTER MAJOR SITE WORK IS COMPLETE.
3. MAINTENANCE AND PEDESTRIAN CORRIDOR:
   - AREA AROUND SECURITY FENCE- WIDTH VARIES
   - ALL TREES AND SHRUBS TO BE CLEARED AND STUMPS REMOVED
   - ANY RE-GRADING TO ADHERE TO NOTE 1A
4. SHADE MANAGEMENT:
   - SHADE MANAGEMENT SHALL BE ALLOWED ONLY WITHIN THE DEFINED AREAS DETAILED ON THE SITE PLAN. ADDITIONAL PERIMETER EROSION CONTROLS WILL BE INSTALLED WHERE WORK WITHIN THE SHADE MANAGEMENT FALLS OUTSIDE OF THE EROSION CONTROL LINE DETAILED ON THE SITE PLANS.
5. THE CONTRACTOR SHALL NOTIFY THE PLANNING BOARD OR ITS DESIGNATED AGENT AND THE DESIGN ENGINEER AND REQUEST AND INSPECTION AT LEAST TWO WORKING DAYS BEFORE EACH OF THE FOLLOWING EVENT:
   - EROSION AND SEDIMENT CONTROL MEASURES ARE IN PLACE AND STABILIZED;
   - SITE CLEARING HAS BEEN SUBSTANTIALLY COMPLETED;
   - ROUGH GRADING HAS BEEN SUBSTANTIALLY COMPLETED;
   - FINAL GRADING BEEN HAS SUBSTANTIALLY COMPLETED;
   - CLOSE OF THE CONSTRUCTION SEASON:
   - FINAL LANDSCAPING (PERMANENT STABILIZATION) AND PROJECT FINAL COMPLETION.

ZONING REQUIREMENTS:

ZONING DISTRICT: RESIDENCE & AGRICULTURAL (RA)

OVERLAY DISTRICT: GROUNDWATER PROTECTION OVERLAY

REQUIREMENT

*MINIMUM LOT AREA	35,000 SQUARE FEET
FRONTAGE	175 FEET
*MINIMUM FRONT YARD	55 FEET
*MINIMUM SIDE YARD	15 FEET
*MINIMUM REAR YARD	15 FEET

*NOTE: PROPERTY LINE SETBACK FOR GROUND-MOUNTED SOLAR FACILITIES AS REQUIRED BY THE TOWN OF DIGHTON ZONING BYLAW SECTION 4600-4680 LARGE SCALE GROUND MOUNTED SOLAR PHOTOVOLTAIC INSTALLATIONS:

MINIMUM LOT SIZE	8 ACRES
MINIMUM FRONT YARD	100 FEET
MINIMUM SIDE YARD	50 FEET
MINIMUM REAR YARD	50 FEET

PROPERTY / PROJECT INFORMATION:

SUBJECT PARCEL AREA = 19.6 ACRES AND IS IDENTIFIED AS LOT 28, MAP 16 BY CURRENT TOWN OF DIGHTON ASSESSOR RECORDS

OWNER OF RECORD: THE MANUAL & LOUISE ANDREWS TRUST, 12 CYPRESS DRIVE, DARTMOUTH, MASSACHUSETTS 02747

PROPERTY DEED REFERENCE: DEED BOOK 1247, PAGE 113

DEVELOPER / APPLICANT: GHTJA03, 1209 ORANGE STREET, WILMINGTON, DELAWARE 19801

THE SITE IS LOCATED WITH ZONE X FLOOD PLAIN, AN AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE OF FLOODING BASED ON A REVIEW OF FEMA FLOOD INSURANCE RATE MAP NUMBER 25005C0234G EFFECTIVE DATE, JULY 13, 2018.

BASED ON A REVIEW OF CURRENT MASSACHUSETTS GEOGRAPHIC INFORMATION SYSTEM (MASS GIS) INFORMATION THE SITE IS NOT LOCATED WITHIN A ZONE II AQUIFER PROTECTION DISTRICT, AN AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC) OR WITHIN A PRIORITY OR ESTIMATED HABITAT OF ANY RARE OR ENDANGERED SPECIES.

LEGEND

EXISTING		PROPOSED
100	CONTOUR	100
D	STORM DRAIN	
W	WATER	
E	ELECTRIC MANHOLE	
E	ELECTRICAL	
G	GAS	
S	SANITARY SEWER	
	HYDRANT	
	SEWER MANHOLE	
	DRAIN MANHOLE	
	VALVE	
D	CATCH BASIN	
	CURB	
429x5	SPOT GRADE	429.5
	HP RAMP	
	SEDIMENTATION CONTROL BARRIER	
	LIGHT POLE	
	TREE	
	UTILITY POLE	
	POST INDICATOR VALVE	PIV
	TRAFFIC DIRECTION	

NO.	DATE	REVISIONS
1	01/29/2021	ISSUE FOR CONSTRUCTION
2	08/28/2021	SPECIAL PERMIT MODIFICATION

SEAL

NICOLA FACENDOLA CIVIL No. 46034 REGISTERED PROFESSIONAL ENGINEER 8/20/21

DATE : AUGUST 21, 2020
DRAWN : NF / DRC
SCALE : 1" = 100'

BROOK STREET SOLAR COMMERCIAL SOLAR FACILITY

ASSESSOR PARCEL - MAP 16; PARCEL 28
BROOK STREET
DIGHTON, MASSACHUSETTS

LEVEL DESIGN GROUP
CIVIL ENGINEERING / LAND SURVEYING
249 SOUTH STREET
UNIT 1
PLAINVILLE, MA 02762
TEL. (508) 695-2221 FAX. (508) 695-2219

KEY SHEET & NOTES

C-1.0

SHEET 2 OF 10

0' 50' 100' 200'

1817.00

TOWN OF DIGHTON CONSERVATION COMMISSION GENERAL & SPECIAL CONDITIONS FOR BROOK STREET SOLAR PROJECT ISSUED DECEMBER, 2019 (MADEP FILE # 017–0404)

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   a. The work is a maintenance dredging project as provided for in the Act; or
   b. The time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
   c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on _____ unless extended in writing by the Department.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.
10. A sign shall be displayed at the site not less then two square feet or more than three square feet in size bearing the words,

    "Massachusetts Department of Environmental Protection" [or, "MassDEP"]

    "File Number 017-0404 "
11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.
12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
13. The work shall conform to the plans and special conditions referenced in this order.
14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.
19. The work associated with this Order (the "Project")
    (1) ☒ is subject to the Massachusetts Stormwater Standards
    (2) ☐ is NOT subject to the Massachusetts Stormwater Standards

    If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:

    a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.

    b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:

    i. all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;

    ii. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;

    iii. any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;

    iv. all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;

    v. any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

    c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement) for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following:

    i.) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and

    ii.) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

    d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.

    e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

    f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.

    [illegible] inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.

    h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.

    i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.

    j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.

    k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.

    l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):
See Attachment Part. C

). For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.

Special Conditions

Resource Area Conditions

1. The following site resource area boundaries, as shown on the record plans, have not been confirmed or denied as part of the review process, as they are either located offsite, or they were located via GPS with inadequate accuracy.
   a. BVW Flags: D33 through D68
   b. IVW Flags: Flags C1 through C8, C12, and E2 through E15
   c. Bank Flags: A1 though A30, B1, B2, and B10

Pre-Construction Conditions

2. Prior to the commencement of any activities, there shall be a general Pre-construction Meeting between the project supervisor, the contractor responsible for the work, and a representative of the Conservation Commission to ensure that all parties have a copy of the Order of Conditions and that all conditions are clear. The applicant shall assume responsibility for arranging the meeting and shall contact all parties no later than five (5) business days prior to the meeting.
3. A copy of the Stormwater Pollution Prevention Plan (SWPPP) submitted to EPA shall be submitted to the Dighton Conservation Commission for review and approval prior to beginning work.
4. At least two weeks prior to the start of construction the applicant shall submit a Mass. DEP Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan to the Conservation Commission.
5. Prior to construction, the operator or owner shall submit the Site's 24-hour emergency contact information to the Conservation Commission.

Construction Conditions

6. If the Project requires a different form of access due to the Town of Dighton's interpretation of the legal opinion, the Applicant **shall re-appear** before the Commission for review/approval of the revised design.
7. No soil stockpiles or construction staging areas shall be located within 100 feet of any wetland resource areas.
8. No grubbing shall be conducted outside the limits of the proposed perimeter fence.
9. The contractor shall notify the Dighton Conservation Commission if they determine dewatering is necessary for construction. The contractor shall submit a dewatering plan to the Commission and/or its Agent for review and approval prior to implementation.

Post-Construction Conditions

10. Pursuant to General Condition # 12, upon completion of the project, the applicant shall submit a request for a Certificate of Compliance. The request shall include an As-Built Plan, and affidavit, from a Professional Land Surveyor or Professional Engineer certifying compliance with the conditions of this Order and the referenced plans and documents. The request shall state **ANY AND ALL** deviations from this Order and an explanation as to the reason for the deviation.

Continuing Conditions

11. In accordance with the approved Operations and Maintenance Plan, mowing onsite shall be limited to once a year in the late fall/early winter, with the exception of allowing regular mowing along the road and equipment pads to a width of 5-feet from the edge of the road/pad.
12. Additional mowing in/around stormwater facilities may be conducted to ensure proper function only if required. Should mowing of the stormwater facilities be conducted, the Commission **shall be** notified **prior** to commencing mowing.
13. Herbicides are prohibited from use on the Site.
14. The use of soap/detergents for solar panel cleaning is prohibited from use on the Site.

TOWN OF DIGHTON PLANNING BOARD SPECIAL PERMIT & SITE PLAN REVIEW DECISION CONDITIONS FOR BROOK STREET SOLAR PROJECT ISSUED JANUARY 16, 2019

1. The Applicant has agreed to obtain approval of the revised plan (dated December 19, 2018 relocating the entrance) from The Town's engineer, the Fire Chief and the Conservation Commission. No construction of the project may commence and no building permit may issued unless and until such approvals are provided.
2. The Applicant shall obtain approval of the Stormwater Report from the Board of Health prior to the issuance of a building permit.
3. The Applicant shall submit detail of electrical equipment pads and spill prevention measures to the Planning Board prior to the issuance of a building permit.
4. The Applicant shall submit the names and address of the system installer to the Planning Board prior to the issuance of a building permit.
5. The Applicant will work with the Building Department and comply with all requirements regarding signage and lighting in accordance with the Zoning Bylaws Section 3300 prior to the issuance of a building permit.
6. The Applicant is hereby granted a waiver of underground utilities in the area of the wetland crossing, provided that the Conservation Commission approves above-ground wires.
7. The Applicant further agrees to an additional $10,000 in landscape screening for the front of the property. The Applicant has agreed to a Landscape Performance Security Agreement prior to the issuance of a building permit. Such agreement shall be in the amount of $10,000.00, and shall be in a form approvable by the Board's counsel.
8. The Applicant has prepared and presented an Emergency Response Plan and the layout of the access drive to the Fire Chief. The Fire Chief's approval of said plan is required prior to the issuance of a building permit.
9. The Applicant has agreed to posting Decommissioning Security with the Town of Dighton in the estimated amount of $139,300.00 prior to the issuance of a building permit. The form of such security agreement is subject to the prior approval of the Board's counsel and final confirmation of the amount of such security.
10. The Applicant has agreed to install additional traffic signs on Pine and Brook Street in accordance with requirements and standards of the Highway Superintendent. Such signs shall be installed prior to the commencement of operation of the solar facility
11. The Applicant has agreed to submit a Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan for the Board's approval prior to the issuance of a building permit. The Board utilize the services of an engineer to review such plan, and the Applicant shall bear all costs for such review, pursuant to G.L. c. 44, s. 53G.
12. The Applicant has agreed to posting Security for the drainage system construction prior to the issuance of a building permit. The security agreement shall be in the amount of $30,000.00, and shall be in a form approvable by the Board's counsel.

TOWN OF DIGHTON STORMWATER COMMITTEE – STORMWATER PERMIT DECISION CONDITIONS FOR BROOK STREET SOLAR PROJECT ISSUED JANUARY FEBRUARY 10, 2021

Town of Dighton
Board of Health
Stormwater Permit Conditions of Approval

1.) Conservation Commission Order of Conditions will be recorded prior to pre-construction meeting and proof of recording submitted to the Stormwater Committee

2.) A Culvert Driveway Permit issued by the Highway Department is required prior to Building Permit issuance

3.) Provide Stormwater Pollution Prevention Plan (SWPPP).

4.) Pre-Construction meeting with the engineer, site contractor, and Dighton Stormwater and Conservation Agents, prior to tree cutting and excavation.

5.) Install and maintain soil siltation control, including maintenance of access road onto Brook Street.

6.) The Drainage basins shall be roughed-in and erosion control installed prior to the installation of panels infrastructure

7.) Stormwater Agent shall inspect the drainage basins for soil classification and water table prior to loam and seed.

8.) Stormwater Maintenance
   a.) Submittal of an Operation and Management (O&M) Plan for the entire drainage system
   b.) Submittal of a Long-Term Pollution Prevention Plan (LTPPP) for the entire drainage system
   c.) Annual Reports forwarded to the Town's Stormwater Committee as part of the O&M and LTPPP

9.) Establish and maintain a Stormwater 53G account in the amount of $10,000 for yearly maintenance of the access road and drainage basins, if not satisfactorily completed by the owner. Must be established and submitter prior to grid connection

10.) Establish and maintain a 53g account in the amount of $5,000 for yearly culvert maintenance if not satisfactorily completed by the owner. Must be established prior to grid connection.

11.) Drainage, culvert, and access road as-built plans must be submitted and approved prior to final electrical sign off and the issuance of Certificate of Completion by Building Department.

NO.	DATE	REVISIONS
1	01/29/2021	ISSUE FOR CONSTRUCTION
2	08/28/2021	SPECIAL PERMIT MODIFICATION

SEAL

NICOLA FACENDOLA CIVIL No. 49254 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

8/20/21

DATE : AUGUST 21, 2020
DRAWN : NF / DRC
SCALE : 1" = 100'

BROOK STREET SOLAR COMMERCIAL SOLAR FACILITY

ASSESSOR PARCEL - MAP 16; PARCEL 28
BROOK STREET
DIGHTON, MASSACHUSETTS

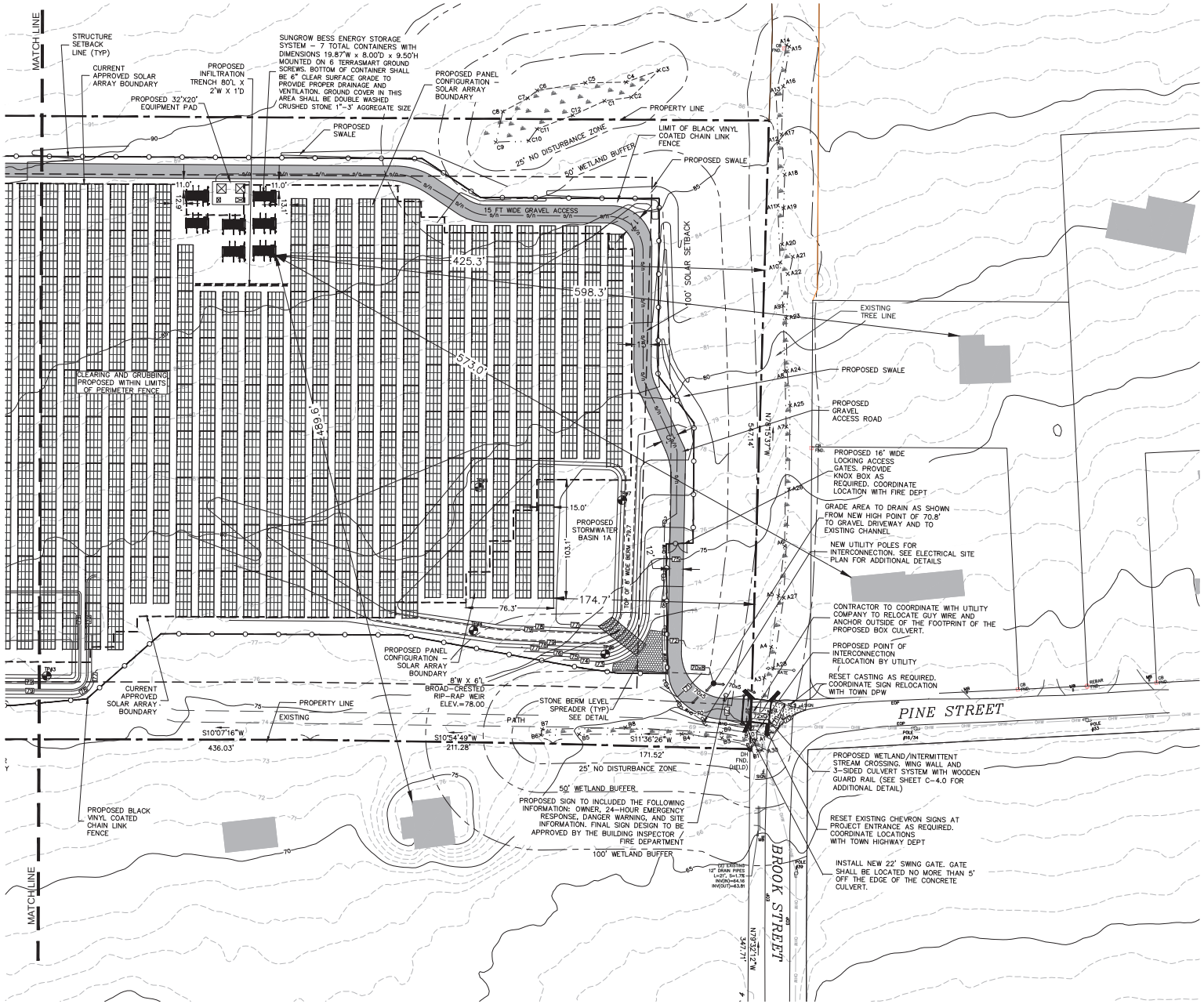
LEVEL DESIGN GROUP
CIVIL ENGINEERING / LAND SURVEYING
249 SOUTH STREET
UNIT 1
PLAINVILLE, MA 02762
TEL. (508) 695-2221 FAX. (508) 695-2219

PERMIT APPROVALS

C-1.1

SHEET 3 OF 10

1817.00



PLAN NOTES:

1. SEE SHEETS C–1.0 & 1.1 FOR PLAN LEGEND, REFERENCE NOTES, CONSTRUCTION NOTES, EROSION AND SEDIMENT CONTROL NOTES, AND TOWN OF DIGHTON SITE PLAN / SPECIAL PERMIT APPROVAL CONDITIONS AND ORDER OF CONDITIONS GENERAL AND SPECIAL CONDITIONS.

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SEAL

COMMONWEALTH OF MASSACHUSETTS
NICOLA FACENDOLA
CIVIL
No. 48254
REGISTERED PROFESSIONAL ENGINEER
8/20/21

DATE : AUGUST 21, 2020
DRAWN : NF / DRC
SCALE : 1" = 40'

BROOK STREET SOLAR COMMERCIAL SOLAR FACILITY

ASSESSOR PARCEL - MAP 16; PARCEL 28
BROOK STREET
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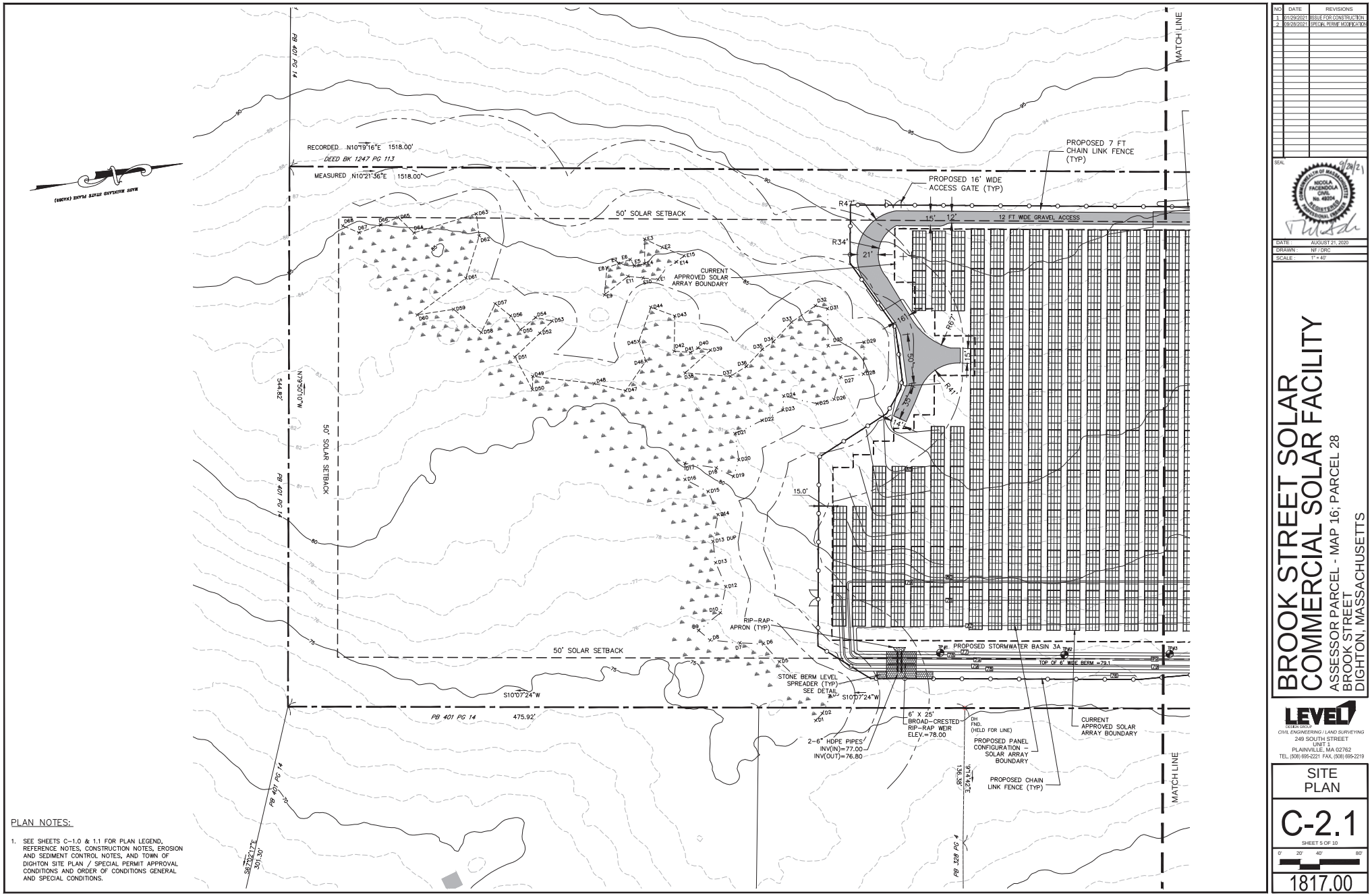
SITE PLAN

C-2.0

SHEET 4 OF 10

0' 20' 40' 80'

1817.00



PLAN NOTES:

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SITE PLAN

C-2.1

SHEET 5 OF 10

0' 20' 40' 80'

1817.00

EROSION CONTROL GENERAL NOTES:

EROSION AND SEDIMENT CONTROL METHODS FOR THE SITE INCLUDE STRUCTURAL AND STABILIZATION PRACTICES. STABILIZATION PRACTICES WILL BE IMPLEMENTED TO COVER EXPOSED SOIL SO THAT DISCHARGE OF SEDIMENT IS MINIMIZED. STABILIZATION PRACTICES REDUCE THE TIME SOIL IS EXPOSED TO THE ELEMENTS THEREFORE REDUCING THE POSSIBILITY OF EROSION. AN ADEQUATE STOCKPILE OF EROSION CONTROL MATERIALS WILL BE MAINTAINED AT THE CONSTRUCTION SITE IN THE EVENT OF AN EMERGENCY OR ROUTINE REPAIRS.

STRUCTURAL PRACTICES INVOLVE THE CONSTRUCTION OF DEVICES TO DIVERT AND LIMIT RUNOFF. THESE PRACTICES LIMIT THE AMOUNT OF STORM WATER ENTERING A DISTURBED AREA OR TRAP SEDIMENT PRIOR TO STORM WATER LEAVING A SITE. THE FOLLOWING ARE THE PROCEDURES TO BE FOLLOWED:

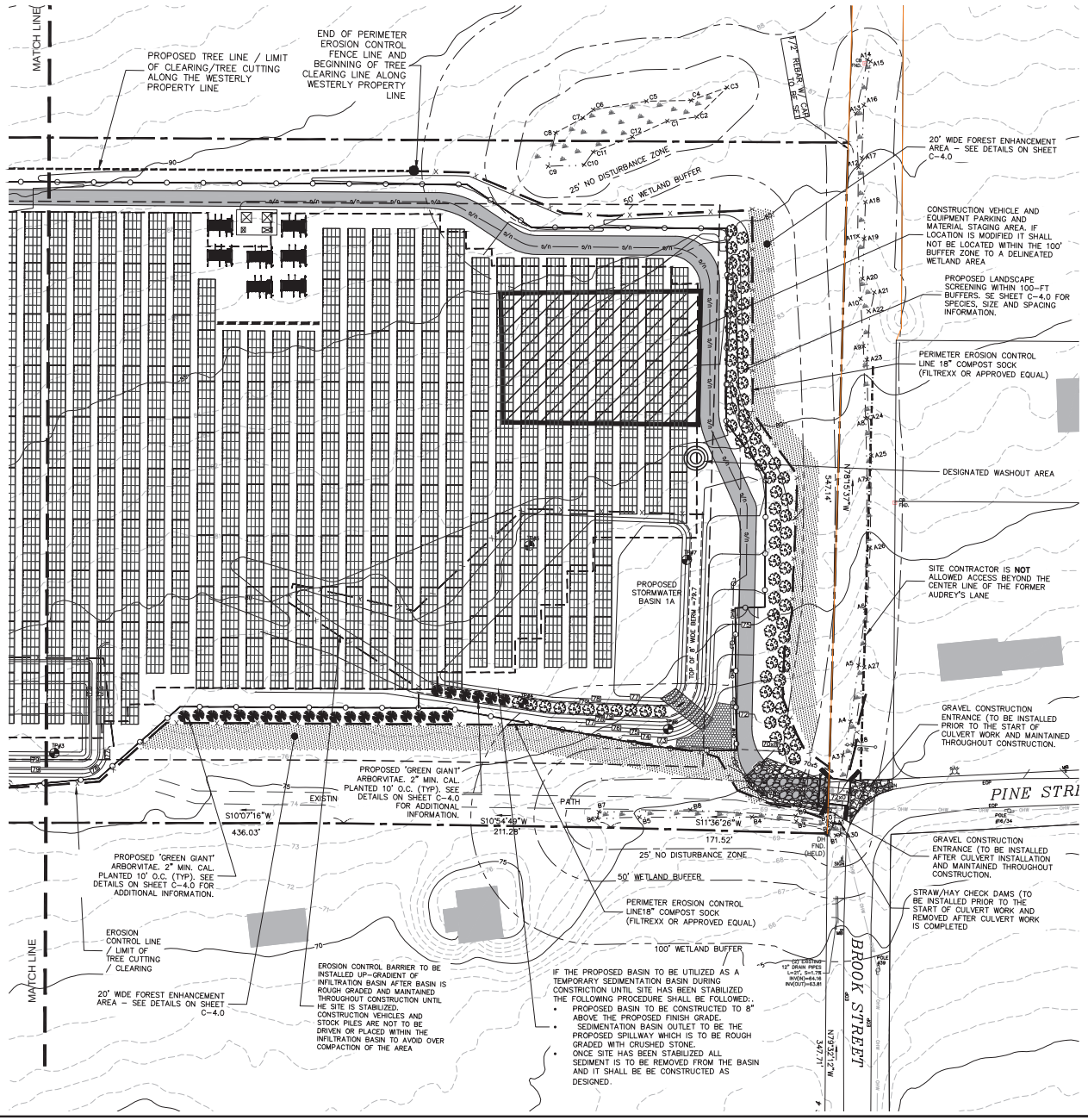
1. THE SITE CONSTRUCTION FOREMAN SHALL BE DESIGNATED AS THE ON-SITE INDIVIDUAL WHO WILL BE RESPONSIBLE FOR THE DAILY MAINTENANCE OF ALL SEDIMENT AND EROSION CONTROLS, AND SHALL IMPLEMENT ALL MEASURES NECESSARY TO CONTROL EROSION AND TO PREVENT SEDIMENT FROM LEAVING THE SITE.
2. PRIOR TO ANY SITE GRADING OR SITE WORK, THE CONTRACTOR SHALL INSTALL ALL SPECIFIED SEDIMENT AND EROSION CONTROLS, WHICH WILL ALSO SERVE AS THE LIMIT OF CONSTRUCTION. THE SEDIMENT CONTROLS WILL BE AS SPECIFIED ON THE APPROVED PLANS.
3. ANY WORK UP TO 100' OF WETLAND RESOURCE AREA (NOT DETAILED IN THE SITE PLAN) IS TO HAVE A SECONDARY ROW OF SILTSOCK & EROSION CONTROL BARRIER. EROSION CONTROL TYPE AS SHOWN ON THE PLANS TO BE FIELD VERIFIED BASED ON CONSTRUCTION TIMING, PHASING AND SITE CONDITIONS.
4. A CONSTRUCTION EXIT SHALL BE CONSTRUCTED TO SHED DIRT FROM CONSTRUCTION VEHICLE TIRES. THE CRUSHED STONE PAD WILL BE REPLACED/CLEANED AS NEEDED TO MAINTAIN ITS EFFECTIVENESS.
5. CONSTRUCTION DEBRIS AND SEDIMENT SHALL BE KEPT ON SITE AND SHALL NOT BE PERMITTED TO MIGRATE BEYOND THE PROJECT BOUNDARIES.
6. ONCE THE SITE IS STABLE, THE SEDIMENT AND EROSION CONTROLS MAY BE REMOVED UNDER THE DIRECTION OF THE EROSION CONTROL SPECIALIST.

SITE CONTROLS

THE FOLLOWING ADDITIONAL CONTROLS SHALL BE IMPLEMENTED DURING CONSTRUCTION IN ORDER TO MINIMIZE EROSION AND RUNOFF FROM THE PROJECT LOCATION:

1. CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO CONTROL DUST ON PROJECT SITE, INCLUDING BUT NOT LIMITED TO THE ADDITION OF DRY CALCIUM ON THE ACCESS ROAD TOWARDS ENTRANCE AT Brook ROAD.
2. CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO KEEP DightonROAD CLEAR OF MUD, EXCESS GRAVEL, AND OTHER CONSTRUCTION DEBRIS.
3. NO CHEMICALS (CEMENT, MORTAR, ETC.) SHALL BE MIXED OR POURED WITHIN ANY WETLANDS OR BUFFER ZONE
4. SOLID WASTE WILL BE COLLECTED AND STORED IN A SECURE DUMPSTER. THE DUMPSTER SHALL MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS.
5. CONSTRUCTION DEBRIS MAY INCLUDE LUMBER, CONCRETE, STEEL, OR OTHER DEBRIS AND SITE MATERIALS REQUIRING REMOVAL. THESE MATERIALS WILL BE DISPOSED OF ACCORDING TO STATE AND FEDERAL LAW AND WILL NOT BE DISPOSED OF ON SITE. EXCESS SOIL GENERATED FROM THIS SITE REQUIRES CHARACTERIZATION PRIOR TO REMOVAL. RATHER THAN EXPORT MATERIAL, IT IS PREFERRED THAT MINOR EXCAVATIONS ARE REUSED ON SITE AS BACKFILL IN THE SAME GENERAL AREA IT ORIGINATED.
6. THE LIMITS OF ALL GRADING AND DISTURBANCE SHALL BE KEPT TO A MINIMUM WITHIN THE PROPOSED AREA OF CONSTRUCTION. ALL AREAS OUTSIDE THE LIMITS OF DISTURBANCE SHALL REMAIN UNDISTURBED.
7. CONTINUOUS LINES OF EROSION CONTROLS SHALL ENCLOSE THE DOWNSTREAM SIDES OF THE WORK AREA, THESE COMBINED WITH UP-SLOPE MARKERS (CONS. FENCE AND/OR FLAGGING) WILL SERVE AS THE LIMIT OF WORK.
8. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED OR REPLACED AS REQUIRED BY THE SITE CONTRACTOR TO ASSURE PROPER FUNCTION.
9. ALL BREACHES OR FAILURES IN SEDIMENT CONTROLS SHALL BE IMMEDIATELY REPAIRED OR REPLACED BY THE SITE CONTRACTOR.
10. DEBRIS AND LITTER, WHICH ACCUMULATES ALONG THE CONSTRUCTION AREA, SHALL BE REMOVED DAILY.
11. SEDIMENT BUILD-UP BEHIND ANY SILT FENCES OR EROSION CONTROL BARRIERS WILL BE MONITORED AND REMOVED WHENEVER SEDIMENT HAS ACCUMULATED TO 3-INCHES IN DEPTH.
12. OTHER CONTROLS WILL BE IMPLEMENTED, AS DEEMED NECESSARY BY THE CONTRACTOR, DURING THE CONSTRUCTION OF THE PROJECT.
13. IF CONDITIONS WARRANT, ADDITIONAL DE-WATERING CONTROLS MAY BE NEEDED SUCH AS DIRT BAGS, FRAC TANKS OR OTHER MEASURES.
14. STORMWATER INFILTRATION BASINS ARE NOT TO BE UTILIZED AS TEMPORARY SEDIMENT BASINS. IF TEMPORARY SEDIMENT BASINS AREA REQUIRED, THEY SHALL BE DESIGN AND SITED BY THE SITE ENGINEER.
15. THE LOCATION OF ALL STORMATER INFILTRATION BASINS SHALL BE FIELD STAKED AFTER SITE CLEARING ACTIVITIES HAVE BEEN COMPLETED. INFILTRATION AREAS SHALL BE PROTECTED THROUGHOUT CONSTRUCTION TO AVOID EXCESSIVE COMPACTION OF THESE AREAS. ONCE THE BASINS HAVE BEEN GRADED PERIMETER EROSION CONTROLS IN THE FORM OF SILTSOCK AND STAKED EROSION CONTROL FENCING SHALL BE INSTALLED ALONG THE UP-GRADIENT SIDE TO PREVENT UNCHECKED SURFACE RUNOFF FROM ENTERING THE BASIN AREA AND SHALL BE MAINTAINED UNTIL FINAL SITE STABILIZATION. ANY ACCUMULATED SEDIMENT WHICH ENTERS THE INFILTRATION BASIN PRIOR TO FINAL SITE STABILIZATION SHALL BE REMOVED TO A DEPTH OF 6" BELOW THE ACCUMULATED SEDIMENT AND THE BOTTOM OF THE BASIN BE FILLED WITH CLEAN SAND TO 6" BELOW FINISH GRADED WHERE 6" OF LOAM AND SEED SHALL BE INSTALLED.

EROSION CONTROL NOTES CONTINUED ON SHEET C-3.1



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SEAL

NICOLA FACENDOLA CIVIL No. 48254 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

8/20/21

DATE : AUGUST 21, 2020
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BROOK STREET SOLAR COMMERCIAL SOLAR FACILITY

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EROSION CONTROL

C-3.0

SHEET 6 OF 10

0' 20' 40' 80'

1817.00

MASS MAINLINE STATE PLANE (NAD83)

EROSION CONTROL CONSTRUCTION NOTES

IN ORDER TO FURTHER MINIMIZE SEDIMENT LOSS ON THE SITE, A GENERAL CONSTRUCTION SEQUENCE PLAN HAS BEEN DEVELOPED. PRIOR TO CONDUCTING WORK ASSOCIATED WITH THIS PROJECT, THE CONTRACTOR SHALL BE REQUIRED TO OBTAIN ALL COPIES OF PERMIT APPLICATIONS AND APPROVALS THAT OUTLINE CONDITIONS GOVERNING THE PROPOSED WORK. THE CONTRACTOR WILL ALSO REVIEW THE DRAWINGS PREPARED FOR THE PROJECT. THE CONTRACTOR WILL THEN FOLLOW THE GENERAL SEQUENCE OF WORK AS OUTLINED BELOW:

1. CONTRACTOR SHALL COORDINATE WITH LOCAL POLICE DEPARTMENT REGARDING TRAFFIC SAFETY MEASURES TO BE EMPLOYED DURING CONSTRUCTION.
2. A TRAFFIC CONTROL OFFICER SHALL BE USED FOR MAJOR DELIVERIES.
3. THE CONTRACTOR WILL PLACE ALL EROSION AND SEDIMENTATION CONTROL SYSTEMS IN ACCORDANCE WITH THE DRAWINGS, OR AS MAY BE DICTATED BY SITE CONDITIONS, IN ORDER TO MAINTAIN THE INTENT OF THE SPECIFICATIONS AND PERMITS. DEFICIENCIES OR CHANGES ON THE DRAWINGS SHALL BE CORRECTED OR IMPLEMENTED AS SITE CONDITIONS CHANGE. CHANGES DURING CONSTRUCTION SHALL BE NOTED AND POSTED ON THE DRAWINGS (SITE PLANS).
4. THE INTENT IS TO DIRECT ALL WATER FROM DISTURBED AREAS THROUGH SEDIMENTATION CONTROLS PRIOR TO LEAVING CONSTRUCTION BOUNDARIES. THERE SHALL BE NO DISCHARGE OF UNTREATED CONSTRUCTION RUNOFF FROM THIS SITE.
5. THE CONTRACTOR SHALL MAINTAIN TEMPORARY EROSION AND SEDIMENTATION CONTROL SYSTEMS AS DICTATED BY SITE CONDITIONS, INDICATED IN THE CONSTRUCTION DOCUMENTS, OR AS DIRECTED BY GOVERNING AUTHORITIES OR OWNER TO CONTROL SEDIMENT UNTIL FINAL STABILIZATION.
6.
7. THE CONTRACTOR SHALL RESPOND TO ANY MAINTENANCE OR ADDITIONAL WORK ORDERED BY OWNER OR GOVERNING AUTHORITIES IMMEDIATELY, IF REQUIRED, AND ALWAYS WITHIN 7 DAYS.
8. THE CONTRACTOR SHALL INCORPORATE PERMANENT EROSION CONTROL FEATURES, PERMANENT SLOPE STABILIZATION, AND VEGETATION INTO THE PROJECT PLANS AT THE EARLIEST PRACTICAL TIME TO MINIMIZE THE NEED FOR TEMPORARY CONTROLS.
9. TREE AND VEGETATION CLEARING AND ANY ROUGH GRADING SHALL ONLY OCCUR IF THE DISTURBED SOIL SURFACE CAN BE STABILIZED WITHIN 48 HOURS OF CLEARING. TREE AND VEGETATION CLEARING SHALL BE SCHEDULED IN CONJUNCTION WITH WEATHER FORECAST SUCH THAT NO MORE THAN 1/4" OF RAIN IS TO BE EXPECTED WITHIN 48 HOURS OF ANY CLEARING OR GRADING ACTIVITY.
10. ANY AREA DISTURBED WITHIN THE LIMIT OF WORK, BUT NOT WITHIN THE LIMITS OF THE SOLAR ARRAY FOOTPRINT ARE TO BE SEEDED WITH NEW ENGLAND CONSERVATION/ WILDLIFE SEED MIX UNLESS SPECIFIED OTHERWISE IN THE PLAN SET.
11. THE CONTRACTOR SHALL STABILIZE ALL DISTURBED AREAS WITHIN 48 HOURS AFTER FINAL GRADING. IN THE EVENT THAT IT IS NOT PRACTICAL TO SEED AREAS, SLOPES MUST BE STABILIZED WITH GEOTEXTILE FABRIC OR OTHER MEANS TO REDUCE THE EROSIVE POTENTIAL OF THE AREA.

EROSION STRUCTURAL PRACTICES

SILTATION CONTROL USING EROSION 18" DIA FILTREXX SILT SOXX, OR APPROVED EQUAL.

EROSION CONTROL LINE IS TO BE VISUALLY INSPECTED AFTER EVERY RAIN FALL AND REPAIRS MADE AS REQUIRED TO THE 18" SILT SOXX AFTER EACH RAIN FALL. CLEANOUT OF ACCUMULATED SEDIMENT BEHIND THE WATTLE IS NECESSARY IF ½ OF THE ORIGINAL HEIGHT OF THE WATTLE APPEARS TO HAVE BEEN INUNDATED WITH SEDIMENT.

PRESERVE TOPSOIL

SITE OWNERS AND OPERATORS MUST PRESERVE EXISTING TOPSOIL ON THE CONSTRUCTION SITE TO THE MAXIMUM EXTENT FEASIBLE AND AS NECESSARY TO SUPPORT HEALTHY VEGETATION, PROMOTE SOIL STABILIZATION, AND INCREASE STORMWATER INFILTRATION RATES IN THE POST-CONSTRUCTION PHASE OF THE PROJECT.

STABILIZATION OF SOILS

UPON COMPLETION AND ACCEPTANCE OF SITE PREPARATION AND INITIAL INSTALLATION OF EROSION, RUNOFF, AND SEDIMENT CONTROLS AND TEMPORARY POLLUTION PREVENTION MEASURES, THE OPERATOR SHALL INITIATE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION PRACTICES DURING ALL PHASES OF CONSTRUCTION ON ALL DISTURBED AREAS AS SOON AS POSSIBLE BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY OR PERMANENTLY CEASED UNLESS THE ACTIVITY IS TO RESUME WITHIN TWENTY-ONE (21) DAYS.

ANY DISTURBED AREAS THAT WILL NOT HAVE ACTIVE CONSTRUCTION ACTIVITY OCCURRING WITHIN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY OR PERMANENTLY CEASED UNLESS THE ACTIVITY IS TO RESUME WITHIN TWENTY-ONE (21) DAYS MUST BE STABILIZED BY THE USE OF TEMPORARY AND/OR FINAL SEEDING OF THAT AREA.

ONLY AREAS THAT CAN BE REASONABLY EXPECTED TO HAVE ACTIVE CONSTRUCTION WORK BEING PERFORMED WITHIN 14 DAYS OF DISTURBANCE WILL BE CLEARED/GRUBBED AT ANY ONE TIME. IT IS NOT ACCEPTABLE TO GRUB AND STRIP TOP SOIL THE ENTIRE CONSTRUCTION SITE IF PORTIONS WILL NOT BE ACTIVE WITHIN THE 14-DAY TIME FRAME. PROPER PHASING OF CLEARING AND GRUBBING ACTIVITIES SHALL INCLUDE TEMPORARY STABILIZATION TECHNIQUES FOR AREAS CLEARED AND GRUBBED THAT WILL NOT BE ACTIVE WITHIN THE 14-DAY TIME FRAME.

STEEP SLOPES SHALL NOT BE LEFT UNATTENDED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH AS THE INACTIVE WINTER SEASON. THE CONTRACTOR SHALL INITIATE APPROPRIATE VEGETATIVE PRACTICES ON ALL DISTURBED AREAS IN AREAS OF STEEP SLOPES AS SOON AS POSSIBLE BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY OR PERMANENTLY CEASED, UNLESS THE ACTIVITY IS TO RESUME WITHIN TWENTY-ONE (21) DAYS. ONCE AN STEEP SLOPE AREA HAS BEEN TEMPORARY AND/OR FINAL SEEDED IT SHALL BE PROTECTED WITH 4' HIGH ORANGE CONSTRUCTION TO PREVENT FURTHER DISTURBANCE OF THE AREA.

THE TEMPORARY SEEDING DESIGN MIX SHALL BE COMPRISED OF THE FOLLOWING:

TYPE	% BY WEIGHT
ANNUAL RYE GRASS	40
PERENNIAL RYE GRASS	60

STORMWATER INLET PROTECTION

INLET PROTECTION – WILL BE UTILIZED TO PREVENT SOIL AND DEBRIS FROM ENTERING STORM DRAIN INLETS. THESE MEASURES ARE USUALLY TEMPORARY AND ARE IMPLEMENTED BEFORE A SITE IS DISTURBED.

MAINTENANCE – THE OPERATOR MUST CLEAN, OR REMOVE AND REPLACE THE INLET PROTECTION MEASURES AS SEDIMENT ACCUMULATES, THE FILTER BECOMES CLOGGED, AND/OR AS PERFORMANCE IS COMPROMISED. ACCUMULATED SEDIMENT ADJACENT TO THE INLET PROTECTION MEASURES SHOULD BE REMOVED BY THE END OF THE SAME WORK DAY IN WHICH IT IS FOUND OR BY THE END OF THE FOLLOWING WORK DAY IF REMOVAL BY THE SAME WORK DAY IS NOT FEASIBLE.

STORMWATER BASINS – ALL AREAS CONTAINING STORMWATER BASINS (ABOVE OR BELOW GROUND) SHALL BE PROTECTED THROUGHOUT CONSTRUCTION. THESE ARES ARE NOT BE USED FOR MATERIAL STOCKPILES OR FOR PARKING EQUIPMENT. SURFACE BASINS ARE TO BE ROUGH GRADED AND PROTECTED UNTIL STABILIZED AND BROUGHT ON-LINE FOR STORMWATER MANAGEMENT OF THE STABILIZED SITE.

