MAMARONECK SELF-STORAGE BUILDING ADDITON

Draft Environmental Impact Statement

APPENDIX

Lead Agency:

Village of Mamaroneck – Zoning Board of Appeals

December, 2019

Scoping Document

FINAL SCOPING OUTLINE

East Coast North Properties, LLC – Expansion of Existing Self-Storage Facility
Adopted September 5, 2019

This document identifies the issues to be addressed in a Draft Environmental Impact Statement ("DEIS") for the proposed self-storage facility expansion. Accordingly, this Scoping Document addresses the items identified in paragraphs (e)(1) through (7) of Section 617.8 and paragraphs (b)(1) through (7) of Section 617.9 of the State Environmental Quality Review Act ("SEQRA") regulations.

A. DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action is the expansion of an existing 40,620 square foot self-storage facility with a 56,328 square foot addition in the Village of Mamaroneck, New York. The addition will include 321 additional storage units required to meet local customer demand and incorporate 700 square feet of storage-associated retail space[1] along the Waverly Avenue frontage in the existing self-storage building.

The site of the Proposed Action consists of one tax parcel totaling approximately 1.01 acres, identified on the Village of Mamaroneck Tax Maps as #8-111-29-42, with street addresses of 416 Waverly Avenue and 560 Fenimore Road (the "Project Site").

Existing on-site uses include numerous contractor and construction uses, and the existing self-storage facility. There are five (5) buildings currently located on the Project Site:

- 3-story Barn located near the rear of the property line;
- 2-story stucco building at the corner of Fenimore Road and Waverly Avenue;
- 2-story concrete block structure currently used as the Murphy Brothers Construction ("MBC") office that is located in the center of the Project Site;
- 2 -story building over covered parking located near the rear of the property line, along with an open storage area; and
- 4-story existing self-storage building located along Waverly Avenue.

In addition to the five (5) buildings, open storage areas for construction vehicles and equipment are located on the Project Site. The Proposed Action involves the construction of a new 4-story self-storage building that will be an addition to the existing self-storage building, the removal of the open storage areas and the demolition of:

- 3-story Barn located near the rear of the property line;
- 2-story concrete block structure currently used as the Murphy Brothers Construction ("MBC") office that is located in the center of the Project Site; and
- 2 -story building over covered parking located near the rear of the property line.

The existing self-storage building will remain and the 2-story stucco building at the corner of Fenimore Road and Waverly Avenue will be utilized exclusively by MBC as their office

[1] The proposed retail store will sell packing and moving materials for the self-storage customers.

operations. After construction, only the self-storage and MBC uses will remain active at the Premises.

INVOLVED AGENCIES AND APPROVALS REQUIRED

- Village of Mamaroneck Board of Trustees
- Village of Mamaroneck Zoning Board of Appeals (Multiple Area Variances)
- Village of Mamaroneck Planning Board (Site Plan Approval)
- Village of Mamaroneck Harbor and Coastal Zone Management Commission (LWRP Consistency Determination)
- Village of Mamaroneck Department of Public Works (Street/Sidewalk Opening Permit)
- Village of Mamaroneck Board of Architectural Review (Approval of Architecture)
- Village of Mamaroneck Building Inspector (Building Permit and Flood Plain Development Permit)

INTERESTED AGENCIES

- Village of Mamaroneck Board of Traffic Commissioners
- Village of Mamaroneck Fire Department
- Town of Mamaroneck
- Westchester County Department of Health
- Westchester County Department of Planning
- New York State Department of Environmental Conservation
- CSX Railroad
- Metro-North Railroad
- Westchester Joint Water Works (WJWW)
- Consolidated Edison

POTENTIAL ENVIRONMENTAL IMPACTS

The Environmental Assessment Form prepared for this Proposed Action identified potential environmental impacts in the following areas:

IMPACT ON LAND

The Project Site has a high-water table that is within 3 feet of construction activity. As such, there is the potential for a moderate to large impact on the land/water table from potential releases on unknown contaminants. The Proposed Action is anticipated to involve the excavation of more than 1,000 tons of natural material in order to import structural fill.

There is the potential for construction to exceed one year. Accordingly, mitigation measures may need to be maintained over an extended period, resulting in the potential for long-term construction impacts.

IMPACTS ON SURFACE WATER

The Proposed Action may have a significant impact on the water quality of water bodies within or downstream of the Project Site as the area has not been thoroughly tested for contaminants or solid or hazardous waste.

IMPACTS ON GROUNDWATER

The Project Site is adjacent to an unconfined aquifer. Due to the industrial nature of the Project Site and the surrounding area, there is the potential for contamination. The Project Site has not been sufficiently evaluated for potential contaminants or solid or hazardous waste.

IMPACT ON FLOODING

The Proposed Action will result in construction in the 100- and 500-year floodplains with potential impacts to other properties nearby and downstream from the project. The Proposed Action may result in development within a flood hazard area and in an area with known flooding.

IMPACT ON TRANSPORTATION

The Proposed Action abuts an active freight rail spur. There is potential for a moderate to large impact on rail traffic, and adverse impacts on the integrity of the railway.