CONSTRUCTION ENTRANCES

CONSTRUCTION ENTRANCES SHALL BE USED IN CONJUNCTION WITH THE STABILIZATION OF CONSTRUCTION ROADS TO REDUCE THE AMOUNT OF SEDIMENT TRACKING OFF THE PROJECT. ANY CONSTRUCTION SITE ACCESS POINT MUST EMPLOY THE CONTROL MEASURES ON THE APPROVED SITE PLANS AND IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN. CONSTRUCTION ENTRANCES SHALL BE USED IN CONJUNCTION WITH THE STABILIZATION OF CONSTRUCTION ROADS TO REDUCE THE AMOUNT OF MUD PICKED UP BY CONSTRUCTION VEHICLES. ALL CONSTRUCTION ACCESS ROADS SHALL BE CONSTRUCTED PRIOR TO ANY ROADWAY ACCEPTING CONSTRUCTION TRAFFIC.

THE SITE OWNER AND OPERATOR MUST WILL RESTRICT VEHICLE USE TO PROPERLY DESIGNATED EXIT POINTS, USE PROPERLY DESIGNED AND CONSTRUCTED CONSTRUCTION ENTRANCES AT ALL POINTS THAT EXIT ONTO PAVED ROADS SO THAT SEDIMENT REMOVAL OCCURS PRIOR TO VEHICLE EXIT. WHEN AND WHERE NECESSARY, USE ADDITIONAL CONTROLS TO REMOVE SEDIMENT FROM VEHICLE TIRES PRIOR TO EXIT (I.E. WHEEL WASHING RACKS, RUMBLE STRIPS, AND RATTLE PLATES). WHERE SEDIMENT HAS BEEN TRACKED OUT FROM THE CONSTRUCTION SITE ONTO THE SURFACE OF OFF-SITE STREETS, OTHER PAVED AREAS, AND SIDEWALKS, THE DEPOSITED SEDIMENT MUST BE REMOVED BY THE END OF THE SAME WORK DAY IN WHICH THE TRACK OUT OCCURS. TRACK-OUT MUST BE REMOVED BY SWEEPING, SHOVELING, OR VACUUMING THESE SURFACES, OR BY USING OTHER SIMILARLY EFFECTIVE MEANS OF SEDIMENT REMOVAL.

STOCKPILE AND MATERIAL STAGING CONTAINMENT

SHALL BE USED ONSITE TO MINIMIZE OR ELIMINATE THE DISCHARGE OF SOIL, TOPSOIL, BASE MATERIAL OR RUBBLE, FROM ENTERING DRAINAGE SYSTEMS OR SURFACE WATERS. ALL STOCKPILES MUST BE LOCATED WITHIN THE LIMIT OF DISTURBANCE, PROTECTED FROM RUN-ON WITH THE USE OF TEMPORARY SEDIMENT BARRIERS AND PROVIDED WITH COVER OR STABILIZATION TO AVOID CONTACT WITH PRECIPITATION AND WIND WHERE AND WHEN PRACTICAL. STOCK PILE MANAGEMENT CONSISTS OF PROCEDURES AND PRACTICES DESIGNED TO MINIMIZE OR ELIMINATE THE DISCHARGE OF STOCKPILED MATERIAL (SOIL, TOPSOIL, BASEMATERIAL, RUBBLE) FROM ENTERING DRAINAGE SYSTEMS OR SURFACE WATERS.
FOR ANY STOCKPILES OR LAND CLEARING DEBRIS COMPOSED, IN WHOLE OR IN PART, OF SEDIMENT OR SOIL, YOU MUST COMPLY WITH THE FOLLOWING REQUIREMENTS – LOCATE PILES WITHIN THE DESIGNATED LIMITS OF DISTURBANCE OUTSIDE OF THE 100-FOOT BUFFER ZONE, PROTECT FROM CONTACT WITH STORMWATER (INCLUDING RUN-ON) USING A TEMPORARY PERIMETER SEDIMENT BARRIER; WHERE PRACTICABLE, PROVIDE COVER OR APPROPRIATE TEMPORARY VEGETATIVE OR STRUCTURAL STABILIZATION TO AVOID DIRECT CONTACT WITH PRECIPITATION OR TO MINIMIZE SEDIMENT DISCHARGE; NEVER HOSE DOWN OR SWEEP SOIL OR SEDIMENT ACCUMULATED ON PAVEMENT OR OTHER IMPERVIOUS SURFACES INTO ANY STORMWATER CONVEYANCE, STORM DRAIN INLET, OR SURFACE WATER; TO THE MAXIMUM EXTENT PRACTICABLE, CONTAIN AND SECURELY PROTECT FROM WIND.

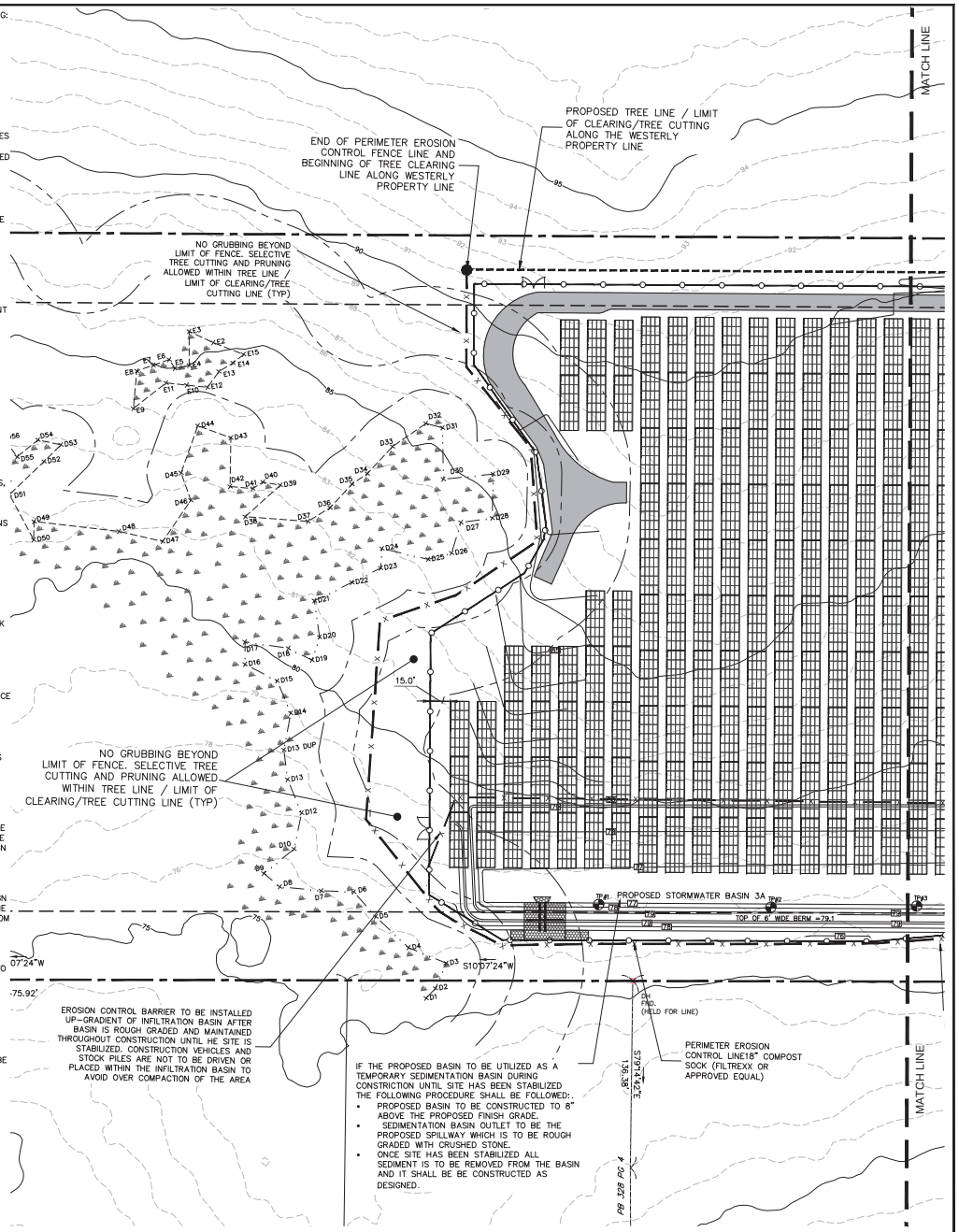
TEMPORARY SEDIMENT BASINS

IF REQUIRED, ADDITIONAL TEMPORARY SEDIMENT BASINS ARE REQUIRED, TO THE PROPOSED MITIGATION DETAILED WITHIN THESE DESIGN PLANS, TO MITIGATE THE POTENTIAL SEDIMENT LOADING TO THE ADJACENT RESOURCE AREAS THE DESIGN ENGINEER SHALL BE CONTACTED TO DESIGN AND SITE NEW TEMPORARY SEDIMENT BASIS AS REQUIRED. TEMPORARY SEDIMENT BASINS SHALL BE LOCATED OUTSIDE OF THE 100-FOOT BUFFER ZONE TO ANY RESOURCE ARES THAT ARE NOT SCHEDULED FOR PERMANENT ALTERATION, UNLESS NO ALTERNATIVES ARE AVAILABLE. TEMPORARY SEDIMENT BASIN LOCATION, DESIGN AND GRADING BE DICTATED BY THE DESIGN ENGINEER. AT A MINIMUM THE THE VOLUME OF THE TEMPORARY SEDIMENT BASIN, AS MEASURED FROM THE BOTTOM OF THE BASE TO THE ELEVATION OF THE CREST OF THE PRINCIPAL SPILLWAY SHALL BE AT LEAST 3,600 CUBIC FEET PER ACRE OF DRAINAGE AREA. THIS 3,600 CUBIC FEET IS EQUIVALENT TO 1.0 INCH OF SEDIMENT PER ACRE OF DRAINAGE AREA. ADDITIONAL STORAGE IN THE FORM OF A PERMANENT WET POOL SHALL BE PROVIDED WHENEVER PRACTICABLE, BUT MAY NOT BE USED TO FULFILL THE TEMPORARY STORAGE VOLUME REQUIREMENT.

SEDIMENT BASINS SHALL BE CLEANED OUT WHEN THE VOLUME REMAINING AS DESCRIBED ABOVE IS REDUCED BY SEDIMENTATION TO 1,800 CUBIC FEET PER ACRE OF DRAINAGE AREA (50 PERCENT FULL). IN NO CASE SHALL THE SEDIMENT LEVEL BE PERMITTED TO BUILD UP HIGHER THAN ONE FOOT BELOW THE PRINCIPAL SPILLWAY CREST. AT THIS ELEVATION, CLEANOUT SHALL BE PERFORMED TO RESTORE THE ORIGINAL DESIGN VOLUME TO THE SEDIMENT BASIN. THE ELEVATION OF THE MAXIMUM ALLOWABLE SEDIMENT LEVEL SHALL BE DETERMINED AND SHALL BE STATED IN THE DESIGN DATA AS A DISTANCE BELOW THE TOP OF THE RISER AND BE CLEARLY MARKED ON THE RISER.

CONSTRUCTION SEQUENCING

1. CONSTRUCT WETLAND / INTERMITTENT STREAM CROSSING
2. INSTALL EROSION AND SEDIMENT CONTROLS;
3. CUT TREES;
4. CLEAR TREES AND REMOVE/GRIND STUMPS;
5. INSTALL TEMPORARY SEDIMENT BASINS AND CONVEYANCE SWALES AND BERMS;
6. GRUB AND ROUGH GRADE AREAS SHOWN TO BE RE-GRADED;
7. CONSTRUCT GRAVEL DRIVEWAY;
8. INSTALL STORMWATER MANAGEMENT SYSTEM AND SITE UTILITIES WITH FINAL STABILIZATION;
9. INSTALL SOLAR SOLAR PANELS AND RACKS AND STABILIZE ARRAY AREAS
10. INSTALL SECURITY FENCING;
11. INSTALL SITE LANDSCAPING;
12. FINE GRADE SITE AND LOAM AND SEED ALL REMAINING DISTURBED AREAS;
13. PROJECT CLOSE OUT.



NO.	DATE	REVISIONS
1	01/29/2021	ISSUE FOR CONSTRUCTION
2	08/28/2021	SPECIAL PERMIT MODIFICATION

SEAL

COMMONWEALTH OF MASSACHUSETTS
NICOLA FACENDOLA
CIVIL
No. 48204
REGISTERED PROFESSIONAL ENGINEER
8/28/21

DATE : AUGUST 21, 2020
DRAWN : NF / DRC
SCALE : 1" = 40'

BROOK STREET SOLAR COMMERCIAL SOLAR FACILITY

ASSESSOR PARCEL - MAP 16; PARCEL 28
BROOK STREET
DIGHTON, MASSACHUSETTS

LEVEL DESIGN GROUP
CIVIL ENGINEERING / LAND SURVEYING
249 SOUTH STREET
UNIT 1
PLAINVILLE, MA 02762
TEL. (508) 695-2221 FAX. (508) 695-2219

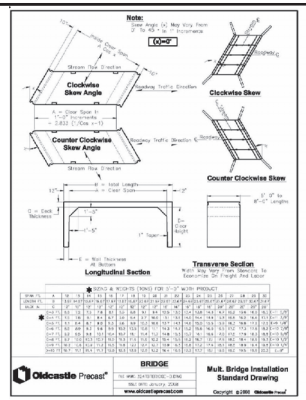
EROSION CONTROL

C-3.1

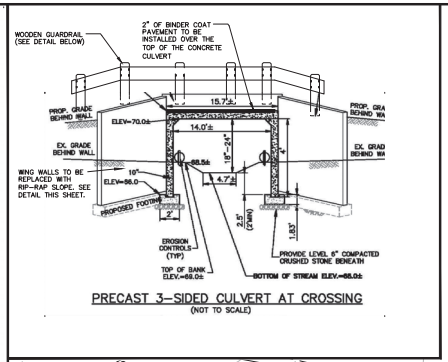
SHEET 7 OF 10

0' 20' 40' 80'

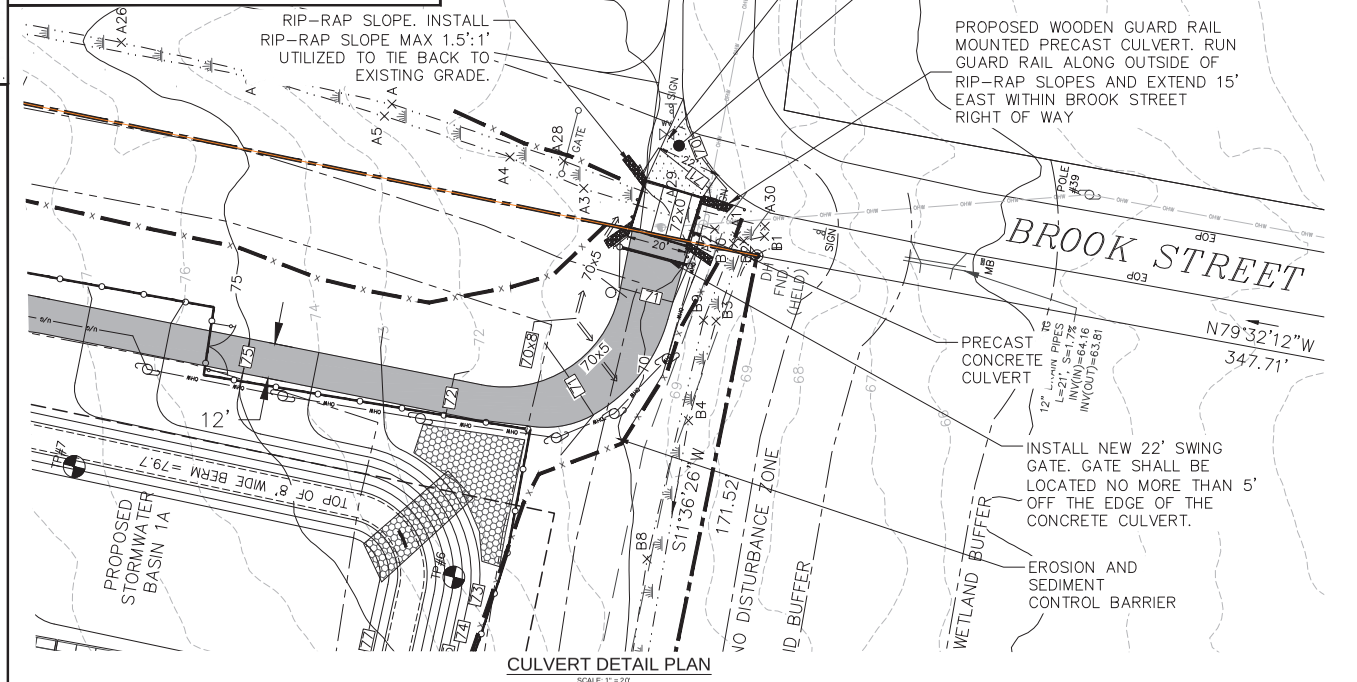
1817.00



CULVERT DETAIL
NOT TO SCALE



PRECAST 3-SIDED CULVERT AT CROSSING
(NOT TO SCALE)



CULVERT DETAIL PLAN
SCALE: 1" = 20'

LANDSCAPE SCREENING PLANT LIST (OUTSIDE OF 100-FOOT BUFFER)

NUMBER	SPECIES	SIZE	SPACING
30	'GREEN GIANT' ARBORVITAE Thuja occidentalis x 'Green Giant'	7-9FT	8-10FT O.C.

NOTES:
1) NUMBERS AND SIZES ARE APPROXIMATE AND BASED ON ASSUMED SIZE AND REQUIREMENTS OF SCREENING AREAS. SPECIFIC NUMBER MAY VARY AND IS CONTINGENT ON THE CREATION OF ADEQUATE VISUAL SCREENING. PLANTING SIZES MAY BE INCREASED/REDUCED DEPENDING ON SITE CONDITIONS AS REQUIRED TO MAXIMIZE SCREENING EFFECTIVENESS.
2) SPECIFIC PLACEMENT OF SCREENING PLANTINGS WILL BE DETERMINED BY A QUALIFIED LANDSCAPE DESIGNER TO MAXIMIZE SCREENING EFFECTIVENESS AND ENSURE SUCCESSFUL ESTABLISHMENT OF PLANTINGS.
3) THE EFFECTIVENESS OF THE SCREENING INSTALLED WILL BE RE-EVALUATED DURING THE NON FOLIAR SEASON BY A QUALIFIED WETLAND SCIENTIST OR LANDSCAPE DESIGNER. AREAS WHERE ADDITIONAL SCREENING IS REQUIRED WILL BE IDENTIFIED AND SCREENING WILL BE INSTALLED IN THE TARGETED AREAS.

LANDSCAPE SCREENING PLANT LIST (WITHIN 100-FOOT BUFFER)

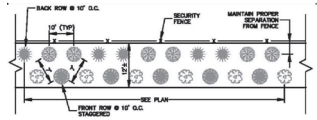
NUMBER	SPECIES	SIZE	SPACING
25	ARBORVITAE Thuja occidentalis	7-9FT	8-10FT O.C.
25	WHITE PINE Pinus strobus	7-9FT	8-10FT O.C.
25	HEMLOCK Tsuga canadensis	7-9FT	8-10FT O.C.

NOTES:
1) NUMBERS AND SIZES ARE APPROXIMATE AND BASED ON ASSUMED SIZE AND REQUIREMENTS OF SCREENING AREAS. SPECIFIC NUMBER MAY VARY AND IS CONTINGENT ON THE CREATION OF ADEQUATE VISUAL SCREENING. PLANTING SIZES MAY BE INCREASED/REDUCED DEPENDING ON SITE CONDITIONS AS REQUIRED TO MAXIMIZE SCREENING EFFECTIVENESS.
2) SPECIFIC PLACEMENT OF SCREENING PLANTINGS WILL BE DETERMINED BY A QUALIFIED LANDSCAPE DESIGNER/WETLAND SCIENTIST TO MAXIMIZE SCREENING EFFECTIVENESS AND ENSURE SUCCESSFUL ESTABLISHMENT OF PLANTINGS.
3) THE EFFECTIVENESS OF THE SCREENING INSTALLED WILL BE RE-EVALUATED DURING THE NON FOLIAR SEASON BY A QUALIFIED WETLAND SCIENTIST OR LANDSCAPE DESIGNER. AREAS WHERE ADDITIONAL SCREENING IS REQUIRED WILL BE IDENTIFIED AND SCREENING WILL BE INSTALLED IN THE TARGETED AREAS.
4) SPECIES MAY BE SUBSTITUTED WITH CONSERVATION COMMISSION APPROVAL.

FOREST ENHANCEMENT AREAS (14,000 SF±)

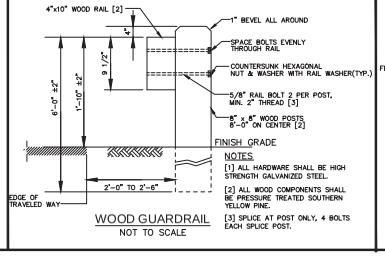
NUMBER	SPECIES	SIZE	SPACING
30	WITCH HAZEL Hamamelis virginiana	2-3FT	8-10FT O.C.
15	WHITE PINE Pinus strobus	4-5FT	8-20FT O.C.
15	RED MAPLE Acer rubrum	4-5FT	8-20FT O.C.
50	COMMON SERVICEBERRY Amelanchier arborea	4-6FT	4-5FT O.C.

NOTES:
1) SPECIES, NUMBERS AND SIZES ARE APPROXIMATE AND BASED ON ASSUMED SIZE AND REQUIREMENTS OF SCREENING AREAS. SPECIFIC NUMBER MAY VARY AND IS CONTINGENT ON THE CREATION OF ADEQUATE VISUAL SCREENING. PLANTING SIZES MAY BE INCREASED/REDUCED DEPENDING ON SITE CONDITIONS AS REQUIRED TO MAXIMIZE SCREENING EFFECTIVENESS.
2) SPECIFIC PLACEMENT OF SCREENING PLANTINGS WILL BE DETERMINED BY A QUALIFIED WETLAND SCIENTIST AND/OR LANDSCAPE DESIGNER TO MAXIMIZE SCREENING EFFECTIVENESS AND ENSURE SUCCESSFUL ESTABLISHMENT OF PLANTINGS.
3) THE EFFECTIVENESS OF THE SCREENING INSTALLED WILL BE RE-EVALUATED DURING THE NON FOLIAR SEASON BY A QUALIFIED WETLAND SCIENTIST OR LANDSCAPE DESIGNER. AREAS WHERE ADDITIONAL SCREENING IS REQUIRED WILL BE IDENTIFIED AND SCREENING WILL BE INSTALLED IN THE TARGETED AREAS.

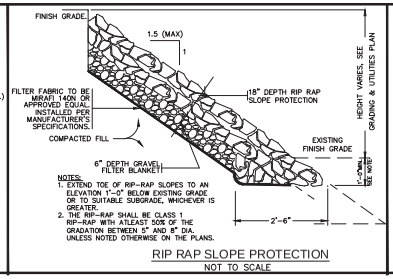


NOTES:
1. MINIMUM TREE HEIGHT SHALL BE 4 FEET. STAKE TREES UNDER 3" CALIPER AND GUY TREES 3" AND ABOVE.
2. THE SCREENING PLANTINGS SHALL BE SELECTED FROM THE SPECIES OUTLINED WITHIN THE LANDSCAPE SCREENING PLAN DATED SEPTEMBER 25, 2018; SIZED AND DELIVERED IN CONTAINERS PER ANSI Z60.1-2014.

GENERAL PLANTING DETAIL
(NOT TO SCALE)



WOOD GUARDRAIL
NOT TO SCALE



RIP RAP SLOPE PROTECTION
NOT TO SCALE

PLAN NOTES:

1. SEE SHEETS C-1.0 & 1.1 FOR PLAN LEGEND, REFERENCE NOTES, CONSTRUCTION NOTES, EROSION AND SEDIMENT CONTROL NOTES, AND TOWN OF DIGHTON SITE PLAN / SPECIAL PERMIT APPROVAL CONDITIONS AND ORDER OF CONDITIONS GENERAL AND SPECIAL CONDITIONS.
2. PRE-CASTE CULVERT CROSSING PLAN AND DETAIL INFORMATION AND LANDSCAPING DETAILS AND NOTES WERE TAKEN FROM THE APPROVED PROJECT SITE PLAN SET ENTITLED, "SITE DEVELOPMENT PLANS FOR BROOK STREET SOLAR PROJECT DIGHTON, MASSACHUSETTS"; DATED JULY 16, 2018 AND REVISED THROUGH DECEMBER 19, 2018. PREPARED BY ATLANTIC DESIGN ENGINEERS, INC.
3. SITE CONTRACTOR SHALL APPLY FOR A DRIVEWAY ACCESS PERMIT THROUGH THE BUILDING DEPARTMENT PRIOR TO THE START OF CONSTRUCTION ON THE CULVER.
4. SITE CONTRACTOR SHALL COORDINATE POLICE DETAILS FOR WORK DONE WITHIN THE TOWN'S RIGHT-OF-WAY. DETAILS AND TRAFFIC SAFETY MITIGATION SHALL BE REQUIRED WHEN WORK ON THE PROPOSED CULVERT REQUIRES THAT CONSTRUCTION VEHICLE UTILIZE THE PAVED TRAVELED. IT IS ANTICIPATED, AT A MINIMUM, THAT POLICE DETAILS WILL BE REQUIRED WHEN THE CULVER FOOTING ARE BEING POURED AND WHEN THE PRE-CAST CULVERT STRUCTURE IS BEING SET.
5. ALL CONSTRUCTION AND CONSTRUCTION ACTIVITIES WITHIN THE TOWN'S RIGHT-OF -WAY SHALL CONFORM TO STATE AND LOCAL REQUIREMENTS AND ALL PROJECT PERMITS ISSUED. INCLUDING BUT NOT LIMITED TO THE TOWN OF DIGHTON HIGHWAY DEPARTMENT, THE COMMONWEALTH OF MASSACHUSETTS AND ANY OTHER AGENCIES HAVING JURISDICTION

NO.	DATE	REVISIONS
1	01/29/2021	ISSUE FOR CONSTRUCTION
2	08/28/2021	SPECIAL PERMIT MODIFICATION

SEAL
NICOLA FACENDOLA CIVIL No. 49259 REGISTERED PROFESSIONAL ENGINEER
08/28/21

DATE: AUGUST 21, 2020
DRAWN: NF / DRC
SCALE: 1" = 20'

BROOK STREET SOLAR COMMERCIAL SOLAR FACILITY

ASSESSOR PARCEL - MAP 16; PARCEL 28
BROOK STREET
DIGHTON, MASSACHUSETTS

LEVEL DESIGN GROUP
CIVIL ENGINEERING / LAND SURVEYING
249 SOUTH STREET
UNIT 1
PLAINVILLE, MA 02762
TEL. (508) 695-2221 FAX. (508) 695-2219

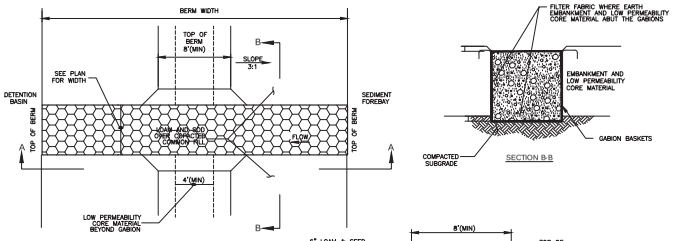
WETLAND CROSSING & LANDSCAPING DETAILS

C-4.0

SHEET 8 OF 10

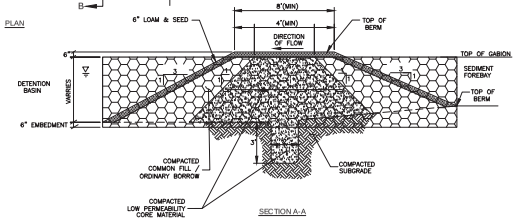
0' 10' 20' 40'

1817.00



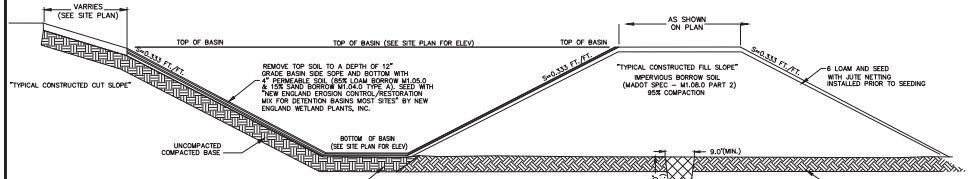
NOTES

1. CORE MATERIAL SHALL HAVE A PERMEABILITY OF LESS THAN 1X10^-5 INCHES PER HOUR.
2. THE BERM SECTION MAY BE BASED ON THE RESULTS OF FURTHER GEOTECHNICAL INVESTIGATIONS.
3. COMBINE GABIONS TO MEET WIDTH AND LENGTH DIMENSIONS AND ELEVATIONS SHOWN ON PLAN. TYPICAL GABION IS 3' WIDE X 3' HIGH X 3' LONG.
4. PROVIDE FILTER FABRIC TO PREVENT EARTH EMBANKMENT FROM SILTING INTO GABIONS.
5. SEE SPECIFICATIONS FOR EMBANKMENT MATERIALS.
6. GABION ROCK TO BE PER EARTHWORK SPECIFICATIONS; STONE FOR PIPE ENDS WITH
7. SIZE D50=50.



SEDIMENT FOREBAY BERM

NOT TO SCALE



INFILTRATION BASIN TYPICAL SECTION

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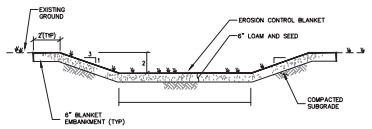
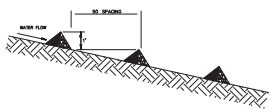


GRASSED SWALE

NOT TO SCALE



STONE CHECK DAM

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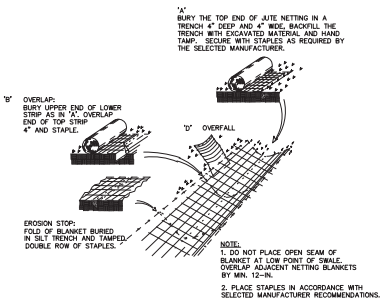
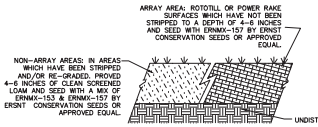


NOTE:
1. DO NOT PLACE OPEN SEAM OF BLANKET AT LOW POINT OF SWALE. OVERLAP ADJACENT NETTING BLANKETS BY MIN. 12-IN.
2. PLACE STAPLES IN ACCORDANCE WITH SELECTED MANUFACTURER RECOMMENDATIONS.

JUTE NETTING BLANKET

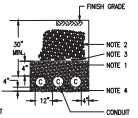
NOT TO SCALE



SURFACE SEEDING TREATMENT UNDER ARRAY AND WITHIN DISTURBED AREAS

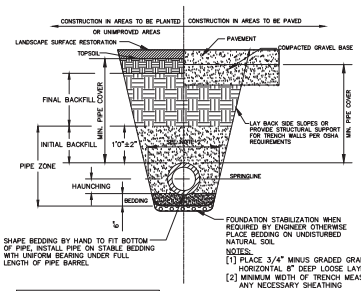
NOT TO SCALE

NOTES:
1. SCREENED, WASHED SAND.
2. BACKFILL TO BE FREE OF STONES GREATER THAN ONE INCH AND SHALL NOT CONTAIN ASHES, CINDERS, SHELL OR FROZEN MATERIAL.
3. WARNING TAPE TO BE PLACED 12" BELOW FINISH GRADE DIRECTLY ABOVE ELECTRIC CONDUIT.
4. MINIMUM SEPARATION BETWEEN ELECTRIC CONDUITS SHALL BE 12".
5. 30" MINIMUM BURIAL DEPTH FROM FINISH GRADE TO TOP OF CONDUIT.
5. REFER TO ELECTRICAL SITE PLAN FOR FINAL CONDUIT LAYOUT AND CONFIGURATION.



DUCTBANK

NOT TO SCALE



FOUNDATION, BEDDING AND BACKFILL MATERIALS		
PIPE MATERIAL	HDP, PVC	RC, DI
FOUNDATION STABILIZATION	NOTE [6]	[6]
BEDDING	[1]	[1]
HAUNCHING	[1]	[1]
INITIAL BACKFILL	[4]	[4]
FINAL BACKFILL	[4]	[4]
MIN. PIPE COVER	[5]	[5]

UTILITY TRENCH

NOT TO SCALE

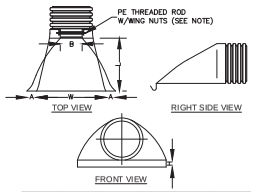
NOTES:
[1] PLACE 3/4" MINUS GRADED GRANULAR BACKFILL AT OPTIMUM MOISTURE IN HORIZONTAL 8" DEEP LOOSE LAYERS, COMPACT TO 95% PER ASTM D-1557
[2] MINIMUM WIDTH OF TRENCH MEASURED AT SPRINGLINE OF PIPE, INCLUDING ANY NECESSARY SHEATHING

PIPE I.D.	WIDTH
LESS THAN 21"	O.D. + 12"
21" TO 42"	O.D. + 24"
GREATER THAN 42"	O.D. + 30"

[3] INSTALL PIPE IN CENTER OF TRENCH.
[4] IN PLANTED OR UNIMPROVED AREAS, USE ON-SITE EXCAVATED MATERIAL FOR FINAL BACKFILL. COMPACT TO 95% PER ASTM D-1557. IN PAVED AREAS, OBTAIN ENGINEER APPROVAL OF ON-SITE EXCAVATED MATERIALS FOR USE AS FINAL BACKFILL.
[5] MINIMUM COVER OVER TOP OF PIPE

PIPE MATERIAL	HDP, PVC	RC, DI
WATER	4' – 0"	3' – 0"
SEWER	4' – 0"	4' – 0"
DRAIN	2' – 0"	1' – 6"

[6] FOR FOUNDATION STABILIZATION, USE 2" MINUS CRUSHED STONE

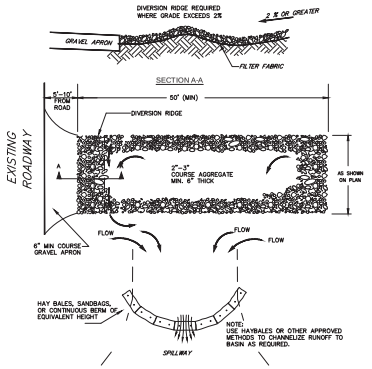


PIPE SIZE	A	B (MAX)	H	L	W
12"	6.5"	10"	6.5"	25"	29"
15"	6.5"	10"	6.5"	25"	29"

NOTE: PE THREADED ROD W/WING NUTS PROVIDED FOR END SECTIONS 12"–24". 30" & 36" END SECTIONS TO BE WELDED TO PIPE PER MANUFACTURER'S RECOMMENDATIONS.

HDPE FLARED END SECTION

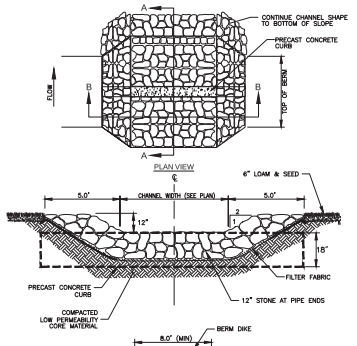
NOT TO SCALE



NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITIONS THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS TO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

TEMPORARY CONSTRUCTION ENTRANCE/EXIT DETAIL

NOT TO SCALE



OVERFLOW STONE SWALE

NOT TO SCALE

NO.	DATE	REVISIONS
1	01/29/2021	ISSUE FOR CONSTRUCTION
2	08/28/2021	SPECIAL PERMIT MODIFICATION

SEAL

NICOLA FACENDOLA CIVIL No. 46034 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

01/29/21

DATE: AUGUST 21, 2020
DRAWN: NF / DRC
SCALE: AS SHOWN

BROOK STREET SOLAR COMMERCIAL SOLAR FACILITY

ASSESSOR PARCEL - MAP 16; PARCEL 28
BROOK STREET
DIGHTON, MASSACHUSETTS

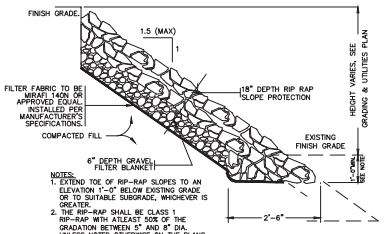
LEVEL DESIGN GROUP
CIVIL ENGINEERING / LAND SURVEYING
249 SOUTH STREET
UNIT 1
PLAINVILLE, MA 02762
TEL. (508) 695-2221 FAX. (508) 695-2219

DETAILS

C-5.0

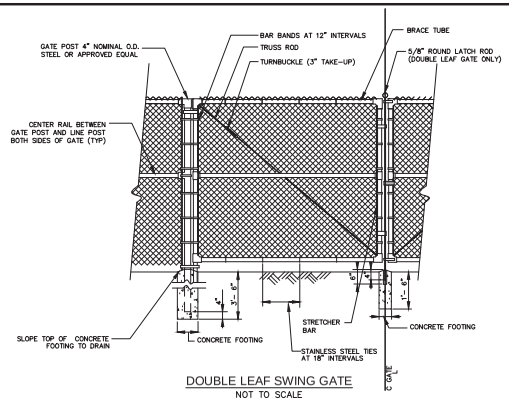
SHEET 9 OF 10

1817.00

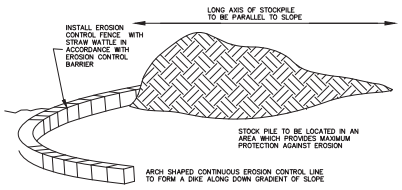


NOTES:
1. EXTEND TOE OF RIP-RAP SLOPES TO AN ELEVATION 1'-0" BELOW EXISTING GRADE OR TO SUITABLE SUBGRADE, WHICHEVER IS GREATER.
2. THE RIP-RAP SHALL BE CLASS 1 RIP-RAP WITH ATLEAST 50% OF THE GRADATION BETWEEN 3" AND 8" DIA. UNLESS NOTED OTHERWISE ON THE PLANS.

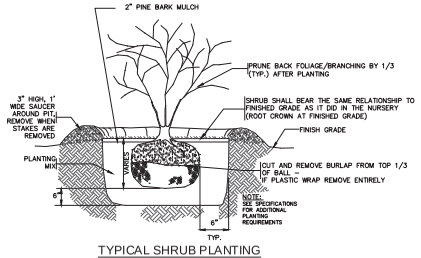
RIP RAP SLOPE PROTECTION
NOT TO SCALE



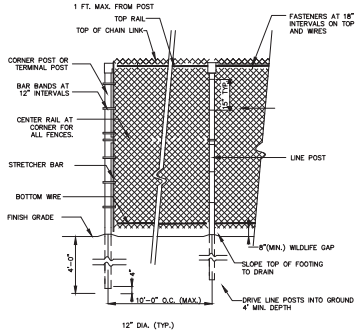
DOUBLE LEAF SWING GATE
NOT TO SCALE



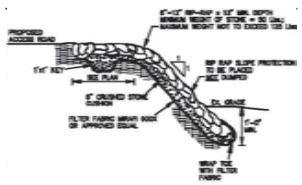
TEMPORARY MATERIAL STOCKPILE
NOT TO SCALE



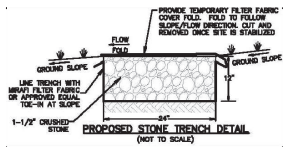
TYPICAL SHRUB PLANTING
NOT TO SCALE



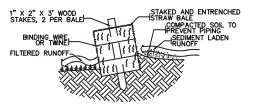
7' HIGH CHAIN LINK FENCE
NOT TO SCALE



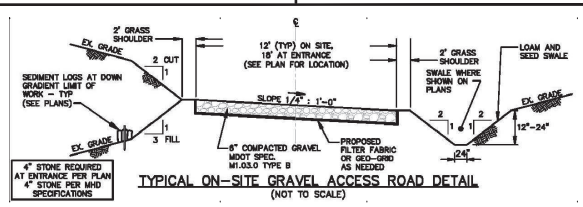
TYPICAL RIP RAP SLOPE PROTECTION
NOT TO SCALE



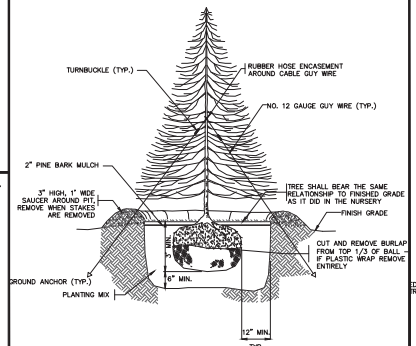
PROPOSED STONE TRENCH DETAIL
(NOT TO SCALE)



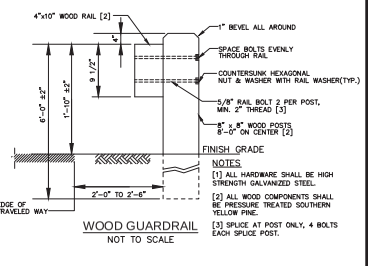
CROSS-SECTION OF STRAW BALE EROSION CHECK
NOT TO SCALE



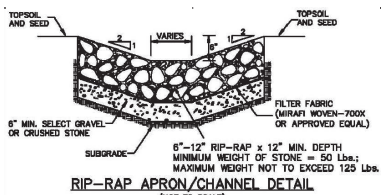
TYPICAL ON-SITE GRAVEL ACCESS ROAD DETAIL
(NOT TO SCALE)



TYPICAL TREE PLANTING - EVERGREEN
NOT TO SCALE



WOOD GUARDRAIL
NOT TO SCALE



RIP-RAP APRON/CHANNEL DETAIL
(NOT TO SCALE)

filtrexx®
SUSTAINABLE TECHNOLOGIES

INSTALLATION SPECIFICATION

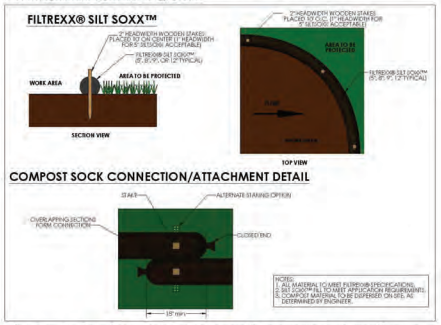
PERIMETER CONTROL - Compost Filter Sock

INSTALLATION

1. Perimeter control will be placed at locations indicated on plans and in a manner as directed by the Engineer or Manufacturer.
2. Perimeter control should be installed parallel to the base of the slope or other disturbed area. In challenging conditions (i.e., 2:1 slopes), a second perimeter control shall be constructed at the top of the slope, or staking may be increased.
3. Effective Soxx height in the field should be as follows: ~~5" diameter Soxx = 4" high~~ ~~8" diameter Soxx = 6.5" high~~ ~~12" diameter Soxx = 9.5" high~~, 18" diameter Soxx = 14.5" high, 24" diameter Soxx = 19" high.
4. Stakes should be installed through the middle of the perimeter control on 10 ft (3m) centers, using 2 in (50mm) by 2 in (50mm) by 3 ft (1m) wooden stakes. 5" diameter Soxx may use 1" (25 mm) x 1" (25 mm) x 18" (0.5 m) wooden stakes. In the event staking is not possible, i.e., when perimeter control is used on pavement, heavy concrete blocks shall be used behind the perimeter control to help stabilize during rainfall/runoff events.
5. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.
6. Straighten or position the Soxx as needed on the ground, ensuring there is good ground contact and no void spaces under the Soxx.
7. Do not drag Soxx across rough surfaces. If dragging across a rough surface is necessary, place a barrier such as plastic or a tarp under Soxx to prevent tearing.
8. Loose compost may be backfilled along the upslope side of the perimeter control, filling the seam between the soil surface and the device, improving filtration and sediment retention.
9. If the perimeter control is to be left as a permanent filter or part of the natural landscape, it may be seeded at time of installation for establishment of permanent vegetation. The Engineer will specify seed requirements.

MAINTENANCE & DISPOSAL

1. The contractor shall remove sediment at the base of the upslope side of the perimeter when accumulation has reached 1/2 of the effective height of the sock, or as directed by the Engineer. Alternatively, a new perimeter control sock can be placed on top of and slightly behind the original one creating more sediment storage capacity without soil disturbance.
2. Perimeter control shall be maintained until disturbed area above the device has been permanently stabilized and construction activity has ceased.
3. The FilterMedia will be dispersed on site once disturbed area has been permanently stabilized, construction activity has ceased, or as determined by the Engineer.



Refer to Design Specification for complete application, design, installation, maintenatnce, and removal documentation.

filtrexx.com | 877.542.7699 | info@filtrexx.com

NO.	DATE	REVISIONS
1	01/29/2021	ISSUE FOR CONSTRUCTION
2	08/28/2021	SPECIAL PERMIT MODIFICATION

SEAL

COMMONWEALTH OF MASSACHUSETTS
NICOLA FACENDOLA
CIVIL
No. 48254
REGISTERED PROFESSIONAL ENGINEER
08/28/21

DATE: AUGUST 21, 2020
DRAWN: NF / DRC
SCALE: AS SHOWN

BROOK STREET SOLAR COMMERCIAL SOLAR FACILITY

ASSESSOR PARCEL - MAP 16; PARCEL 28
BROOK STREET
DIGHTON, MASSACHUSETTS

LEVEL DESIGN GROUP
CIVIL ENGINEERING / LAND SURVEYING
249 SOUTH STREET
UNIT 1
PLAINVILLE, MA 02762
TEL. (508) 695-2221 FAX. (508) 695-2219

DETAILS

C-5.1

SHEET 10 OF 10

1817.00

TOWN OF DIGHTON

PLANNING BOARD

979 Somerset Avenue
Dighton, MA 02715
Tel: (508) 669-6636, Ext. 114

NOTICE OF DECISION
MINOR SITE PLAN APPROVAL

APPLICANT: GRASSHOPPER ENERGY, LLC
c/o GHTJA03, LLC
5935 AIRPORT ROAD, SUITE 210
MISSISSAUGA, ON L4V 1W5

1. On or about December 10, 2020 the Dighton Planning Board received notification for a request for a Minor Site Plan Review. The proposed modification seeks to reduce the culvert width from 25' to 18' wide, realign the width and layout of the gravel access driveway, reposition the proposed access gate and signage and to relocate the proposed utility poles from the west side of the driveway to the east side of the driveway.

   The proposed use requires SITE PLAN APPROVAL from the Planning Board pursuant to 5460 of the Dighton Zoning Bylaws, entitled Minor Site Plan.

2. The site is located at 0 Brook Street and shown on Assessors' Map 16, Lot 28.

3. This decision is accompanied by plan entitled Driveway Modification Site Plan dated December 10, 2020 consisting of one (1) sheet.

4. The Dighton Planning Board at a regular scheduled meeting held on January 6, 2021 Voted to: ( ) grant, (X) grant, subject to conditions, ( ) deny the above referenced request to APPROVE the MINOR Special Permit/Site Plan. Condition of approval, if any: the Applicant will maintain the culvert in perpetuity as determined by the Stormwater Committee.

DIGHTON PLANNING BOARD

Timothy Rhines, Chairman

Robert Boughner, Vice Chairman

Joseph Figueiredo, Member

Robert Woods, Member

Jeff Carvalho, Member

The following members of the Planning Board are in opposition to the grant of the special permit:

_____ _____

_____ _____

Filed with the Town Clerk on January 21, 2021.

Susana Medeiros, Town Clerk

cc: Conservation Commission
Board of Health
Building Commissioner
Town Engineer
Highway Department
Fire Chief

RECEIVED
2021 JAN 21 AM 9:18
TOWN CLERK
DIGHTON, MA
BY

STORMWATER SUMMARY FOR
BASIN 1 MODIFICATION
TO SUPPORT A
SPECIAL PERMIT MODIFICATIN
FOR BROOK STREET SOLAR-COMMERCIAL SOLAR FACILITY
893 BROOK STREET, DIGHTON, MA
ASSESSOR MAP 16; PARCEL 28

Level Design Group, L.L.C. (LDG), on behalf of the project developer, GHTJA03, LLC (Grasshopper Energy), has prepared the following analysis for the maintenance/repair of the two existing on-site stormwater management basins located at the above-referenced parcel. The analysis intends to provide a modified design that will result in the basins draining within 72 hours after a storm event. Currently, Basin 1 is retaining stormwater for a prolonged period of time despite the basins being reconstructed in the fall of 2022 to remove unsuitable materials from below the basin floor and to regrade and re-install the basin outlets per the original design plan. As part of the review and design of the basin modification, LDG has taken into account recommendations and findings by Weston & Sampson detailed in two letters dated December 11, 2023, & March 15, 2024, addressed to the Town of Dighton Stormwater Committee.

The proposed basin improvements and calculations included in this review are based on a drainage as-built survey prepared by LDG dated November 17, 2022. The drainage as-built survey details existing as-built site grades within the basin footprints, installed outlets, and installed solar panel racking within the basin areas.

Basin 1 Maintenance / Repair:

The proposed modifications to Basin 1 include the installation of a new 4" perforated pipe basin subdrain which will daylight to a solid 4"PVC outlet pipe discharging to the existing splash pad/level spreader. The subdrain consists of a network of 4" perforated PCV pipes at an installed slope of 0.005 ft/ft embedded in the crushed stone floor of Basin 1. The subdrain is located within the low point of the existing basin in the northeast corner of the basin floor. The existing grade of the basin floor in this area is between 75.7 – 76.3. As part of the proposed basin modification, the basin floor in this area will be filled with additional crushed stone to provide an approximately level basin floor elevation of 76.5. The additional crushed stone will provide adequate cover over the proposed basin subdrain and allow for the water in the basin to be efficiently collected into the subdrain network and discharged through the 4" solid PVC pipe.

A review of the existing basin volume and adjustments made for the additional crushed stone to be added to the basin floor detail a total basin volume 28,778 cu.ft. of storage volume below the crest of the installed outlet weir at elevation 78.70. Based on the total storage volume and the calculated capacity of a 4" PVC pipe flowing full installed at a 0.010 ft/ft slope being equal to 0.22 cfs, the basin if full, will be able to fully drain through the 4" pipe within 36.34 hours (see the calculation below).

[(28,788 cu.ft.) / (0.22 cu.ft /sec)] / (3,600 seconds/hour) = 36.34 hours (note: this calculation assumes no infiltration occurs through the bottom of the basin floor).

Based on the provided calculation the basin will be able to fully drain through the proposed 4" pipe well within the required 72-hour time period. If the 4" pipe were to be only flowing half-full due to a partial blockage the basin would still drain in approximately 72.6 hours based on an analysis of the 4" pipe flowing a half its calculated capacity.

In addition to the analysis of the proposed 4" PVC outlet, LDG has recreated the HydroCAD model to evaluate the peak rate of runoff and flows from the 2-, 10-, 25-, & 100-year storm events at Design Point 1. Within the provided analysis the contributing sub-catchments are identical to the approved stormwater report prepared by Atlantic Engineers dated 07/16/2018 and the subsequent Addendums dated 11/19/2018 & 12/05/2018. The original analysis for Basin 1 included an exfiltration rate of 2.41 inches per hour associated with Loamy Sand material. The new HydroCAD model for the proposed modifications to Basin 1 includes the new 4" subdrain outlet pipe, the as-built basin volume and outlet weir, and an exfiltration rate that has been adjusted to 0.27 inches per hour for a Sandy Clay Loam soil textural class to more accurately model the infiltration through the basin. The table below details the previously approved pre-development and post-development flows and volumes as compared to the currently proposed basin modification flow and volume for the design storm events.

The table above details that the proposed post-development flow is mitigated for all storm events as compared to the originally approved pre-development flow rates. There are minor increases to the calculated proposed post-development volumes associated with each design storm. The post-development flows are unavoidable given that

Design Point 1	Pre - Development Flow	Pre - Development Volume	Approved Post-Development Flow	Approved Post-Development Volume	Proposed Post-Development Flow	Proposed Post-Development Volume	
	cfs	af	cfs	af	cfs	af	increase
2-year	**7.13**	**1.53**	6.40	1.31	***6.78***	***1.68***	***0.15***
10-year	**20.48**	**4.00**	19.44	3.43	***18.26***	***4.07***	***0.07***
25-year	**30.02**	**5.75**	29.42	5.11	***28.14***	***5.83***	***0.08***
100-year	**45.69**	**8.67**	45.30	7.93	***44.76***	***8.80***	***0.13***

current basin configuration was originally designed to fully infiltrate the 2-year storm event and was designed with no outlets other than the overflow weir and an infiltration rate that is nine (9) times the infiltration rate utilized in the current analysis.

Based on the analysis above and provided calculations and updated HydroCAD model of the proposed modifications to Basin 1 will allow for the basin to fully drain within 72-hours after a storm event. The modified basin continues to mitigate peak flows at the original design points as required by current MADEP Stormwater Management Standards and current Town of Dighton Stormwater Regulations.

Basin 3 Maintenance / Repair (not included as part of the Special Permit Modification):

The proposed modifications to Basin 3 include re-grading the basin floor to provide a positive pitch from the northerly end of the basin to the southerly end of the basin where the basin outlet pipes are located. A review of the current Basin 3 grading details that the basin below point is located in the northerly part of the basin at the approximate elevation of 76±. The proposed re-grading of the basin will pull the 76 contour to the southerly side of the basin creating the low point of the basin floor in the location of the two outlet pipes allowing the basin to properly drain.

In addition to re-grading the basin floor, the two outlet pipes will have their outlets reset to the regraded bottom of the basin. Outlet Pipe 1 will have a 6"x4" reducer installed in order to maintain the post-development design flow at less than 0.92 cfs for the 2-year storm. Outlet Pipe 2 will remain as a 6" outlet with a modified invert elevation. These proposed minor modifications to the installed basin outlets will minimize site disturbance to the existing basin while providing the required peak flow mitigation.

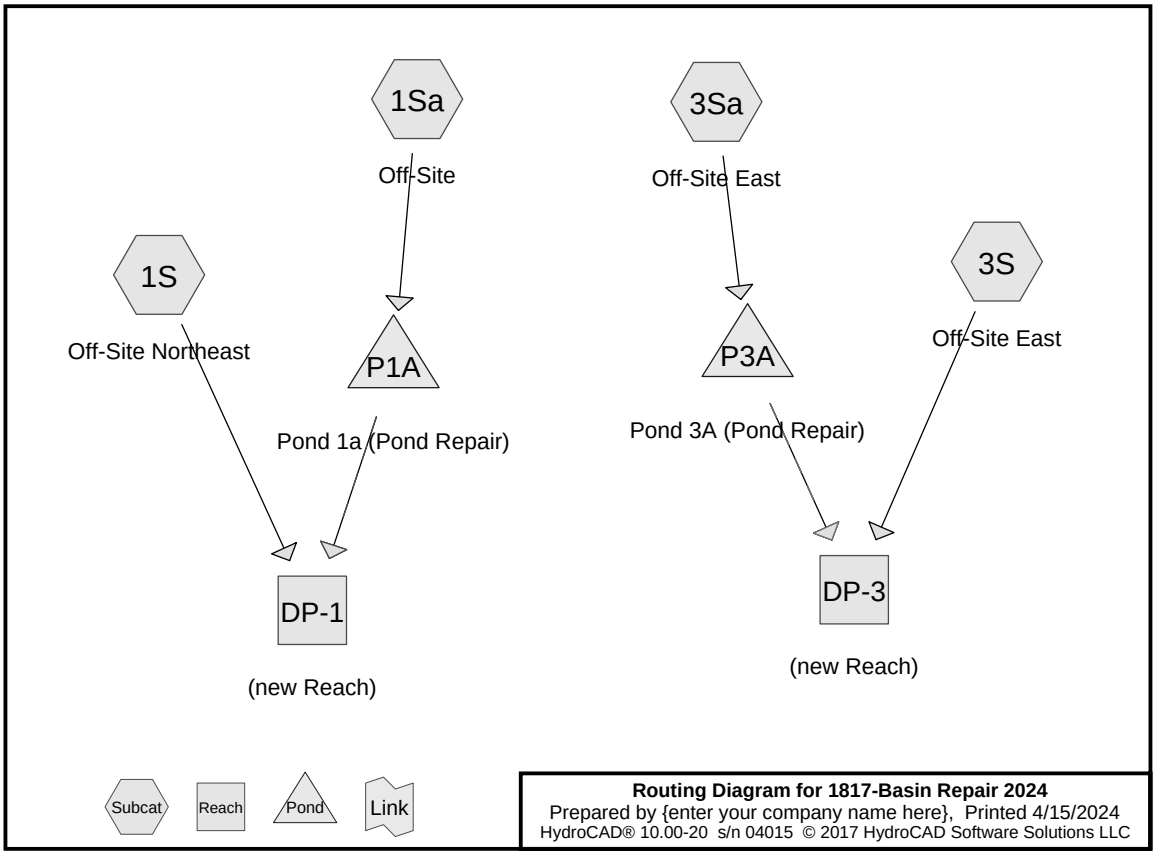
The table above details that the proposed post-development flow is mitigated for all storm events as compared to the originally approved pre-development flow rates. Despite the minor change in basin volume the proposed post-development volume is exactly the same as the current approved post-development design volume. The approved post-development design volumes all exceeded the pre-development design volumes as detailed in the table above.

Design Point 3	Pre - Development Flow	Pre - Development Volume	Approved Post-Development Flow	Approved Post-Development Volume	Proposed Post-Development Flow	Proposed Post-Development Volume
Storm	cfs	af	cfs	af	cfs	af
2-year	**0.92**	**0.14**	0.86	0.30	***0.91***	***0.30***
10-year	**2.63**	**0.36**	2.17	0.63	***2.20***	***0.63***
25-year	**3.84**	**0.52**	2.95	0.85	***2.95***	***0.85***
100-year	**5.81**	**0.78**	5.75	1.20	***4.07***	***1.20***

Based on the analysis above and the updated HydroCAD model the proposed modifications to the approved Basin 3 will allow for the basin to fully drain to the basin floor elevation of 76.0 within 72-hours of a storm event. The modified basin continues to mitigate peak flows at the original design point as required by as required by current MADEP Stormwater Management Standards and current Town of Dighton Stormwater Regulations.

Summary:

The proposed design changes changes to Basin 1 will allow the stormwater basins to dewater within the required 72-hour time period after a stormwater event and are in line with the recommendations and findings by Weston & Sampson detailed in two letters dated December 11, 2023 & March 15, 2024 addressed to the Town of Dighton Stormwater Committee. The modified basin will continue to mitigate peak flows at the original design points originally approved and as required by as required by current MADEP Stormwater Management Standards and current Town of Dighton Stormwater Regulations.



Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.602	74	>75% Grass cover, Good, HSG C (1S, 1Sa, 3S, 3Sa)
0.015	98	Equipment Pad, HSG C (1Sa)
0.073	96	Gravel Road (3Sa)
0.133	96	Gravel Road, HSG C (1S)
0.228	98	Gravel Road, HSG C (1Sa)
1.250	98	Water Surface, HSG C (1Sa, 3Sa)
15.202	70	Woods, Good, HSG C (1S, 3S)
24.502	**73**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
24.430	HSG C	1S, 1Sa, 3S, 3Sa
0.000	HSG D	
0.073	Other	3Sa
24.502		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	7.602	0.000	0.000	7.602	>75% Grass cover, Good	1S, 1Sa, 3S, 3Sa
0.000	0.000	0.015	0.000	0.000	0.015	Equipment Pad	1Sa
0.000	0.000	0.361	0.000	0.073	0.434	Gravel Road	1S, 1Sa, 3Sa
0.000	0.000	1.250	0.000	0.000	1.250	Water Surface	1Sa, 3Sa
0.000	0.000	15.202	0.000	0.000	15.202	Woods, Good	1S, 3S
0.000	**0.000**	**24.430**	**0.000**	**0.073**	**24.502**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	P1A	75.50	75.10	40.0	0.0100	0.013	4.0	0.0	0.0
2	P3A	76.00	75.52	20.0	0.0240	0.013	4.0	0.0	0.0
3	P3A	76.55	75.60	20.0	0.0475	0.013	6.0	0.0	0.0

Time span=1.00-73.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Off-Site Northeast Runoff Area=772,071 sf 0.00% Impervious Runoff Depth=0.88"
Flow Length=1,645' Tc=61.7 min CN=71 Runoff=6.40 cfs 1.306 af

Subcatchment 1Sa: Off-Site Runoff Area=190,352 sf 20.04% Impervious Runoff Depth=1.34"
Flow Length=540' Tc=12.8 min CN=79 Runoff=5.43 cfs 0.490 af

Subcatchment 3S: Off-Site East Runoff Area=21,487 sf 0.00% Impervious Runoff Depth=0.94"
Tc=6.0 min CN=72 Runoff=0.50 cfs 0.038 af

Subcatchment 3Sa: Off-Site East Runoff Area=83,406 sf 32.23% Impervious Runoff Depth=1.62"
Flow Length=366' Tc=8.6 min CN=83 Runoff=3.31 cfs 0.258 af

Reach DP-1: (new Reach) Inflow=6.78 cfs 1.681 af
Outflow=6.78 cfs 1.681 af

Reach DP-3: (new Reach) Inflow=0.91 cfs 0.297 af
Outflow=0.91 cfs 0.297 af

Pond P1A: Pond 1a (Pond Repair) Peak Elev=77.57' Storage=9,773 cf Inflow=5.43 cfs 0.490 af
Discarded=0.16 cfs 0.114 af Primary=0.38 cfs 0.375 af Secondary=0.00 cfs 0.000 af Outflow=0.53 cfs 0.490 af

Pond P3A: Pond 3A (Pond Repair) Peak Elev=77.03' Storage=4,350 cf Inflow=3.31 cfs 0.258 af
Primary=0.34 cfs 0.200 af Secondary=0.40 cfs 0.058 af Tertiary=0.00 cfs 0.000 af Outflow=0.74 cfs 0.258 af

Total Runoff Area = 24.502 ac Runoff Volume = 2.092 af Average Runoff Depth = 1.02"
93.91% Pervious = 23.009 ac 6.09% Impervious = 1.493 ac

Summary for Subcatchment 1S: Off-Site Northeast

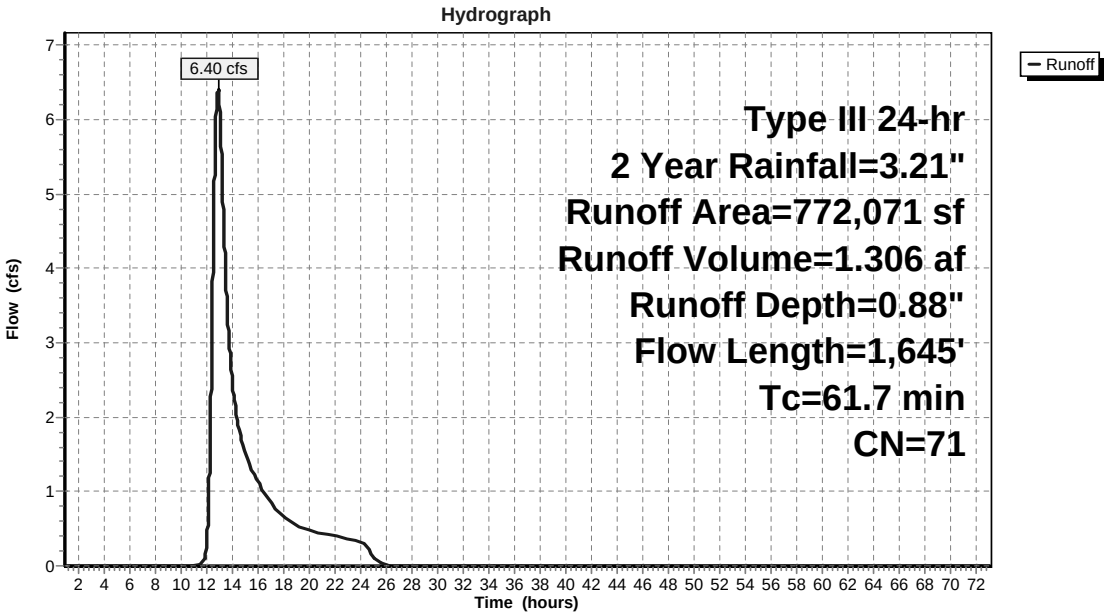
Runoff = 6.40 cfs @ 12.95 hrs, Volume= 1.306 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.21"

	Area (sf)	CN	Description
	650,962	70	Woods, Good, HSG C
	115,309	74	>75% Grass cover, Good, HSG C
*	5,800	96	Gravel Road, HSG C
	772,071	71	Weighted Average
	772,071		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.0	50	0.0080	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.00"
12.6	628	0.0276	0.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.3	496	0.0276	2.49		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.8	471	0.0130	0.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
61.7	1,645	Total			

Subcatchment 1S: Off-Site Northeast



Hydrograph for Subcatchment 1S: Off-Site Northeast

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00	36.00	3.21	0.88	0.00	71.00	3.21	0.88	0.00
2.00	0.06	0.00	0.00	37.00	3.21	0.88	0.00	72.00	3.21	0.88	0.00
3.00	0.10	0.00	0.00	38.00	3.21	0.88	0.00	73.00	3.21	0.88	0.00
4.00	0.14	0.00	0.00	39.00	3.21	0.88	0.00				
5.00	0.18	0.00	0.00	40.00	3.21	0.88	0.00				
6.00	0.23	0.00	0.00	41.00	3.21	0.88	0.00				
7.00	0.29	0.00	0.00	42.00	3.21	0.88	0.00				
8.00	0.37	0.00	0.00	43.00	3.21	0.88	0.00				
9.00	0.47	0.00	0.00	44.00	3.21	0.88	0.00				
10.00	0.61	0.00	0.00	45.00	3.21	0.88	0.00				
11.00	0.80	0.00	0.00	46.00	3.21	0.88	0.00				
12.00	1.60	0.13	**0.25**	47.00	3.21	0.88	0.00				
13.00	2.41	0.45	**6.30**	48.00	3.21	0.88	0.00				
14.00	2.60	0.54	2.54	49.00	3.21	0.88	0.00				
15.00	2.74	0.62	1.54	50.00	3.21	0.88	0.00				
16.00	2.84	0.67	1.14	51.00	3.21	0.88	0.00				
17.00	2.92	0.71	0.85	52.00	3.21	0.88	0.00				
18.00	2.98	0.75	0.67	53.00	3.21	0.88	0.00				
19.00	3.03	0.78	0.54	54.00	3.21	0.88	0.00				
20.00	3.07	0.80	0.48	55.00	3.21	0.88	0.00				
21.00	3.11	0.83	0.44	56.00	3.21	0.88	0.00				
22.00	3.15	0.85	0.40	57.00	3.21	0.88	0.00				
23.00	3.18	0.87	0.37	58.00	3.21	0.88	0.00				
24.00	**3.21**	**0.88**	0.33	59.00	3.21	0.88	0.00				
25.00	3.21	0.88	0.12	60.00	3.21	0.88	0.00				
26.00	3.21	0.88	0.01	61.00	3.21	0.88	0.00				
27.00	3.21	0.88	0.00	62.00	3.21	0.88	0.00				
28.00	3.21	0.88	0.00	63.00	3.21	0.88	0.00				
29.00	3.21	0.88	0.00	64.00	3.21	0.88	0.00				
30.00	3.21	0.88	0.00	65.00	3.21	0.88	0.00				
31.00	3.21	0.88	0.00	66.00	3.21	0.88	0.00				
32.00	3.21	0.88	0.00	67.00	3.21	0.88	0.00				
33.00	3.21	0.88	0.00	68.00	3.21	0.88	0.00				
34.00	3.21	0.88	0.00	69.00	3.21	0.88	0.00				
35.00	3.21	0.88	0.00	70.00	3.21	0.88	0.00				

Summary for Subcatchment 1Sa: Off-Site

Runoff = 5.43 cfs @ 12.18 hrs, Volume= 0.490 af, Depth= 1.34"

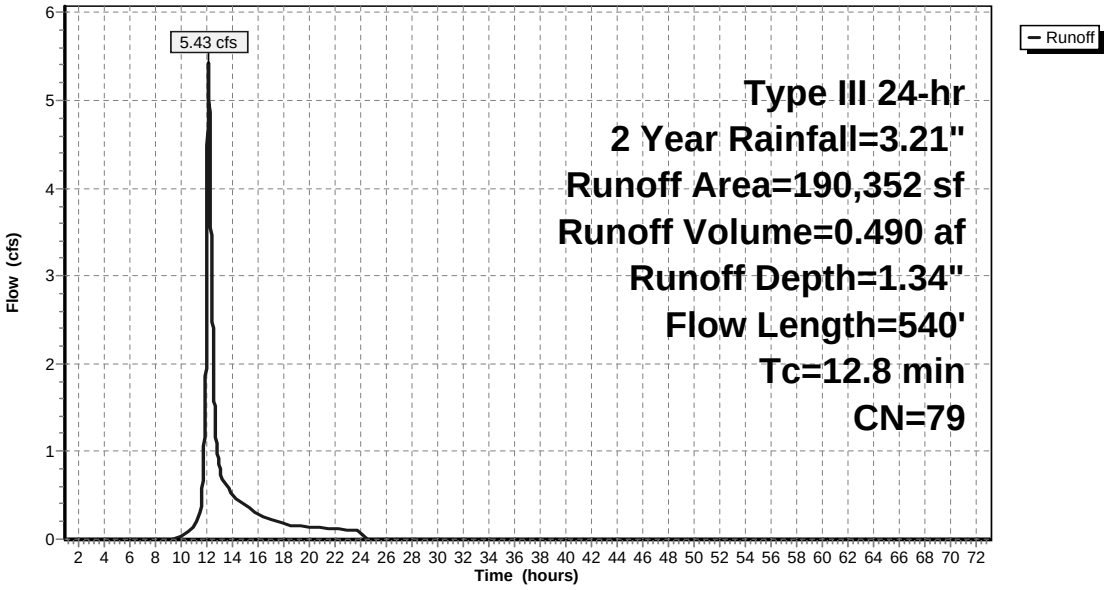
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.21"

	Area (sf)	CN	Description
	152,204	74	>75% Grass cover, Good, HSG C
*	9,937	98	Gravel Road, HSG C
	27,571	98	Water Surface, HSG C
*	640	98	Equipment Pad, HSG C
	190,352	79	Weighted Average
	152,204		79.96% Pervious Area
	38,148		20.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0380	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
8.3	490	0.0196	0.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.8	540	Total			

Subcatchment 1Sa: Off-Site

Hydrograph



Hydrograph for Subcatchment 1Sa: Off-Site

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00	36.00	3.21	1.34	0.00	71.00	3.21	1.34	0.00
2.00	0.06	0.00	0.00	37.00	3.21	1.34	0.00	72.00	3.21	1.34	0.00
3.00	0.10	0.00	0.00	38.00	3.21	1.34	0.00	73.00	3.21	1.34	0.00
4.00	0.14	0.00	0.00	39.00	3.21	1.34	0.00				
5.00	0.18	0.00	0.00	40.00	3.21	1.34	0.00				
6.00	0.23	0.00	0.00	41.00	3.21	1.34	0.00				
7.00	0.29	0.00	0.00	42.00	3.21	1.34	0.00				
8.00	0.37	0.00	0.00	43.00	3.21	1.34	0.00				
9.00	0.47	0.00	0.00	44.00	3.21	1.34	0.00				
10.00	0.61	0.00	0.02	45.00	3.21	1.34	0.00				
11.00	0.80	0.03	0.15	46.00	3.21	1.34	0.00				
12.00	1.60	0.31	**2.14**	47.00	3.21	1.34	0.00				
13.00	2.41	0.78	**0.84**	48.00	3.21	1.34	0.00				
14.00	2.60	0.91	0.52	49.00	3.21	1.34	0.00				
15.00	2.74	1.00	0.39	50.00	3.21	1.34	0.00				
16.00	2.84	1.08	0.28	51.00	3.21	1.34	0.00				
17.00	2.92	1.13	0.22	52.00	3.21	1.34	0.00				
18.00	2.98	1.17	0.17	53.00	3.21	1.34	0.00				
19.00	3.03	1.21	0.15	54.00	3.21	1.34	0.00				
20.00	3.07	1.24	0.14	55.00	3.21	1.34	0.00				
21.00	3.11	1.27	0.13	56.00	3.21	1.34	0.00				
22.00	3.15	1.30	0.12	57.00	3.21	1.34	0.00				
23.00	3.18	1.32	0.10	58.00	3.21	1.34	0.00				
24.00	**3.21**	**1.34**	0.09	59.00	3.21	1.34	0.00				
25.00	3.21	1.34	0.00	60.00	3.21	1.34	0.00				
26.00	3.21	1.34	0.00	61.00	3.21	1.34	0.00				
27.00	3.21	1.34	0.00	62.00	3.21	1.34	0.00				
28.00	3.21	1.34	0.00	63.00	3.21	1.34	0.00				
29.00	3.21	1.34	0.00	64.00	3.21	1.34	0.00				
30.00	3.21	1.34	0.00	65.00	3.21	1.34	0.00				
31.00	3.21	1.34	0.00	66.00	3.21	1.34	0.00				
32.00	3.21	1.34	0.00	67.00	3.21	1.34	0.00				
33.00	3.21	1.34	0.00	68.00	3.21	1.34	0.00				
34.00	3.21	1.34	0.00	69.00	3.21	1.34	0.00				
35.00	3.21	1.34	0.00	70.00	3.21	1.34	0.00				

Summary for Subcatchment 3S: Off-Site East

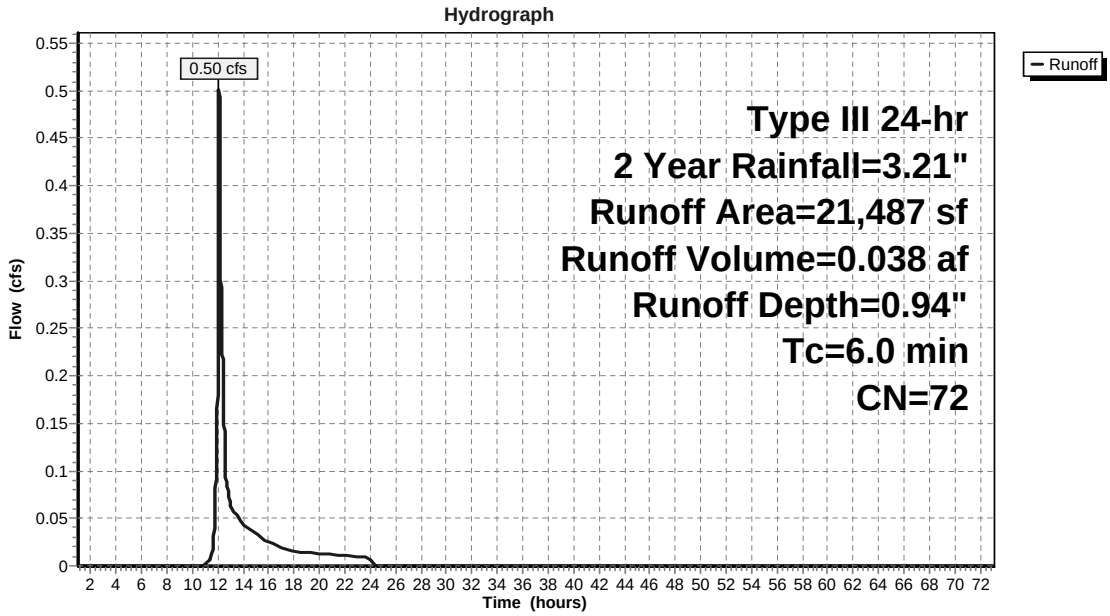
Runoff = 0.50 cfs @ 12.10 hrs, Volume= 0.038 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.21"

Area (sf)	CN	Description
11,216	70	Woods, Good, HSG C
10,271	74	>75% Grass cover, Good, HSG C
21,487	72	Weighted Average
21,487		100.00% Pervious Area

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

Subcatchment 3S: Off-Site East



Hydrograph for Subcatchment 3S: Off-Site East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00	36.00	3.21	0.94	0.00	71.00	3.21	0.94	0.00
2.00	0.06	0.00	0.00	37.00	3.21	0.94	0.00	72.00	3.21	0.94	0.00
3.00	0.10	0.00	0.00	38.00	3.21	0.94	0.00	73.00	3.21	0.94	0.00
4.00	0.14	0.00	0.00	39.00	3.21	0.94	0.00				
5.00	0.18	0.00	0.00	40.00	3.21	0.94	0.00				
6.00	0.23	0.00	0.00	41.00	3.21	0.94	0.00				
7.00	0.29	0.00	0.00	42.00	3.21	0.94	0.00				
8.00	0.37	0.00	0.00	43.00	3.21	0.94	0.00				
9.00	0.47	0.00	0.00	44.00	3.21	0.94	0.00				
10.00	0.61	0.00	0.00	45.00	3.21	0.94	0.00				
11.00	0.80	0.00	0.00	46.00	3.21	0.94	0.00				
12.00	1.60	0.15	**0.25**	47.00	3.21	0.94	0.00				
13.00	2.41	0.48	**0.06**	48.00	3.21	0.94	0.00				
14.00	2.60	0.58	0.04	49.00	3.21	0.94	0.00				
15.00	2.74	0.66	0.03	50.00	3.21	0.94	0.00				
16.00	2.84	0.72	0.02	51.00	3.21	0.94	0.00				
17.00	2.92	0.76	0.02	52.00	3.21	0.94	0.00				
18.00	2.98	0.80	0.02	53.00	3.21	0.94	0.00				
19.00	3.03	0.82	0.01	54.00	3.21	0.94	0.00				
20.00	3.07	0.85	0.01	55.00	3.21	0.94	0.00				
21.00	3.11	0.88	0.01	56.00	3.21	0.94	0.00				
22.00	3.15	0.90	0.01	57.00	3.21	0.94	0.00				
23.00	3.18	0.92	0.01	58.00	3.21	0.94	0.00				
24.00	**3.21**	**0.94**	0.01	59.00	3.21	0.94	0.00				
25.00	3.21	0.94	0.00	60.00	3.21	0.94	0.00				
26.00	3.21	0.94	0.00	61.00	3.21	0.94	0.00				
27.00	3.21	0.94	0.00	62.00	3.21	0.94	0.00				
28.00	3.21	0.94	0.00	63.00	3.21	0.94	0.00				
29.00	3.21	0.94	0.00	64.00	3.21	0.94	0.00				
30.00	3.21	0.94	0.00	65.00	3.21	0.94	0.00				
31.00	3.21	0.94	0.00	66.00	3.21	0.94	0.00				
32.00	3.21	0.94	0.00	67.00	3.21	0.94	0.00				
33.00	3.21	0.94	0.00	68.00	3.21	0.94	0.00				
34.00	3.21	0.94	0.00	69.00	3.21	0.94	0.00				
35.00	3.21	0.94	0.00	70.00	3.21	0.94	0.00				

Summary for Subcatchment 3Sa: Off-Site East

Runoff = 3.31 cfs @ 12.12 hrs, Volume= 0.258 af, Depth= 1.62"

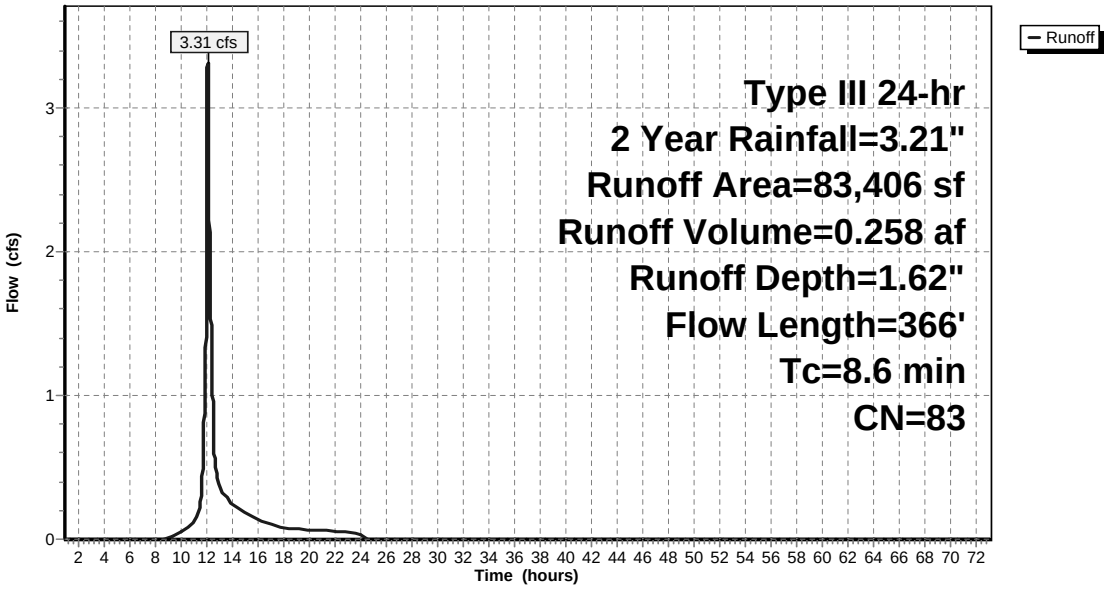
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.21"

	Area (sf)	CN	Description
	53,364	74	>75% Grass cover, Good, HSG C
	26,882	98	Water Surface, HSG C
*	3,160	96	Gravel Road
	83,406	83	Weighted Average
	56,524		67.77% Pervious Area
	26,882		32.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	50	0.0280	0.16		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.00"
0.4	82	0.0316	3.61		**Shallow Concentrated Flow, Shallow Conc. Flow** Paved Kv= 20.3 fps
3.1	234	0.0317	1.25		**Shallow Concentrated Flow, Shallow Conc Flow** Short Grass Pasture Kv= 7.0 fps
8.6	366	Total			

Subcatchment 3Sa: Off-Site East

Hydrograph



Hydrograph for Subcatchment 3Sa: Off-Site East

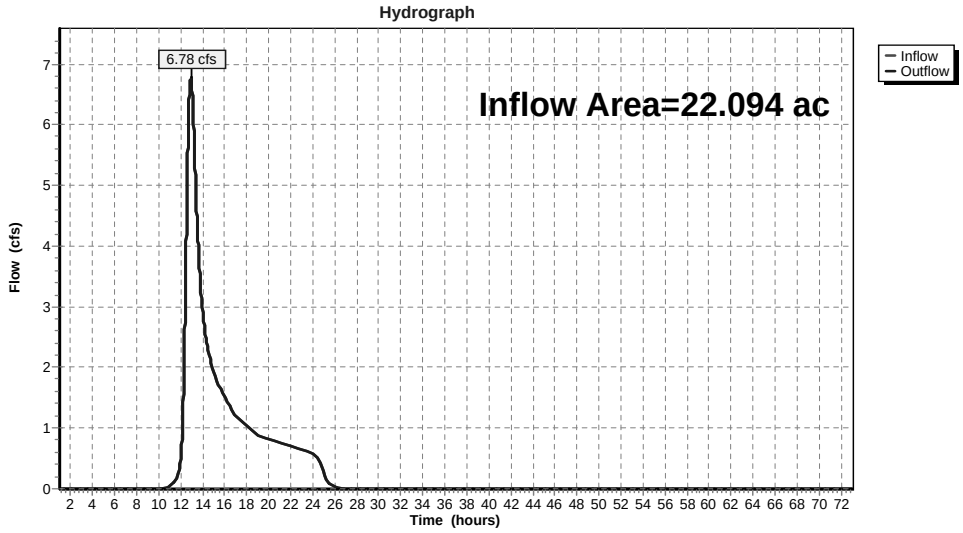
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00	36.00	3.21	1.62	0.00	71.00	3.21	1.62	0.00
2.00	0.06	0.00	0.00	37.00	3.21	1.62	0.00	72.00	3.21	1.62	0.00
3.00	0.10	0.00	0.00	38.00	3.21	1.62	0.00	73.00	3.21	1.62	0.00
4.00	0.14	0.00	0.00	39.00	3.21	1.62	0.00				
5.00	0.18	0.00	0.00	40.00	3.21	1.62	0.00				
6.00	0.23	0.00	0.00	41.00	3.21	1.62	0.00				
7.00	0.29	0.00	0.00	42.00	3.21	1.62	0.00				
8.00	0.37	0.00	0.00	43.00	3.21	1.62	0.00				
9.00	0.47	0.00	0.01	44.00	3.21	1.62	0.00				
10.00	0.61	0.02	0.04	45.00	3.21	1.62	0.00				
11.00	0.80	0.06	0.12	46.00	3.21	1.62	0.00				
12.00	1.60	0.44	**1.61**	47.00	3.21	1.62	0.00				
13.00	2.41	0.99	**0.39**	48.00	3.21	1.62	0.00				
14.00	2.60	1.13	0.25	49.00	3.21	1.62	0.00				
15.00	2.74	1.24	0.19	50.00	3.21	1.62	0.00				
16.00	2.84	1.32	0.13	51.00	3.21	1.62	0.00				
17.00	2.92	1.38	0.11	52.00	3.21	1.62	0.00				
18.00	2.98	1.43	0.08	53.00	3.21	1.62	0.00				
19.00	3.03	1.47	0.07	54.00	3.21	1.62	0.00				
20.00	3.07	1.50	0.07	55.00	3.21	1.62	0.00				
21.00	3.11	1.54	0.06	56.00	3.21	1.62	0.00				
22.00	3.15	1.57	0.06	57.00	3.21	1.62	0.00				
23.00	3.18	1.59	0.05	58.00	3.21	1.62	0.00				
24.00	**3.21**	**1.62**	0.04	59.00	3.21	1.62	0.00				
25.00	3.21	1.62	0.00	60.00	3.21	1.62	0.00				
26.00	3.21	1.62	0.00	61.00	3.21	1.62	0.00				
27.00	3.21	1.62	0.00	62.00	3.21	1.62	0.00				
28.00	3.21	1.62	0.00	63.00	3.21	1.62	0.00				
29.00	3.21	1.62	0.00	64.00	3.21	1.62	0.00				
30.00	3.21	1.62	0.00	65.00	3.21	1.62	0.00				
31.00	3.21	1.62	0.00	66.00	3.21	1.62	0.00				
32.00	3.21	1.62	0.00	67.00	3.21	1.62	0.00				
33.00	3.21	1.62	0.00	68.00	3.21	1.62	0.00				
34.00	3.21	1.62	0.00	69.00	3.21	1.62	0.00				
35.00	3.21	1.62	0.00	70.00	3.21	1.62	0.00				

Summary for Reach DP-1: (new Reach)

Inflow Area = 22.094 ac, 3.96% Impervious, Inflow Depth = 0.91" for 2 Year event
Inflow = 6.78 cfs @ 12.95 hrs, Volume= 1.681 af
Outflow = 6.78 cfs @ 12.95 hrs, Volume= 1.681 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs

Reach DP-1: (new Reach)



Hydrograph for Reach DP-1: (new Reach)

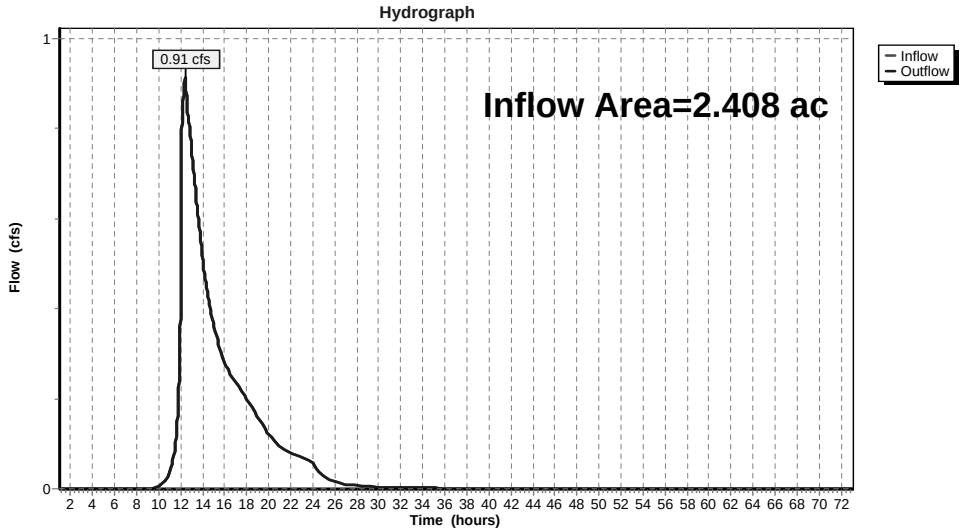
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
1.00	0.00		0.00	36.00	0.00		0.00	71.00	0.00		0.00
2.00	0.00		0.00	37.00	0.00		0.00	72.00	0.00		0.00
3.00	0.00		0.00	38.00	0.00		0.00	73.00	0.00		0.00
4.00	0.00		0.00	39.00	0.00		0.00				
5.00	0.00		0.00	40.00	0.00		0.00				
6.00	0.00		0.00	41.00	0.00		0.00				
7.00	0.00		0.00	42.00	0.00		0.00				
8.00	0.00		0.00	43.00	0.00		0.00				
9.00	0.00		0.00	44.00	0.00		0.00				
10.00	0.00		0.00	45.00	0.00		0.00				
11.00	0.04		0.04	46.00	0.00		0.00				
12.00	**0.53**		**0.53**	47.00	0.00		0.00				
13.00	**6.68**		**6.68**	48.00	0.00		0.00				
14.00	2.92		2.92	49.00	0.00		0.00				
15.00	1.92		1.92	50.00	0.00		0.00				
16.00	1.51		1.51	51.00	0.00		0.00				
17.00	1.21		1.21	52.00	0.00		0.00				
18.00	1.03		1.03	53.00	0.00		0.00				
19.00	0.89		0.89	54.00	0.00		0.00				
20.00	0.82		0.82	55.00	0.00		0.00				
21.00	0.76		0.76	56.00	0.00		0.00				
22.00	0.71		0.71	57.00	0.00		0.00				
23.00	0.65		0.65	58.00	0.00		0.00				
24.00	0.59		0.59	59.00	0.00		0.00				
25.00	0.25		0.25	60.00	0.00		0.00				
26.00	0.03		0.03	61.00	0.00		0.00				
27.00	0.00		0.00	62.00	0.00		0.00				
28.00	0.00		0.00	63.00	0.00		0.00				
29.00	0.00		0.00	64.00	0.00		0.00				
30.00	0.00		0.00	65.00	0.00		0.00				
31.00	0.00		0.00	66.00	0.00		0.00				
32.00	0.00		0.00	67.00	0.00		0.00				
33.00	0.00		0.00	68.00	0.00		0.00				
34.00	0.00		0.00	69.00	0.00		0.00				
35.00	0.00		0.00	70.00	0.00		0.00				