IMPACT ON ENERGY

The total square footage of all buildings on the Project Site would exceed 100,000 square feet, which could involve significant energy use for heating and/or cooling.

IMPACT ON NOISE, ODOR AND LIGHT

The Proposed Action has the potential to increase lighting levels over existing conditions.

IMPACT ON HUMAN HEALTH

The Proposed Action is near one or more sites identified on the New York State Environmental Site Remediation Database as being in the State Superfund and Brownfield Clean-up programs. The Project Site has the potential to contain hazardous materials or contamination associated with on- and off-site activities. The Project Site must be analyzed for potential environmental concerns so appropriate mitigation measures can be put in place to protect human health.

CONSISTENCY WITH COMMUNITY PLANS

The Proposed Action's land use components are different from, or in sharp contrast to, current surrounding land use patterns as the project is significantly larger than other buildings in the area. The Proposed Action is inconsistent with local land use plans and zoning regulations as it is requires significant variances. The Proposed Action is significantly larger, in terms of coverage and FAR, than is permitted in the area.

CONSISTENCY WITH COMMUNITY CHARACTER

The Proposed Action is inconsistent with the predominant architectural scale and character of the neighborhood. The Proposed Action will be significantly larger than the surrounding buildings and may significantly alter the character and aesthetics of the neighborhood.

B. REQUIRED ELEMENTS OF THE DEIS

GENERAL GUIDANCE

The DEIS is intended to convey general and technical information regarding the potential environmental impacts of the Proposed Action to the Village of Mamaroneck Zoning Board of Appeals (as Lead Agency) and other agencies involved in the review of the Proposed Action. The DEIS is also intended to convey the same information to the interested public. The Preparer of the DEIS is encouraged to keep this audience in mind as it prepares the document. Enough detail should be provided in each subject area to ensure that most readers of the document will understand, and be able to make decisions based upon, the information provided. Efforts should be made to avoid the use of technical jargon.

Narrative discussions should be accompanied by appropriate tables, charts, graphs, and figures whenever possible. If a particular subject can be most effectively described in graphic format, the narrative discussion should merely summarize and highlight the information presented graphically. All plans and maps showing the site should include adjacent properties (if appropriate), neighboring uses and structures, roads, and water bodies.

As the DEIS will become, upon acceptance by the Lead Agency, a document supporting objective findings on approvals requested under the application, the Preparer is requested to avoid subjective statements regarding potential impacts. The DEIS should contain objective statements and conclusions of facts based upon technical analyses. Subjective evaluations of impacts where evidence is inconclusive or subject to opinion should be prefaced by statements indicating that "It is the applicant's opinion that..." The Village of Mamaroneck Zoning Board of Appeals reserves the right, during review of the document, to request that subjective statements be removed from the document or otherwise modified to indicate that subjective statements are not necessarily representative of the findings of the Board. The document and any appendices or technical reports should be written in the third person (i.e., the terms "we" and "our" should not be used).

Discussions of mitigation measures should include an explanation of how those measures would be implemented, any potential environmental impacts of such implementation, the costs and the time frame associated with such implementation, and the entity that would be responsible for implementing and paying for the mitigation. The discussion should indicate any proposed improvements that have been incorporated into the Proposed Action.

REQUIRED ELEMENTS

The DEIS shall contain an analysis of environmental impacts in the subject areas outlined below and an identification of any significant adverse environmental effects that cannot be avoided if the Proposed Action is implemented. Information for each of the subject areas shall be provided in individual chapters describing existing conditions, conditions in the future without the Proposed Action (the "No Build" condition), potential impacts of the Proposed Action, and mitigation measures for any significant adverse impacts identified. Each chapter shall include a brief introduction identifying the major topics to be considered, relevant methodology used, and thresholds for determining if significant adverse impacts exist. An Executive Summary describing the Proposed Action and all significant adverse impacts identified shall also be included.

The current conditions on the Project Site shall be considered the existing conditions throughout the technical analyses. The "build year" for the Proposed Action shall be the expected first year of full occupancy and operation. The analysis of the future without the Proposed Action (the "No

Build" condition) should be based upon conditions projected in the build year for the Proposed Action, and shall include, at a minimum, the following projects in the vicinity of the Proposed Action and any approved mitigation measures (such as road improvements) for these projects:

- Mason Lofts (at full occupancy)

The Applicant shall contact surrounding communities to identify any other large projects that should be added to this list. Unless otherwise noted, the DEIS study area shall be a quarter mile radius around the Project Site.

ORGANIZATION AND EXPECTED CONTENT OF DEIS

COVER SHEET AND GENERAL INFORMATION

Introductory Material - Cover Sheet that includes:

A. Title (i.e., Draft Environmental Impact Statement).

B. Identification of the Proposed Action, including name and Location.

C. Identification of the Village Zoning Board of Appeals of the Village of Mamaroneck as the Lead Agency for the project.

D. The following contact information:

Betty-Ann Sherer, Land Use Coordinator
169 Mount Pleasant Avenue, Mamaroneck, NY10543
BSherer@VoMNY.org
(914) 825-8758

E. Website/URL where SEQRA documents are located

F. Date submitted and any revision dates.

G. Date of acceptance of the DEIS.

H. Deadline by which comments on the DEIS are due.

I. Name and address of Sponsor of Proposed Action, and the name, address and email address for a contact person representing the Sponsor.

J. The name and address of the primary preparer(s) of the DEIS and a list of consultants involved with the Project for the Applicant.

K. List of Consultant involved with the Project for the Village.

L. Table of Contents.

M. List of Exhibits.

N. List of Tables.

O. List of Appendices.

I. EXECUTIVE SUMMARY

The summary should provide the reader with a clear and cogent understanding of the information found elsewhere in the main body of the DEIS and should be organized as follows:

A. Brief but complete description of the Proposed Action, including Project Site history and background leading to the proposed development and anticipated build year.

B. Reasons for Modifying Project/Proposed Action.

C. Listing of required approvals and permits.

D. List of Involved and Interested Agencies (including neighboring municipalities).

E. Brief Description of Anticipated Impacts and Proposed Mitigation Measures.

F. Brief Description of Alternatives to the Proposed Action.

G. Table comparing impacts of the Proposed Action with the various alternatives.

II. DESCRIPTION OF PROPOSED ACTION

A. Project Location (including appropriate descriptive graphics).

B. Project Sponsor (including experience and objectives).

C. Description of Project Site's existing character.

D. Inventory of existing structures on the Project Site, including identification of buildings to be removed.

E. Description of land uses on the Project Site and surrounding land use, in narrative and graphic form.

F. Project description, including building location, square footage, arrangement, dimensions, height, general character, architecture, retail areas, rental areas, ownership and maintenance, access, off-street parking and traffic circulation, Project Site infrastructure, internal traffic circulation, internal pedestrian circulation, streetscape enhancements and associated site improvements, lighting, description of views from and to Project Site, connection to surrounding areas.

G. General description of utilities and stormwater management.

H. Construction scheduling, including any phasing and description of project construction, including site preparation (demolition, erosion and sedimentation controls and earthwork).

I. Purpose, need and benefits of the Proposed Action.

III. REQUIRED PERMITS AND APPROVALS, INVOLVED AND INTERESTED AGENCIES

A. Listing of all Village, County, State and federal permits and approvals that may be required to implement the project.

B. Listing of all Involved Agencies.

C. Listing of all Interested Agencies (including neighboring municipalities).

IV. EXISTING ENVIRONMENTAL CONDITIONS, ANTICIPATED IMPACTS AND PROPOSED MITIGATION

For the specific issues identified in this Scope, the DEIS should provide a topic-by- topic analysis of existing environmental conditions, future conditions without the project, potential impacts of

the project, and potential measures to mitigate adverse environmental impacts. A description of the conditions associated with current and prior uses on the Project Site should also be included. Cumulative impacts should be discussed, including both on-site and off-site impacts. The identification of potential mitigation measures in this Scope is illustrative only and not intended to be all-inclusive or specifically required. Where mitigation is identified, the DEIS should discuss any adverse impacts associated with and approvals required for any such measures and identify the entity responsible for implementing any such improvements and the funding therefor.

A. Land Use, Zoning and Community Plans

1. Existing Conditions
    a. Include maps and narrative describing generalized land use patterns and neighborhood character in the Village of Mamaroneck and more specifically for a primary land use study area within a quarter mile of the Project Site.
    b. Describe existing uses on the Project Site, including previous land use approvals for the existing storage facility, and variances and conditions of approval therefor.
    c. Identify and describe existing uses of neighboring properties.
    d. Describe existing industrial uses within a quarter mile of the Project Site.
    e. Describe development trends and land use approval activity in the area.
    f. Describe the existing M-1 industrial zoning and applicable dimensional requirements.
        i. Describe existing on-site nonconformities with M-1 zoning district dimensional requirements.
        ii. Describe existing dimensional nonconformities on nearby properties within the M-1 zoning district.
    g. Describe any conditions of the existing variances on the Project Site.
    h. Describe the proposed "Maker Zone Overlay District" and its applicability to the Project Site.
    i. Describe the current Land Use Plans and Policies that affect the Project Site; including:
        i. Village of Mamaroneck existing Comprehensive Plans;
        ii. Village of Mamaroneck Local Waterfront Revitalization Plan (adopted)
        iii. Village of Mamaroneck Local Waterfront Revitalization Plan (draft)
        iv. Waverly Avenue Design Study
        v. Patterns for Westchester; and
        vi. Westchester 2025
2. Future Conditions without the Proposed Action
3. Anticipated Impacts
    a. Analyze the relationship of the proposed development to overall land use patterns within the study area, and to adjacent properties, including impacts on

neighborhood character (e.g., from visual perspective), and discuss the Proposed Action's compliance or non-compliance with local land use regulations and its relationship to local, County and regional Plans.

b. Analyze any potential conflicts with the existing area variances on the Project Site.