Summary for Reach DP-3: (new Reach)

Inflow Area = 2.408 ac, 25.63% Impervious, Inflow Depth = 1.48" for 2 Year event
Inflow = 0.91 cfs @ 12.38 hrs, Volume= 0.297 af
Outflow = 0.91 cfs @ 12.38 hrs, Volume= 0.297 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs

Reach DP-3: (new Reach)



Hydrograph for Reach DP-3: (new Reach)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
1.00	0.00		0.00	36.00	0.00		0.00	71.00	0.00		0.00
2.00	0.00		0.00	37.00	0.00		0.00	72.00	0.00		0.00
3.00	0.00		0.00	38.00	0.00		0.00	73.00	0.00		0.00
4.00	0.00		0.00	39.00	0.00		0.00				
5.00	0.00		0.00	40.00	0.00		0.00				
6.00	0.00		0.00	41.00	0.00		0.00				
7.00	0.00		0.00	42.00	0.00		0.00				
8.00	0.00		0.00	43.00	0.00		0.00				
9.00	0.00		0.00	44.00	0.00		0.00				
10.00	0.00		0.00	45.00	0.00		0.00				
11.00	0.04		0.04	46.00	0.00		0.00				
12.00	**0.46**		**0.46**	47.00	0.00		0.00				
13.00	**0.75**		**0.75**	48.00	0.00		0.00				
14.00	0.51		0.51	49.00	0.00		0.00				
15.00	0.36		0.36	50.00	0.00		0.00				
16.00	0.28		0.28	51.00	0.00		0.00				
17.00	0.24		0.24	52.00	0.00		0.00				
18.00	0.20		0.20	53.00	0.00		0.00				
19.00	0.16		0.16	54.00	0.00		0.00				
20.00	0.12		0.12	55.00	0.00		0.00				
21.00	0.10		0.10	56.00	0.00		0.00				
22.00	0.08		0.08	57.00	0.00		0.00				
23.00	0.07		0.07	58.00	0.00		0.00				
24.00	0.06		0.06	59.00	0.00		0.00				
25.00	0.03		0.03	60.00	0.00		0.00				
26.00	0.02		0.02	61.00	0.00		0.00				
27.00	0.01		0.01	62.00	0.00		0.00				
28.00	0.01		0.01	63.00	0.00		0.00				
29.00	0.00		0.00	64.00	0.00		0.00				
30.00	0.00		0.00	65.00	0.00		0.00				
31.00	0.00		0.00	66.00	0.00		0.00				
32.00	0.00		0.00	67.00	0.00		0.00				
33.00	0.00		0.00	68.00	0.00		0.00				
34.00	0.00		0.00	69.00	0.00		0.00				
35.00	0.00		0.00	70.00	0.00		0.00				

Summary for Pond P1A: Pond 1a (Pond Repair)

Inflow Area = 4.370 ac, 20.04% Impervious, Inflow Depth = 1.34" for 2 Year event
Inflow = 5.43 cfs @ 12.18 hrs, Volume= 0.490 af
Outflow = 0.53 cfs @ 13.92 hrs, Volume= 0.490 af, Atten= 90%, Lag= 104.0 min
Discarded = 0.16 cfs @ 13.92 hrs, Volume= 0.114 af
Primary = 0.38 cfs @ 13.92 hrs, Volume= 0.375 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Peak Elev= 77.57' @ 13.92 hrs Surf.Area= 14,738 sf Storage= 9,773 cf

Plug-Flow detention time= 214.3 min calculated for 0.489 af (100% of inflow)
Center-of-Mass det. time= 214.3 min (1,066.4 - 852.1)

Volume	Invert	Avail.Storage	Storage Description
#1	75.50'	1,242 cf	**Custom Stage Data (Irregular)** Listed below 3,106 cf Overall x 40.0% Voids
#2	76.50'	37,823 cf	**Custom Stage Data (Irregular)** Listed below
		39,065 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
75.50	3,106	220.0	0	0	3,106
76.00	3,106	220.0	1,553	1,553	3,216
76.50	3,106	220.0	1,553	3,106	3,326

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.50	3,106	220.0	0	0	3,106
77.00	6,731	331.0	2,402	2,402	7,975
78.00	15,313	639.8	10,732	13,134	31,836
79.20	26,330	782.0	24,689	37,823	47,947

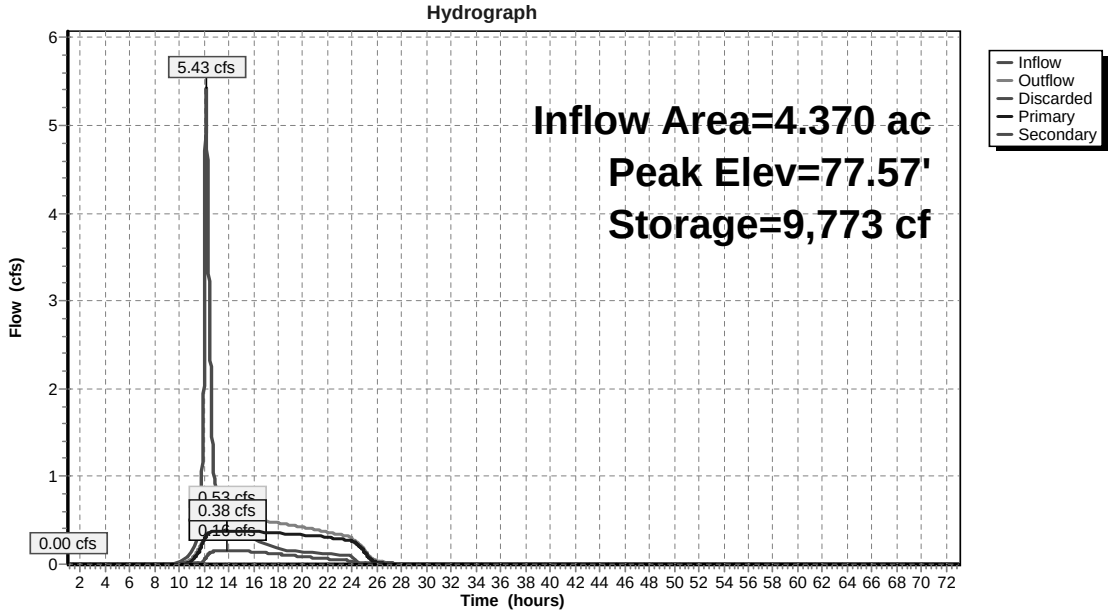
Device	Routing	Invert	Outlet Devices
#1	Secondary	78.70'	**14.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	75.50'	**0.270 in/hr Exfiltration over Wetted area**
#3	Primary	75.50'	**4.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.50' / 75.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf

Discarded OutFlow Max=0.16 cfs @ 13.92 hrs HW=77.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.16 cfs)

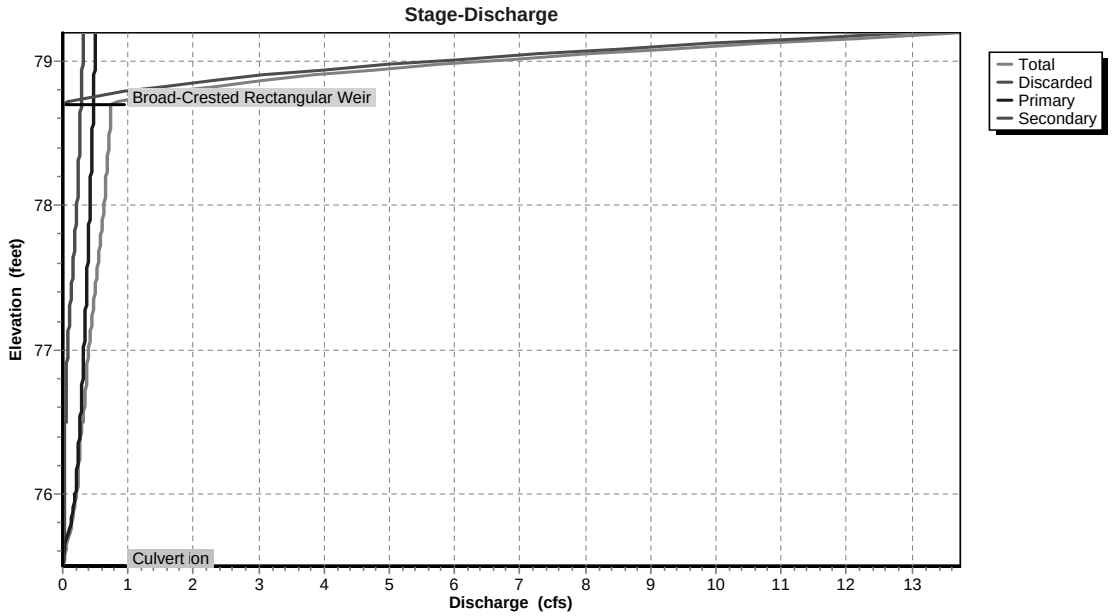
Primary OutFlow Max=0.38 cfs @ 13.92 hrs HW=77.57' (Free Discharge)
└**3=Culvert** (Barrel Controls 0.38 cfs @ 4.33 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=75.50' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

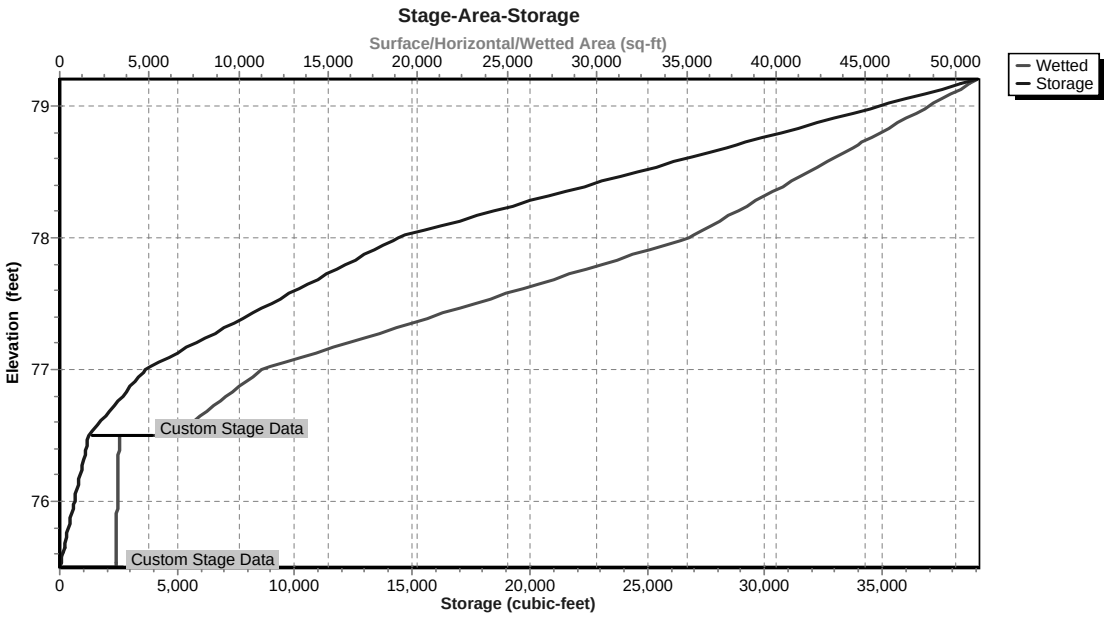
Pond P1A: Pond 1a (Pond Repair)



Pond P1A: Pond 1a (Pond Repair)



Pond P1A: Pond 1a (Pond Repair)



Hydrograph for Pond P1A: Pond 1a (Pond Repair)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
1.00	0.00	0	75.50	0.00	0.00	0.00	**0.00**
6.00	0.00	0	75.50	0.00	0.00	0.00	0.00
11.00	**0.15**	**186**	**75.65**	**0.06**	**0.02**	**0.04**	0.00
16.00	**0.28**	**8,815**	**77.48**	**0.51**	**0.14**	**0.37**	0.00
21.00	0.13	3,797	77.01	0.40	0.07	0.33	0.00
26.00	0.00	126	75.60	0.04	0.02	0.02	0.00
31.00	0.00	0	75.50	0.00	0.00	0.00	0.00
36.00	0.00	0	75.50	0.00	0.00	0.00	0.00
41.00	0.00	0	75.50	0.00	0.00	0.00	0.00
46.00	0.00	0	75.50	0.00	0.00	0.00	0.00
51.00	0.00	0	75.50	0.00	0.00	0.00	0.00
56.00	0.00	0	75.50	0.00	0.00	0.00	0.00
61.00	0.00	0	75.50	0.00	0.00	0.00	0.00
66.00	0.00	0	75.50	0.00	0.00	0.00	0.00
71.00	0.00	0	75.50	0.00	0.00	0.00	0.00

Stage-Discharge for Pond P1A: Pond 1a (Pond Repair)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
75.50	0.00	0.00	0.00	0.00
75.60	0.04	0.02	0.02	0.00
75.70	0.09	0.02	0.07	0.00
75.80	0.14	0.02	0.12	0.00
75.90	0.18	0.02	0.16	0.00
76.00	0.21	0.02	0.19	0.00
76.10	0.23	0.02	0.21	0.00
76.20	0.25	0.02	0.23	0.00
76.30	0.26	0.02	0.24	0.00
76.40	0.27	0.02	0.25	0.00
76.50	0.31	0.04	0.27	0.00
76.60	0.33	0.05	0.28	0.00
76.70	0.34	0.05	0.29	0.00
76.80	0.36	0.06	0.30	0.00
76.90	0.38	0.06	0.31	0.00
77.00	0.39	0.07	0.32	0.00
77.10	0.42	0.09	0.33	0.00
77.20	0.44	0.10	0.34	0.00
77.30	0.47	0.12	0.35	0.00
77.40	0.49	0.13	0.36	0.00
77.50	0.52	0.15	0.37	0.00
77.60	0.54	0.16	0.38	0.00
77.70	0.56	0.18	0.39	0.00
77.80	0.59	0.19	0.40	0.00
77.90	0.61	0.20	0.41	0.00
78.00	0.63	0.22	0.41	0.00
78.10	0.65	0.23	0.42	0.00
78.20	0.67	0.24	0.43	0.00
78.30	0.68	0.24	0.44	0.00
78.40	0.70	0.25	0.45	0.00
78.50	0.71	0.26	0.45	0.00
78.60	0.73	0.27	0.46	0.00
78.70	0.75	0.28	0.47	0.00
78.80	1.81	0.29	0.47	1.05
78.90	3.74	0.30	0.48	2.97
79.00	6.41	0.30	0.49	5.61
79.10	9.70	0.31	0.50	8.89
79.20	**13.72**	**0.32**	**0.50**	**12.89**

Stage-Area-Storage for Pond P1A: Pond 1a (Pond Repair)

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
75.50	3,106	0
75.55	3,117	62
75.60	3,128	124
75.65	3,139	186
75.70	3,150	248
75.75	3,161	311
75.80	3,172	373
75.85	3,183	435
75.90	3,194	497
75.95	3,205	559
76.00	3,216	621
76.05	3,227	683
76.10	3,238	745
76.15	3,249	808
76.20	3,260	870
76.25	3,271	932
76.30	3,282	994
76.35	3,293	1,056
76.40	3,304	1,118
76.45	3,315	1,180
76.50	6,432	1,242
76.55	6,919	1,483
76.60	7,406	1,723
76.65	7,893	1,963
76.70	8,380	2,203
76.75	8,866	2,443
76.80	9,353	2,683
76.85	9,840	2,923
76.90	10,327	3,164
76.95	10,814	3,404
77.00	11,301	3,644
77.05	12,494	4,181
77.10	13,687	4,717
77.15	14,880	5,254
77.20	16,073	5,790
77.25	17,266	6,327
77.30	18,459	6,864
77.35	19,652	7,400
77.40	20,845	7,937
77.45	22,038	8,473
77.50	23,231	9,010
77.55	24,424	9,547
77.60	25,618	10,083
77.65	26,811	10,620
77.70	28,004	11,156
77.75	29,197	11,693
77.80	30,390	12,230
77.85	31,583	12,766
77.90	32,776	13,303
77.95	33,969	13,839
78.00	35,162	14,376
78.05	35,833	15,405
78.10	36,505	16,434
78.15	37,176	17,462
78.20	37,847	18,491
78.25	38,518	19,520
78.30	39,190	20,548
78.35	39,861	21,577
78.40	40,532	22,606
78.45	41,204	23,634
78.50	41,875	24,663
78.55	42,546	25,692
78.60	43,218	26,721
78.65	43,889	27,749
78.70	44,560	28,778
78.75	45,232	29,807
78.80	45,903	30,835
78.85	46,574	31,864
78.90	47,246	32,893
78.95	47,917	33,922
79.00	48,588	34,950
79.05	49,260	35,979
79.10	49,931	37,008
79.15	50,602	38,036
79.20	**51,273**	**39,065**

Summary for Pond P3A: Pond 3A (Pond Repair)

Inflow Area = 1.915 ac, 32.23% Impervious, Inflow Depth = 1.62" for 2 Year event
Inflow = 3.31 cfs @ 12.12 hrs, Volume= 0.258 af
Outflow = 0.74 cfs @ 12.58 hrs, Volume= 0.258 af, Atten= 78%, Lag= 27.4 min
Primary = 0.34 cfs @ 12.58 hrs, Volume= 0.200 af
Secondary = 0.40 cfs @ 12.58 hrs, Volume= 0.058 af
Tertiary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Peak Elev= 77.03' @ 12.58 hrs Surf.Area= 6,943 sf Storage= 4,350 cf
Flood Elev= 79.50' Surf.Area= 25,484 sf Storage= 37,166 cf

Plug-Flow detention time= 113.3 min calculated for 0.258 af (100% of inflow)
Center-of-Mass det. time= 113.5 min (948.7 - 835.2)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	37,166 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	2,053	339.0	0	0	2,053
77.00	6,709	559.0	4,158	4,158	17,781
78.00	17,458	791.4	11,663	15,821	42,764
79.00	25,484	883.5	21,345	37,166	55,068

Device	Routing	Invert	Outlet Devices
#1	Primary	76.00'	**4.0" Round 6" Culvert 1** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 76.00' / 75.52' S= 0.0240 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Secondary	76.55'	**6.0" Round 6" Culvert 2** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 76.55' / 75.60' S= 0.0475 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Tertiary	78.50'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50

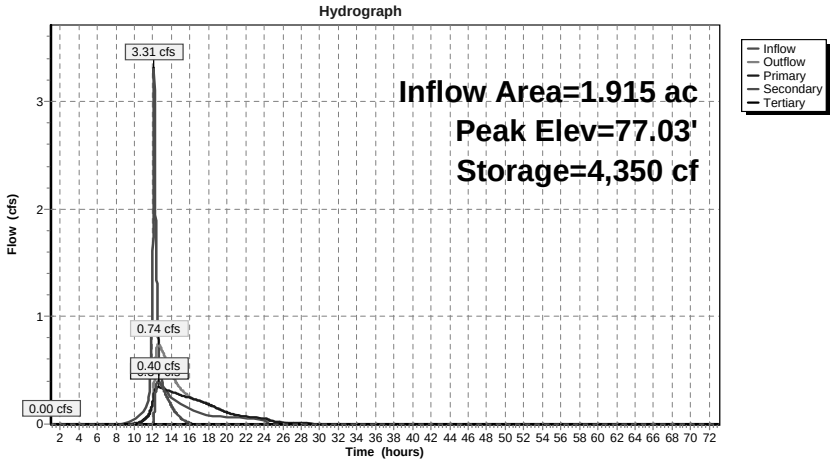
Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.34 cfs @ 12.58 hrs HW=77.03' (Free Discharge)
└**1=6" Culvert 1** (Inlet Controls 0.34 cfs @ 3.94 fps)

Secondary OutFlow Max=0.40 cfs @ 12.58 hrs HW=77.03' (Free Discharge)
└**2=6" Culvert 2** (Inlet Controls 0.40 cfs @ 2.08 fps)

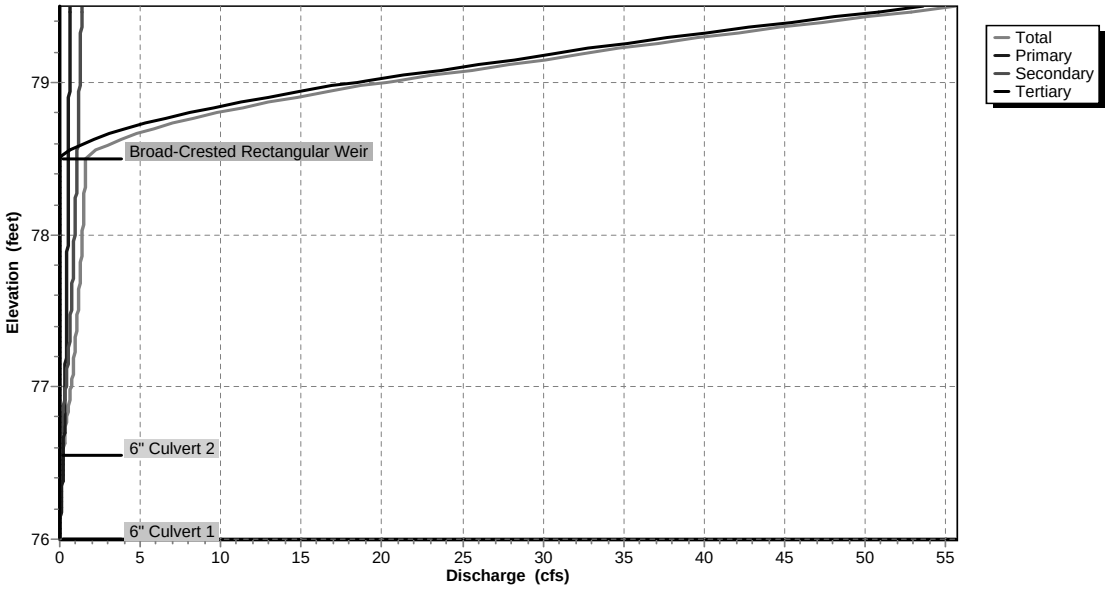
Tertiary OutFlow Max=0.00 cfs @ 1.00 hrs HW=76.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P3A: Pond 3A (Pond Repair)



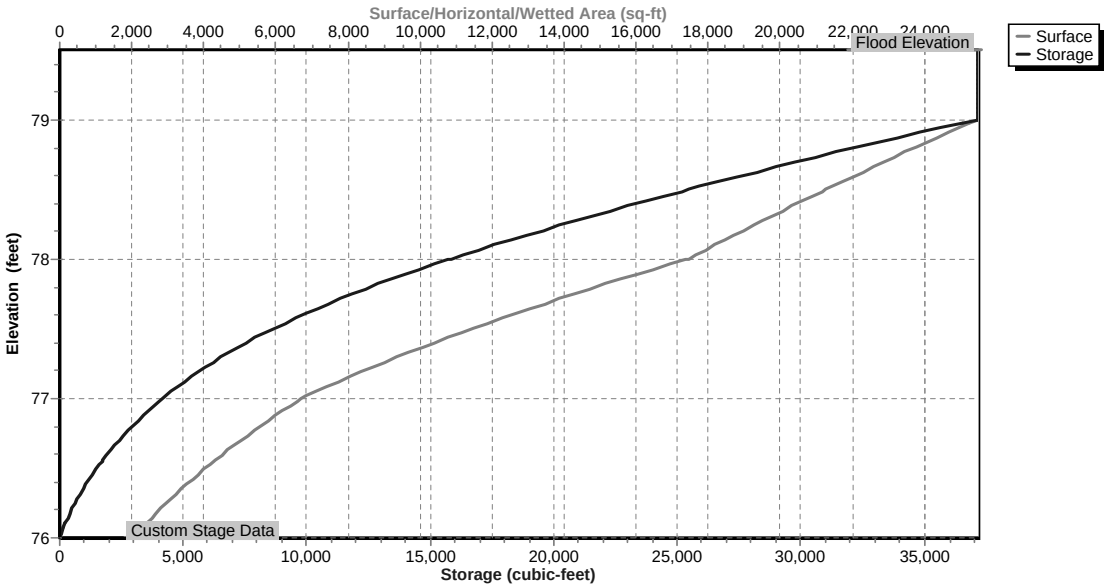
Pond P3A: Pond 3A (Pond Repair)

Stage-Discharge



Pond P3A: Pond 3A (Pond Repair)

Stage-Area-Storage



Hydrograph for Pond P3A: Pond 3A (Pond Repair)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1.00	0.00	0	76.00	0.00	0.00	0.00	**0.00**
6.00	0.00	0	76.00	0.00	0.00	0.00	0.00
11.00	**0.12**	**312**	**76.14**	**0.04**	**0.04**	**0.00**	0.00
16.00	**0.13**	**1,952**	**76.61**	**0.25**	**0.25**	**0.01**	0.00
21.00	0.06	525	76.22	0.08	0.08	0.00	0.00
26.00	0.00	186	76.08	0.02	0.02	0.00	0.00
31.00	0.00	69	76.03	0.00	0.00	0.00	0.00
36.00	0.00	35	76.02	0.00	0.00	0.00	0.00
41.00	0.00	18	76.01	0.00	0.00	0.00	0.00
46.00	0.00	9	76.00	0.00	0.00	0.00	0.00
51.00	0.00	5	76.00	0.00	0.00	0.00	0.00
56.00	0.00	2	76.00	0.00	0.00	0.00	0.00
61.00	0.00	1	76.00	0.00	0.00	0.00	0.00
66.00	0.00	1	76.00	0.00	0.00	0.00	0.00
71.00	0.00	0	76.00	0.00	0.00	0.00	0.00

Stage-Discharge for Pond P3A: Pond 3A (Pond Repair)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
76.00	0.00	0.00	0.00	0.00
76.10	0.02	0.02	0.00	0.00
76.20	0.07	0.07	0.00	0.00
76.30	0.14	0.14	0.00	0.00
76.40	0.18	0.18	0.00	0.00
76.50	0.21	0.21	0.00	0.00
76.60	0.25	0.24	0.01	0.00
76.70	0.33	0.27	0.06	0.00
76.80	0.44	0.30	0.15	0.00
76.90	0.58	0.32	0.26	0.00
77.00	0.71	0.34	0.38	0.00
77.10	0.82	0.36	0.46	0.00
77.20	0.90	0.38	0.53	0.00
77.30	0.98	0.39	0.59	0.00
77.40	1.06	0.41	0.65	0.00
77.50	1.13	0.43	0.70	0.00
77.60	1.19	0.44	0.75	0.00
77.70	1.24	0.45	0.79	0.00
77.80	1.30	0.46	0.83	0.00
77.90	1.35	0.48	0.87	0.00
78.00	1.40	0.49	0.91	0.00
78.10	1.45	0.50	0.95	0.00
78.20	1.50	0.51	0.99	0.00
78.30	1.54	0.52	1.02	0.00
78.40	1.59	0.53	1.06	0.00
78.50	1.63	0.54	1.09	0.00
78.60	3.17	0.55	1.12	1.50
78.70	5.95	0.56	1.15	4.24
78.80	9.77	0.57	1.18	8.02
78.90	14.49	0.58	1.21	12.70
79.00	20.25	0.59	1.24	18.42
79.10	26.96	0.60	1.27	25.10
79.20	33.41	0.61	1.29	31.51
79.30	40.29	0.62	1.32	38.35
79.40	47.74	0.63	1.35	45.76
79.50	**55.61**	**0.64**	**1.37**	**53.60**

Stage-Area-Storage for Pond P3A: Pond 3A (Pond Repair)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
76.00	2,053	0	77.75	14,298	11,858	79.50	25,484	37,166
76.05	2,222	107	77.80	14,905	12,588			
76.10	2,398	222	77.85	15,524	13,349			
76.15	2,581	347	77.90	16,156	14,141			
76.20	2,770	481	77.95	16,801	14,964			
76.25	2,966	624	78.00	17,458	15,821			
76.30	3,169	777	78.05	17,823	16,703			
76.35	3,378	941	78.10	18,192	17,603			
76.40	3,594	1,115	78.15	18,565	18,522			
76.45	3,817	1,300	78.20	18,942	19,460			
76.50	4,046	1,497	78.25	19,323	20,417			
76.55	4,282	1,705	78.30	19,707	21,392			
76.60	4,525	1,925	78.35	20,095	22,387			
76.65	4,775	2,158	78.40	20,487	23,402			
76.70	5,031	2,403	78.45	20,882	24,436			
76.75	5,294	2,661	78.50	21,282	25,490			
76.80	5,563	2,932	78.55	21,685	26,564			
76.85	5,840	3,217	78.60	22,092	27,659			
76.90	6,123	3,516	78.65	22,503	28,774			
76.95	6,413	3,830	78.70	22,917	29,909			
77.00	6,709	4,158	78.75	23,336	31,065			
77.05	7,127	4,504	78.80	23,758	32,243			
77.10	7,557	4,871	78.85	24,184	33,441			
77.15	8,000	5,259	78.90	24,613	34,661			
77.20	8,455	5,671	78.95	25,047	35,903			
77.25	8,923	6,105	79.00	**25,484**	**37,166**			
77.30	9,404	6,563	79.05	25,484	37,166			
77.35	9,897	7,046	79.10	25,484	37,166			
77.40	10,403	7,553	79.15	25,484	37,166			
77.45	10,922	8,086	79.20	25,484	37,166			
77.50	11,453	8,646	79.25	25,484	37,166			
77.55	11,997	9,232	79.30	25,484	37,166			
77.60	12,553	9,846	79.35	25,484	37,166			
77.65	13,122	10,487	79.40	25,484	37,166			
77.70	13,704	11,158	79.45	25,484	37,166			

Time span=1.00-73.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Off-Site Northeast Runoff Area=772,071 sf 0.00% Impervious Runoff Depth=2.25"
Flow Length=1,645' Tc=61.7 min CN=71 Runoff=17.81 cfs 3.328 af

Subcatchment 1Sa: Off-Site Runoff Area=190,352 sf 20.04% Impervious Runoff Depth=2.96"
Flow Length=540' Tc=12.8 min CN=79 Runoff=12.16 cfs 1.077 af

Subcatchment 3S: Off-Site East Runoff Area=21,487 sf 0.00% Impervious Runoff Depth=2.34"
Tc=6.0 min CN=72 Runoff=1.34 cfs 0.096 af

Subcatchment 3Sa: Off-Site East Runoff Area=83,406 sf 32.23% Impervious Runoff Depth=3.34"
Flow Length=366' Tc=8.6 min CN=83 Runoff=6.82 cfs 0.533 af

Reach DP-1: (new Reach) Inflow=18.26 cfs 4.066 af
Outflow=18.26 cfs 4.066 af

Reach DP-3: (new Reach) Inflow=2.20 cfs 0.629 af
Outflow=2.20 cfs 0.629 af

Pond P1A: Pond 1a (Pond Repair) Peak Elev=78.58' Storage=26,263 cf Inflow=12.16 cfs 1.077 af
Discarded=0.27 cfs 0.340 af Primary=0.46 cfs 0.737 af Secondary=0.00 cfs 0.000 af Outflow=0.73 cfs 1.077 af

Pond P3A: Pond 3A (Pond Repair) Peak Elev=77.59' Storage=9,691 cf Inflow=6.82 cfs 0.533 af
Primary=0.44 cfs 0.316 af Secondary=0.74 cfs 0.217 af Tertiary=0.00 cfs 0.000 af Outflow=1.18 cfs 0.533 af

Total Runoff Area = 24.502 ac Runoff Volume = 5.034 af Average Runoff Depth = 2.47"
93.91% Pervious = 23.009 ac 6.09% Impervious = 1.493 ac

Summary for Subcatchment 1S: Off-Site Northeast

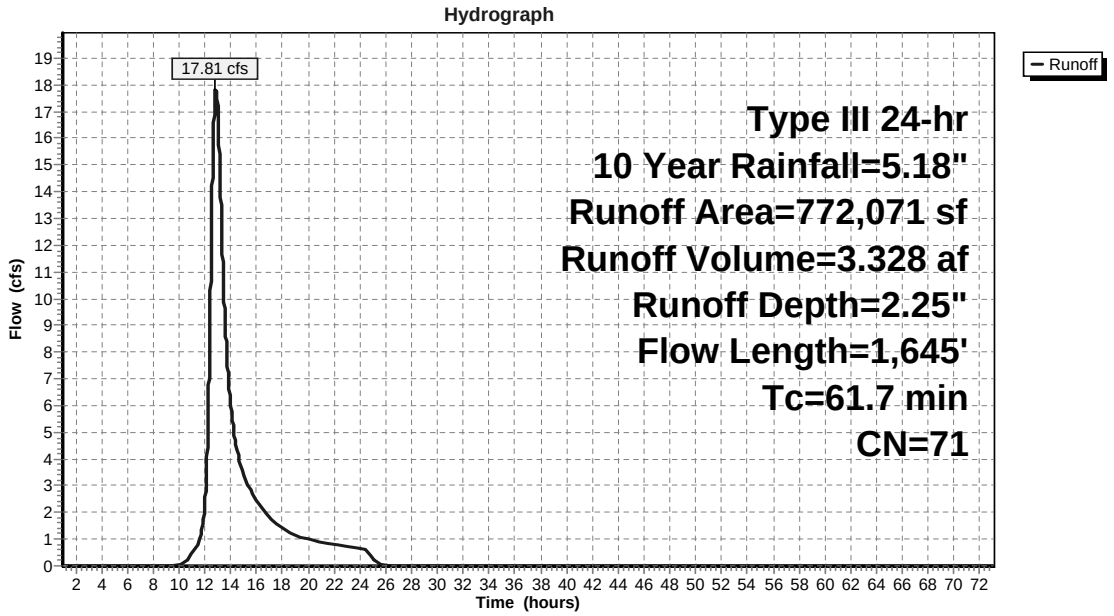
Runoff = 17.81 cfs @ 12.83 hrs, Volume= 3.328 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=5.18"

	Area (sf)	CN	Description
	650,962	70	Woods, Good, HSG C
	115,309	74	>75% Grass cover, Good, HSG C
*	5,800	96	Gravel Road, HSG C
	772,071	71	Weighted Average
	772,071		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.0	50	0.0080	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.00"
12.6	628	0.0276	0.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.3	496	0.0276	2.49		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.8	471	0.0130	0.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
61.7	1,645	Total			

Subcatchment 1S: Off-Site Northeast



Hydrograph for Subcatchment 1S: Off-Site Northeast

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00	36.00	5.18	2.25	0.00	71.00	5.18	2.25	0.00
2.00	0.10	0.00	0.00	37.00	5.18	2.25	0.00	72.00	5.18	2.25	0.00
3.00	0.16	0.00	0.00	38.00	5.18	2.25	0.00	73.00	5.18	2.25	0.00
4.00	0.22	0.00	0.00	39.00	5.18	2.25	0.00				
5.00	0.29	0.00	0.00	40.00	5.18	2.25	0.00				
6.00	0.37	0.00	0.00	41.00	5.18	2.25	0.00				
7.00	0.47	0.00	0.00	42.00	5.18	2.25	0.00				
8.00	0.59	0.00	0.00	43.00	5.18	2.25	0.00				
9.00	0.75	0.00	0.00	44.00	5.18	2.25	0.00				
10.00	0.98	0.01	0.02	45.00	5.18	2.25	0.00				
11.00	1.30	0.05	0.44	46.00	5.18	2.25	0.00				
12.00	2.59	0.54	**2.24**	47.00	5.18	2.25	0.00				
13.00	3.88	1.32	**17.06**	48.00	5.18	2.25	0.00				
14.00	4.20	1.53	6.00	49.00	5.18	2.25	0.00				
15.00	4.43	1.69	3.41	50.00	5.18	2.25	0.00				
16.00	4.59	1.81	2.47	51.00	5.18	2.25	0.00				
17.00	4.71	1.90	1.81	52.00	5.18	2.25	0.00				
18.00	4.81	1.97	1.42	53.00	5.18	2.25	0.00				
19.00	4.89	2.03	1.14	54.00	5.18	2.25	0.00				
20.00	4.96	2.08	1.00	55.00	5.18	2.25	0.00				
21.00	5.02	2.13	0.91	56.00	5.18	2.25	0.00				
22.00	5.08	2.18	0.83	57.00	5.18	2.25	0.00				
23.00	5.13	2.22	0.75	58.00	5.18	2.25	0.00				
24.00	**5.18**	**2.25**	0.68	59.00	5.18	2.25	0.00				
25.00	5.18	2.25	0.24	60.00	5.18	2.25	0.00				
26.00	5.18	2.25	0.02	61.00	5.18	2.25	0.00				
27.00	5.18	2.25	0.00	62.00	5.18	2.25	0.00				
28.00	5.18	2.25	0.00	63.00	5.18	2.25	0.00				
29.00	5.18	2.25	0.00	64.00	5.18	2.25	0.00				
30.00	5.18	2.25	0.00	65.00	5.18	2.25	0.00				
31.00	5.18	2.25	0.00	66.00	5.18	2.25	0.00				
32.00	5.18	2.25	0.00	67.00	5.18	2.25	0.00				
33.00	5.18	2.25	0.00	68.00	5.18	2.25	0.00				
34.00	5.18	2.25	0.00	69.00	5.18	2.25	0.00				
35.00	5.18	2.25	0.00	70.00	5.18	2.25	0.00				

Summary for Subcatchment 1Sa: Off-Site

Runoff = 12.16 cfs @ 12.18 hrs, Volume= 1.077 af, Depth= 2.96"

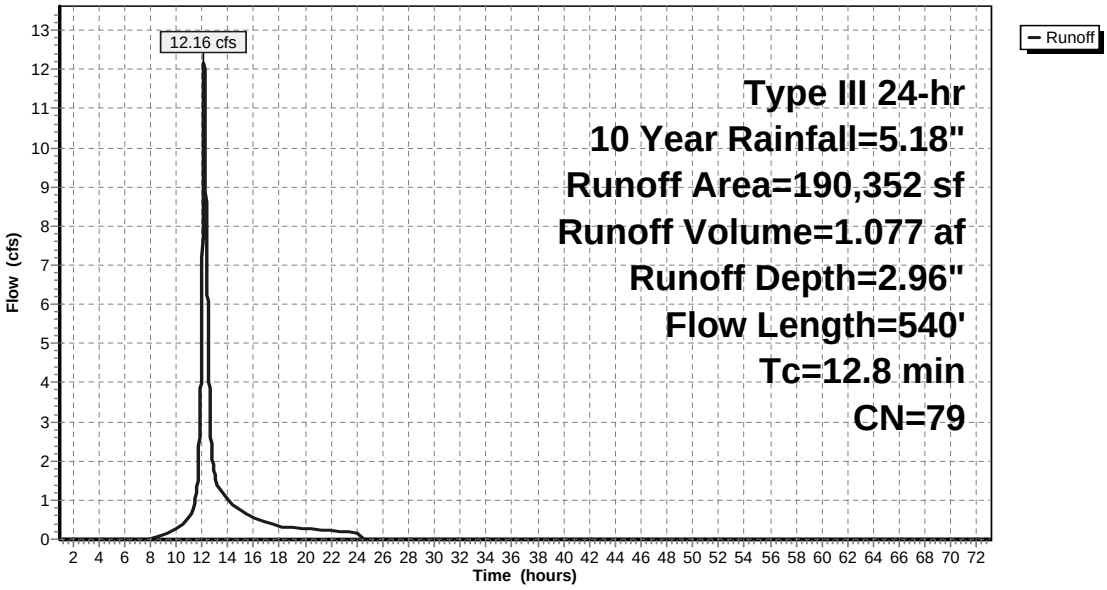
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=5.18"

	Area (sf)	CN	Description
	152,204	74	>75% Grass cover, Good, HSG C
*	9,937	98	Gravel Road, HSG C
	27,571	98	Water Surface, HSG C
*	640	98	Equipment Pad, HSG C
	190,352	79	Weighted Average
	152,204		79.96% Pervious Area
	38,148		20.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0380	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
8.3	490	0.0196	0.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.8	540	Total			

Subcatchment 1Sa: Off-Site

Hydrograph



Hydrograph for Subcatchment 1Sa: Off-Site

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00	36.00	5.18	2.96	0.00	71.00	5.18	2.96	0.00
2.00	0.10	0.00	0.00	37.00	5.18	2.96	0.00	72.00	5.18	2.96	0.00
3.00	0.16	0.00	0.00	38.00	5.18	2.96	0.00	73.00	5.18	2.96	0.00
4.00	0.22	0.00	0.00	39.00	5.18	2.96	0.00				
5.00	0.29	0.00	0.00	40.00	5.18	2.96	0.00				
6.00	0.37	0.00	0.00	41.00	5.18	2.96	0.00				
7.00	0.47	0.00	0.00	42.00	5.18	2.96	0.00				
8.00	0.59	0.00	0.01	43.00	5.18	2.96	0.00				
9.00	0.75	0.02	0.10	44.00	5.18	2.96	0.00				
10.00	0.98	0.06	0.26	45.00	5.18	2.96	0.00				
11.00	1.30	0.17	0.58	46.00	5.18	2.96	0.00				
12.00	2.59	0.90	**5.37**	47.00	5.18	2.96	0.00				
13.00	3.88	1.87	**1.67**	48.00	5.18	2.96	0.00				
14.00	4.20	2.13	1.01	49.00	5.18	2.96	0.00				
15.00	4.43	2.31	0.76	50.00	5.18	2.96	0.00				
16.00	4.59	2.45	0.54	51.00	5.18	2.96	0.00				
17.00	4.71	2.55	0.43	52.00	5.18	2.96	0.00				
18.00	4.81	2.64	0.33	53.00	5.18	2.96	0.00				
19.00	4.89	2.70	0.29	54.00	5.18	2.96	0.00				
20.00	4.96	2.76	0.26	55.00	5.18	2.96	0.00				
21.00	5.02	2.82	0.24	56.00	5.18	2.96	0.00				
22.00	5.08	2.87	0.22	57.00	5.18	2.96	0.00				
23.00	5.13	2.92	0.19	58.00	5.18	2.96	0.00				
24.00	**5.18**	**2.96**	0.17	59.00	5.18	2.96	0.00				
25.00	5.18	2.96	0.00	60.00	5.18	2.96	0.00				
26.00	5.18	2.96	0.00	61.00	5.18	2.96	0.00				
27.00	5.18	2.96	0.00	62.00	5.18	2.96	0.00				
28.00	5.18	2.96	0.00	63.00	5.18	2.96	0.00				
29.00	5.18	2.96	0.00	64.00	5.18	2.96	0.00				
30.00	5.18	2.96	0.00	65.00	5.18	2.96	0.00				
31.00	5.18	2.96	0.00	66.00	5.18	2.96	0.00				
32.00	5.18	2.96	0.00	67.00	5.18	2.96	0.00				
33.00	5.18	2.96	0.00	68.00	5.18	2.96	0.00				
34.00	5.18	2.96	0.00	69.00	5.18	2.96	0.00				
35.00	5.18	2.96	0.00	70.00	5.18	2.96	0.00				

Summary for Subcatchment 3S: Off-Site East

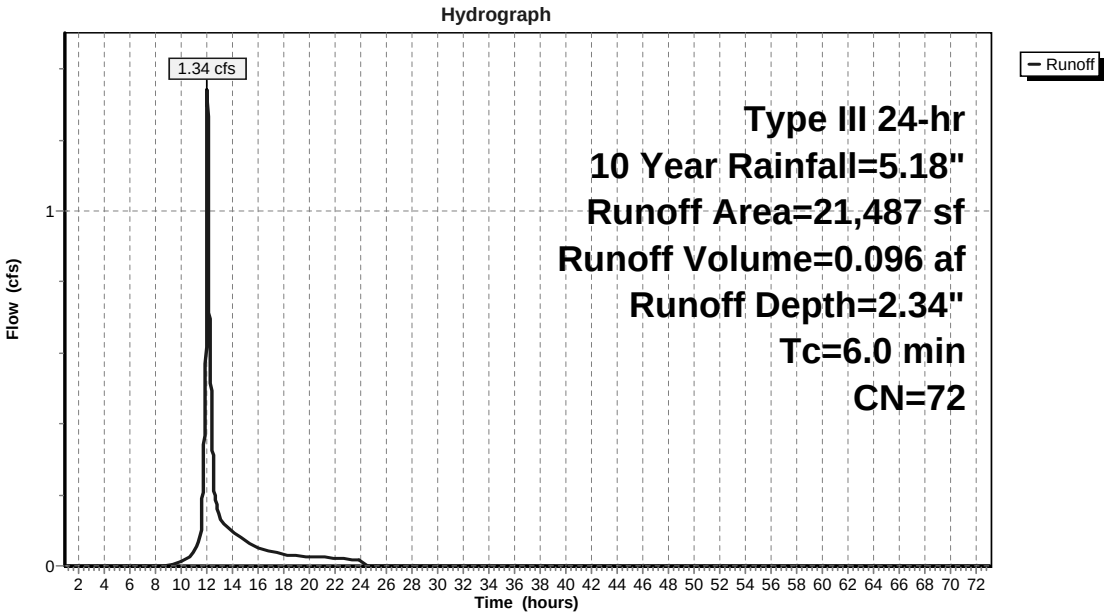
Runoff = 1.34 cfs @ 12.09 hrs, Volume= 0.096 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=5.18"