c. Analyze the Proposed Action's consistency with the New York State Village Law (Section 7-712-B.3(b)) criteria for area variances.

d. Analyze the project's consistency with the proposed "Maker Zone Overlay District" and applicable use and dimensional requirements.

e. Analyze the Proposed Action's consistency with the current Land Use Plans and Policies; including:

   i. Village of Mamaroneck existing Comprehensive Plans;

   ii. Village of Mamaroneck Local Waterfront Revitalization Plan (adopted)

   iii. Village of Mamaroneck Local Waterfront Revitalization Plan (draft)

   iv. Waverly Avenue Design Study

   v. Patterns for Westchester; and

   vi. Westchester 2025

4. Proposed Mitigation Measures

B. Natural Resources

1. Surface Water

   a. Existing Conditions

      i. Identify and analyze surface water on the Project Site (if any).

      ii. Identify and analyze portions of the Project Site within or which drain to the Sheldrake River Basin.

   b. Future Conditions without the Proposed Action

   c. Anticipated Impacts

      i. Analyze potential impacts of the Proposed Action to any surface water located on-site, and to the Sheldrake River Basin.

   d. Proposed Mitigation Measures

2. Aquifers and Groundwater

   a. Existing Conditions

      i. Confirm depth to water across the Project Site.

      ii. Identify and analyze portions of the Project Site where construction will occur, and if groundwater will be encountered during/after construction..

iii. Identify and analyze any portions of the Project Site that are located over an aquifer.

b. Future Conditions without the Proposed Action

c. Anticipated Impacts

i. Review impacts of construction to groundwater.

ii. Review impacts of excavation activities to groundwater, including any need for construction-related dewatering, considering the removal of more than 1,000 tons of natural material.

iii. Review impacts of excavation activities on any aquifers located below the Project Site.

d. Proposed Mitigation Measures

3. Geology, Soils, and Topography

a. Existing Conditions

i. Identify the major geologic, soil, and topographical conditions on the Project Site, focusing on the suitability of the site for development using published data (i.e., NRCS Soils Survey, NYS surficial geology) and site specific information that has been obtained by the Applicant, if available.

b. Future Conditions without the Proposed Action

c. Anticipated Impacts

i. Analyze potential impacts to bedrock and soil conditions as a result of the Proposed Project. Impacts of grading and excavation should be quantified (i.e., cut and fill) and discussed. Potential impacts with regard to soil erosion should be discussed.

d. Proposed Mitigation Measures

i. Identify and analyze measures that will be implemented to mitigate potentially adverse impacts resulting from the Proposed Project, including proposed sediment and erosion control measures. Describe site or construction constraints anticipated as a result of the existing conditions' analysis.

C. Hazardous Materials and Public Health

1. Existing Conditions

a. Prepare both a Phase I and Phase II Environmental Site Assessment (ESA). The Phase I ESA should be completed in accordance with the American Society of Testing and Materials (ASTM) Standard Practice E 1527-13 to identify any existing recognized environmental conditions (RECs) and/or environmental concerns. The Phase I ESA should also include a review of non-scope considerations under ASTM 1527-13, which includes radon, asbestos containing materials (ACMs), PCBs, lead based paint, chemical storage, and any other regulatory compliance issues. This should include the potential for hazardous

materials to be present within structures to be demolished or modified as part of the Proposed Project. The Phase II ESA should consider both the results of the Phase I ESA and the areas of proposed soil disturbance to confirm if hazardous materials are present on-site in soil, groundwater, and soil vapor. The Phase II conclusions should include recommendations for soil handling and required methods for off-site disposal, potential on-site exposure to site personnel and the surrounding community during construction, and the need for any mitigation measures [i.e., a sub-slab depressurization system (SSDS)] to be incorporated into the building design.

b. Describe adjacent and surrounding contaminated sites and their proximity to the Proposed Action (ex- Brownfields, Superfund Sites).

2. Future Conditions without the Proposed Action

3. Anticipated Impacts

a. Identify potential impacts of the Proposed Project with respect to hazardous material contamination as a result of the Proposed Project, both during project construction and during the project's operation.

b. Describe construction methods, including need for excavation dewatering, if applicable.

c. Describe any hazardous materials to be used.

d. Describe any potential impacts related to existing contamination.

4. Proposed Mitigation Measures

a. Identify and describe measures to avoid or mitigate significant adverse impacts from hazardous materials that may result from existing conditions, construction, or operation of the Proposed Project.

b. Describe any NYS DEC-required remediation procedure and policies.

c. Implement any recommended actions from the Phase I and Phase II Environmental Assessments.

d. If contamination is identified during the Phase II ESA, consideration should be made for preparation of an Excavation Management Plan to identify measures to control contamination in soil, groundwater, and/or soil vapor, including fugitive dust, during any site disturbance (i.e., excavation, grading, stockpiling, loading, backfilling), a Construction Health and Safety Plan (CHASP) to identify measures to protect workers from exposure, and a Community Air Monitoring Plan (CAMP) to minimize exposure to the surrounding community.

D. Flooding and Flood Zone Impacts

1. Existing Conditions

a. Identify and analyze portions of the Project Site within the 100 year and 500-year floodplains.

b. Identify and analyze existing flood volume storage and stormwater management on the Project Site.

c. Including a description of local drainage patterns and their relationship to the Project Site. Stormwater flow peak rates of runoff would be provided for 1-, 2-, 10-, 25-, 50- and 100-year storm events as required by Village and NYSDEC Phase II regulations.

2. Future Conditions without the Proposed Action

3. Anticipated Impacts

a. Identify and analyze the amount of disturbance within the floodplains.

b. Identify and analyze relevant portions of FEMA's Flood Control Regulations and Standards and the Village of Mamaroneck Floodplain Development Code applicable to the proposed addition.

c. Describe compliance with relevant FEMA and Village Floodplain Development Standards.

d. Identify location and quantity of excavation, and analyze potential impacts of excavation within the floodplain.

e. Identify and analyze flood volume storage after the project is constructed.

f. Describe proposed stormwater management system and implementation of Best Management Practices based on NYSDEC Phase II regulation, including methods to maintain and enhance water quality standards and peak runoff rates.

g. Identify and analyze measures to avoid or reduce both the Proposed Action's impacts on climate change and associated impacts due to the effects of climate change such as sea level rise and flooding.

4. Proposed Mitigation Measures

E. Historic Resources

1. Existing Conditions

a. Summarize New York State Historic Preservation Officer (SHPO) consultation regarding the potential for impacts to historic, archaeological, and cultural resources on the Project Site. Include all relevant correspondence in the technical appendix.

b. Summarize the results of any previous archaeological studies conducted on the Project Site.

2. Future Conditions without the Proposed Action

3. Anticipated Impacts

a. Discuss potential impacts on any historic or archaeological resources substantially contiguous (less than a quarter mile radius) to the Project Site.

4. Proposed Mitigation Measures

F. Visual Resources

1. Existing Conditions
    a. Document the visual and architectural character of the Project Site and study area through photographs, cross sections and narrative.
2. Future Conditions without the Proposed Action
3. Anticipated Impacts
    a. Describe architectural scale and character of proposed self-storage expansion and how it integrates with scale and character of buildings to remain on the Project Site as well as buildings on adjacent properties.
    b. Identify and analyze views to and from the Project Site from surrounding roads, properties, and, designated visual resources. Specific views to the Proposed Action should include the following locations:
        i. Northwest corner of the intersection of Waverly Avenue and Fenimore Road looking towards the Project Site;
        ii. Northwest corner of the intersection of Waverly Avenue and Ogden Road looking towards the Project Site;
        iii. Northwest corner of the intersection of Fenimore Road and Hoyt Avenue looking towards the Project Site;
        iv. North side of Fenimore Road, midblock between Center Avenue and Waverly Avenue, looking towards the Project Site;
        v. Northbound on Heathcote Avenue looking towards the Project Site; and
        vi. Highview Street Historic District.
    c. Analyze potential impacts on the overall aesthetic quality and character of the surrounding area.
    d. Analyze the relationship of the proposed self-storage addition to the surrounding community, including the project height, general character, bulk and scale in relation to the surrounding area. Include a bulk diagram that shows the size of the proposed building in the context of the existing neighborhood.
    e. Describe and present graphically, the proposed Project Site landscaping and lighting plan.
    f. Utilize 3-D renderings, photographs, cross sections and elevations of the proposed development and/or photo simulations, as appropriate, to describe the resulting visual impact (i.e., before and after conditions), including a comparison of views of the existing buildings to views of the Proposed Action and images of typical proposed project buildings. This assessment should include consideration of rooftop facilities, such as solar panels, etc.
4. Proposed Mitigation Measures

G. Utilities

1. Water Supply
    a. Existing Conditions
        i. Include a description of existing water lines within study area and water system capacities.
        ii. Include usage under prior and existing contractor uses.
        iii. Include flow tests.
    b. Future Conditions without the Proposed Action
    c. Anticipated Impacts
        i. Describe proposed water mains, including pipe-sizing, location, and routing.
        ii. Identify and analyze proposed connection points to the existing systems.
        iii. Identify and analyze potential impacts of construction on infrastructure, including during peak usage periods.
        iv. Compare projected water use with prior and existing contractor uses to demand during anticipated peak usage periods.
        v. Discuss sufficiency of water resources for domestic and commercial use, as well as firefighting purposes.
    d. Proposed Mitigation Measures
        i. Use of water saving devices and other water conservation techniques.
        ii. Evaluate storage and system looping
2. Sanitary Sewage
    a. Existing Conditions
        i. Include a description of existing sanitary sewer lines servicing the development, including capacity and pipe location.
        ii. Include estimated sewage flows under existing uses.
        iii. Discussion of capacities of Mamaroneck Wastewater Treatment Facility.
    b. Future Conditions without the Proposed Action
    c. Anticipated Impacts
        i. Analysis of Proposed Action's sewage generation and compare with sewage generated by existing uses.
        ii. Description of proposed sewage system.
        iii. Identify and analyze proposed connection points to existing systems. 1v. Discuss sufficiency of treatment capacity.
        iv. Discuss any effects on sanitary sewer line capacity.

d. Proposed Mitigation Measures

e. Provide details of improvements and projections for proposed future demand in the area in addition to the project.