Area (sf)	CN	Description
11,216	70	Woods, Good, HSG C
10,271	74	>75% Grass cover, Good, HSG C
21,487	72	Weighted Average
21,487		100.00% Pervious Area

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

Subcatchment 3S: Off-Site East



Hydrograph for Subcatchment 3S: Off-Site East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00	36.00	5.18	2.34	0.00	71.00	5.18	2.34	0.00
2.00	0.10	0.00	0.00	37.00	5.18	2.34	0.00	72.00	5.18	2.34	0.00
3.00	0.16	0.00	0.00	38.00	5.18	2.34	0.00	73.00	5.18	2.34	0.00
4.00	0.22	0.00	0.00	39.00	5.18	2.34	0.00				
5.00	0.29	0.00	0.00	40.00	5.18	2.34	0.00				
6.00	0.37	0.00	0.00	41.00	5.18	2.34	0.00				
7.00	0.47	0.00	0.00	42.00	5.18	2.34	0.00				
8.00	0.59	0.00	0.00	43.00	5.18	2.34	0.00				
9.00	0.75	0.00	0.00	44.00	5.18	2.34	0.00				
10.00	0.98	0.01	0.01	45.00	5.18	2.34	0.00				
11.00	1.30	0.06	0.04	46.00	5.18	2.34	0.00				
12.00	2.59	0.58	**0.74**	47.00	5.18	2.34	0.00				
13.00	3.88	1.38	**0.14**	48.00	5.18	2.34	0.00				
14.00	4.20	1.60	0.09	49.00	5.18	2.34	0.00				
15.00	4.43	1.77	0.07	50.00	5.18	2.34	0.00				
16.00	4.59	1.89	0.05	51.00	5.18	2.34	0.00				
17.00	4.71	1.98	0.04	52.00	5.18	2.34	0.00				
18.00	4.81	2.05	0.03	53.00	5.18	2.34	0.00				
19.00	4.89	2.11	0.03	54.00	5.18	2.34	0.00				
20.00	4.96	2.17	0.03	55.00	5.18	2.34	0.00				
21.00	5.02	2.21	0.02	56.00	5.18	2.34	0.00				
22.00	5.08	2.26	0.02	57.00	5.18	2.34	0.00				
23.00	5.13	2.30	0.02	58.00	5.18	2.34	0.00				
24.00	**5.18**	**2.34**	0.02	59.00	5.18	2.34	0.00				
25.00	5.18	2.34	0.00	60.00	5.18	2.34	0.00				
26.00	5.18	2.34	0.00	61.00	5.18	2.34	0.00				
27.00	5.18	2.34	0.00	62.00	5.18	2.34	0.00				
28.00	5.18	2.34	0.00	63.00	5.18	2.34	0.00				
29.00	5.18	2.34	0.00	64.00	5.18	2.34	0.00				
30.00	5.18	2.34	0.00	65.00	5.18	2.34	0.00				
31.00	5.18	2.34	0.00	66.00	5.18	2.34	0.00				
32.00	5.18	2.34	0.00	67.00	5.18	2.34	0.00				
33.00	5.18	2.34	0.00	68.00	5.18	2.34	0.00				
34.00	5.18	2.34	0.00	69.00	5.18	2.34	0.00				
35.00	5.18	2.34	0.00	70.00	5.18	2.34	0.00				

Summary for Subcatchment 3Sa: Off-Site East

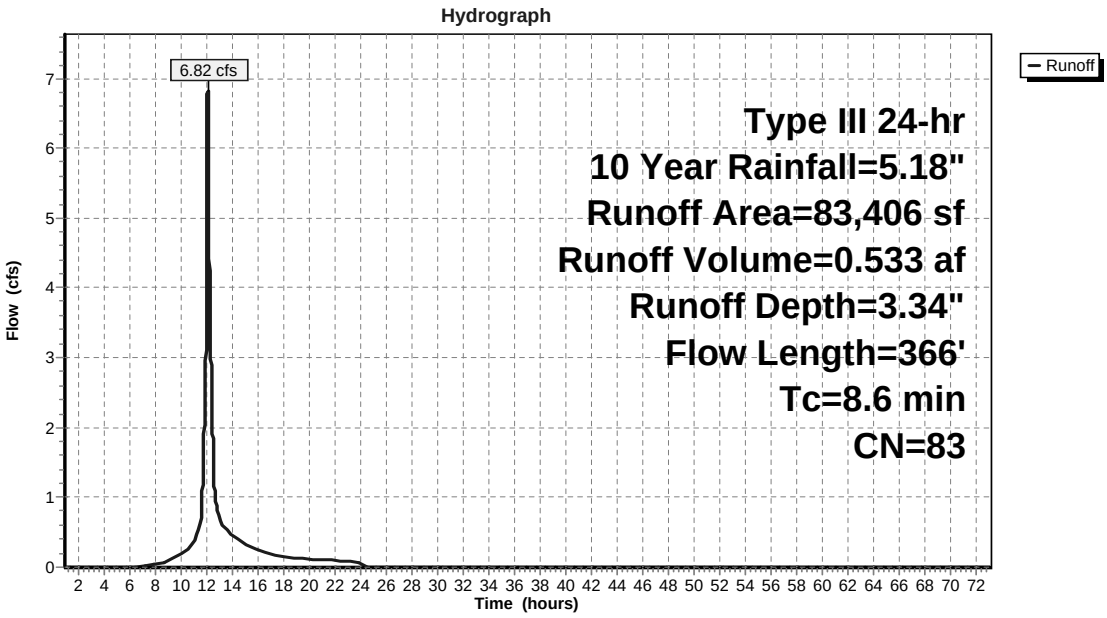
Runoff = 6.82 cfs @ 12.12 hrs, Volume= 0.533 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=5.18"

	Area (sf)	CN	Description
	53,364	74	>75% Grass cover, Good, HSG C
	26,882	98	Water Surface, HSG C
*	3,160	96	Gravel Road
	83,406	83	Weighted Average
	56,524		67.77% Pervious Area
	26,882		32.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	50	0.0280	0.16		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.00"
0.4	82	0.0316	3.61		**Shallow Concentrated Flow, Shallow Conc. Flow** Paved Kv= 20.3 fps
3.1	234	0.0317	1.25		**Shallow Concentrated Flow, Shallow Conc Flow** Short Grass Pasture Kv= 7.0 fps
8.6	366	Total			

Subcatchment 3Sa: Off-Site East



Hydrograph for Subcatchment 3Sa: Off-Site East

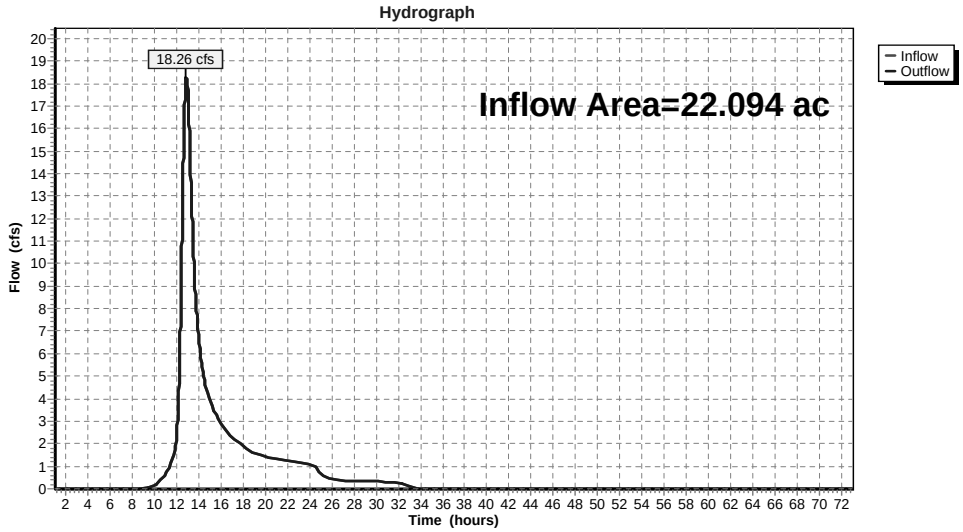
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00	36.00	5.18	3.34	0.00	71.00	5.18	3.34	0.00
2.00	0.10	0.00	0.00	37.00	5.18	3.34	0.00	72.00	5.18	3.34	0.00
3.00	0.16	0.00	0.00	38.00	5.18	3.34	0.00	73.00	5.18	3.34	0.00
4.00	0.22	0.00	0.00	39.00	5.18	3.34	0.00				
5.00	0.29	0.00	0.00	40.00	5.18	3.34	0.00				
6.00	0.37	0.00	0.00	41.00	5.18	3.34	0.00				
7.00	0.47	0.00	0.01	42.00	5.18	3.34	0.00				
8.00	0.59	0.01	0.04	43.00	5.18	3.34	0.00				
9.00	0.75	0.05	0.09	44.00	5.18	3.34	0.00				
10.00	0.98	0.12	0.18	45.00	5.18	3.34	0.00				
11.00	1.30	0.27	0.35	46.00	5.18	3.34	0.00				
12.00	2.59	1.12	**3.52**	47.00	5.18	3.34	0.00				
13.00	3.88	2.19	**0.73**	48.00	5.18	3.34	0.00				
14.00	4.20	2.46	0.46	49.00	5.18	3.34	0.00				
15.00	4.43	2.66	0.35	50.00	5.18	3.34	0.00				
16.00	4.59	2.81	0.25	51.00	5.18	3.34	0.00				
17.00	4.71	2.91	0.19	52.00	5.18	3.34	0.00				
18.00	4.81	3.00	0.15	53.00	5.18	3.34	0.00				
19.00	4.89	3.07	0.13	54.00	5.18	3.34	0.00				
20.00	4.96	3.14	0.12	55.00	5.18	3.34	0.00				
21.00	5.02	3.19	0.11	56.00	5.18	3.34	0.00				
22.00	5.08	3.25	0.10	57.00	5.18	3.34	0.00				
23.00	5.13	3.29	0.09	58.00	5.18	3.34	0.00				
24.00	**5.18**	**3.34**	0.08	59.00	5.18	3.34	0.00				
25.00	5.18	3.34	0.00	60.00	5.18	3.34	0.00				
26.00	5.18	3.34	0.00	61.00	5.18	3.34	0.00				
27.00	5.18	3.34	0.00	62.00	5.18	3.34	0.00				
28.00	5.18	3.34	0.00	63.00	5.18	3.34	0.00				
29.00	5.18	3.34	0.00	64.00	5.18	3.34	0.00				
30.00	5.18	3.34	0.00	65.00	5.18	3.34	0.00				
31.00	5.18	3.34	0.00	66.00	5.18	3.34	0.00				
32.00	5.18	3.34	0.00	67.00	5.18	3.34	0.00				
33.00	5.18	3.34	0.00	68.00	5.18	3.34	0.00				
34.00	5.18	3.34	0.00	69.00	5.18	3.34	0.00				
35.00	5.18	3.34	0.00	70.00	5.18	3.34	0.00				

Summary for Reach DP-1: (new Reach)

Inflow Area = 22.094 ac, 3.96% Impervious, Inflow Depth = 2.21" for 10 Year event
Inflow = 18.26 cfs @ 12.83 hrs, Volume= 4.066 af
Outflow = 18.26 cfs @ 12.83 hrs, Volume= 4.066 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs

Reach DP-1: (new Reach)



Hydrograph for Reach DP-1: (new Reach)

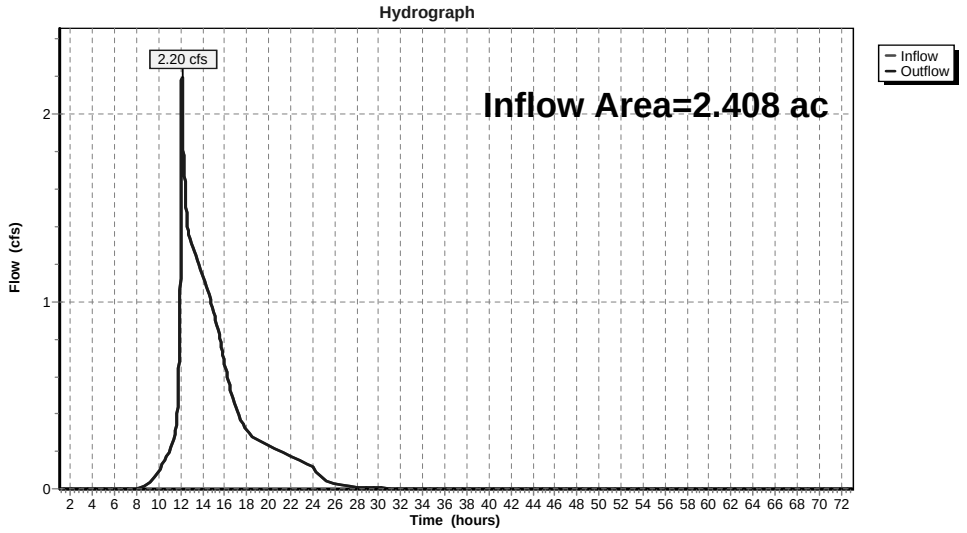
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
1.00	0.00		0.00	36.00	0.00		0.00	71.00	0.00		0.00
2.00	0.00		0.00	37.00	0.00		0.00	72.00	0.00		0.00
3.00	0.00		0.00	38.00	0.00		0.00	73.00	0.00		0.00
4.00	0.00		0.00	39.00	0.00		0.00				
5.00	0.00		0.00	40.00	0.00		0.00				
6.00	0.00		0.00	41.00	0.00		0.00				
7.00	0.00		0.00	42.00	0.00		0.00				
8.00	0.00		0.00	43.00	0.00		0.00				
9.00	0.02		0.02	44.00	0.00		0.00				
10.00	0.16		0.16	45.00	0.00		0.00				
11.00	0.69		0.69	46.00	0.00		0.00				
12.00	**2.58**		**2.58**	47.00	0.00		0.00				
13.00	**17.51**		**17.51**	48.00	0.00		0.00				
14.00	6.46		6.46	49.00	0.00		0.00				
15.00	3.87		3.87	50.00	0.00		0.00				
16.00	2.92		2.92	51.00	0.00		0.00				
17.00	2.26		2.26	52.00	0.00		0.00				
18.00	1.87		1.87	53.00	0.00		0.00				
19.00	1.58		1.58	54.00	0.00		0.00				
20.00	1.44		1.44	55.00	0.00		0.00				
21.00	1.34		1.34	56.00	0.00		0.00				
22.00	1.26		1.26	57.00	0.00		0.00				
23.00	1.17		1.17	58.00	0.00		0.00				
24.00	1.09		1.09	59.00	0.00		0.00				
25.00	0.64		0.64	60.00	0.00		0.00				
26.00	0.40		0.40	61.00	0.00		0.00				
27.00	0.37		0.37	62.00	0.00		0.00				
28.00	0.35		0.35	63.00	0.00		0.00				
29.00	0.34		0.34	64.00	0.00		0.00				
30.00	0.32		0.32	65.00	0.00		0.00				
31.00	0.29		0.29	66.00	0.00		0.00				
32.00	0.26		0.26	67.00	0.00		0.00				
33.00	0.12		0.12	68.00	0.00		0.00				
34.00	0.02		0.02	69.00	0.00		0.00				
35.00	0.00		0.00	70.00	0.00		0.00				

Summary for Reach DP-3: (new Reach)

Inflow Area = 2.408 ac, 25.63% Impervious, Inflow Depth = 3.13" for 10 Year event
Inflow = 2.20 cfs @ 12.10 hrs, Volume= 0.629 af
Outflow = 2.20 cfs @ 12.10 hrs, Volume= 0.629 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs

Reach DP-3: (new Reach)



Hydrograph for Reach DP-3: (new Reach)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
1.00	0.00		0.00	36.00	0.00		0.00	71.00	0.00		0.00
2.00	0.00		0.00	37.00	0.00		0.00	72.00	0.00		0.00
3.00	0.00		0.00	38.00	0.00		0.00	73.00	0.00		0.00
4.00	0.00		0.00	39.00	0.00		0.00				
5.00	0.00		0.00	40.00	0.00		0.00				
6.00	0.00		0.00	41.00	0.00		0.00				
7.00	0.00		0.00	42.00	0.00		0.00				
8.00	0.00		0.00	43.00	0.00		0.00				
9.00	0.03		0.03	44.00	0.00		0.00				
10.00	0.10		0.10	45.00	0.00		0.00				
11.00	0.20		0.20	46.00	0.00		0.00				
12.00	**1.36**		**1.36**	47.00	0.00		0.00				
13.00	**1.31**		**1.31**	48.00	0.00		0.00				
14.00	1.14		1.14	49.00	0.00		0.00				
15.00	0.94		0.94	50.00	0.00		0.00				
16.00	0.67		0.67	51.00	0.00		0.00				
17.00	0.43		0.43	52.00	0.00		0.00				
18.00	0.31		0.31	53.00	0.00		0.00				
19.00	0.26		0.26	54.00	0.00		0.00				
20.00	0.23		0.23	55.00	0.00		0.00				
21.00	0.20		0.20	56.00	0.00		0.00				
22.00	0.17		0.17	57.00	0.00		0.00				
23.00	0.15		0.15	58.00	0.00		0.00				
24.00	0.12		0.12	59.00	0.00		0.00				
25.00	0.05		0.05	60.00	0.00		0.00				
26.00	0.03		0.03	61.00	0.00		0.00				
27.00	0.01		0.01	62.00	0.00		0.00				
28.00	0.01		0.01	63.00	0.00		0.00				
29.00	0.01		0.01	64.00	0.00		0.00				
30.00	0.00		0.00	65.00	0.00		0.00				
31.00	0.00		0.00	66.00	0.00		0.00				
32.00	0.00		0.00	67.00	0.00		0.00				
33.00	0.00		0.00	68.00	0.00		0.00				
34.00	0.00		0.00	69.00	0.00		0.00				
35.00	0.00		0.00	70.00	0.00		0.00				

Summary for Pond P1A: Pond 1a (Pond Repair)

Inflow Area = 4.370 ac, 20.04% Impervious, Inflow Depth = 2.96" for 10 Year event
Inflow = 12.16 cfs @ 12.18 hrs, Volume= 1.077 af
Outflow = 0.73 cfs @ 15.14 hrs, Volume= 1.077 af, Atten= 94%, Lag= 177.9 min
Discarded = 0.27 cfs @ 15.14 hrs, Volume= 0.340 af
Primary = 0.46 cfs @ 15.14 hrs, Volume= 0.737 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Peak Elev= 78.58' @ 15.14 hrs Surf.Area= 23,723 sf Storage= 26,263 cf

Plug-Flow detention time= 412.6 min calculated for 1.077 af (100% of inflow)
Center-of-Mass det. time= 412.6 min (1,241.9 - 829.2)

Volume	Invert	Avail.Storage	Storage Description
#1	75.50'	1,242 cf	**Custom Stage Data (Irregular)** Listed below 3,106 cf Overall x 40.0% Voids
#2	76.50'	37,823 cf	**Custom Stage Data (Irregular)** Listed below
		39,065 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
75.50	3,106	220.0	0	0	3,106
76.00	3,106	220.0	1,553	1,553	3,216
76.50	3,106	220.0	1,553	3,106	3,326

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.50	3,106	220.0	0	0	3,106
77.00	6,731	331.0	2,402	2,402	7,975
78.00	15,313	639.8	10,732	13,134	31,836
79.20	26,330	782.0	24,689	37,823	47,947

Device	Routing	Invert	Outlet Devices
#1	Secondary	78.70'	**14.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	75.50'	**0.270 in/hr Exfiltration over Wetted area**
#3	Primary	75.50'	**4.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.50' / 75.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf

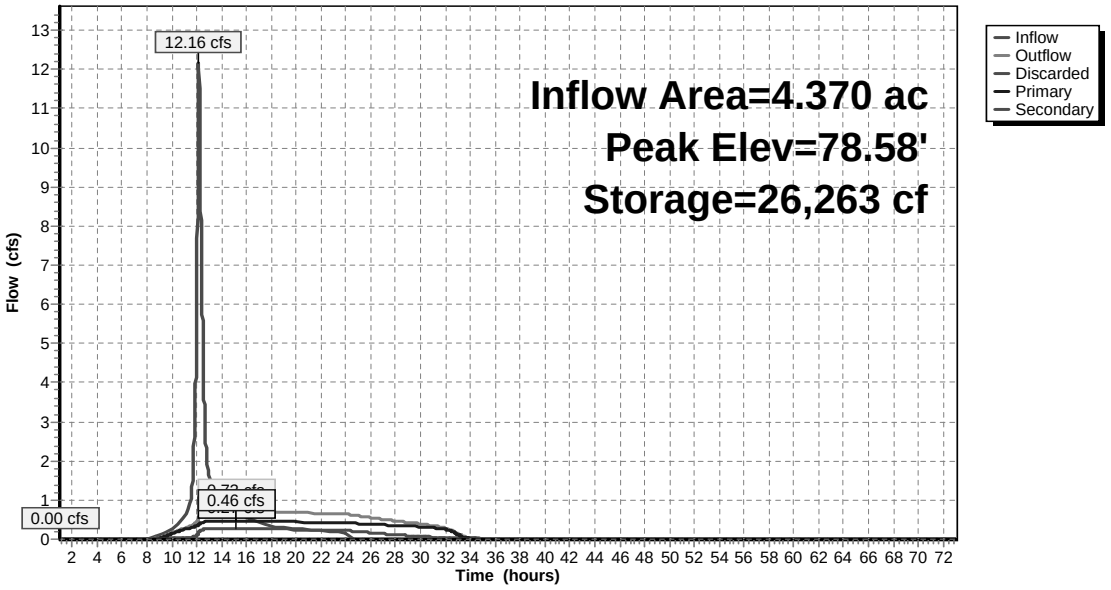
Discarded OutFlow Max=0.27 cfs @ 15.14 hrs HW=78.58' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.27 cfs)

Primary OutFlow Max=0.46 cfs @ 15.14 hrs HW=78.58' (Free Discharge)
└**3=Culvert** (Barrel Controls 0.46 cfs @ 5.26 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=75.50' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

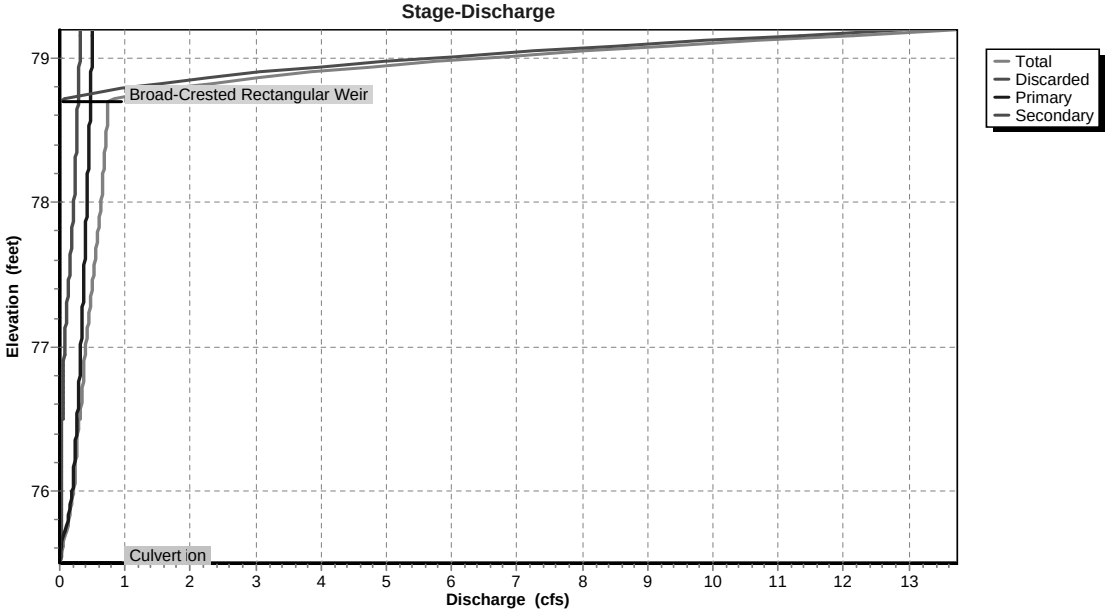
Pond P1A: Pond 1a (Pond Repair)

Hydrograph

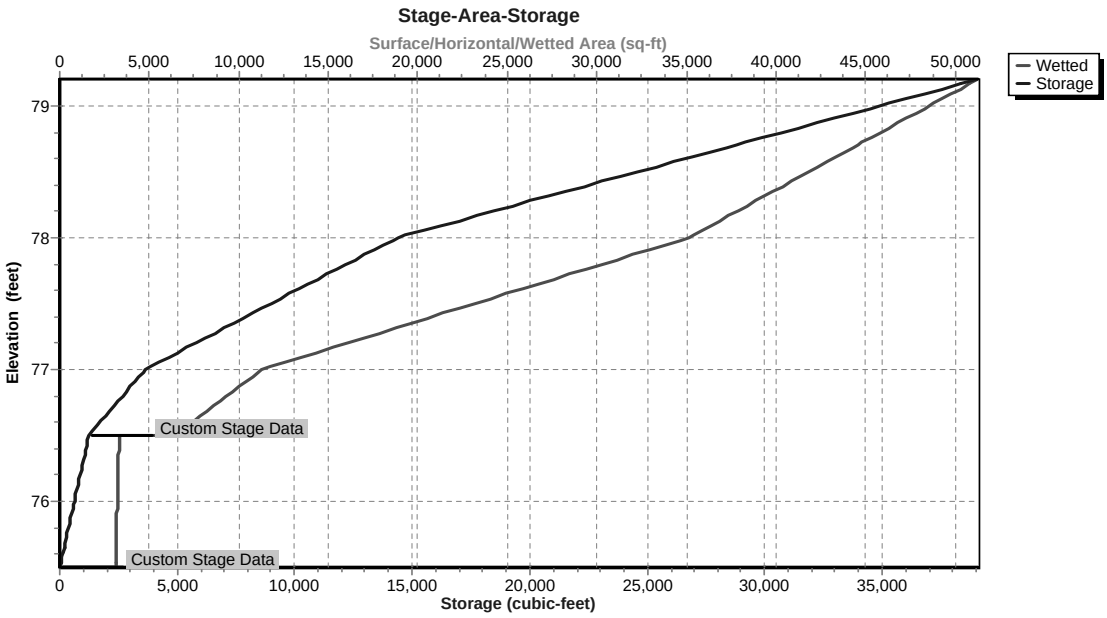


Pond P1A: Pond 1a (Pond Repair)

Stage-Discharge



Pond P1A: Pond 1a (Pond Repair)



Hydrograph for Pond P1A: Pond 1a (Pond Repair)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
1.00	0.00	0	75.50	0.00	0.00	0.00	**0.00**
6.00	0.00	0	75.50	0.00	0.00	0.00	0.00
11.00	**0.58**	**1,085**	**76.37**	**0.27**	**0.02**	**0.25**	0.00
16.00	**0.54**	**25,983**	**78.56**	**0.72**	**0.27**	**0.46**	0.00
21.00	0.24	19,400	78.24	0.67	0.24	0.43	0.00
26.00	0.00	10,398	77.63	0.55	0.16	0.38	0.00
31.00	0.00	2,324	76.73	0.35	0.05	0.29	0.00
36.00	0.00	5	75.50	0.00	0.00	0.00	0.00
41.00	0.00	0	75.50	0.00	0.00	0.00	0.00
46.00	0.00	0	75.50	0.00	0.00	0.00	0.00
51.00	0.00	0	75.50	0.00	0.00	0.00	0.00
56.00	0.00	0	75.50	0.00	0.00	0.00	0.00
61.00	0.00	0	75.50	0.00	0.00	0.00	0.00
66.00	0.00	0	75.50	0.00	0.00	0.00	0.00
71.00	0.00	0	75.50	0.00	0.00	0.00	0.00

Stage-Discharge for Pond P1A: Pond 1a (Pond Repair)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
75.50	0.00	0.00	0.00	0.00
75.60	0.04	0.02	0.02	0.00
75.70	0.09	0.02	0.07	0.00
75.80	0.14	0.02	0.12	0.00
75.90	0.18	0.02	0.16	0.00
76.00	0.21	0.02	0.19	0.00
76.10	0.23	0.02	0.21	0.00
76.20	0.25	0.02	0.23	0.00
76.30	0.26	0.02	0.24	0.00
76.40	0.27	0.02	0.25	0.00
76.50	0.31	0.04	0.27	0.00
76.60	0.33	0.05	0.28	0.00
76.70	0.34	0.05	0.29	0.00
76.80	0.36	0.06	0.30	0.00
76.90	0.38	0.06	0.31	0.00
77.00	0.39	0.07	0.32	0.00
77.10	0.42	0.09	0.33	0.00
77.20	0.44	0.10	0.34	0.00
77.30	0.47	0.12	0.35	0.00
77.40	0.49	0.13	0.36	0.00
77.50	0.52	0.15	0.37	0.00
77.60	0.54	0.16	0.38	0.00
77.70	0.56	0.18	0.39	0.00
77.80	0.59	0.19	0.40	0.00
77.90	0.61	0.20	0.41	0.00
78.00	0.63	0.22	0.41	0.00
78.10	0.65	0.23	0.42	0.00
78.20	0.67	0.24	0.43	0.00
78.30	0.68	0.24	0.44	0.00
78.40	0.70	0.25	0.45	0.00
78.50	0.71	0.26	0.45	0.00
78.60	0.73	0.27	0.46	0.00
78.70	0.75	0.28	0.47	0.00
78.80	1.81	0.29	0.47	1.05
78.90	3.74	0.30	0.48	2.97
79.00	6.41	0.30	0.49	5.61
79.10	9.70	0.31	0.50	8.89
79.20	**13.72**	**0.32**	**0.50**	**12.89**

Stage-Area-Storage for Pond P1A: Pond 1a (Pond Repair)

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
75.50	3,106	0
75.55	3,117	62
75.60	3,128	124
75.65	3,139	186
75.70	3,150	248
75.75	3,161	311
75.80	3,172	373
75.85	3,183	435
75.90	3,194	497
75.95	3,205	559
76.00	3,216	621
76.05	3,227	683
76.10	3,238	745
76.15	3,249	808
76.20	3,260	870
76.25	3,271	932
76.30	3,282	994
76.35	3,293	1,056
76.40	3,304	1,118
76.45	3,315	1,180
76.50	6,432	1,242
76.55	6,919	1,483
76.60	7,406	1,723
76.65	7,893	1,963
76.70	8,380	2,203
76.75	8,866	2,443
76.80	9,353	2,683
76.85	9,840	2,923
76.90	10,327	3,164
76.95	10,814	3,404
77.00	11,301	3,644
77.05	12,494	4,181
77.10	13,687	4,717
77.15	14,880	5,254
77.20	16,073	5,790
77.25	17,266	6,327
77.30	18,459	6,864
77.35	19,652	7,400
77.40	20,845	7,937
77.45	22,038	8,473
77.50	23,231	9,010
77.55	24,424	9,547
77.60	25,618	10,083
77.65	26,811	10,620
77.70	28,004	11,156
77.75	29,197	11,693
77.80	30,390	12,230
77.85	31,583	12,766
77.90	32,776	13,303
77.95	33,969	13,839
78.00	35,162	14,376
78.05	35,833	15,405
78.10	36,505	16,434
78.15	37,176	17,462
78.20	37,847	18,491
78.25	38,518	19,520
78.30	39,190	20,548
78.35	39,861	21,577
78.40	40,532	22,606
78.45	41,204	23,634
78.50	41,875	24,663
78.55	42,546	25,692
78.60	43,218	26,721
78.65	43,889	27,749
78.70	44,560	28,778
78.75	45,232	29,807
78.80	45,903	30,835
78.85	46,574	31,864
78.90	47,246	32,893
78.95	47,917	33,922
79.00	48,588	34,950
79.05	49,260	35,979
79.10	49,931	37,008
79.15	50,602	38,036
79.20	**51,273**	**39,065**

Summary for Pond P3A: Pond 3A (Pond Repair)

Inflow Area = 1.915 ac, 32.23% Impervious, Inflow Depth = 3.34" for 10 Year event
Inflow = 6.82 cfs @ 12.12 hrs, Volume= 0.533 af
Outflow = 1.18 cfs @ 12.63 hrs, Volume= 0.533 af, Atten= 83%, Lag= 30.6 min
Primary = 0.44 cfs @ 12.63 hrs, Volume= 0.316 af
Secondary = 0.74 cfs @ 12.63 hrs, Volume= 0.217 af
Tertiary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Peak Elev= 77.59' @ 12.63 hrs Surf.Area= 12,414 sf Storage= 9,691 cf
Flood Elev= 79.50' Surf.Area= 25,484 sf Storage= 37,166 cf

Plug-Flow detention time= 117.2 min calculated for 0.532 af (100% of inflow)
Center-of-Mass det. time= 117.4 min (931.9 - 814.4)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	37,166 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	2,053	339.0	0	0	2,053
77.00	6,709	559.0	4,158	4,158	17,781
78.00	17,458	791.4	11,663	15,821	42,764
79.00	25,484	883.5	21,345	37,166	55,068

Device	Routing	Invert	Outlet Devices
#1	Primary	76.00'	**4.0" Round 6" Culvert 1** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 76.00' / 75.52' S= 0.0240 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Secondary	76.55'	**6.0" Round 6" Culvert 2** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 76.55' / 75.60' S= 0.0475 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Tertiary	78.50'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50

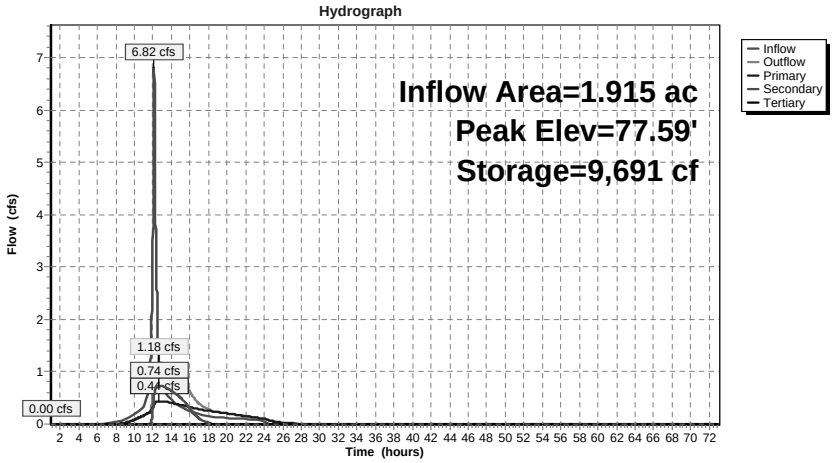
Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.44 cfs @ 12.63 hrs HW=77.59' (Free Discharge)
1=6" Culvert 1 (Barrel Controls 0.44 cfs @ 5.03 fps)

Secondary OutFlow Max=0.74 cfs @ 12.63 hrs HW=77.59' (Free Discharge)
2=6" Culvert 2 (Inlet Controls 0.74 cfs @ 3.77 fps)

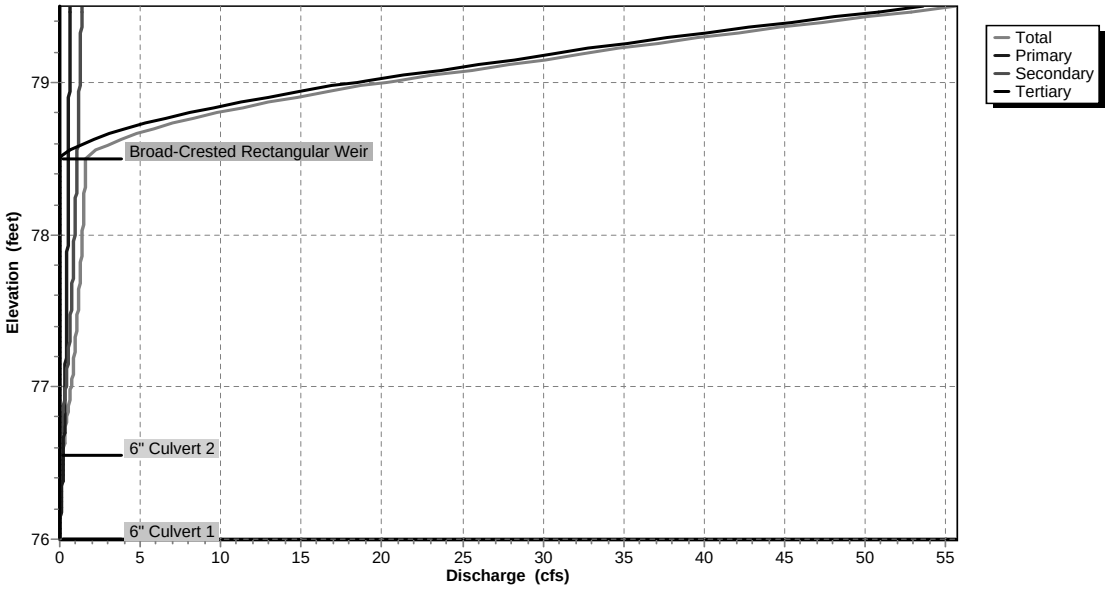
Tertiary OutFlow Max=0.00 cfs @ 1.00 hrs HW=76.00' (Free Discharge)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P3A: Pond 3A (Pond Repair)



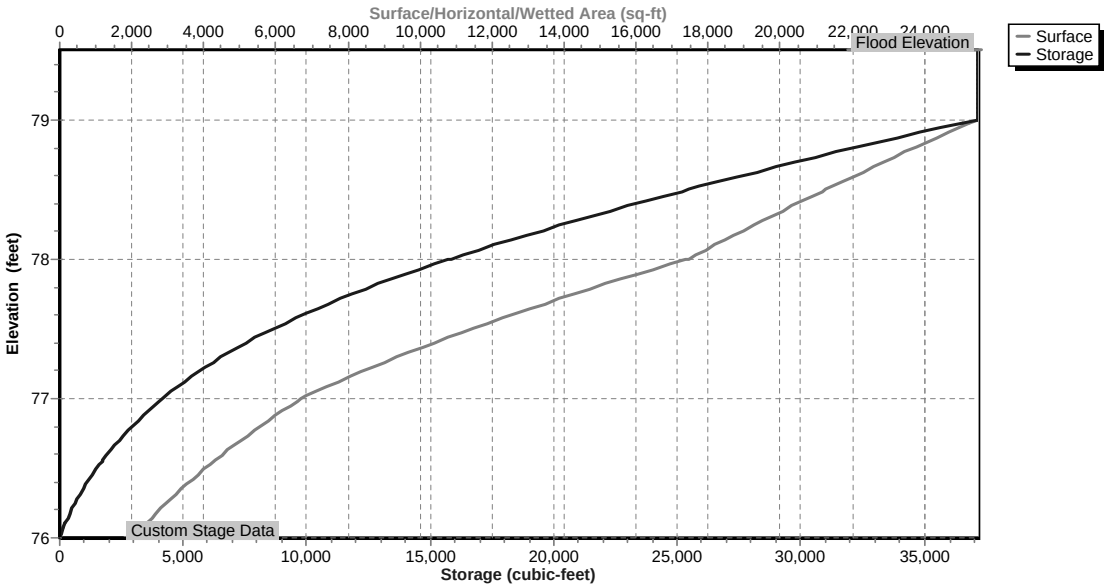
Pond P3A: Pond 3A (Pond Repair)

Stage-Discharge



Pond P3A: Pond 3A (Pond Repair)

Stage-Area-Storage



Hydrograph for Pond P3A: Pond 3A (Pond Repair)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1.00	0.00	0	76.00	0.00	0.00	0.00	**0.00**
6.00	0.00	0	76.00	0.00	0.00	0.00	0.00
11.00	**0.35**	**995**	**76.37**	**0.17**	**0.17**	**0.00**	0.00
16.00	**0.25**	**3,686**	**76.93**	**0.62**	**0.32**	**0.29**	0.00
21.00	0.11	1,113	76.40	0.18	0.18	0.00	0.00
26.00	0.00	247	76.11	0.03	0.03	0.00	0.00
31.00	0.00	77	76.04	0.00	0.00	0.00	0.00
36.00	0.00	40	76.02	0.00	0.00	0.00	0.00
41.00	0.00	20	76.01	0.00	0.00	0.00	0.00
46.00	0.00	10	76.00	0.00	0.00	0.00	0.00
51.00	0.00	5	76.00	0.00	0.00	0.00	0.00
56.00	0.00	3	76.00	0.00	0.00	0.00	0.00
61.00	0.00	1	76.00	0.00	0.00	0.00	0.00
66.00	0.00	1	76.00	0.00	0.00	0.00	0.00
71.00	0.00	0	76.00	0.00	0.00	0.00	0.00

Stage-Discharge for Pond P3A: Pond 3A (Pond Repair)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
76.00	0.00	0.00	0.00	0.00
76.10	0.02	0.02	0.00	0.00
76.20	0.07	0.07	0.00	0.00
76.30	0.14	0.14	0.00	0.00
76.40	0.18	0.18	0.00	0.00
76.50	0.21	0.21	0.00	0.00
76.60	0.25	0.24	0.01	0.00
76.70	0.33	0.27	0.06	0.00
76.80	0.44	0.30	0.15	0.00
76.90	0.58	0.32	0.26	0.00
77.00	0.71	0.34	0.38	0.00
77.10	0.82	0.36	0.46	0.00
77.20	0.90	0.38	0.53	0.00
77.30	0.98	0.39	0.59	0.00
77.40	1.06	0.41	0.65	0.00
77.50	1.13	0.43	0.70	0.00
77.60	1.19	0.44	0.75	0.00
77.70	1.24	0.45	0.79	0.00
77.80	1.30	0.46	0.83	0.00
77.90	1.35	0.48	0.87	0.00
78.00	1.40	0.49	0.91	0.00
78.10	1.45	0.50	0.95	0.00
78.20	1.50	0.51	0.99	0.00
78.30	1.54	0.52	1.02	0.00
78.40	1.59	0.53	1.06	0.00
78.50	1.63	0.54	1.09	0.00
78.60	3.17	0.55	1.12	1.50
78.70	5.95	0.56	1.15	4.24
78.80	9.77	0.57	1.18	8.02
78.90	14.49	0.58	1.21	12.70
79.00	20.25	0.59	1.24	18.42
79.10	26.96	0.60	1.27	25.10
79.20	33.41	0.61	1.29	31.51
79.30	40.29	0.62	1.32	38.35
79.40	47.74	0.63	1.35	45.76
79.50	**55.61**	**0.64**	**1.37**	**53.60**

Stage-Area-Storage for Pond P3A: Pond 3A (Pond Repair)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
76.00	2,053	0	77.75	14,298	11,858	79.50	25,484	37,166
76.05	2,222	107	77.80	14,905	12,588			
76.10	2,398	222	77.85	15,524	13,349			
76.15	2,581	347	77.90	16,156	14,141			
76.20	2,770	481	77.95	16,801	14,964			
76.25	2,966	624	78.00	17,458	15,821			
76.30	3,169	777	78.05	17,823	16,703			
76.35	3,378	941	78.10	18,192	17,603			
76.40	3,594	1,115	78.15	18,565	18,522			
76.45	3,817	1,300	78.20	18,942	19,460			
76.50	4,046	1,497	78.25	19,323	20,417			
76.55	4,282	1,705	78.30	19,707	21,392			
76.60	4,525	1,925	78.35	20,095	22,387			
76.65	4,775	2,158	78.40	20,487	23,402			
76.70	5,031	2,403	78.45	20,882	24,436			
76.75	5,294	2,661	78.50	21,282	25,490			
76.80	5,563	2,932	78.55	21,685	26,564			
76.85	5,840	3,217	78.60	22,092	27,659			
76.90	6,123	3,516	78.65	22,503	28,774			
76.95	6,413	3,830	78.70	22,917	29,909			
77.00	6,709	4,158	78.75	23,336	31,065			
77.05	7,127	4,504	78.80	23,758	32,243			
77.10	7,557	4,871	78.85	24,184	33,441			
77.15	8,000	5,259	78.90	24,613	34,661			
77.20	8,455	5,671	78.95	25,047	35,903			
77.25	8,923	6,105	79.00	**25,484**	**37,166**			
77.30	9,404	6,563	79.05	25,484	37,166			
77.35	9,897	7,046	79.10	25,484	37,166			
77.40	10,403	7,553	79.15	25,484	37,166			
77.45	10,922	8,086	79.20	25,484	37,166			
77.50	11,453	8,646	79.25	25,484	37,166			
77.55	11,997	9,232	79.30	25,484	37,166			
77.60	12,553	9,846	79.35	25,484	37,166			
77.65	13,122	10,487	79.40	25,484	37,166			
77.70	13,704	11,158	79.45	25,484	37,166			