3. Use and Conservation of Energy

a. Existing Conditions

i. Include a description of existing electricity and energy demand required to power, heat and cool all existing uses on the Project Site.

b. Future Conditions without the Proposed Action

c. Anticipated Impacts

i. Analyze proposed electricity and energy demand.

ii. Analyze proposed electricity generation for the Community Solar Project.

iii. Analyze proposed electricity and energy saving devices.

d. Proposed Mitigation Measures

4. Solid Waste

a. Existing Conditions

i. Describe current garbage collection and recycling disposal services.

b. Future Conditions without the Proposed Action

c. Anticipated Impacts

i. Explain responsibilities for garbage collection and recycling following redevelopment.

d. Proposed Mitigation Measures

H. Traffic and Transportation

1. Traffic and Parking

a. Existing Conditions

i. Describe existing vehicle traffic circulation in and around the Project Site.

ii. Describe truck loading and unloading in and around the Project Site.

iii. Describe existing parking conditions on the Project Site.

b. Future Conditions without the Proposed Action

c. Anticipated Impacts

i. Analyze proposed vehicle traffic circulation in and around the Project Site.

ii. Describe truck loading and unloading in and around the Project Site.

IMPACTS ON SURFACE WATER

The Proposed Action may have a significant impact on the water quality of water bodies within or downstream of the Project Site as the area has not been thoroughly tested for contaminants or solid or hazardous waste.

IMPACTS ON GROUNDWATER

The Project Site is adjacent to an unconfined aquifer. Due to the industrial nature of the Project Site and the surrounding area, there is the potential for contamination. The Project Site has not been sufficiently evaluated for potential contaminants or solid or hazardous waste.

IMPACT ON FLOODING

The Proposed Action will result in construction in the 100- and 500-year floodplains with potential impacts to other properties nearby and downstream from the project. The Proposed Action may result in development within a flood hazard area and in an area with known flooding.

IMPACT ON TRANSPORTATION

The Proposed Action abuts an active freight rail spur. There is potential for a moderate to large impact on rail traffic, and adverse impacts on the integrity of the railway.

IMPACT ON ENERGY

The total square footage of all buildings on the Project Site would exceed 100,000 square feet, which could involve significant energy use for heating and/or cooling.

IMPACT ON NOISE, ODOR AND LIGHT

The Proposed Action has the potential to increase lighting levels over existing conditions.

IMPACT ON HUMAN HEALTH

The Proposed Action is near one or more sites identified on the New York State Environmental Site Remediation Database as being in the State Superfund and Brownfield Clean-up programs. The Project Site has the potential to contain hazardous materials or contamination associated with on- and off-site activities. The Project Site must be analyzed for potential environmental concerns so appropriate mitigation measures can be put in place to protect human health.

CONSISTENCY WITH COMMUNITY PLANS

The Proposed Action's land use components are different from, or in sharp contrast to, current surrounding land use patterns as the project is significantly larger than other buildings in the area. The Proposed Action is inconsistent with local land use plans and zoning regulations as it is requires significant variances. The Proposed Action is significantly larger, in terms of coverage and FAR, than is permitted in the area.

CONSISTENCY WITH COMMUNITY CHARACTER

The Proposed Action is inconsistent with the predominant architectural scale and character of the neighborhood. The Proposed Action will be significantly larger than the surrounding buildings and may significantly alter the character and aesthetics of the neighborhood.

iii. Analyze proposed parking conditions on the Project Site.

iv. Analyze changes in trip generation associated with the Proposed Action.

v. Analyze the potential impacts of the Proposed Action on the following intersections:

1. Fenimore Road and Waverly Avenue.
2. Fenimore Road and proposed site driveways.
3. Fenimore Road and Railroad Way.

d. Proposed Mitigation Measures

2. Rail Transportation

a. Existing Conditions

i. Inventory existing CSX rail conditions in the Project Site vicinity, including access, width and traffic controls.

ii. Inventory CSX rail operations in the Project Site vicinity including time and frequency.

iii. Describe the study area.

b. Future Conditions without the Proposed Action

c. Anticipated Impacts

i. Analyze potential conflicts with rail transportation resulting from construction and/or operation of the Proposed Action. Specifically consider: potential impacts to the railroad track from excavation, grading, and construction activities in close proximity; potential impacts to the railroad track from stormwater runoff or drainage from the Project Site; and potential conflicts with vehicular or construction traffic resulting from the Proposed Action.

ii. Analyze potential wind, noise, and lighting impacts that could result from the proposed building's proximity to the railroad tracks.

d. Proposed Mitigation Measures

i. Develop strategy for supportive excavation to prevent undermining of track bed or adjacent pavement.

ii. Develop a plan for demolition and construction that protects the tracks from debris.