Time span=1.00-73.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Off-Site Northeast Runoff Area=772,071 sf 0.00% Impervious Runoff Depth=3.22"
Flow Length=1,645' Tc=61.7 min CN=71 Runoff=25.87 cfs 4.762 af

Subcatchment 1Sa: Off-Site Runoff Area=190,352 sf 20.04% Impervious Runoff Depth=4.04"
Flow Length=540' Tc=12.8 min CN=79 Runoff=16.56 cfs 1.471 af

Subcatchment 3S: Off-Site East Runoff Area=21,487 sf 0.00% Impervious Runoff Depth=3.32"
Tc=6.0 min CN=72 Runoff=1.92 cfs 0.137 af

Subcatchment 3Sa: Off-Site East Runoff Area=83,406 sf 32.23% Impervious Runoff Depth=4.46"
Flow Length=366' Tc=8.6 min CN=83 Runoff=9.04 cfs 0.712 af

Reach DP-1: (new Reach) Inflow=28.14 cfs 5.832 af
Outflow=28.14 cfs 5.832 af

Reach DP-3: (new Reach) Inflow=2.95 cfs 0.849 af
Outflow=2.95 cfs 0.849 af

Pond P1A: Pond 1a (Pond Repair) Peak Elev=78.84' Storage=31,721 cf Inflow=16.56 cfs 1.471 af
Discarded=0.29 cfs 0.401 af Primary=0.48 cfs 0.843 af Secondary=1.80 cfs 0.227 af Outflow=2.57 cfs 1.471 af

Pond P3A: Pond 3A (Pond Repair) Peak Elev=77.86' Storage=13,503 cf Inflow=9.04 cfs 0.712 af
Primary=0.47 cfs 0.383 af Secondary=0.86 cfs 0.329 af Tertiary=0.00 cfs 0.000 af Outflow=1.33 cfs 0.712 af

Total Runoff Area = 24.502 ac Runoff Volume = 7.082 af Average Runoff Depth = 3.47"
93.91% Pervious = 23.009 ac 6.09% Impervious = 1.493 ac

Summary for Subcatchment 1S: Off-Site Northeast

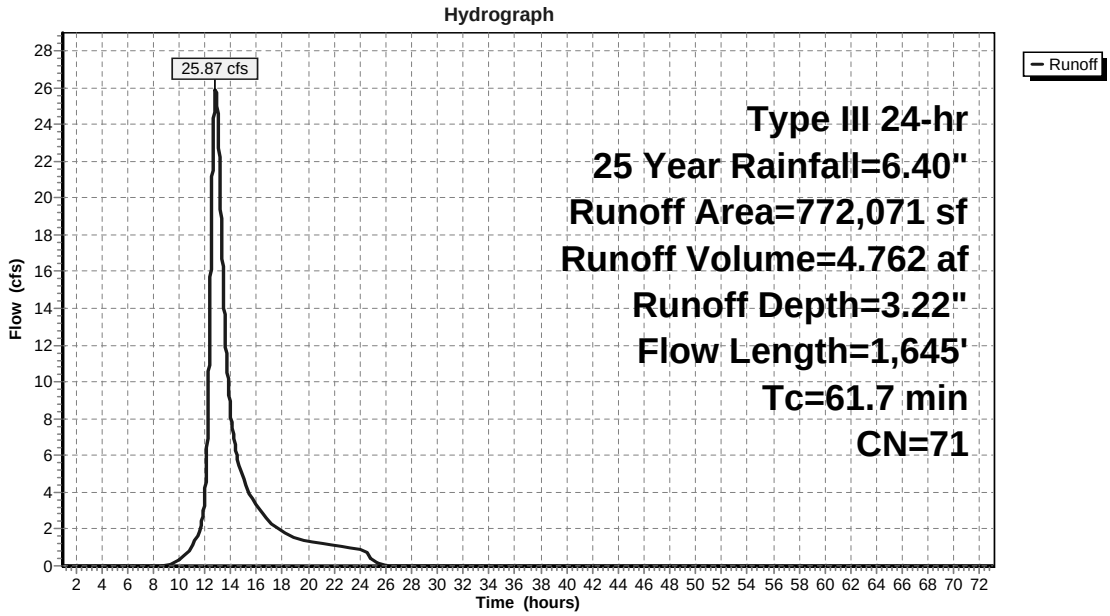
Runoff = 25.87 cfs @ 12.82 hrs, Volume= 4.762 af, Depth= 3.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=6.40"

	Area (sf)	CN	Description
	650,962	70	Woods, Good, HSG C
	115,309	74	>75% Grass cover, Good, HSG C
*	5,800	96	Gravel Road, HSG C
	772,071	71	Weighted Average
	772,071		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.0	50	0.0080	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.00"
12.6	628	0.0276	0.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.3	496	0.0276	2.49		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.8	471	0.0130	0.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
61.7	1,645	Total			

Subcatchment 1S: Off-Site Northeast



Hydrograph for Subcatchment 1S: Off-Site Northeast

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.06	0.00	0.00	36.00	6.40	3.22	0.00	71.00	6.40	3.22	0.00
2.00	0.13	0.00	0.00	37.00	6.40	3.22	0.00	72.00	6.40	3.22	0.00
3.00	0.20	0.00	0.00	38.00	6.40	3.22	0.00	73.00	6.40	3.22	0.00
4.00	0.28	0.00	0.00	39.00	6.40	3.22	0.00				
5.00	0.36	0.00	0.00	40.00	6.40	3.22	0.00				
6.00	0.46	0.00	0.00	41.00	6.40	3.22	0.00				
7.00	0.58	0.00	0.00	42.00	6.40	3.22	0.00				
8.00	0.73	0.00	0.00	43.00	6.40	3.22	0.00				
9.00	0.93	0.00	0.01	44.00	6.40	3.22	0.00				
10.00	1.21	0.03	0.30	45.00	6.40	3.22	0.00				
11.00	1.60	0.13	1.09	46.00	6.40	3.22	0.00				
12.00	3.20	0.88	**3.87**	47.00	6.40	3.22	0.00				
13.00	4.80	1.97	**24.50**	48.00	6.40	3.22	0.00				
14.00	5.19	2.26	8.30	49.00	6.40	3.22	0.00				
15.00	5.47	2.48	4.62	50.00	6.40	3.22	0.00				
16.00	5.67	2.64	3.32	51.00	6.40	3.22	0.00				
17.00	5.82	2.76	2.42	52.00	6.40	3.22	0.00				
18.00	5.94	2.85	1.90	53.00	6.40	3.22	0.00				
19.00	6.04	2.93	1.51	54.00	6.40	3.22	0.00				
20.00	6.12	3.00	1.34	55.00	6.40	3.22	0.00				
21.00	6.20	3.06	1.21	56.00	6.40	3.22	0.00				
22.00	6.28	3.12	1.10	57.00	6.40	3.22	0.00				
23.00	6.34	3.18	1.00	58.00	6.40	3.22	0.00				
24.00	**6.40**	**3.22**	0.90	59.00	6.40	3.22	0.00				
25.00	6.40	3.22	0.32	60.00	6.40	3.22	0.00				
26.00	6.40	3.22	0.03	61.00	6.40	3.22	0.00				
27.00	6.40	3.22	0.00	62.00	6.40	3.22	0.00				
28.00	6.40	3.22	0.00	63.00	6.40	3.22	0.00				
29.00	6.40	3.22	0.00	64.00	6.40	3.22	0.00				
30.00	6.40	3.22	0.00	65.00	6.40	3.22	0.00				
31.00	6.40	3.22	0.00	66.00	6.40	3.22	0.00				
32.00	6.40	3.22	0.00	67.00	6.40	3.22	0.00				
33.00	6.40	3.22	0.00	68.00	6.40	3.22	0.00				
34.00	6.40	3.22	0.00	69.00	6.40	3.22	0.00				
35.00	6.40	3.22	0.00	70.00	6.40	3.22	0.00				

Summary for Subcatchment 1Sa: Off-Site

Runoff = 16.56 cfs @ 12.17 hrs, Volume= 1.471 af, Depth= 4.04"

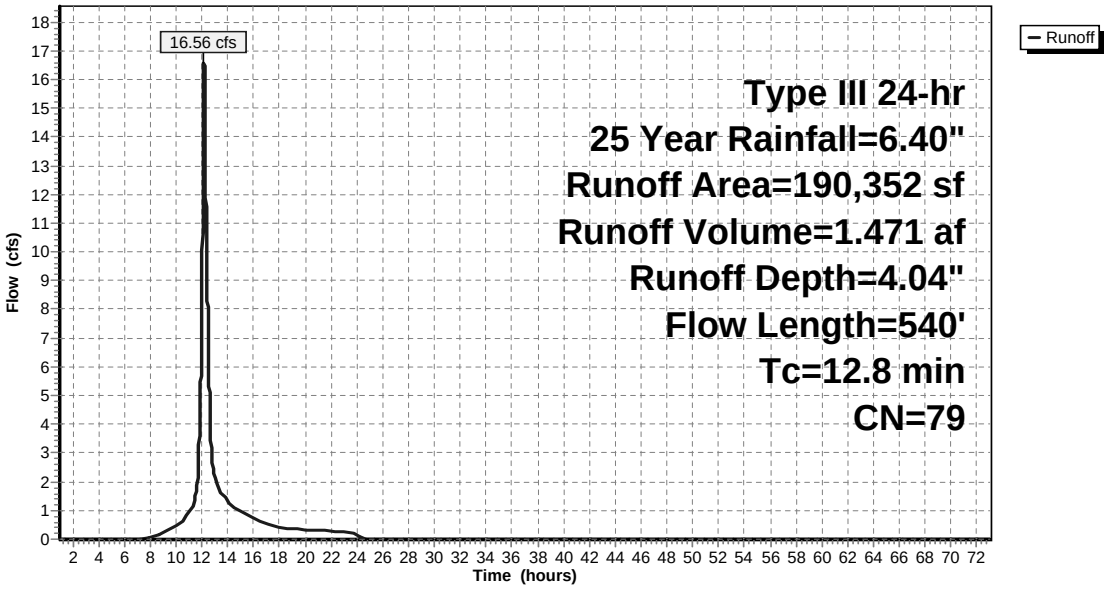
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=6.40"

	Area (sf)	CN	Description
	152,204	74	>75% Grass cover, Good, HSG C
*	9,937	98	Gravel Road, HSG C
	27,571	98	Water Surface, HSG C
*	640	98	Equipment Pad, HSG C
	190,352	79	Weighted Average
	152,204		79.96% Pervious Area
	38,148		20.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0380	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
8.3	490	0.0196	0.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.8	540	Total			

Subcatchment 1Sa: Off-Site

Hydrograph



Hydrograph for Subcatchment 1Sa: Off-Site

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.06	0.00	0.00	36.00	6.40	4.04	0.00	71.00	6.40	4.04	0.00
2.00	0.13	0.00	0.00	37.00	6.40	4.04	0.00	72.00	6.40	4.04	0.00
3.00	0.20	0.00	0.00	38.00	6.40	4.04	0.00	73.00	6.40	4.04	0.00
4.00	0.28	0.00	0.00	39.00	6.40	4.04	0.00				
5.00	0.36	0.00	0.00	40.00	6.40	4.04	0.00				
6.00	0.46	0.00	0.00	41.00	6.40	4.04	0.00				
7.00	0.58	0.00	0.01	42.00	6.40	4.04	0.00				
8.00	0.73	0.01	0.08	43.00	6.40	4.04	0.00				
9.00	0.93	0.05	0.22	44.00	6.40	4.04	0.00				
10.00	1.21	0.14	0.45	45.00	6.40	4.04	0.00				
11.00	1.60	0.31	0.90	46.00	6.40	4.04	0.00				
12.00	3.20	1.34	**7.55**	47.00	6.40	4.04	0.00				
13.00	4.80	2.63	**2.19**	48.00	6.40	4.04	0.00				
14.00	5.19	2.97	1.31	49.00	6.40	4.04	0.00				
15.00	5.47	3.21	0.98	50.00	6.40	4.04	0.00				
16.00	5.67	3.39	0.70	51.00	6.40	4.04	0.00				
17.00	5.82	3.52	0.55	52.00	6.40	4.04	0.00				
18.00	5.94	3.63	0.43	53.00	6.40	4.04	0.00				
19.00	6.04	3.71	0.37	54.00	6.40	4.04	0.00				
20.00	6.12	3.79	0.34	55.00	6.40	4.04	0.00				
21.00	6.20	3.86	0.31	56.00	6.40	4.04	0.00				
22.00	6.28	3.93	0.28	57.00	6.40	4.04	0.00				
23.00	6.34	3.99	0.25	58.00	6.40	4.04	0.00				
24.00	**6.40**	**4.04**	0.22	59.00	6.40	4.04	0.00				
25.00	6.40	4.04	0.00	60.00	6.40	4.04	0.00				
26.00	6.40	4.04	0.00	61.00	6.40	4.04	0.00				
27.00	6.40	4.04	0.00	62.00	6.40	4.04	0.00				
28.00	6.40	4.04	0.00	63.00	6.40	4.04	0.00				
29.00	6.40	4.04	0.00	64.00	6.40	4.04	0.00				
30.00	6.40	4.04	0.00	65.00	6.40	4.04	0.00				
31.00	6.40	4.04	0.00	66.00	6.40	4.04	0.00				
32.00	6.40	4.04	0.00	67.00	6.40	4.04	0.00				
33.00	6.40	4.04	0.00	68.00	6.40	4.04	0.00				
34.00	6.40	4.04	0.00	69.00	6.40	4.04	0.00				
35.00	6.40	4.04	0.00	70.00	6.40	4.04	0.00				

Summary for Subcatchment 3S: Off-Site East

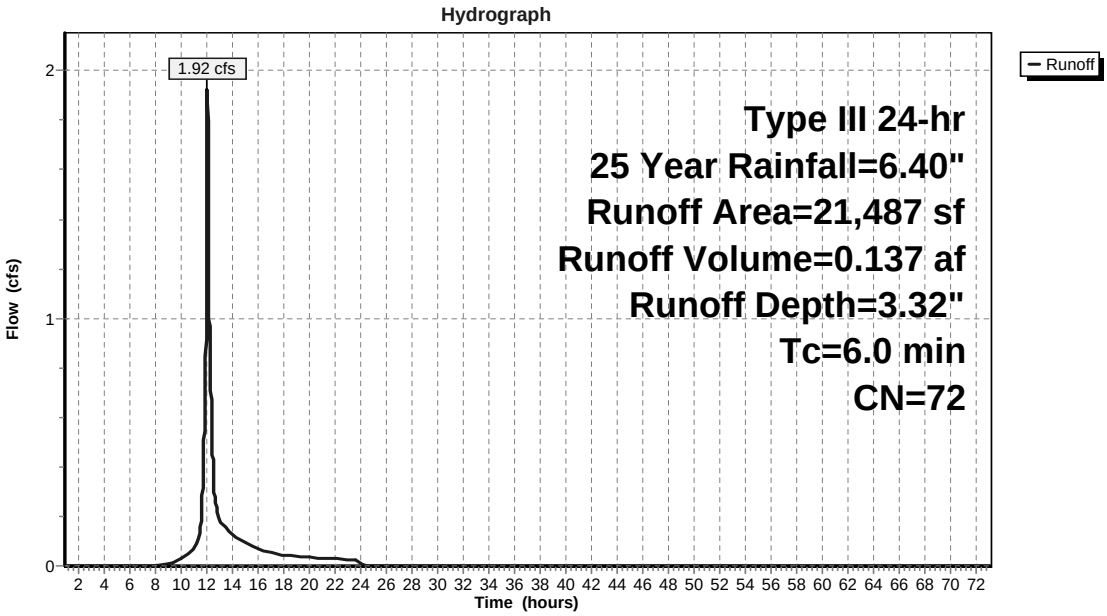
Runoff = 1.92 cfs @ 12.09 hrs, Volume= 0.137 af, Depth= 3.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=6.40"

Area (sf)	CN	Description
11,216	70	Woods, Good, HSG C
10,271	74	>75% Grass cover, Good, HSG C
21,487	72	Weighted Average
21,487		100.00% Pervious Area

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

Subcatchment 3S: Off-Site East



Hydrograph for Subcatchment 3S: Off-Site East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.06	0.00	0.00	36.00	6.40	3.32	0.00	71.00	6.40	3.32	0.00
2.00	0.13	0.00	0.00	37.00	6.40	3.32	0.00	72.00	6.40	3.32	0.00
3.00	0.20	0.00	0.00	38.00	6.40	3.32	0.00	73.00	6.40	3.32	0.00
4.00	0.28	0.00	0.00	39.00	6.40	3.32	0.00				
5.00	0.36	0.00	0.00	40.00	6.40	3.32	0.00				
6.00	0.46	0.00	0.00	41.00	6.40	3.32	0.00				
7.00	0.58	0.00	0.00	42.00	6.40	3.32	0.00				
8.00	0.73	0.00	0.00	43.00	6.40	3.32	0.00				
9.00	0.93	0.01	0.01	44.00	6.40	3.32	0.00				
10.00	1.21	0.04	0.03	45.00	6.40	3.32	0.00				
11.00	1.60	0.14	0.07	46.00	6.40	3.32	0.00				
12.00	3.20	0.93	**1.10**	47.00	6.40	3.32	0.00				
13.00	4.80	2.05	**0.20**	48.00	6.40	3.32	0.00				
14.00	5.19	2.35	0.13	49.00	6.40	3.32	0.00				
15.00	5.47	2.56	0.10	50.00	6.40	3.32	0.00				
16.00	5.67	2.73	0.07	51.00	6.40	3.32	0.00				
17.00	5.82	2.85	0.06	52.00	6.40	3.32	0.00				
18.00	5.94	2.94	0.04	53.00	6.40	3.32	0.00				
19.00	6.04	3.02	0.04	54.00	6.40	3.32	0.00				
20.00	6.12	3.10	0.03	55.00	6.40	3.32	0.00				
21.00	6.20	3.16	0.03	56.00	6.40	3.32	0.00				
22.00	6.28	3.22	0.03	57.00	6.40	3.32	0.00				
23.00	6.34	3.28	0.03	58.00	6.40	3.32	0.00				
24.00	**6.40**	**3.32**	0.02	59.00	6.40	3.32	0.00				
25.00	6.40	3.32	0.00	60.00	6.40	3.32	0.00				
26.00	6.40	3.32	0.00	61.00	6.40	3.32	0.00				
27.00	6.40	3.32	0.00	62.00	6.40	3.32	0.00				
28.00	6.40	3.32	0.00	63.00	6.40	3.32	0.00				
29.00	6.40	3.32	0.00	64.00	6.40	3.32	0.00				
30.00	6.40	3.32	0.00	65.00	6.40	3.32	0.00				
31.00	6.40	3.32	0.00	66.00	6.40	3.32	0.00				
32.00	6.40	3.32	0.00	67.00	6.40	3.32	0.00				
33.00	6.40	3.32	0.00	68.00	6.40	3.32	0.00				
34.00	6.40	3.32	0.00	69.00	6.40	3.32	0.00				
35.00	6.40	3.32	0.00	70.00	6.40	3.32	0.00				

Summary for Subcatchment 3Sa: Off-Site East

Runoff = 9.04 cfs @ 12.12 hrs, Volume= 0.712 af, Depth= 4.46"

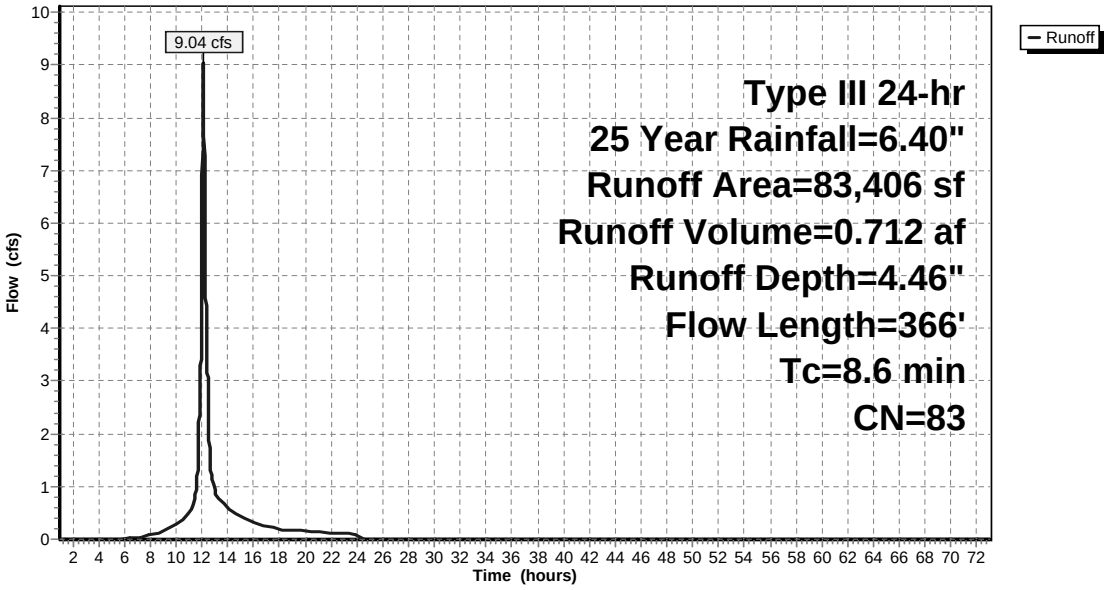
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=6.40"

	Area (sf)	CN	Description
	53,364	74	>75% Grass cover, Good, HSG C
	26,882	98	Water Surface, HSG C
*	3,160	96	Gravel Road
	83,406	83	Weighted Average
	56,524		67.77% Pervious Area
	26,882		32.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	50	0.0280	0.16		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.00"
0.4	82	0.0316	3.61		**Shallow Concentrated Flow, Shallow Conc. Flow** Paved Kv= 20.3 fps
3.1	234	0.0317	1.25		**Shallow Concentrated Flow, Shallow Conc Flow** Short Grass Pasture Kv= 7.0 fps
8.6	366	Total			

Subcatchment 3Sa: Off-Site East

Hydrograph



Hydrograph for Subcatchment 3Sa: Off-Site East

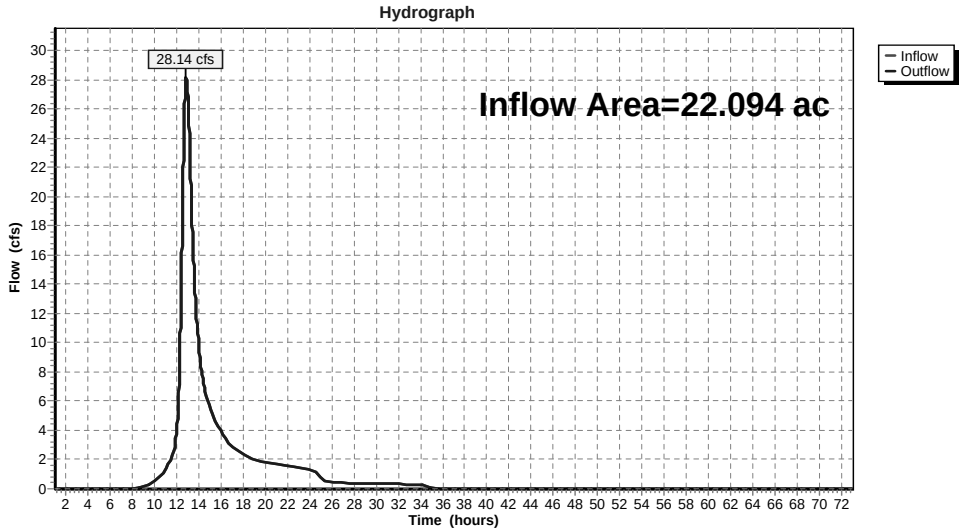
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.06	0.00	0.00	36.00	6.40	4.46	0.00	71.00	6.40	4.46	0.00
2.00	0.13	0.00	0.00	37.00	6.40	4.46	0.00	72.00	6.40	4.46	0.00
3.00	0.20	0.00	0.00	38.00	6.40	4.46	0.00	73.00	6.40	4.46	0.00
4.00	0.28	0.00	0.00	39.00	6.40	4.46	0.00				
5.00	0.36	0.00	0.00	40.00	6.40	4.46	0.00				
6.00	0.46	0.00	0.01	41.00	6.40	4.46	0.00				
7.00	0.58	0.01	0.03	42.00	6.40	4.46	0.00				
8.00	0.73	0.04	0.07	43.00	6.40	4.46	0.00				
9.00	0.93	0.11	0.16	44.00	6.40	4.46	0.00				
10.00	1.21	0.22	0.27	45.00	6.40	4.46	0.00				
11.00	1.60	0.44	0.50	46.00	6.40	4.46	0.00				
12.00	3.20	1.61	**4.75**	47.00	6.40	4.46	0.00				
13.00	4.80	2.99	**0.94**	48.00	6.40	4.46	0.00				
14.00	5.19	3.35	0.59	49.00	6.40	4.46	0.00				
15.00	5.47	3.60	0.44	50.00	6.40	4.46	0.00				
16.00	5.67	3.79	0.31	51.00	6.40	4.46	0.00				
17.00	5.82	3.93	0.25	52.00	6.40	4.46	0.00				
18.00	5.94	4.03	0.19	53.00	6.40	4.46	0.00				
19.00	6.04	4.13	0.17	54.00	6.40	4.46	0.00				
20.00	6.12	4.21	0.15	55.00	6.40	4.46	0.00				
21.00	6.20	4.28	0.14	56.00	6.40	4.46	0.00				
22.00	6.28	4.35	0.13	57.00	6.40	4.46	0.00				
23.00	6.34	4.41	0.11	58.00	6.40	4.46	0.00				
24.00	**6.40**	**4.46**	0.10	59.00	6.40	4.46	0.00				
25.00	6.40	4.46	0.00	60.00	6.40	4.46	0.00				
26.00	6.40	4.46	0.00	61.00	6.40	4.46	0.00				
27.00	6.40	4.46	0.00	62.00	6.40	4.46	0.00				
28.00	6.40	4.46	0.00	63.00	6.40	4.46	0.00				
29.00	6.40	4.46	0.00	64.00	6.40	4.46	0.00				
30.00	6.40	4.46	0.00	65.00	6.40	4.46	0.00				
31.00	6.40	4.46	0.00	66.00	6.40	4.46	0.00				
32.00	6.40	4.46	0.00	67.00	6.40	4.46	0.00				
33.00	6.40	4.46	0.00	68.00	6.40	4.46	0.00				
34.00	6.40	4.46	0.00	69.00	6.40	4.46	0.00				
35.00	6.40	4.46	0.00	70.00	6.40	4.46	0.00				

Summary for Reach DP-1: (new Reach)

Inflow Area = 22.094 ac, 3.96% Impervious, Inflow Depth = 3.17" for 25 Year event
Inflow = 28.14 cfs @ 12.82 hrs, Volume= 5.832 af
Outflow = 28.14 cfs @ 12.82 hrs, Volume= 5.832 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs

Reach DP-1: (new Reach)



Hydrograph for Reach DP-1: (new Reach)

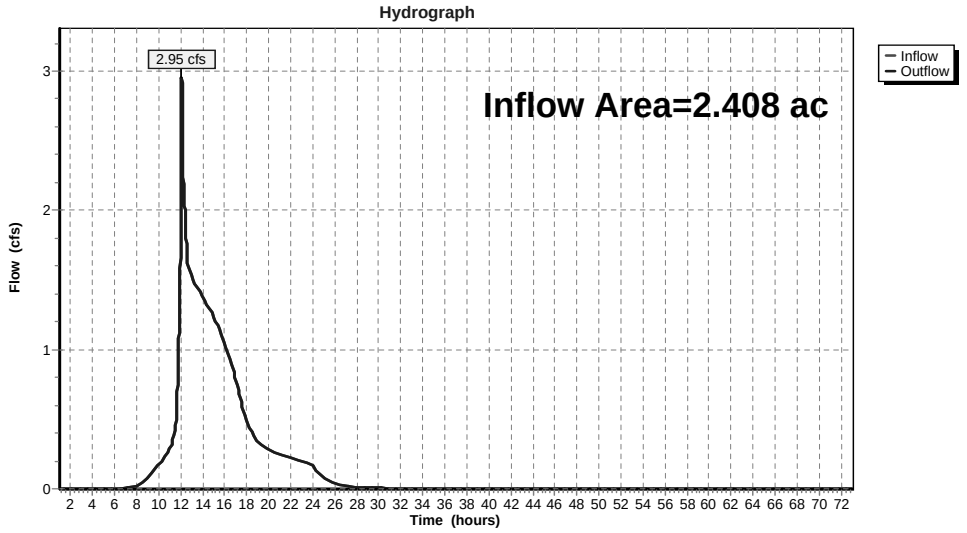
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
1.00	0.00		0.00	36.00	0.01		0.01	71.00	0.00		0.00
2.00	0.00		0.00	37.00	0.00		0.00	72.00	0.00		0.00
3.00	0.00		0.00	38.00	0.00		0.00	73.00	0.00		0.00
4.00	0.00		0.00	39.00	0.00		0.00				
5.00	0.00		0.00	40.00	0.00		0.00				
6.00	0.00		0.00	41.00	0.00		0.00				
7.00	0.00		0.00	42.00	0.00		0.00				
8.00	0.01		0.01	43.00	0.00		0.00				
9.00	0.12		0.12	44.00	0.00		0.00				
10.00	0.53		0.53	45.00	0.00		0.00				
11.00	1.38		1.38	46.00	0.00		0.00				
12.00	**4.24**		**4.24**	47.00	0.00		0.00				
13.00	**26.70**		**26.70**	48.00	0.00		0.00				
14.00	9.57		9.57	49.00	0.00		0.00				
15.00	5.47		5.47	50.00	0.00		0.00				
16.00	3.90		3.90	51.00	0.00		0.00				
17.00	2.89		2.89	52.00	0.00		0.00				
18.00	2.37		2.37	53.00	0.00		0.00				
19.00	1.97		1.97	54.00	0.00		0.00				
20.00	1.79		1.79	55.00	0.00		0.00				
21.00	1.66		1.66	56.00	0.00		0.00				
22.00	1.55		1.55	57.00	0.00		0.00				
23.00	1.44		1.44	58.00	0.00		0.00				
24.00	1.33		1.33	59.00	0.00		0.00				
25.00	0.74		0.74	60.00	0.00		0.00				
26.00	0.44		0.44	61.00	0.00		0.00				
27.00	0.40		0.40	62.00	0.00		0.00				
28.00	0.38		0.38	63.00	0.00		0.00				
29.00	0.37		0.37	64.00	0.00		0.00				
30.00	0.35		0.35	65.00	0.00		0.00				
31.00	0.34		0.34	66.00	0.00		0.00				
32.00	0.32		0.32	67.00	0.00		0.00				
33.00	0.29		0.29	68.00	0.00		0.00				
34.00	0.25		0.25	69.00	0.00		0.00				
35.00	0.11		0.11	70.00	0.00		0.00				

Summary for Reach DP-3: (new Reach)

Inflow Area = 2.408 ac, 25.63% Impervious, Inflow Depth = 4.23" for 25 Year event
Inflow = 2.95 cfs @ 12.10 hrs, Volume= 0.849 af
Outflow = 2.95 cfs @ 12.10 hrs, Volume= 0.849 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs

Reach DP-3: (new Reach)



Hydrograph for Reach DP-3: (new Reach)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
1.00	0.00		0.00	36.00	0.00		0.00	71.00	0.00		0.00
2.00	0.00		0.00	37.00	0.00		0.00	72.00	0.00		0.00
3.00	0.00		0.00	38.00	0.00		0.00	73.00	0.00		0.00
4.00	0.00		0.00	39.00	0.00		0.00				
5.00	0.00		0.00	40.00	0.00		0.00				
6.00	0.00		0.00	41.00	0.00		0.00				
7.00	0.00		0.00	42.00	0.00		0.00				
8.00	0.02		0.02	43.00	0.00		0.00				
9.00	0.08		0.08	44.00	0.00		0.00				
10.00	0.17		0.17	45.00	0.00		0.00				
11.00	0.29		0.29	46.00	0.00		0.00				
12.00	**1.95**		**1.95**	47.00	0.00		0.00				
13.00	**1.52**		**1.52**	48.00	0.00		0.00				
14.00	1.37		1.37	49.00	0.00		0.00				
15.00	1.23		1.23	50.00	0.00		0.00				
16.00	1.03		1.03	51.00	0.00		0.00				
17.00	0.79		0.79	52.00	0.00		0.00				
18.00	0.49		0.49	53.00	0.00		0.00				
19.00	0.34		0.34	54.00	0.00		0.00				
20.00	0.28		0.28	55.00	0.00		0.00				
21.00	0.25		0.25	56.00	0.00		0.00				
22.00	0.23		0.23	57.00	0.00		0.00				
23.00	0.20		0.20	58.00	0.00		0.00				
24.00	0.17		0.17	59.00	0.00		0.00				
25.00	0.08		0.08	60.00	0.00		0.00				
26.00	0.04		0.04	61.00	0.00		0.00				
27.00	0.02		0.02	62.00	0.00		0.00				
28.00	0.01		0.01	63.00	0.00		0.00				
29.00	0.01		0.01	64.00	0.00		0.00				
30.00	0.01		0.01	65.00	0.00		0.00				
31.00	0.00		0.00	66.00	0.00		0.00				
32.00	0.00		0.00	67.00	0.00		0.00				
33.00	0.00		0.00	68.00	0.00		0.00				
34.00	0.00		0.00	69.00	0.00		0.00				
35.00	0.00		0.00	70.00	0.00		0.00				

Summary for Pond P1A: Pond 1a (Pond Repair)

Inflow Area = 4.370 ac, 20.04% Impervious, Inflow Depth = 4.04" for 25 Year event
Inflow = 16.56 cfs @ 12.17 hrs, Volume= 1.471 af
Outflow = 2.57 cfs @ 12.86 hrs, Volume= 1.471 af, Atten= 84%, Lag= 41.1 min
Discarded = 0.29 cfs @ 12.86 hrs, Volume= 0.401 af
Primary = 0.48 cfs @ 12.86 hrs, Volume= 0.843 af
Secondary = 1.80 cfs @ 12.86 hrs, Volume= 0.227 af

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Peak Elev= 78.84' @ 12.86 hrs Surf.Area= 26,159 sf Storage= 31,721 cf

Plug-Flow detention time= 386.6 min calculated for 1.471 af (100% of inflow)
Center-of-Mass det. time= 386.5 min (1,206.8 - 820.3)

Volume	Invert	Avail.Storage	Storage Description
#1	75.50'	1,242 cf	**Custom Stage Data (Irregular)** Listed below 3,106 cf Overall x 40.0% Voids
#2	76.50'	37,823 cf	**Custom Stage Data (Irregular)** Listed below
		39,065 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
75.50	3,106	220.0	0	0	3,106
76.00	3,106	220.0	1,553	1,553	3,216
76.50	3,106	220.0	1,553	3,106	3,326

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.50	3,106	220.0	0	0	3,106
77.00	6,731	331.0	2,402	2,402	7,975
78.00	15,313	639.8	10,732	13,134	31,836
79.20	26,330	782.0	24,689	37,823	47,947

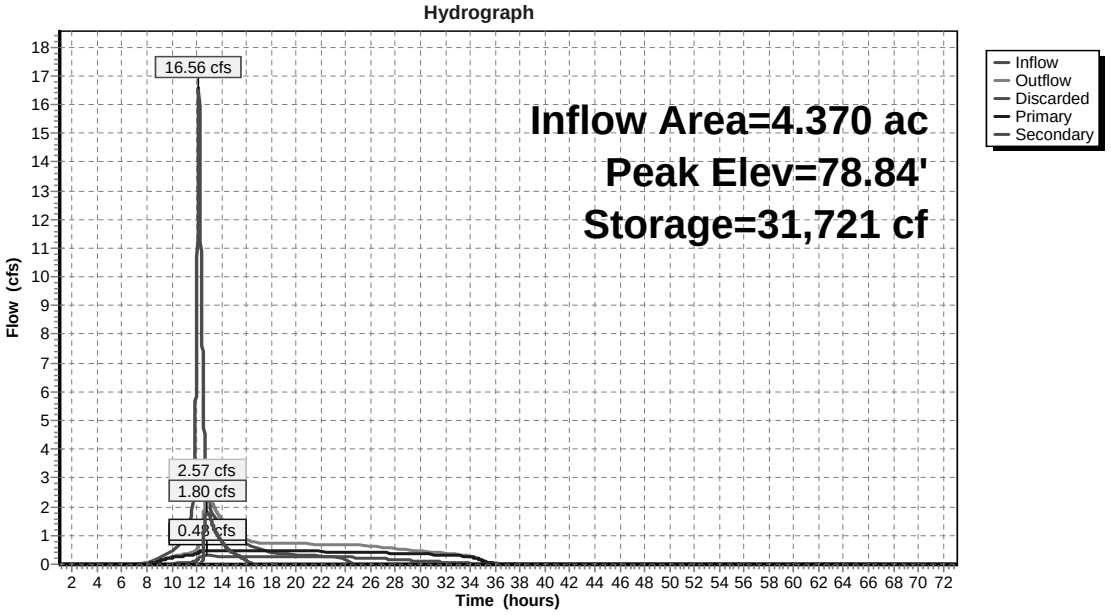
Device	Routing	Invert	Outlet Devices
#1	Secondary	78.70'	**14.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	75.50'	**0.270 in/hr Exfiltration over Wetted area**
#3	Primary	75.50'	**4.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.50' / 75.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf

Discarded OutFlow Max=0.29 cfs @ 12.86 hrs HW=78.84' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.29 cfs)

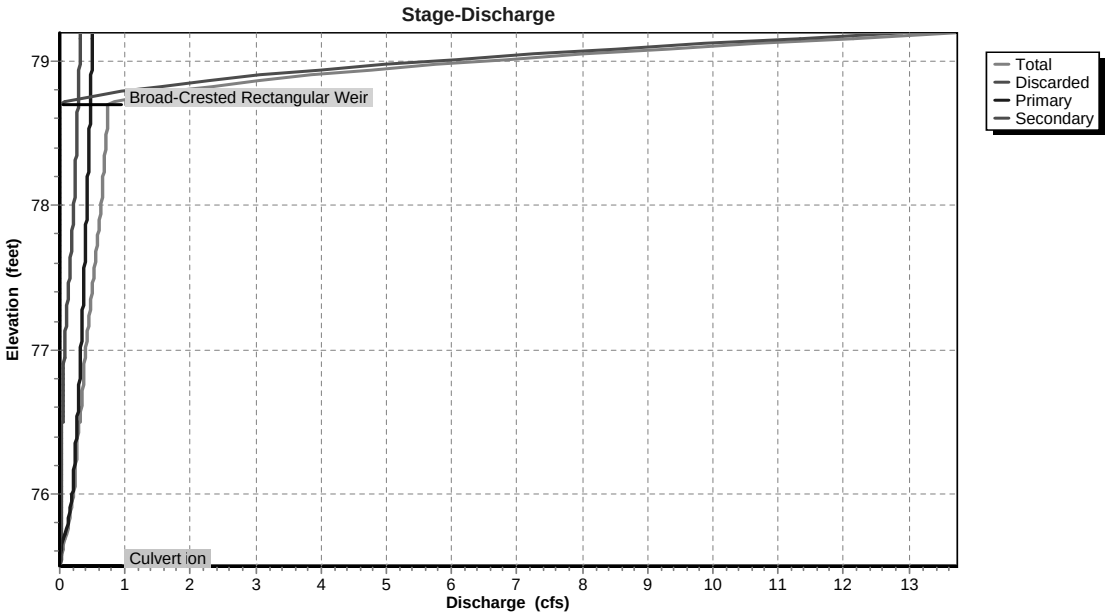
Primary OutFlow Max=0.48 cfs @ 12.86 hrs HW=78.84' (Free Discharge)
└**3=Culvert** (Barrel Controls 0.48 cfs @ 5.47 fps)

Secondary OutFlow Max=1.79 cfs @ 12.86 hrs HW=78.84' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 1.79 cfs @ 0.90 fps)

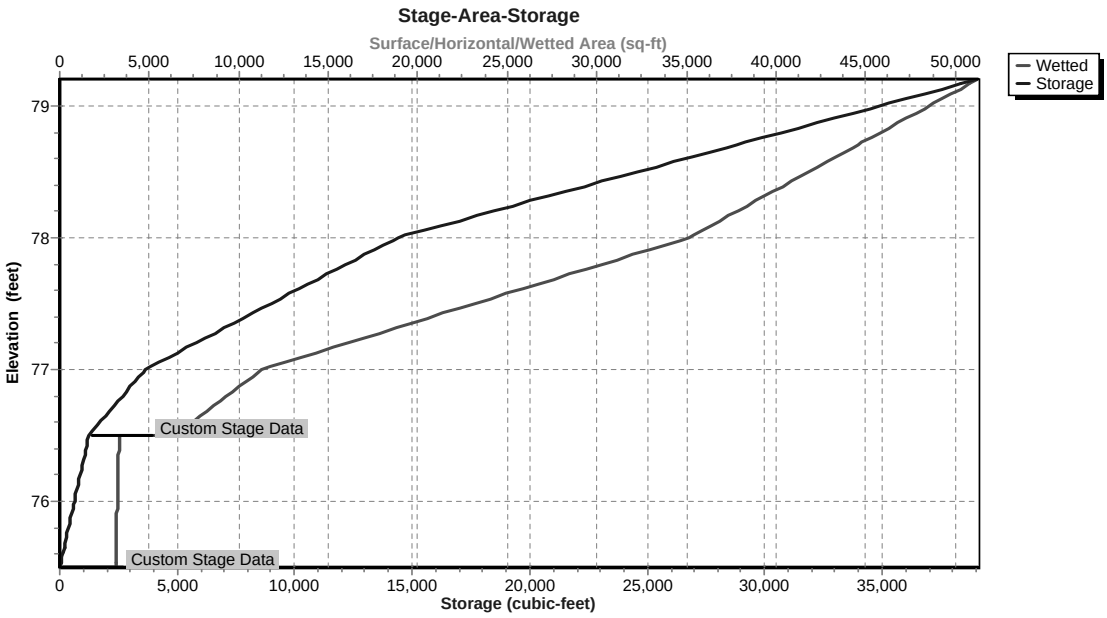
Pond P1A: Pond 1a (Pond Repair)



Pond P1A: Pond 1a (Pond Repair)



Pond P1A: Pond 1a (Pond Repair)



Hydrograph for Pond P1A: Pond 1a (Pond Repair)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
1.00	0.00	0	75.50	0.00	0.00	0.00	0.00
6.00	0.00	0	75.50	0.00	0.00	0.00	0.00
11.00	**0.90**	**2,111**	**76.68**	**0.34**	**0.05**	**0.29**	**0.00**
16.00	**0.70**	**29,234**	**78.72**	**0.87**	**0.28**	**0.47**	**0.12**
21.00	0.31	23,741	78.46	0.71	0.26	0.45	0.00
26.00	0.00	14,588	78.01	0.64	0.22	0.42	0.00
31.00	0.00	5,089	77.13	0.43	0.09	0.34	0.00
36.00	0.00	108	75.59	0.03	0.02	0.01	0.00
41.00	0.00	0	75.50	0.00	0.00	0.00	0.00
46.00	0.00	0	75.50	0.00	0.00	0.00	0.00
51.00	0.00	0	75.50	0.00	0.00	0.00	0.00
56.00	0.00	0	75.50	0.00	0.00	0.00	0.00
61.00	0.00	0	75.50	0.00	0.00	0.00	0.00
66.00	0.00	0	75.50	0.00	0.00	0.00	0.00
71.00	0.00	0	75.50	0.00	0.00	0.00	0.00

Stage-Discharge for Pond P1A: Pond 1a (Pond Repair)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
75.50	0.00	0.00	0.00	0.00
75.60	0.04	0.02	0.02	0.00
75.70	0.09	0.02	0.07	0.00
75.80	0.14	0.02	0.12	0.00
75.90	0.18	0.02	0.16	0.00
76.00	0.21	0.02	0.19	0.00
76.10	0.23	0.02	0.21	0.00
76.20	0.25	0.02	0.23	0.00
76.30	0.26	0.02	0.24	0.00
76.40	0.27	0.02	0.25	0.00
76.50	0.31	0.04	0.27	0.00
76.60	0.33	0.05	0.28	0.00
76.70	0.34	0.05	0.29	0.00
76.80	0.36	0.06	0.30	0.00
76.90	0.38	0.06	0.31	0.00
77.00	0.39	0.07	0.32	0.00
77.10	0.42	0.09	0.33	0.00
77.20	0.44	0.10	0.34	0.00
77.30	0.47	0.12	0.35	0.00
77.40	0.49	0.13	0.36	0.00
77.50	0.52	0.15	0.37	0.00
77.60	0.54	0.16	0.38	0.00
77.70	0.56	0.18	0.39	0.00
77.80	0.59	0.19	0.40	0.00
77.90	0.61	0.20	0.41	0.00
78.00	0.63	0.22	0.41	0.00
78.10	0.65	0.23	0.42	0.00
78.20	0.67	0.24	0.43	0.00
78.30	0.68	0.24	0.44	0.00
78.40	0.70	0.25	0.45	0.00
78.50	0.71	0.26	0.45	0.00
78.60	0.73	0.27	0.46	0.00
78.70	0.75	0.28	0.47	0.00
78.80	1.81	0.29	0.47	1.05
78.90	3.74	0.30	0.48	2.97
79.00	6.41	0.30	0.49	5.61
79.10	9.70	0.31	0.50	8.89
79.20	**13.72**	**0.32**	**0.50**	**12.89**

Stage-Area-Storage for Pond P1A: Pond 1a (Pond Repair)

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
75.50	3,106	0
75.55	3,117	62
75.60	3,128	124
75.65	3,139	186
75.70	3,150	248
75.75	3,161	311
75.80	3,172	373
75.85	3,183	435
75.90	3,194	497
75.95	3,205	559
76.00	3,216	621
76.05	3,227	683
76.10	3,238	745
76.15	3,249	808
76.20	3,260	870
76.25	3,271	932
76.30	3,282	994
76.35	3,293	1,056
76.40	3,304	1,118
76.45	3,315	1,180
76.50	6,432	1,242
76.55	6,919	1,483
76.60	7,406	1,723
76.65	7,893	1,963
76.70	8,380	2,203
76.75	8,866	2,443
76.80	9,353	2,683
76.85	9,840	2,923
76.90	10,327	3,164
76.95	10,814	3,404
77.00	11,301	3,644
77.05	12,494	4,181
77.10	13,687	4,717
77.15	14,880	5,254
77.20	16,073	5,790
77.25	17,266	6,327
77.30	18,459	6,864
77.35	19,652	7,400
77.40	20,845	7,937
77.45	22,038	8,473
77.50	23,231	9,010
77.55	24,424	9,547
77.60	25,618	10,083
77.65	26,811	10,620
77.70	28,004	11,156
77.75	29,197	11,693
77.80	30,390	12,230
77.85	31,583	12,766
77.90	32,776	13,303
77.95	33,969	13,839
78.00	35,162	14,376
78.05	35,833	15,405
78.10	36,505	16,434
78.15	37,176	17,462
78.20	37,847	18,491
78.25	38,518	19,520
78.30	39,190	20,548
78.35	39,861	21,577
78.40	40,532	22,606
78.45	41,204	23,634
78.50	41,875	24,663
78.55	42,546	25,692
78.60	43,218	26,721
78.65	43,889	27,749
78.70	44,560	28,778
78.75	45,232	29,807
78.80	45,903	30,835
78.85	46,574	31,864
78.90	47,246	32,893
78.95	47,917	33,922
79.00	48,588	34,950
79.05	49,260	35,979
79.10	49,931	37,008
79.15	50,602	38,036
79.20	**51,273**	**39,065**

Summary for Pond P3A: Pond 3A (Pond Repair)

Inflow Area = 1.915 ac, 32.23% Impervious, Inflow Depth = 4.46" for 25 Year event
Inflow = 9.04 cfs @ 12.12 hrs, Volume= 0.712 af
Outflow = 1.33 cfs @ 12.69 hrs, Volume= 0.712 af, Atten= 85%, Lag= 34.1 min
Primary = 0.47 cfs @ 12.69 hrs, Volume= 0.383 af
Secondary = 0.86 cfs @ 12.69 hrs, Volume= 0.329 af
Tertiary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Peak Elev= 77.86' @ 12.69 hrs Surf.Area= 15,649 sf Storage= 13,503 cf
Flood Elev= 79.50' Surf.Area= 25,484 sf Storage= 37,166 cf

Plug-Flow detention time= 130.8 min calculated for 0.712 af (100% of inflow)
Center-of-Mass det. time= 130.8 min (936.9 - 806.2)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	37,166 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	2,053	339.0	0	0	2,053
77.00	6,709	559.0	4,158	4,158	17,781
78.00	17,458	791.4	11,663	15,821	42,764
79.00	25,484	883.5	21,345	37,166	55,068

Device	Routing	Invert	Outlet Devices
#1	Primary	76.00'	**4.0" Round 6" Culvert 1** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 76.00' / 75.52' S= 0.0240 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Secondary	76.55'	**6.0" Round 6" Culvert 2** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 76.55' / 75.60' S= 0.0475 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Tertiary	78.50'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50

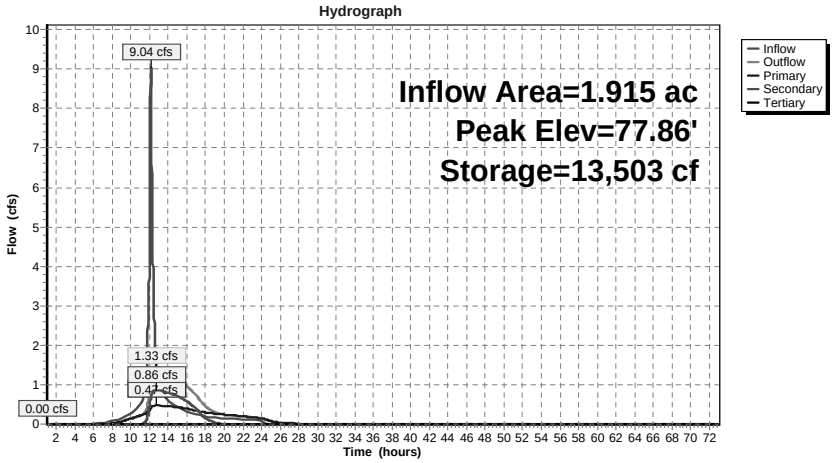
Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.47 cfs @ 12.69 hrs HW=77.86' (Free Discharge)
1=6" Culvert 1 (Barrel Controls 0.47 cfs @ 5.41 fps)

Secondary OutFlow Max=0.86 cfs @ 12.69 hrs HW=77.86' (Free Discharge)
2=6" Culvert 2 (Inlet Controls 0.86 cfs @ 4.37 fps)

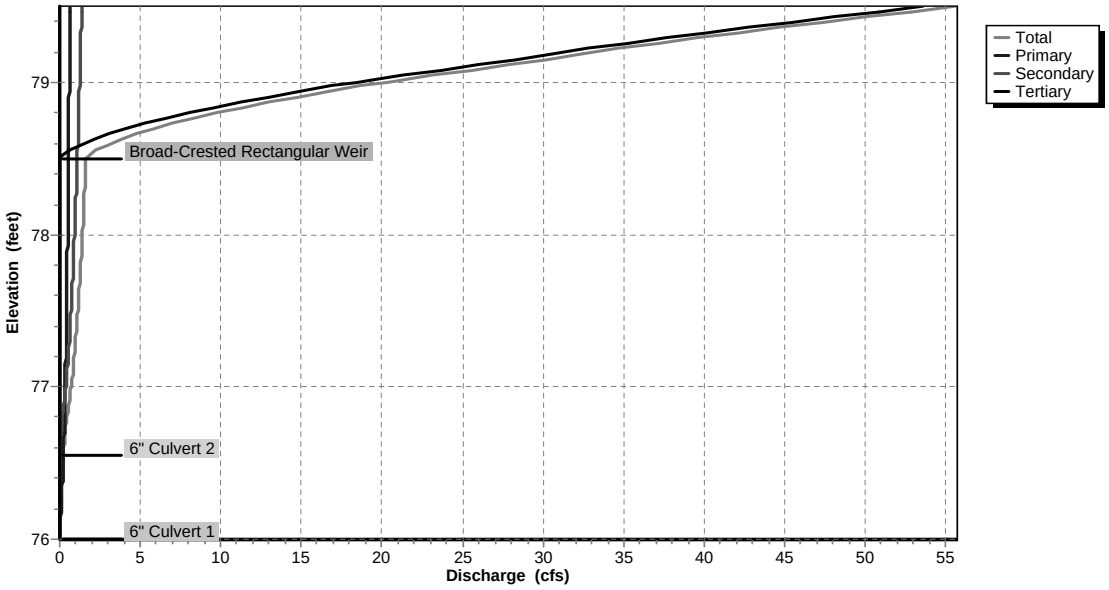
Tertiary OutFlow Max=0.00 cfs @ 1.00 hrs HW=76.00' (Free Discharge)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P3A: Pond 3A (Pond Repair)



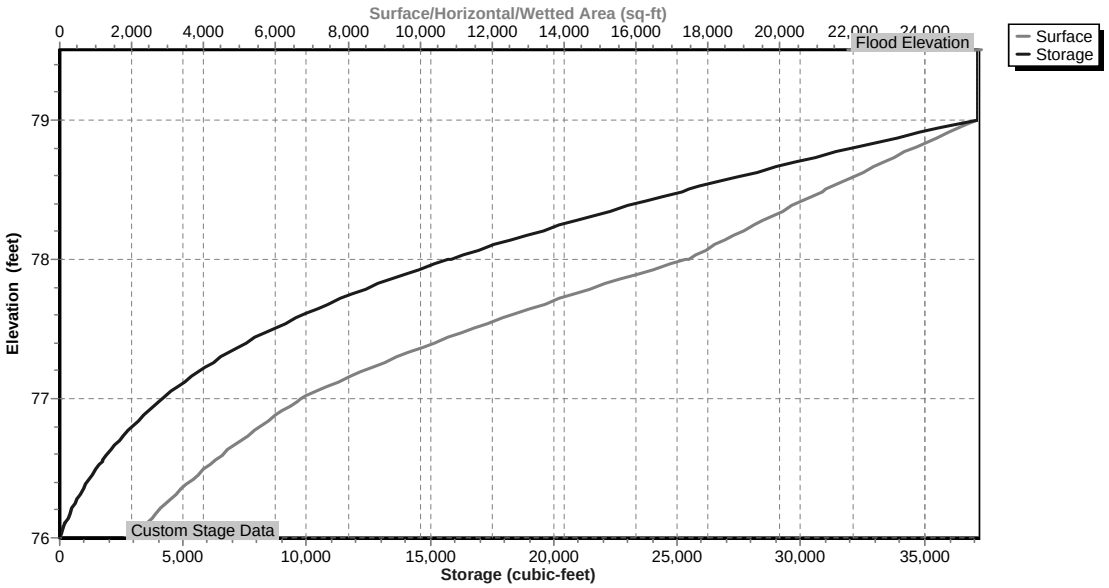
Pond P3A: Pond 3A (Pond Repair)

Stage-Discharge



Pond P3A: Pond 3A (Pond Repair)

Stage-Area-Storage



Hydrograph for Pond P3A: Pond 3A (Pond Repair)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1.00	0.00	0	76.00	0.00	0.00	0.00	**0.00**
6.00	0.01	5	76.00	0.00	0.00	0.00	0.00
11.00	**0.50**	**1,557**	**76.51**	**0.22**	**0.22**	**0.00**	0.00
16.00	**0.31**	**6,329**	**77.27**	**0.96**	**0.39**	**0.57**	0.00
21.00	0.14	1,566	76.52	0.22	0.22	0.00	0.00
26.00	0.00	304	76.13	0.04	0.04	0.00	0.00
31.00	0.00	84	76.04	0.00	0.00	0.00	0.00
36.00	0.00	42	76.02	0.00	0.00	0.00	0.00
41.00	0.00	22	76.01	0.00	0.00	0.00	0.00
46.00	0.00	11	76.01	0.00	0.00	0.00	0.00
51.00	0.00	6	76.00	0.00	0.00	0.00	0.00
56.00	0.00	3	76.00	0.00	0.00	0.00	0.00
61.00	0.00	2	76.00	0.00	0.00	0.00	0.00
66.00	0.00	1	76.00	0.00	0.00	0.00	0.00
71.00	0.00	0	76.00	0.00	0.00	0.00	0.00

Stage-Discharge for Pond P3A: Pond 3A (Pond Repair)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
76.00	0.00	0.00	0.00	0.00
76.10	0.02	0.02	0.00	0.00
76.20	0.07	0.07	0.00	0.00
76.30	0.14	0.14	0.00	0.00
76.40	0.18	0.18	0.00	0.00
76.50	0.21	0.21	0.00	0.00
76.60	0.25	0.24	0.01	0.00
76.70	0.33	0.27	0.06	0.00
76.80	0.44	0.30	0.15	0.00
76.90	0.58	0.32	0.26	0.00
77.00	0.71	0.34	0.38	0.00
77.10	0.82	0.36	0.46	0.00
77.20	0.90	0.38	0.53	0.00
77.30	0.98	0.39	0.59	0.00
77.40	1.06	0.41	0.65	0.00
77.50	1.13	0.43	0.70	0.00
77.60	1.19	0.44	0.75	0.00
77.70	1.24	0.45	0.79	0.00
77.80	1.30	0.46	0.83	0.00
77.90	1.35	0.48	0.87	0.00
78.00	1.40	0.49	0.91	0.00
78.10	1.45	0.50	0.95	0.00
78.20	1.50	0.51	0.99	0.00
78.30	1.54	0.52	1.02	0.00
78.40	1.59	0.53	1.06	0.00
78.50	1.63	0.54	1.09	0.00
78.60	3.17	0.55	1.12	1.50
78.70	5.95	0.56	1.15	4.24
78.80	9.77	0.57	1.18	8.02
78.90	14.49	0.58	1.21	12.70
79.00	20.25	0.59	1.24	18.42
79.10	26.96	0.60	1.27	25.10
79.20	33.41	0.61	1.29	31.51
79.30	40.29	0.62	1.32	38.35
79.40	47.74	0.63	1.35	45.76
79.50	**55.61**	**0.64**	**1.37**	**53.60**

Stage-Area-Storage for Pond P3A: Pond 3A (Pond Repair)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
76.00	2,053	0	77.75	14,298	11,858	79.50	25,484	37,166
76.05	2,222	107	77.80	14,905	12,588			
76.10	2,398	222	77.85	15,524	13,349			
76.15	2,581	347	77.90	16,156	14,141			
76.20	2,770	481	77.95	16,801	14,964			
76.25	2,966	624	78.00	17,458	15,821			
76.30	3,169	777	78.05	17,823	16,703			
76.35	3,378	941	78.10	18,192	17,603			
76.40	3,594	1,115	78.15	18,565	18,522			
76.45	3,817	1,300	78.20	18,942	19,460			
76.50	4,046	1,497	78.25	19,323	20,417			
76.55	4,282	1,705	78.30	19,707	21,392			
76.60	4,525	1,925	78.35	20,095	22,387			
76.65	4,775	2,158	78.40	20,487	23,402			
76.70	5,031	2,403	78.45	20,882	24,436			
76.75	5,294	2,661	78.50	21,282	25,490			
76.80	5,563	2,932	78.55	21,685	26,564			
76.85	5,840	3,217	78.60	22,092	27,659			
76.90	6,123	3,516	78.65	22,503	28,774			
76.95	6,413	3,830	78.70	22,917	29,909			
77.00	6,709	4,158	78.75	23,336	31,065			
77.05	7,127	4,504	78.80	23,758	32,243			
77.10	7,557	4,871	78.85	24,184	33,441			
77.15	8,000	5,259	78.90	24,613	34,661			
77.20	8,455	5,671	78.95	25,047	35,903			
77.25	8,923	6,105	79.00	**25,484**	**37,166**			
77.30	9,404	6,563	79.05	25,484	37,166			
77.35	9,897	7,046	79.10	25,484	37,166			
77.40	10,403	7,553	79.15	25,484	37,166			
77.45	10,922	8,086	79.20	25,484	37,166			
77.50	11,453	8,646	79.25	25,484	37,166			
77.55	11,997	9,232	79.30	25,484	37,166			
77.60	12,553	9,846	79.35	25,484	37,166			
77.65	13,122	10,487	79.40	25,484	37,166			
77.70	13,704	11,158	79.45	25,484	37,166			

Time span=1.00-73.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Off-Site Northeast Runoff Area=772,071 sf 0.00% Impervious Runoff Depth=4.83"
Flow Length=1,645' Tc=61.7 min CN=71 Runoff=39.01 cfs 7.137 af

Subcatchment 1Sa: Off-Site Runoff Area=190,352 sf 20.04% Impervious Runoff Depth=5.78"
Flow Length=540' Tc=12.8 min CN=79 Runoff=23.48 cfs 2.104 af

Subcatchment 3S: Off-Site East Runoff Area=21,487 sf 0.00% Impervious Runoff Depth=4.95"
Tc=6.0 min CN=72 Runoff=2.86 cfs 0.203 af

Subcatchment 3Sa: Off-Site East Runoff Area=83,406 sf 32.23% Impervious Runoff Depth=6.25"
Flow Length=366' Tc=8.6 min CN=83 Runoff=12.49 cfs 0.998 af

Reach DP-1: (new Reach) Inflow=44.76 cfs 8.798 af
Outflow=44.76 cfs 8.798 af

Reach DP-3: (new Reach) Inflow=4.07 cfs 1.201 af
Outflow=4.07 cfs 1.201 af

Pond P1A: Pond 1a (Pond Repair) Peak Elev=79.12' Storage=37,356 cf Inflow=23.48 cfs 2.104 af
Discarded=0.31 cfs 0.443 af Primary=0.50 cfs 0.924 af Secondary=9.53 cfs 0.737 af Outflow=10.34 cfs 2.104 af

Pond P3A: Pond 3A (Pond Repair) Peak Elev=78.22' Storage=19,761 cf Inflow=12.49 cfs 0.998 af
Primary=0.51 cfs 0.480 af Secondary=0.99 cfs 0.518 af Tertiary=0.00 cfs 0.000 af Outflow=1.50 cfs 0.998 af

Total Runoff Area = 24.502 ac Runoff Volume = 10.443 af Average Runoff Depth = 5.11"
93.91% Pervious = 23.009 ac 6.09% Impervious = 1.493 ac

Summary for Subcatchment 1S: Off-Site Northeast

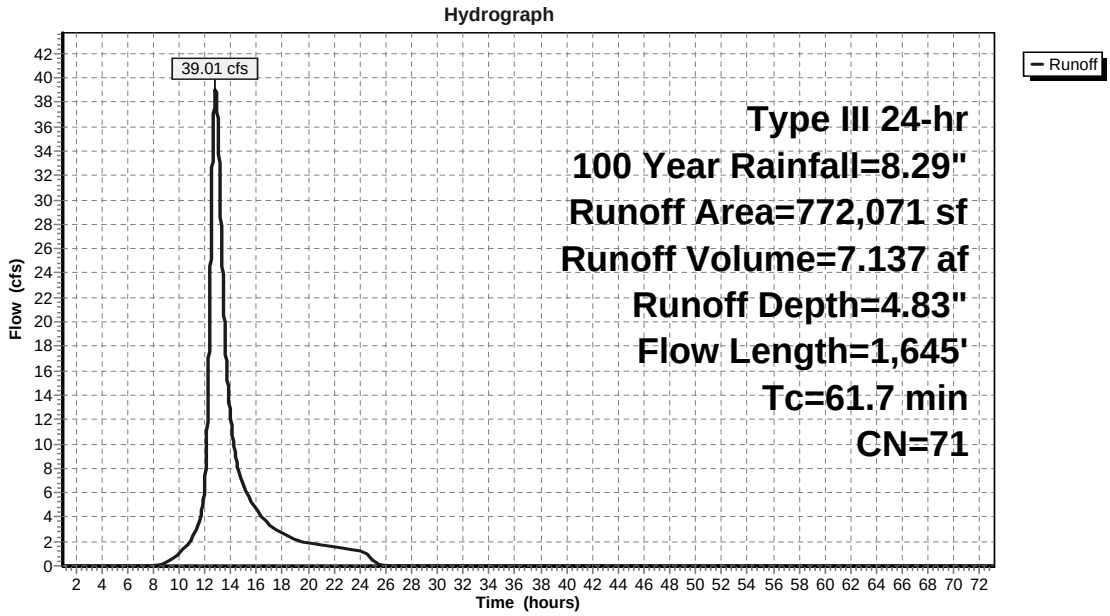
Runoff = 39.01 cfs @ 12.82 hrs, Volume= 7.137 af, Depth= 4.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.29"

	Area (sf)	CN	Description
	650,962	70	Woods, Good, HSG C
	115,309	74	>75% Grass cover, Good, HSG C
*	5,800	96	Gravel Road, HSG C
	772,071	71	Weighted Average
	772,071		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.0	50	0.0080	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.00"
12.6	628	0.0276	0.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.3	496	0.0276	2.49		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.8	471	0.0130	0.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
61.7	1,645	Total			

Subcatchment 1S: Off-Site Northeast



Hydrograph for Subcatchment 1S: Off-Site Northeast

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.08	0.00	0.00	36.00	8.29	4.83	0.00	71.00	8.29	4.83	0.00
2.00	0.17	0.00	0.00	37.00	8.29	4.83	0.00	72.00	8.29	4.83	0.00
3.00	0.25	0.00	0.00	38.00	8.29	4.83	0.00	73.00	8.29	4.83	0.00
4.00	0.36	0.00	0.00	39.00	8.29	4.83	0.00				
5.00	0.47	0.00	0.00	40.00	8.29	4.83	0.00				
6.00	0.60	0.00	0.00	41.00	8.29	4.83	0.00				
7.00	0.75	0.00	0.00	42.00	8.29	4.83	0.00				
8.00	0.95	0.00	0.01	43.00	8.29	4.83	0.00				
9.00	1.21	0.03	0.30	44.00	8.29	4.83	0.00				
10.00	1.57	0.12	1.02	45.00	8.29	4.83	0.00				
11.00	2.07	0.30	2.32	46.00	8.29	4.83	0.00				
12.00	4.14	1.49	**6.73**	47.00	8.29	4.83	0.00				
13.00	6.22	3.07	**36.56**	48.00	8.29	4.83	0.00				
14.00	6.72	3.49	11.94	49.00	8.29	4.83	0.00				
15.00	7.08	3.79	6.52	50.00	8.29	4.83	0.00				
16.00	7.34	4.02	4.64	51.00	8.29	4.83	0.00				
17.00	7.54	4.18	3.37	52.00	8.29	4.83	0.00				
18.00	7.69	4.31	2.65	53.00	8.29	4.83	0.00				
19.00	7.82	4.42	2.10	54.00	8.29	4.83	0.00				
20.00	7.93	4.52	1.85	55.00	8.29	4.83	0.00				
21.00	8.04	4.61	1.67	56.00	8.29	4.83	0.00				
22.00	8.13	4.69	1.52	57.00	8.29	4.83	0.00				
23.00	8.21	4.77	1.38	58.00	8.29	4.83	0.00				
24.00	**8.29**	**4.83**	1.24	59.00	8.29	4.83	0.00				
25.00	8.29	4.83	0.44	60.00	8.29	4.83	0.00				
26.00	8.29	4.83	0.04	61.00	8.29	4.83	0.00				
27.00	8.29	4.83	0.00	62.00	8.29	4.83	0.00				
28.00	8.29	4.83	0.00	63.00	8.29	4.83	0.00				
29.00	8.29	4.83	0.00	64.00	8.29	4.83	0.00				
30.00	8.29	4.83	0.00	65.00	8.29	4.83	0.00				
31.00	8.29	4.83	0.00	66.00	8.29	4.83	0.00				
32.00	8.29	4.83	0.00	67.00	8.29	4.83	0.00				
33.00	8.29	4.83	0.00	68.00	8.29	4.83	0.00				
34.00	8.29	4.83	0.00	69.00	8.29	4.83	0.00				
35.00	8.29	4.83	0.00	70.00	8.29	4.83	0.00				

Summary for Subcatchment 1Sa: Off-Site

Runoff = 23.48 cfs @ 12.17 hrs, Volume= 2.104 af, Depth= 5.78"

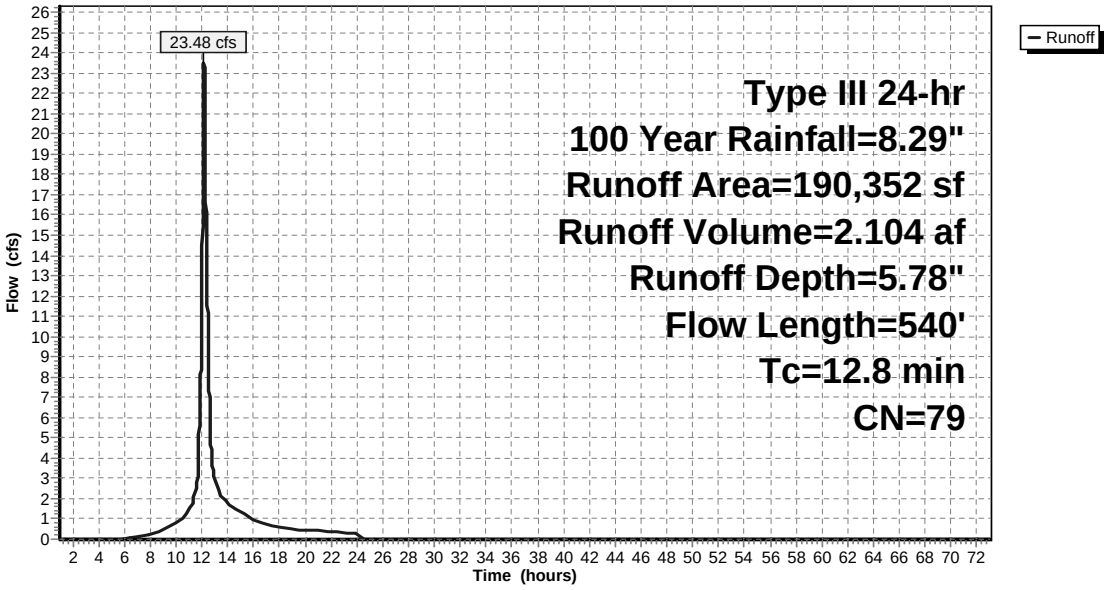
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.29"

	Area (sf)	CN	Description
	152,204	74	>75% Grass cover, Good, HSG C
*	9,937	98	Gravel Road, HSG C
	27,571	98	Water Surface, HSG C
*	640	98	Equipment Pad, HSG C
	190,352	79	Weighted Average
	152,204		79.96% Pervious Area
	38,148		20.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0380	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
8.3	490	0.0196	0.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.8	540	Total			

Subcatchment 1Sa: Off-Site

Hydrograph



Hydrograph for Subcatchment 1Sa: Off-Site

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.08	0.00	0.00	36.00	8.29	5.78	0.00	71.00	8.29	5.78	0.00
2.00	0.17	0.00	0.00	37.00	8.29	5.78	0.00	72.00	8.29	5.78	0.00
3.00	0.25	0.00	0.00	38.00	8.29	5.78	0.00	73.00	8.29	5.78	0.00
4.00	0.36	0.00	0.00	39.00	8.29	5.78	0.00				
5.00	0.47	0.00	0.00	40.00	8.29	5.78	0.00				
6.00	0.60	0.00	0.02	41.00	8.29	5.78	0.00				
7.00	0.75	0.02	0.09	42.00	8.29	5.78	0.00				
8.00	0.95	0.06	0.21	43.00	8.29	5.78	0.00				
9.00	1.21	0.14	0.44	44.00	8.29	5.78	0.00				
10.00	1.57	0.29	0.78	45.00	8.29	5.78	0.00				
11.00	2.07	0.57	1.44	46.00	8.29	5.78	0.00				
12.00	4.14	2.08	**11.04**	47.00	8.29	5.78	0.00				
13.00	6.22	3.87	**3.00**	48.00	8.29	5.78	0.00				
14.00	6.72	4.33	1.78	49.00	8.29	5.78	0.00				
15.00	7.08	4.66	1.33	50.00	8.29	5.78	0.00				
16.00	7.34	4.90	0.95	51.00	8.29	5.78	0.00				
17.00	7.54	5.08	0.74	52.00	8.29	5.78	0.00				
18.00	7.69	5.22	0.57	53.00	8.29	5.78	0.00				
19.00	7.82	5.34	0.50	54.00	8.29	5.78	0.00				
20.00	7.93	5.45	0.45	55.00	8.29	5.78	0.00				
21.00	8.04	5.54	0.41	56.00	8.29	5.78	0.00				
22.00	8.13	5.63	0.37	57.00	8.29	5.78	0.00				
23.00	8.21	5.71	0.34	58.00	8.29	5.78	0.00				
24.00	**8.29**	**5.78**	0.30	59.00	8.29	5.78	0.00				
25.00	8.29	5.78	0.00	60.00	8.29	5.78	0.00				
26.00	8.29	5.78	0.00	61.00	8.29	5.78	0.00				
27.00	8.29	5.78	0.00	62.00	8.29	5.78	0.00				
28.00	8.29	5.78	0.00	63.00	8.29	5.78	0.00				
29.00	8.29	5.78	0.00	64.00	8.29	5.78	0.00				
30.00	8.29	5.78	0.00	65.00	8.29	5.78	0.00				
31.00	8.29	5.78	0.00	66.00	8.29	5.78	0.00				
32.00	8.29	5.78	0.00	67.00	8.29	5.78	0.00				
33.00	8.29	5.78	0.00	68.00	8.29	5.78	0.00				
34.00	8.29	5.78	0.00	69.00	8.29	5.78	0.00				
35.00	8.29	5.78	0.00	70.00	8.29	5.78	0.00				

Summary for Subcatchment 3S: Off-Site East

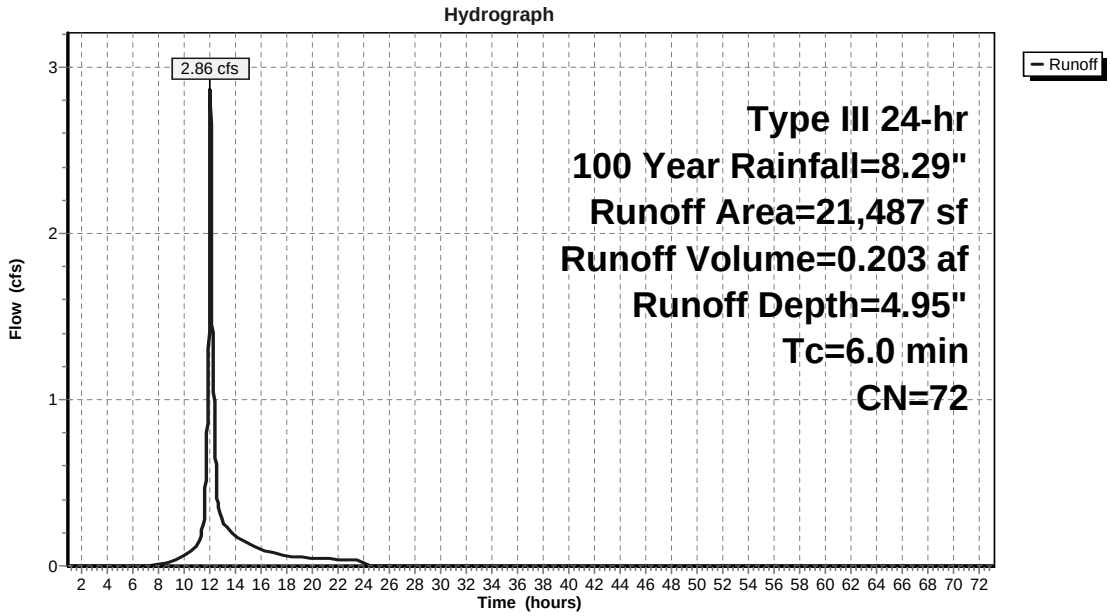
Runoff = 2.86 cfs @ 12.09 hrs, Volume= 0.203 af, Depth= 4.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.29"

Area (sf)	CN	Description
11,216	70	Woods, Good, HSG C
10,271	74	>75% Grass cover, Good, HSG C
21,487	72	Weighted Average
21,487		100.00% Pervious Area

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

Subcatchment 3S: Off-Site East



Hydrograph for Subcatchment 3S: Off-Site East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.08	0.00	0.00	36.00	8.29	4.95	0.00	71.00	8.29	4.95	0.00
2.00	0.17	0.00	0.00	37.00	8.29	4.95	0.00	72.00	8.29	4.95	0.00
3.00	0.25	0.00	0.00	38.00	8.29	4.95	0.00	73.00	8.29	4.95	0.00
4.00	0.36	0.00	0.00	39.00	8.29	4.95	0.00				
5.00	0.47	0.00	0.00	40.00	8.29	4.95	0.00				
6.00	0.60	0.00	0.00	41.00	8.29	4.95	0.00				
7.00	0.75	0.00	0.00	42.00	8.29	4.95	0.00				
8.00	0.95	0.01	0.01	43.00	8.29	4.95	0.00				
9.00	1.21	0.04	0.03	44.00	8.29	4.95	0.00				
10.00	1.57	0.13	0.06	45.00	8.29	4.95	0.00				
11.00	2.07	0.32	0.12	46.00	8.29	4.95	0.00				
12.00	4.14	1.56	**1.67**	47.00	8.29	4.95	0.00				
13.00	6.22	3.17	**0.28**	48.00	8.29	4.95	0.00				
14.00	6.72	3.59	0.18	49.00	8.29	4.95	0.00				
15.00	7.08	3.90	0.14	50.00	8.29	4.95	0.00				
16.00	7.34	4.12	0.10	51.00	8.29	4.95	0.00				
17.00	7.54	4.29	0.08	52.00	8.29	4.95	0.00				
18.00	7.69	4.43	0.06	53.00	8.29	4.95	0.00				
19.00	7.82	4.54	0.05	54.00	8.29	4.95	0.00				
20.00	7.93	4.64	0.05	55.00	8.29	4.95	0.00				
21.00	8.04	4.73	0.04	56.00	8.29	4.95	0.00				
22.00	8.13	4.81	0.04	57.00	8.29	4.95	0.00				
23.00	8.21	4.88	0.04	58.00	8.29	4.95	0.00				
24.00	**8.29**	**4.95**	0.03	59.00	8.29	4.95	0.00				
25.00	8.29	4.95	0.00	60.00	8.29	4.95	0.00				
26.00	8.29	4.95	0.00	61.00	8.29	4.95	0.00				
27.00	8.29	4.95	0.00	62.00	8.29	4.95	0.00				
28.00	8.29	4.95	0.00	63.00	8.29	4.95	0.00				
29.00	8.29	4.95	0.00	64.00	8.29	4.95	0.00				
30.00	8.29	4.95	0.00	65.00	8.29	4.95	0.00				
31.00	8.29	4.95	0.00	66.00	8.29	4.95	0.00				
32.00	8.29	4.95	0.00	67.00	8.29	4.95	0.00				
33.00	8.29	4.95	0.00	68.00	8.29	4.95	0.00				
34.00	8.29	4.95	0.00	69.00	8.29	4.95	0.00				
35.00	8.29	4.95	0.00	70.00	8.29	4.95	0.00				

Summary for Subcatchment 3Sa: Off-Site East

Runoff = 12.49 cfs @ 12.12 hrs, Volume= 0.998 af, Depth= 6.25"

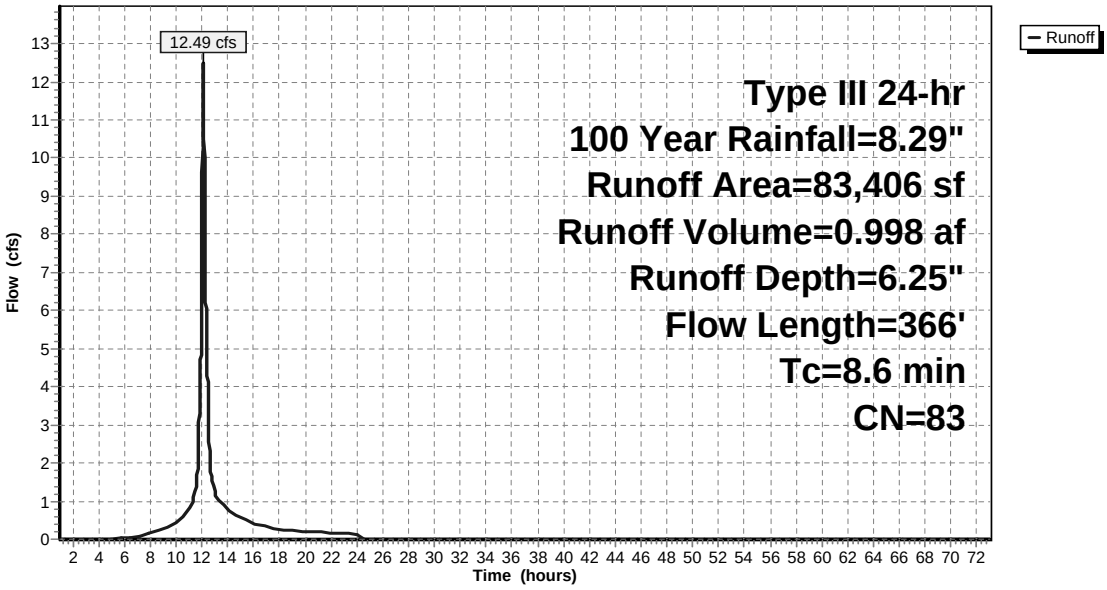
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.29"

	Area (sf)	CN	Description
	53,364	74	>75% Grass cover, Good, HSG C
	26,882	98	Water Surface, HSG C
*	3,160	96	Gravel Road
	83,406	83	Weighted Average
	56,524		67.77% Pervious Area
	26,882		32.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	50	0.0280	0.16		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.00"
0.4	82	0.0316	3.61		**Shallow Concentrated Flow, Shallow Conc. Flow** Paved Kv= 20.3 fps
3.1	234	0.0317	1.25		**Shallow Concentrated Flow, Shallow Conc Flow** Short Grass Pasture Kv= 7.0 fps
8.6	366	Total			

Subcatchment 3Sa: Off-Site East

Hydrograph



Hydrograph for Subcatchment 3Sa: Off-Site East

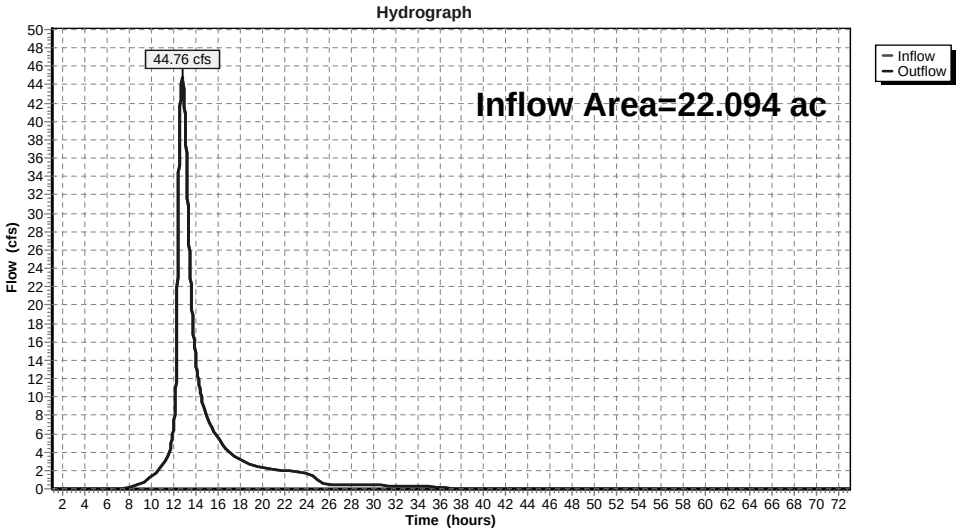
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.08	0.00	0.00	36.00	8.29	6.25	0.00	71.00	8.29	6.25	0.00
2.00	0.17	0.00	0.00	37.00	8.29	6.25	0.00	72.00	8.29	6.25	0.00
3.00	0.25	0.00	0.00	38.00	8.29	6.25	0.00	73.00	8.29	6.25	0.00
4.00	0.36	0.00	0.00	39.00	8.29	6.25	0.00				
5.00	0.47	0.00	0.01	40.00	8.29	6.25	0.00				
6.00	0.60	0.02	0.04	41.00	8.29	6.25	0.00				
7.00	0.75	0.05	0.08	42.00	8.29	6.25	0.00				
8.00	0.95	0.11	0.15	43.00	8.29	6.25	0.00				
9.00	1.21	0.22	0.27	44.00	8.29	6.25	0.00				
10.00	1.57	0.42	0.44	45.00	8.29	6.25	0.00				
11.00	2.07	0.75	0.76	46.00	8.29	6.25	0.00				
12.00	4.14	2.41	**6.67**	47.00	8.29	6.25	0.00				
13.00	6.22	4.29	**1.27**	48.00	8.29	6.25	0.00				
14.00	6.72	4.77	0.78	49.00	8.29	6.25	0.00				
15.00	7.08	5.10	0.59	50.00	8.29	6.25	0.00				
16.00	7.34	5.35	0.42	51.00	8.29	6.25	0.00				
17.00	7.54	5.54	0.33	52.00	8.29	6.25	0.00				
18.00	7.69	5.68	0.25	53.00	8.29	6.25	0.00				
19.00	7.82	5.81	0.22	54.00	8.29	6.25	0.00				
20.00	7.93	5.91	0.20	55.00	8.29	6.25	0.00				
21.00	8.04	6.01	0.18	56.00	8.29	6.25	0.00				
22.00	8.13	6.10	0.17	57.00	8.29	6.25	0.00				
23.00	8.21	6.18	0.15	58.00	8.29	6.25	0.00				
24.00	**8.29**	**6.25**	0.13	59.00	8.29	6.25	0.00				
25.00	8.29	6.25	0.00	60.00	8.29	6.25	0.00				
26.00	8.29	6.25	0.00	61.00	8.29	6.25	0.00				
27.00	8.29	6.25	0.00	62.00	8.29	6.25	0.00				
28.00	8.29	6.25	0.00	63.00	8.29	6.25	0.00				
29.00	8.29	6.25	0.00	64.00	8.29	6.25	0.00				
30.00	8.29	6.25	0.00	65.00	8.29	6.25	0.00				
31.00	8.29	6.25	0.00	66.00	8.29	6.25	0.00				
32.00	8.29	6.25	0.00	67.00	8.29	6.25	0.00				
33.00	8.29	6.25	0.00	68.00	8.29	6.25	0.00				
34.00	8.29	6.25	0.00	69.00	8.29	6.25	0.00				
35.00	8.29	6.25	0.00	70.00	8.29	6.25	0.00				

Summary for Reach DP-1: (new Reach)

Inflow Area = 22.094 ac, 3.96% Impervious, Inflow Depth = 4.78" for 100 Year event
Inflow = 44.76 cfs @ 12.75 hrs, Volume= 8.798 af
Outflow = 44.76 cfs @ 12.75 hrs, Volume= 8.798 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs

Reach DP-1: (new Reach)



Hydrograph for Reach DP-1: (new Reach)

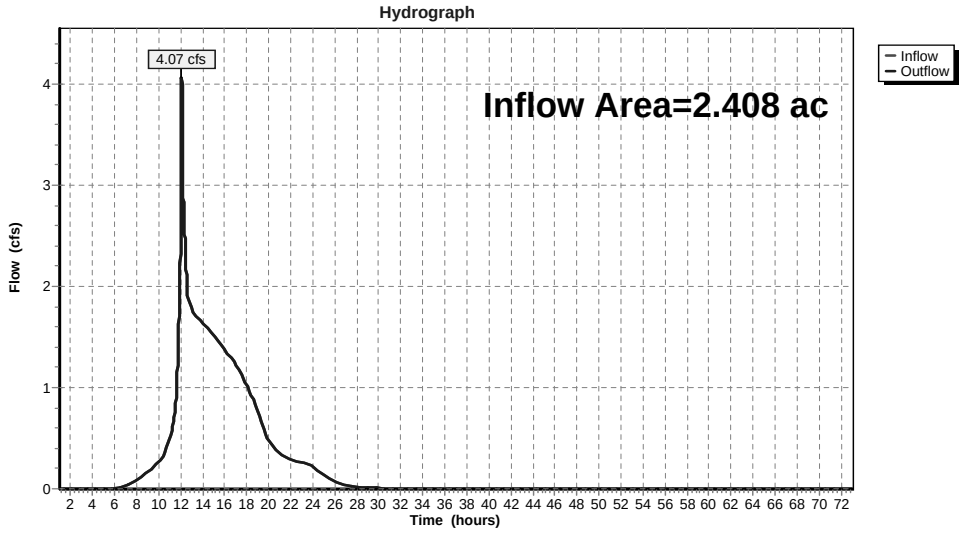
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
1.00	0.00		0.00	36.00	0.16		0.16	71.00	0.00		0.00
2.00	0.00		0.00	37.00	0.02		0.02	72.00	0.00		0.00
3.00	0.00		0.00	38.00	0.00		0.00	73.00	0.00		0.00
4.00	0.00		0.00	39.00	0.00		0.00				
5.00	0.00		0.00	40.00	0.00		0.00				
6.00	0.00		0.00	41.00	0.00		0.00				
7.00	0.02		0.02	42.00	0.00		0.00				
8.00	0.13		0.13	43.00	0.00		0.00				
9.00	0.52		0.52	44.00	0.00		0.00				
10.00	1.30		1.30	45.00	0.00		0.00				
11.00	2.65		2.65	46.00	0.00		0.00				
12.00	**7.15**		**7.15**	47.00	0.00		0.00				
13.00	**40.69**		**40.69**	48.00	0.00		0.00				
14.00	13.74		13.74	49.00	0.00		0.00				
15.00	7.74		7.74	50.00	0.00		0.00				
16.00	5.49		5.49	51.00	0.00		0.00				
17.00	3.96		3.96	52.00	0.00		0.00				
18.00	3.11		3.11	53.00	0.00		0.00				
19.00	2.57		2.57	54.00	0.00		0.00				
20.00	2.31		2.31	55.00	0.00		0.00				
21.00	2.13		2.13	56.00	0.00		0.00				
22.00	1.98		1.98	57.00	0.00		0.00				
23.00	1.83		1.83	58.00	0.00		0.00				
24.00	1.68		1.68	59.00	0.00		0.00				
25.00	0.87		0.87	60.00	0.00		0.00				
26.00	0.46		0.46	61.00	0.00		0.00				
27.00	0.42		0.42	62.00	0.00		0.00				
28.00	0.40		0.40	63.00	0.00		0.00				
29.00	0.39		0.39	64.00	0.00		0.00				
30.00	0.37		0.37	65.00	0.00		0.00				
31.00	0.36		0.36	66.00	0.00		0.00				
32.00	0.34		0.34	67.00	0.00		0.00				
33.00	0.33		0.33	68.00	0.00		0.00				
34.00	0.30		0.30	69.00	0.00		0.00				
35.00	0.27		0.27	70.00	0.00		0.00				