I. Economic and Fiscal Analysis

1. Existing Conditions

a. Current Project Site taxes provided to each taxing jurisdiction (e.g., Village, County, school district) will be identified and described. Using available data, the economic activity in the study area will be qualitatively described.

2. Future Conditions without the Proposed Action
3. Anticipated Impacts
    a. Projected real property accruing to each taxing jurisdiction will be identified.
    b. The potential impacts of the Proposed Action on the area's employment, residential population, and the potential addition of or displacement of local businesses will be described.
    c. Identify and analyze any significant neighborhood character impacts, based on how the Proposed Action would affect businesses that define or substantially contribute to defining the character of the Village of Mamaroneck.
4. Proposed Mitigation Measures

J. Building Demolition and Construction

1. Anticipated Impacts
    a. Provide a construction phasing plan, including hours of demolition and construction activities, and identification of staging areas.
    b. Describe building demolition activities.
    c. Describe construction activities including the need, if any, for blasting.
    d. Identify and analyze short-term impacts related to issues such as parking (including construction-related parking and the temporary displacement of on-Site parking), vehicular and truck traffic, rail transportation, air quality, noise, vermin on-site and migration off-site during construction, etc.
    e. Discuss any impacts to sensitive receptors.
    f. Describe site security measures.
    g. Identify and analyze any impacts from excavation.
2. Proposed Mitigation
    a. Describe construction management plans and best management practices to be employed.
    b. Describe the construction staging plan, including any anticipated road and sidewalk closures.
    c. Describe mitigation measures to be employed during demolition, including site clearance protocol (i.e. traffic controls, construction fencing, railroad track protection, etc.).
    d. Describe measures to minimize construction-related impacts to air quality, such as fugitive dust control, controls on diesel emissions, prohibition of idling trucks.
    e. Describe measures to reduce noise during construction.
    f. Provide excavation plan.

K. Alternatives

A. No Action Alternative.

B. Redevelopment of the Project Site with a zoning compliant storage facility.

C. Alternative site plan redevelopment proposals:

1. Smaller square-footage of proposed addition;
2. Proposed addition with one less floor; and
3. Adaptive reuse of the Project Site buildings as a storage facility.

VI. Significant Adverse Impacts that cannot be Avoided

A. Long-Term

B. Short-Term

VII. Irreversible and Irretrievable Commitment of Resources

VIII. Growth Inducing Aspects of the Proposed Action

IV. Sources and Bibliography

V. Technical Appendix

A. SEQRA Documentation

B. Correspondence

C. Engineering and Environmental Reports

IMPACTS ON SURFACE WATER

The Proposed Action may have a significant impact on the water quality of water bodies within or downstream of the Project Site as the area has not been thoroughly tested for contaminants or solid or hazardous waste.

IMPACTS ON GROUNDWATER

The Project Site is adjacent to an unconfined aquifer. Due to the industrial nature of the Project Site and the surrounding area, there is the potential for contamination. The Project Site has not been sufficiently evaluated for potential contaminants or solid or hazardous waste.

IMPACT ON FLOODING

The Proposed Action will result in construction in the 100- and 500-year floodplains with potential impacts to other properties nearby and downstream from the project. The Proposed Action may result in development within a flood hazard area and in an area with known flooding.

IMPACT ON TRANSPORTATION

The Proposed Action abuts an active freight rail spur. There is potential for a moderate to large impact on rail traffic, and adverse impacts on the integrity of the railway.

IMPACT ON ENERGY

The total square footage of all buildings on the Project Site would exceed 100,000 square feet, which could involve significant energy use for heating and/or cooling.

IMPACT ON NOISE, ODOR AND LIGHT

The Proposed Action has the potential to increase lighting levels over existing conditions.

IMPACT ON HUMAN HEALTH

The Proposed Action is near one or more sites identified on the New York State Environmental Site Remediation Database as being in the State Superfund and Brownfield Clean-up programs. The Project Site has the potential to contain hazardous materials or contamination associated with on- and off-site activities. The Project Site must be analyzed for potential environmental concerns so appropriate mitigation measures can be put in place to protect human health.

CONSISTENCY WITH COMMUNITY PLANS

The Proposed Action's land use components are different from, or in sharp contrast to, current surrounding land use patterns as the project is significantly larger than other buildings in the area. The Proposed Action is inconsistent with local land use plans and zoning regulations as it is requires significant variances. The Proposed Action is significantly larger, in terms of coverage and FAR, than is permitted in the area.

CONSISTENCY WITH COMMUNITY CHARACTER

The Proposed Action is inconsistent with the predominant architectural scale and character of the neighborhood. The Proposed Action will be significantly larger than the surrounding buildings and may significantly alter the character and aesthetics of the neighborhood.

Environmental Assessment Form

Full Environmental Assessment Form
Part 1 - Project and Setting

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Sponsor Information.