Summary for Reach DP-3: (new Reach)

Inflow Area = 2.408 ac, 25.63% Impervious, Inflow Depth = 5.99" for 100 Year event
Inflow = 4.07 cfs @ 12.09 hrs, Volume= 1.201 af
Outflow = 4.07 cfs @ 12.09 hrs, Volume= 1.201 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs

Reach DP-3: (new Reach)



Hydrograph for Reach DP-3: (new Reach)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
1.00	0.00		0.00	36.00	0.00		0.00	71.00	0.00		0.00
2.00	0.00		0.00	37.00	0.00		0.00	72.00	0.00		0.00
3.00	0.00		0.00	38.00	0.00		0.00	73.00	0.00		0.00
4.00	0.00		0.00	39.00	0.00		0.00				
5.00	0.00		0.00	40.00	0.00		0.00				
6.00	0.00		0.00	41.00	0.00		0.00				
7.00	0.03		0.03	42.00	0.00		0.00				
8.00	0.08		0.08	43.00	0.00		0.00				
9.00	0.17		0.17	44.00	0.00		0.00				
10.00	0.27		0.27	45.00	0.00		0.00				
11.00	0.49		0.49	46.00	0.00		0.00				
12.00	**2.74**		**2.74**	47.00	0.00		0.00				
13.00	**1.78**		**1.78**	48.00	0.00		0.00				
14.00	1.63		1.63	49.00	0.00		0.00				
15.00	1.52		1.52	50.00	0.00		0.00				
16.00	1.38		1.38	51.00	0.00		0.00				
17.00	1.23		1.23	52.00	0.00		0.00				
18.00	1.02		1.02	53.00	0.00		0.00				
19.00	0.76		0.76	54.00	0.00		0.00				
20.00	0.48		0.48	55.00	0.00		0.00				
21.00	0.35		0.35	56.00	0.00		0.00				
22.00	0.29		0.29	57.00	0.00		0.00				
23.00	0.26		0.26	58.00	0.00		0.00				
24.00	0.24		0.24	59.00	0.00		0.00				
25.00	0.14		0.14	60.00	0.00		0.00				
26.00	0.07		0.07	61.00	0.00		0.00				
27.00	0.03		0.03	62.00	0.00		0.00				
28.00	0.02		0.02	63.00	0.00		0.00				
29.00	0.01		0.01	64.00	0.00		0.00				
30.00	0.01		0.01	65.00	0.00		0.00				
31.00	0.00		0.00	66.00	0.00		0.00				
32.00	0.00		0.00	67.00	0.00		0.00				
33.00	0.00		0.00	68.00	0.00		0.00				
34.00	0.00		0.00	69.00	0.00		0.00				
35.00	0.00		0.00	70.00	0.00		0.00				

Summary for Pond P1A: Pond 1a (Pond Repair)

Inflow Area = 4.370 ac, 20.04% Impervious, Inflow Depth = 5.78" for 100 Year event
Inflow = 23.48 cfs @ 12.17 hrs, Volume= 2.104 af
Outflow = 10.34 cfs @ 12.48 hrs, Volume= 2.104 af, Atten= 56%, Lag= 18.3 min
Discarded = 0.31 cfs @ 12.48 hrs, Volume= 0.443 af
Primary = 0.50 cfs @ 12.48 hrs, Volume= 0.924 af
Secondary = 9.53 cfs @ 12.48 hrs, Volume= 0.737 af

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Peak Elev= 79.12' @ 12.48 hrs Surf.Area= 28,674 sf Storage= 37,356 cf

Plug-Flow detention time= 306.3 min calculated for 2.104 af (100% of inflow)
Center-of-Mass det. time= 306.4 min (1,116.6 - 810.2)

Volume	Invert	Avail.Storage	Storage Description
#1	75.50'	1,242 cf	**Custom Stage Data (Irregular)** Listed below 3,106 cf Overall x 40.0% Voids
#2	76.50'	37,823 cf	**Custom Stage Data (Irregular)** Listed below
		39,065 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
75.50	3,106	220.0	0	0	3,106
76.00	3,106	220.0	1,553	1,553	3,216
76.50	3,106	220.0	1,553	3,106	3,326

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.50	3,106	220.0	0	0	3,106
77.00	6,731	331.0	2,402	2,402	7,975
78.00	15,313	639.8	10,732	13,134	31,836
79.20	26,330	782.0	24,689	37,823	47,947

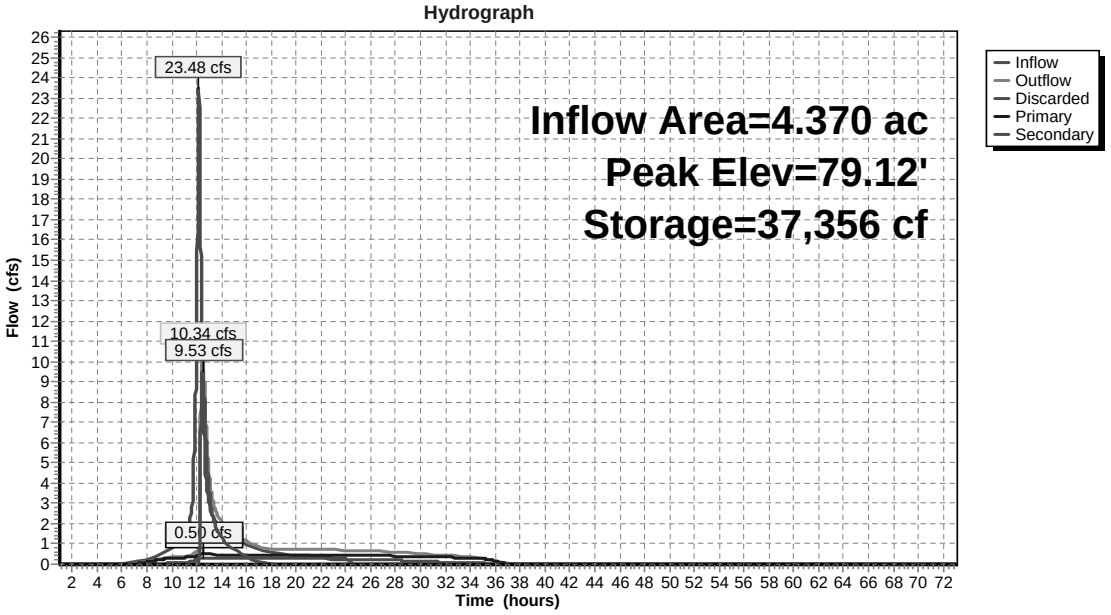
Device	Routing	Invert	Outlet Devices
#1	Secondary	78.70'	**14.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	75.50'	**0.270 in/hr Exfiltration over Wetted area**
#3	Primary	75.50'	**4.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.50' / 75.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf

Discarded OutFlow Max=0.31 cfs @ 12.48 hrs HW=79.12' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.31 cfs)

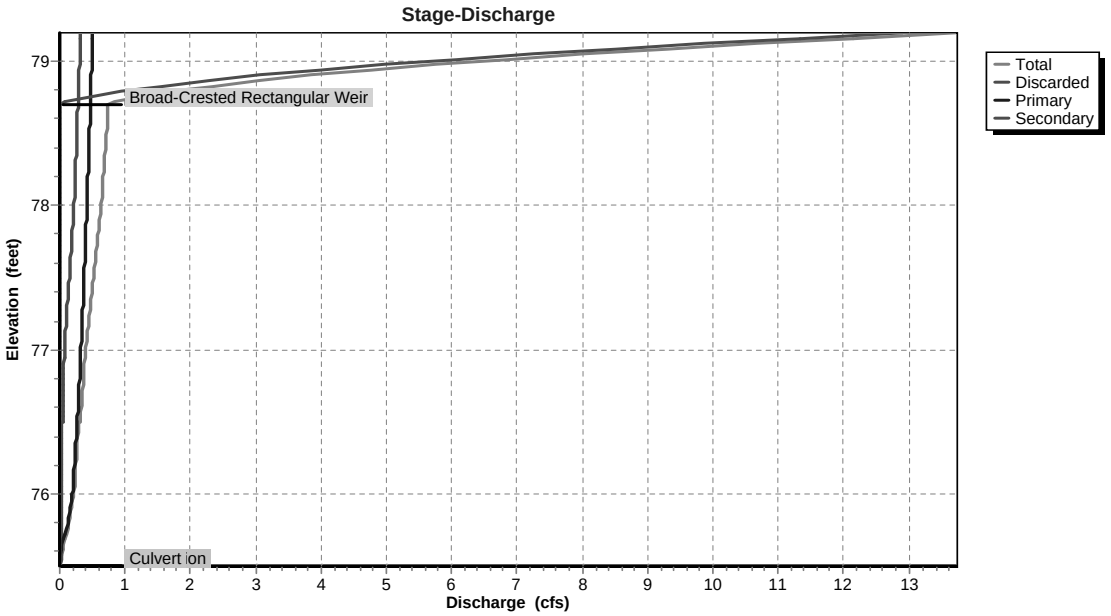
Primary OutFlow Max=0.50 cfs @ 12.48 hrs HW=79.12' (Free Discharge)
└**3=Culvert** (Barrel Controls 0.50 cfs @ 5.69 fps)

Secondary OutFlow Max=9.52 cfs @ 12.48 hrs HW=79.12' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 9.52 cfs @ 1.63 fps)

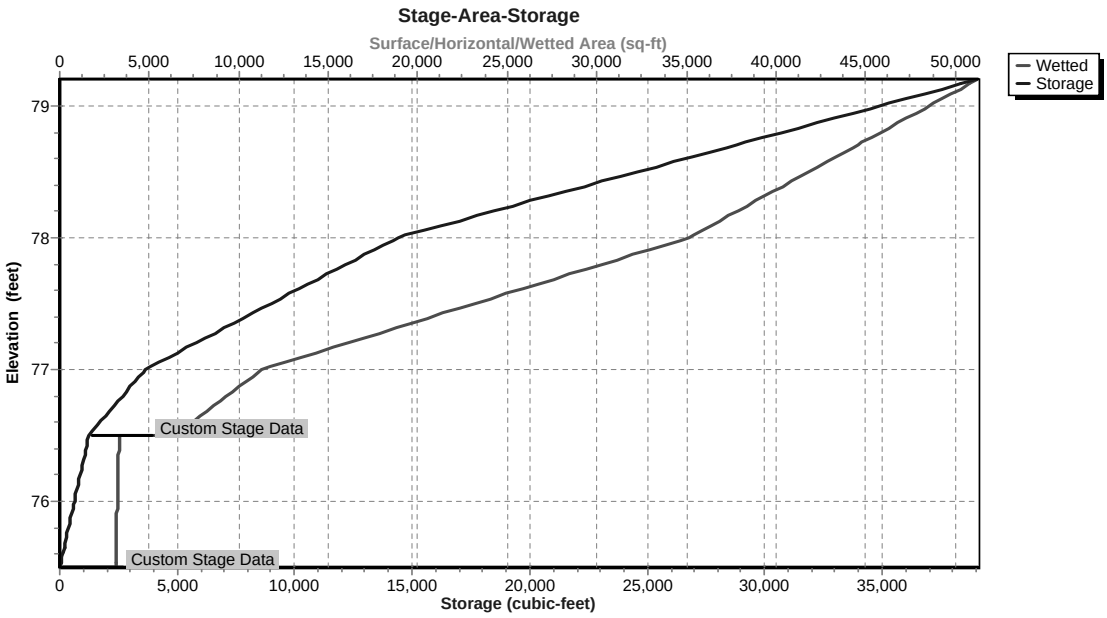
Pond P1A: Pond 1a (Pond Repair)



Pond P1A: Pond 1a (Pond Repair)



Pond P1A: Pond 1a (Pond Repair)



Hydrograph for Pond P1A: Pond 1a (Pond Repair)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
1.00	0.00	0	75.50	0.00	0.00	0.00	0.00
6.00	0.02	8	75.51	0.00	0.00	0.00	0.00
11.00	**1.44**	**4,470**	**77.08**	**0.41**	**0.08**	**0.33**	**0.00**
16.00	**0.95**	**29,795**	**78.75**	**1.13**	**0.28**	**0.47**	**0.38**
21.00	0.41	25,955	78.56	0.72	0.27	0.46	0.00
26.00	0.00	17,448	78.15	0.66	0.23	0.43	0.00
31.00	0.00	7,081	77.32	0.47	0.12	0.36	0.00
36.00	0.00	480	75.89	0.18	0.02	0.16	0.00
41.00	0.00	0	75.50	0.00	0.00	0.00	0.00
46.00	0.00	0	75.50	0.00	0.00	0.00	0.00
51.00	0.00	0	75.50	0.00	0.00	0.00	0.00
56.00	0.00	0	75.50	0.00	0.00	0.00	0.00
61.00	0.00	0	75.50	0.00	0.00	0.00	0.00
66.00	0.00	0	75.50	0.00	0.00	0.00	0.00
71.00	0.00	0	75.50	0.00	0.00	0.00	0.00

Stage-Discharge for Pond P1A: Pond 1a (Pond Repair)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
75.50	0.00	0.00	0.00	0.00
75.60	0.04	0.02	0.02	0.00
75.70	0.09	0.02	0.07	0.00
75.80	0.14	0.02	0.12	0.00
75.90	0.18	0.02	0.16	0.00
76.00	0.21	0.02	0.19	0.00
76.10	0.23	0.02	0.21	0.00
76.20	0.25	0.02	0.23	0.00
76.30	0.26	0.02	0.24	0.00
76.40	0.27	0.02	0.25	0.00
76.50	0.31	0.04	0.27	0.00
76.60	0.33	0.05	0.28	0.00
76.70	0.34	0.05	0.29	0.00
76.80	0.36	0.06	0.30	0.00
76.90	0.38	0.06	0.31	0.00
77.00	0.39	0.07	0.32	0.00
77.10	0.42	0.09	0.33	0.00
77.20	0.44	0.10	0.34	0.00
77.30	0.47	0.12	0.35	0.00
77.40	0.49	0.13	0.36	0.00
77.50	0.52	0.15	0.37	0.00
77.60	0.54	0.16	0.38	0.00
77.70	0.56	0.18	0.39	0.00
77.80	0.59	0.19	0.40	0.00
77.90	0.61	0.20	0.41	0.00
78.00	0.63	0.22	0.41	0.00
78.10	0.65	0.23	0.42	0.00
78.20	0.67	0.24	0.43	0.00
78.30	0.68	0.24	0.44	0.00
78.40	0.70	0.25	0.45	0.00
78.50	0.71	0.26	0.45	0.00
78.60	0.73	0.27	0.46	0.00
78.70	0.75	0.28	0.47	0.00
78.80	1.81	0.29	0.47	1.05
78.90	3.74	0.30	0.48	2.97
79.00	6.41	0.30	0.49	5.61
79.10	9.70	0.31	0.50	8.89
79.20	**13.72**	**0.32**	**0.50**	**12.89**

Stage-Area-Storage for Pond P1A: Pond 1a (Pond Repair)

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
75.50	3,106	0
75.55	3,117	62
75.60	3,128	124
75.65	3,139	186
75.70	3,150	248
75.75	3,161	311
75.80	3,172	373
75.85	3,183	435
75.90	3,194	497
75.95	3,205	559
76.00	3,216	621
76.05	3,227	683
76.10	3,238	745
76.15	3,249	808
76.20	3,260	870
76.25	3,271	932
76.30	3,282	994
76.35	3,293	1,056
76.40	3,304	1,118
76.45	3,315	1,180
76.50	6,432	1,242
76.55	6,919	1,483
76.60	7,406	1,723
76.65	7,893	1,963
76.70	8,380	2,203
76.75	8,866	2,443
76.80	9,353	2,683
76.85	9,840	2,923
76.90	10,327	3,164
76.95	10,814	3,404
77.00	11,301	3,644
77.05	12,494	4,181
77.10	13,687	4,717
77.15	14,880	5,254
77.20	16,073	5,790
77.25	17,266	6,327
77.30	18,459	6,864
77.35	19,652	7,400
77.40	20,845	7,937
77.45	22,038	8,473
77.50	23,231	9,010
77.55	24,424	9,547
77.60	25,618	10,083
77.65	26,811	10,620
77.70	28,004	11,156
77.75	29,197	11,693
77.80	30,390	12,230
77.85	31,583	12,766
77.90	32,776	13,303
77.95	33,969	13,839
78.00	35,162	14,376
78.05	35,833	15,405
78.10	36,505	16,434
78.15	37,176	17,462
78.20	37,847	18,491
78.25	38,518	19,520
78.30	39,190	20,548
78.35	39,861	21,577
78.40	40,532	22,606
78.45	41,204	23,634
78.50	41,875	24,663
78.55	42,546	25,692
78.60	43,218	26,721
78.65	43,889	27,749
78.70	44,560	28,778
78.75	45,232	29,807
78.80	45,903	30,835
78.85	46,574	31,864
78.90	47,246	32,893
78.95	47,917	33,922
79.00	48,588	34,950
79.05	49,260	35,979
79.10	49,931	37,008
79.15	50,602	38,036
79.20	**51,273**	**39,065**

Summary for Pond P3A: Pond 3A (Pond Repair)

Inflow Area = 1.915 ac, 32.23% Impervious, Inflow Depth = 6.25" for 100 Year event
Inflow = 12.49 cfs @ 12.12 hrs, Volume= 0.998 af
Outflow = 1.50 cfs @ 12.83 hrs, Volume= 0.998 af, Atten= 88%, Lag= 42.7 min
Primary = 0.51 cfs @ 12.83 hrs, Volume= 0.480 af
Secondary = 0.99 cfs @ 12.83 hrs, Volume= 0.518 af
Tertiary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.01 hrs
Peak Elev= 78.22' @ 12.83 hrs Surf.Area= 19,062 sf Storage= 19,761 cf
Flood Elev= 79.50' Surf.Area= 25,484 sf Storage= 37,166 cf

Plug-Flow detention time= 155.6 min calculated for 0.998 af (100% of inflow)
Center-of-Mass det. time= 155.5 min (952.3 - 796.8)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	37,166 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	2,053	339.0	0	0	2,053
77.00	6,709	559.0	4,158	4,158	17,781
78.00	17,458	791.4	11,663	15,821	42,764
79.00	25,484	883.5	21,345	37,166	55,068

Device	Routing	Invert	Outlet Devices
#1	Primary	76.00'	**4.0" Round 6" Culvert 1** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 76.00' / 75.52' S= 0.0240 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Secondary	76.55'	**6.0" Round 6" Culvert 2** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 76.55' / 75.60' S= 0.0475 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Tertiary	78.50'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50

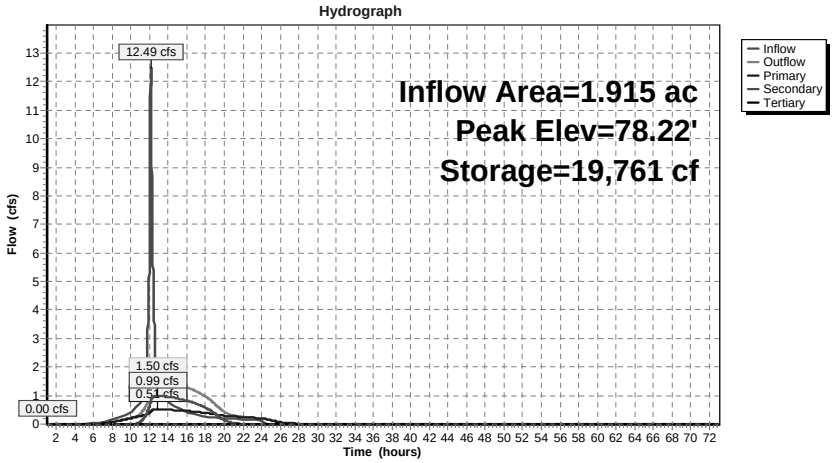
Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.51 cfs @ 12.83 hrs HW=78.22' (Free Discharge)
└**1=6" Culvert 1** (Barrel Controls 0.51 cfs @ 5.87 fps)

Secondary OutFlow Max=0.99 cfs @ 12.83 hrs HW=78.22' (Free Discharge)
└**2=6" Culvert 2** (Inlet Controls 0.99 cfs @ 5.06 fps)

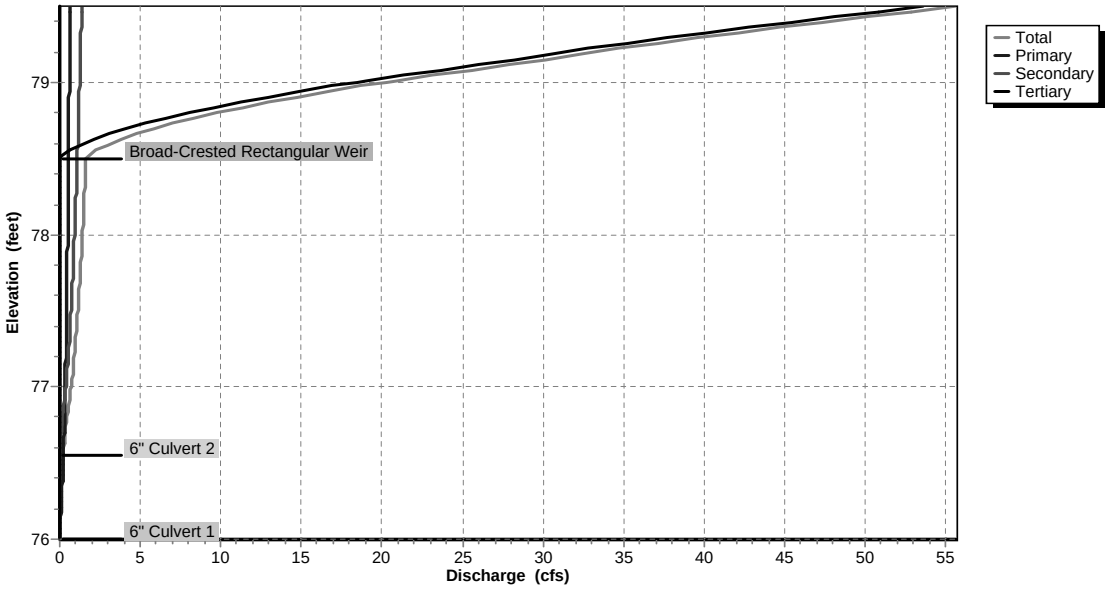
Tertiary OutFlow Max=0.00 cfs @ 1.00 hrs HW=76.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P3A: Pond 3A (Pond Repair)



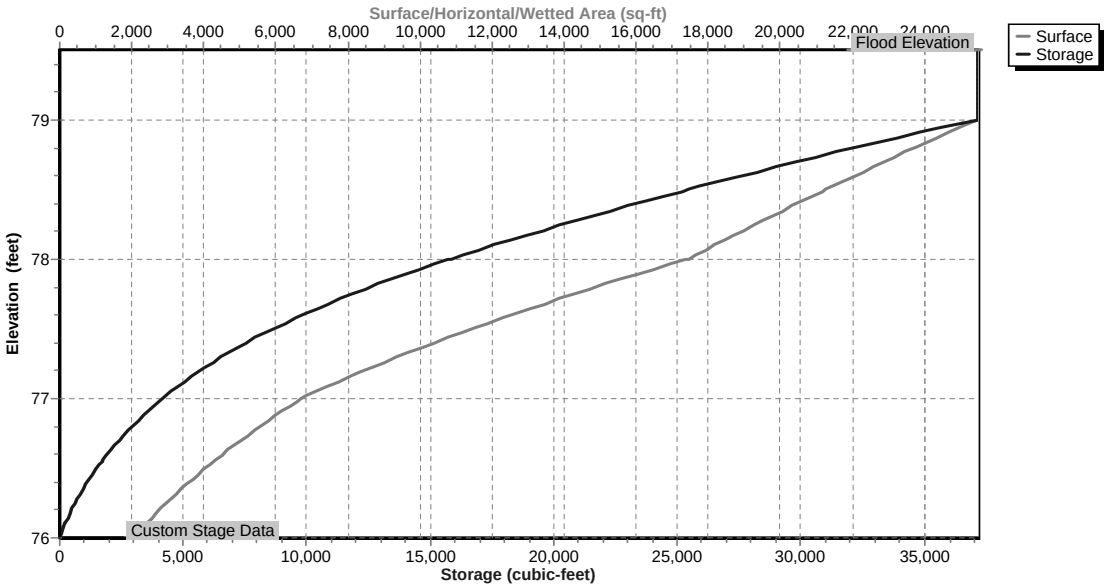
Pond P3A: Pond 3A (Pond Repair)

Stage-Discharge



Pond P3A: Pond 3A (Pond Repair)

Stage-Area-Storage



Hydrograph for Pond P3A: Pond 3A (Pond Repair)

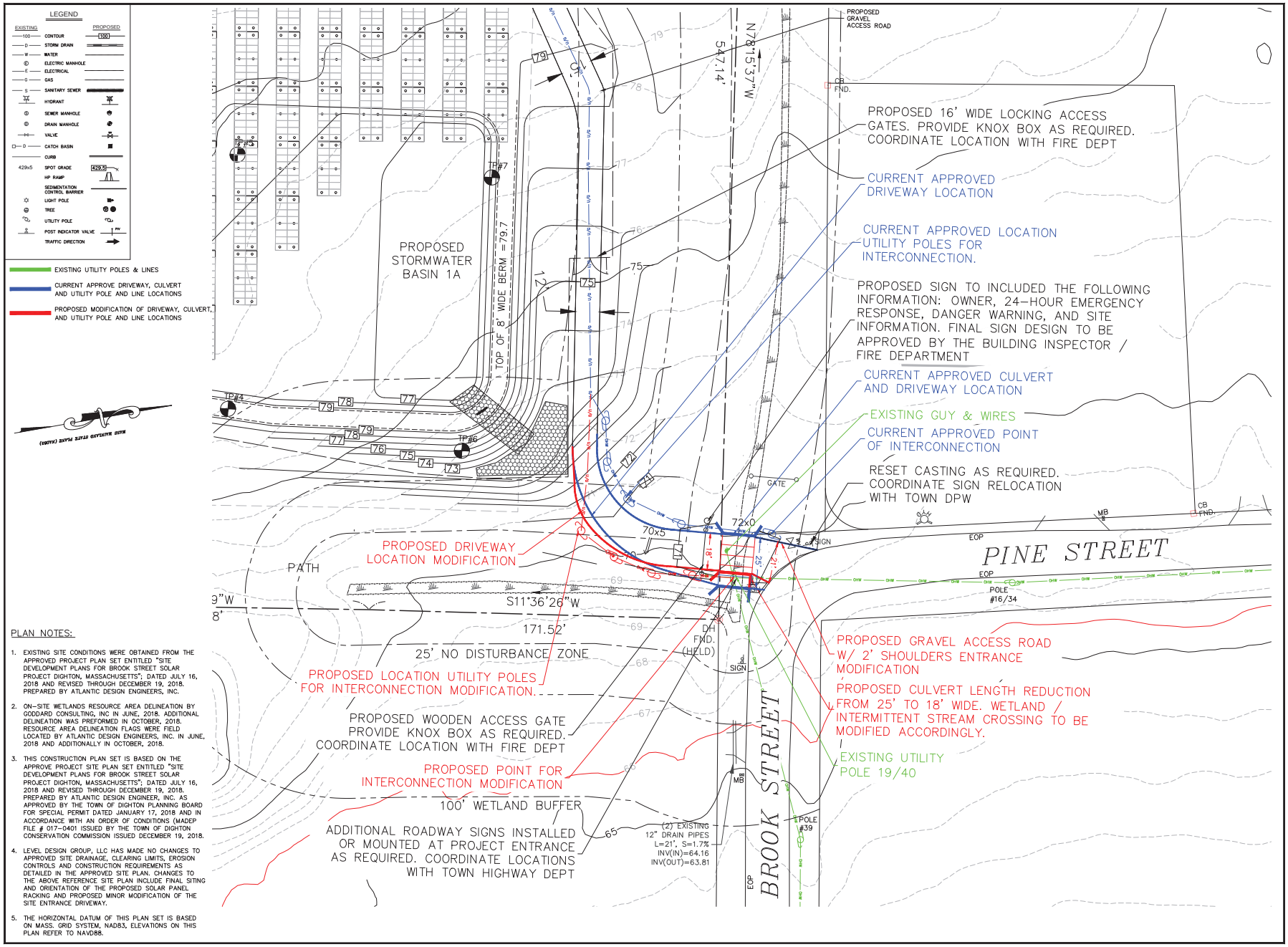
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1.00	0.00	0	76.00	0.00	0.00	0.00	**0.00**
6.00	0.04	85	76.04	0.00	0.00	0.00	0.00
11.00	**0.76**	**2,604**	**76.74**	**0.37**	**0.28**	**0.09**	0.00
16.00	**0.42**	**12,171**	**77.77**	**1.28**	**0.46**	**0.82**	0.00
21.00	0.18	2,287	76.68	0.31	0.26	0.04	0.00
26.00	0.00	447	76.19	0.07	0.07	0.00	0.00
31.00	0.00	96	76.04	0.00	0.00	0.00	0.00
36.00	0.00	47	76.02	0.00	0.00	0.00	0.00
41.00	0.00	24	76.01	0.00	0.00	0.00	0.00
46.00	0.00	12	76.01	0.00	0.00	0.00	0.00
51.00	0.00	6	76.00	0.00	0.00	0.00	0.00
56.00	0.00	3	76.00	0.00	0.00	0.00	0.00
61.00	0.00	2	76.00	0.00	0.00	0.00	0.00
66.00	0.00	1	76.00	0.00	0.00	0.00	0.00
71.00	0.00	0	76.00	0.00	0.00	0.00	0.00

Stage-Discharge for Pond P3A: Pond 3A (Pond Repair)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
76.00	0.00	0.00	0.00	0.00
76.10	0.02	0.02	0.00	0.00
76.20	0.07	0.07	0.00	0.00
76.30	0.14	0.14	0.00	0.00
76.40	0.18	0.18	0.00	0.00
76.50	0.21	0.21	0.00	0.00
76.60	0.25	0.24	0.01	0.00
76.70	0.33	0.27	0.06	0.00
76.80	0.44	0.30	0.15	0.00
76.90	0.58	0.32	0.26	0.00
77.00	0.71	0.34	0.38	0.00
77.10	0.82	0.36	0.46	0.00
77.20	0.90	0.38	0.53	0.00
77.30	0.98	0.39	0.59	0.00
77.40	1.06	0.41	0.65	0.00
77.50	1.13	0.43	0.70	0.00
77.60	1.19	0.44	0.75	0.00
77.70	1.24	0.45	0.79	0.00
77.80	1.30	0.46	0.83	0.00
77.90	1.35	0.48	0.87	0.00
78.00	1.40	0.49	0.91	0.00
78.10	1.45	0.50	0.95	0.00
78.20	1.50	0.51	0.99	0.00
78.30	1.54	0.52	1.02	0.00
78.40	1.59	0.53	1.06	0.00
78.50	1.63	0.54	1.09	0.00
78.60	3.17	0.55	1.12	1.50
78.70	5.95	0.56	1.15	4.24
78.80	9.77	0.57	1.18	8.02
78.90	14.49	0.58	1.21	12.70
79.00	20.25	0.59	1.24	18.42
79.10	26.96	0.60	1.27	25.10
79.20	33.41	0.61	1.29	31.51
79.30	40.29	0.62	1.32	38.35
79.40	47.74	0.63	1.35	45.76
79.50	**55.61**	**0.64**	**1.37**	**53.60**

Stage-Area-Storage for Pond P3A: Pond 3A (Pond Repair)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
76.00	2,053	0	77.75	14,298	11,858	79.50	25,484	37,166
76.05	2,222	107	77.80	14,905	12,588			
76.10	2,398	222	77.85	15,524	13,349			
76.15	2,581	347	77.90	16,156	14,141			
76.20	2,770	481	77.95	16,801	14,964			
76.25	2,966	624	78.00	17,458	15,821			
76.30	3,169	777	78.05	17,823	16,703			
76.35	3,378	941	78.10	18,192	17,603			
76.40	3,594	1,115	78.15	18,565	18,522			
76.45	3,817	1,300	78.20	18,942	19,460			
76.50	4,046	1,497	78.25	19,323	20,417			
76.55	4,282	1,705	78.30	19,707	21,392			
76.60	4,525	1,925	78.35	20,095	22,387			
76.65	4,775	2,158	78.40	20,487	23,402			
76.70	5,031	2,403	78.45	20,882	24,436			
76.75	5,294	2,661	78.50	21,282	25,490			
76.80	5,563	2,932	78.55	21,685	26,564			
76.85	5,840	3,217	78.60	22,092	27,659			
76.90	6,123	3,516	78.65	22,503	28,774			
76.95	6,413	3,830	78.70	22,917	29,909			
77.00	6,709	4,158	78.75	23,336	31,065			
77.05	7,127	4,504	78.80	23,758	32,243			
77.10	7,557	4,871	78.85	24,184	33,441			
77.15	8,000	5,259	78.90	24,613	34,661			
77.20	8,455	5,671	78.95	25,047	35,903			
77.25	8,923	6,105	79.00	**25,484**	**37,166**			
77.30	9,404	6,563	79.05	25,484	37,166			
77.35	9,897	7,046	79.10	25,484	37,166			
77.40	10,403	7,553	79.15	25,484	37,166			
77.45	10,922	8,086	79.20	25,484	37,166			
77.50	11,453	8,646	79.25	25,484	37,166			
77.55	11,997	9,232	79.30	25,484	37,166			
77.60	12,553	9,846	79.35	25,484	37,166			
77.65	13,122	10,487	79.40	25,484	37,166			
77.70	13,704	11,158	79.45	25,484	37,166			



PLAN NOTES:

1. EXISTING SITE CONDITIONS WERE OBTAINED FROM THE APPROVED PROJECT PLAN SET ENTITLED "SITE DEVELOPMENT PLANS FOR BROOK STREET SOLAR PROJECT DIGHTON, MASSACHUSETTS"; DATED JULY 16, 2018 AND REVISED THROUGH DECEMBER 19, 2018. PREPARED BY ATLANTIC DESIGN ENGINEERS, INC.
2. ON-SITE WETLANDS RESOURCE AREA DELINEATION BY GODDARD CONSULTING, INC IN JUNE, 2018. ADDITIONAL DELINEATION WAS PREFORMED IN OCTOBER, 2018. RESOURCE AREA DELINEATION FLAGS WERE FIELD LOCATED BY ATLANTIC DESIGN ENGINEERS, INC. IN JUNE, 2018 AND ADDITIONALLY IN OCTOBER, 2018.
3. THIS CONSTRUCTION PLAN SET IS BASED ON THE APPROVE PROJECT SITE PLAN SET ENTITLED "SITE DEVELOPMENT PLANS FOR BROOK STREET SOLAR PROJECT DIGHTON, MASSACHUSETTS"; DATED JULY 16, 2018 AND REVISED THROUGH DECEMBER 19, 2018. PREPARED BY ATLANTIC DESIGN ENGINEER, INC. AS APPROVED BY THE TOWN OF DIGHTON PLANNING BOARD FOR SPECIAL PERMIT DATED JANUARY 17, 2018 AND IN ACCORDANCE WITH AN ORDER OF CONDITIONS (MADEP FILE # 017-0401 ISSUED BY THE TOWN OF DIGHTON CONSERVATION COMMISSION ISSUED DECEMBER 19, 2018.
4. LEVEL DESIGN GROUP, LLC HAS MADE NO CHANGES TO APPROVED SITE DRAINAGE, CLEARING LIMITS, EROSION CONTROLS AND CONSTRUCTION REQUIREMENTS AS DETAILED IN THE APPROVED SITE PLAN. CHANGES TO THE ABOVE REFERENCE SITE PLAN INCLUDE FINAL SITING AND ORIENTATION OF THE PROPOSED SOLAR PANEL RACKING AND PROPOSED MINOR MODIFICATION OF THE SITE ENTRANCE DRIVEWAY.
5. THE HORIZONTAL DATUM OF THIS PLAN SET IS BASED ON MASS. GRID SYSTEM, NAD83, ELEVATIONS ON THIS PLAN REFER TO NAVD88.

NO	DATE	REVISIONS
1	12/10/2020	ENTRANCE MODIFICATION

SEAL

NICOLA IACENCOLA CIVIL No. 49254 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

DATE :	AUGUST 21, 2020
DRAWN :	NF / DRC
SCALE :	1" = 20'

BROOK STREET SOLAR COMMERCIAL SOLAR FACILITY

ASSESSOR PARCEL - MAP 16; PARCEL 28
BROOK STREET
DIGHTON, MASSACHUSETTS

LEVEL DESIGN GROUP
CIVIL ENGINEERING / LAND SURVEYING
249 SOUTH STREET
UNIT 1
PLAINVILLE, MA 02762
TEL: (508) 695-2221 FAX: (508) 695-2219

DRIVEWAY MODIFICATION SITE PLAN

SK-1.0

0' 10' 20' 40'

1817.00

MA STATE PLANE COORD. SYSTEM

MAINLAND ZONE – NAD 83

RECORDED N10°19'16"E 1518.00'
DEED BK 1247 PG 113
MEASURED N10°21'36"E 1518.00'

AS-BUILT GRAVEL DRIVEWAY

AS-BUILT SITE GRADE (TYP)

AS-BUILT LOCATION CONCRETE PADS WITH MOUNTED ELECTRICAL EQUIPMENT

AS-BUILT LOCATION OF BESS CONTAINERS

REGRADE BASIN FLOOR TO DRAIN FROM NORTH TO SOUTH TOWARDS PIPED OUTLETS. ESTABLISH 76 CLOSED CONTOUR IN SOUTHERLY PART OF BASIN

EXISTING BOTTOM OF BASIN AREA WITH CRUSHED STONE COVER

AS-BUILT SITE GRADE (TYP)

AS-BUILT LOCATION OF RACKING WITHIN BASIN AREAS (TYP)

3,106±SF AREA TO BE FILLED WITH CLEAN DOUBLE WASHED CRUSHED STONE (3"MINUS) TO A NEW BASIN FLOOR ELEVATION OF 76.5'

AS-BUILT SITE GRADE (TYP)

AS-BUILT LOCATION OF NEW UTILITY POLES (TYP)

PROPOSED SOLID 4"PVC OUTLET PIPE WITH SINGLE 45° BEND CONNECTION TO 4"PERF. @ ELEV=75.50 INV(OUT)=75.10 L=40.0', S=0.010

RE-CONSTRUCT DISTURBED BERM AREA IN ACCORDANCE WITH APPROVED SITE PLAN. INSTALL ANTI-SEEPAGE COLLAR AROUND NEW 4"OUTLET.

AS-BUILT LOCATION OF RIP-RAP SPILLWAY CONSTRUCTED OF PRECAST BLOCKS GROUTED TOGETHER CREST ELEV=78.70± 1.5'± DEEP LEVEL SPREADER PROVIDED IN RIP-RAP SPILLWAY

AS-BUILT SPOT-GRADE (TYP)

EXISTING PATH

EXISTING BOTTOM OF BASIN AREA WITH CRUSHED STONE COVER

PROPOSED BASIN SUBDRAIN LATERALS EMBEDDED IN CRUSHED STONE BASIN FLOOR 4-4"PERFORATED PVC PIPES OUTLET L=50.0', S=0.005

4"PERFORATE PVC PIPE HEADER WITH 4"x4" FITTINGS SET LEVEL WITH AN INV(@END) EL=75.65 L=30.0'

EXPAND INSTALLED RIP-RAP APPROXIMATELY 6' TO THE NORTH AS SHOWN.

AS-BUILT LOCATION OF DRIVEWAY BOX CULVERT

PINE STREET

BROOK STREET

S10°07'24"W

S10°07'16"W 436.03'

S10°14'39"W 211.28'

S11°36'26"W 171.52'

S80°10'52"E 161.15'

S79°14'38"W 2.50

DH FND. CHILD FUR LIMO

AS-BUILT LOCATION OF RIP-RAP SPILLWAY CONSTRUCTED OF PRECAST BLOCKS GROUTED TOGETHER CREST ELEV=78.50± 0.5'± DEEP LEVEL SPREADER PROVIDED IN RIP-RAP SPILLWAY

AS-BUILT LOCATION OF 6"HDPE OUTLET 1 PIPES
PIPE 1 CONTAINS 90° ELBOW INLET AT ELEV=77.60, INV(IN EL)=76.63; INV(OUT)=75.52
PIPE 2 CONTAINS 90° ELBOW INLET AT ELEV=77.55, INV(IN EL)=76.58; INV(OUT)=75.60

RECONFIGURE BOTH 6"HDPE OUTLET PIPES TO PROVIDED VERTICAL PIPE OPENINGS.
6"OUTLET PIPE 1 – INSTALL 6"x4" REDUCER
INV(IN)=76.00
INV(OUT)=75.52
6"OUTLET 2
INV(IN)=76.55
INV(OUT)=75.60

EXISTING CONDITIONS NOTES:

1. TRAVERSE AND CONTROL POINTS WERE OBSERVED WITH A LEICA GS14 GPS RECEIVER USING THE LEICA SMARTNET NORTH AMERICA RTK NETWORK.

   HORIZONTAL DATUM:
   MASSACHUSETTS STATE PLANE – MAINLAND ZONE NAD83 (2011) EPOCH 2010.00 – US FEET.

   VERTICAL DATUM:
   NORTH AMERICAN VERTICAL DATUM OF 1988 (GEOID 12B) – US FEET

2. ALL ON-THE-GROUND OBSERVATIONS WERE PERFORMED USING LEICA TS13 (3") ROBOTIC TOTAL STATIONS.

3. THIS SURVEY AND PLAN ARE BASED UPON AN ACTUAL ON THE GROUND INSTRUMENT SURVEY PERFORMED BETWEEN MARCH 23, 2022 AND MARCH 30, 2022. DETENTION BASIN AREAS WERE RE-SURVEYED ON NOVEMBER 17, 2022 TO DETAIL SITE REPAIRS REQUIRE TO BRING THE CONSTRUCTION OF THE BASINS IN TO COMPLIANCE WITH THE APPROVED DESIGN PLAN.

4. LEGAL STATUS OF THE STREETS AND/OR WAYS SHOWN HEREON, WHETHER THEY ARE PUBLIC OR PRIVATE, WERE NOT MADE PART OF THIS SURVEY.

DRWN BY: NF
CHK'D BY: NF
APRVD BY: NF

REVISIONS:

REV #	DATE	DESCRIPTION
0	4/15/24	ISSUED FOR REVIEW

COMMONWEALTH OF MASSACHUSETTS
NICOLA FACENDOLA
CIVIL
No. 49204
REGISTERED PROFESSIONAL ENGINEER
4/15/24

Graphic Scale
1 inch = 40 feet
0 40 80 120

PREPARED BY:
LEVEL DESIGN GROUP
Civil Engineers & Land Surveyors

CIVIL ENGINEERING / LAND SURVEYING
249 SOUTH STREET, UNIT 1, PLAINVILLE, MA 02762
Tel. 508 - 695-2221
website: www.leveldg.com

PROJECT:
893 BROOK STREET
PARCEL ID: 016.0-0028-0000.0
DIGHTON, MASSACHUSETTS

TITLE:
BASINS 1 & 3 REPAIR
BROOK STREET SOLAR

PREPARED FOR:
GHTJA03, LLC
1209 ORANGE STREET
WILMINGTON, DE 19801

DATE:
APRIL 15, 2024

SHEET NO.: 1 OF 1