Name of Action or Project: Murphy Brother's storage Facility Addition		
Project Location (describe, and attach a general location map): 416 Waverly Place, Mamaroneck, New York		
Brief Description of Proposed Action (include purpose or need): Expansion of the existing Murphy Brother's self-storage facility and associated driveway and stormwater improvements.		
Name of Applicant/Sponsor: East Coast North Properties, LLC	Telephone: 914-777-5777 E-Mail: Chris@murphybrothers.com	
Address: 416 Waverly Avenue		
City/PO: Mamaroneck	State: New York	Zip Code: 10543
Project Contact (if not same as sponsor; give name and title/role): Hudson Engineering & Consulting, Michael Stein, P.E	Telephone: 914-909-0420 E-Mail: Michael@hudsonec.com	
Address: 45 Knollwood Road - suite 201		
City/PO: Elmsford	State: New York	Zip Code:
Property Owner (if not same as sponsor):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)		
Government Entity	**If Yes: Identify Agency and Approval(s) Required**	**Application Date (Actual or projected)**
a. City Council, Town Board, or Village Board of Trustees ☐Yes☑No		
b. City, Town or Village Planning Board or Commission ☑Yes☐No	Planning Board - Site Plan Approval & Floodplain Development Permit	December 2017
c. City Council, Town or Village Zoning Board of Appeals ☑Yes☐No	Zoning Board of Appeals - Multiple Area Variances	February 2018
d. Other local agencies ☑Yes☐No	HCZMC - LWRP Consistency Determination DPW- Curb Cut, Building Dept - Building Permit	December 2017
e. County agencies ☐Yes☑No		
f. Regional agencies ☐Yes☑No		
g. State agencies ☐Yes☑No		
h. Federal agencies ☐Yes☑No		

i. Coastal Resources.
i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☑Yes☐No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☑Yes☐No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☐Yes☑No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☐Yes☑No

If Yes, identify the plan(s):

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes☑No

If Yes, identify the plan(s):

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
M-1 Manufacturing District

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site?

C.4. Existing community services.

a. In what school district is the project site located? Mamaroneck UFSD

b. What police or other public protection forces serve the project site?
Village of Mamaroneck Police Department

c. Which fire protection and emergency medical services serve the project site?
Village of Mamaroneck Fire Department & Mamaroneck EMS

d. What parks serve the project site?
Stanley Ave. Park & Station Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Commercial

b. a. Total acreage of the site of the proposed action? 1.01 acres
b. Total acreage to be physically disturbed? 0.73 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 1.01 acres

c. Is the proposed action an expansion of an existing project or use? ☑ Yes ☐ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % 68.93% Units: 321 (storage space)

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☑ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed?
iv. Minimum and maximum proposed lot sizes? Minimum Maximum

e. Will proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: 12 months
ii. If Yes:
- Total number of phases anticipated
- Anticipated commencement date of phase 1 (including demolition) month year
- Anticipated completion date of final phase month year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases:

f. Does the project include new residential uses? ☐Yes ☑No
If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				
At completion of all phases				

g. Does the proposed action include new non-residential construction (including expansions)? ☑Yes ☐No
If Yes,
i. Total number of structures One addition
ii. Dimensions (in feet) of largest proposed structure: 48.0' height; 72.0' width; and 240.0' length
iii. Approximate extent of building space to be heated or cooled: 56,328 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☐Yes ☑No
If Yes,
i. Purpose of the impoundment: _____
ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☐ Other specify: _____
iii. If other than water, identify the type of impounded/contained liquids and their source. _____
iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: _____ acres
v. Dimensions of the proposed dam or impounding structure: _____ height; _____ length
vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete): _____

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐Yes ☑No
If Yes:
i. What is the purpose of the excavation or dredging? _____
ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?
- Volume (specify tons or cubic yards): _____
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them. _____
iv. Will there be onsite dewatering or processing of excavated materials? ☐Yes ☐No
If yes, describe. _____
v. What is the total area to be dredged or excavated? _____ acres
vi. What is the maximum area to be worked at any one time? _____ acres
vii. What would be the maximum depth of excavation or dredging? _____ feet
viii. Will the excavation require blasting? ☐Yes ☐No
ix. Summarize site reclamation goals and plan: _____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐Yes ☑No
If Yes:
i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): _____

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will proposed action cause or result in disturbance to bottom sediments? ☐Yes☐No
If Yes, describe:

iv. Will proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes☐No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes☐No
If Yes:

i. Total anticipated water usage/demand per day: <300 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes☐No
If Yes:

- Name of district or service area: Westchester Joint Water Works
- Does the existing public water supply have capacity to serve the proposal? ☑Yes☐No
- Is the project site in the existing district? ☑Yes☐No
- Is expansion of the district needed? ☐Yes☑No
- Do existing lines serve the project site? ☑Yes☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes☐No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes☐No
If Yes:

i. Total anticipated liquid waste generation per day: <300 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes☐No
If Yes:

- Name of wastewater treatment plant to be used: Mamaroneck Wastewater Treatment Facility
- Name of district: mamroneck
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes☐No
- Is the project site in the existing district? ☑Yes☐No
- Is expansion of the district needed? ☐Yes☑No

- Do existing sewer lines serve the project? ☑Yes ☐No
- Will line extension within an existing district be necessary to serve the project? ☐Yes ☑No

  If Yes:
  - Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:
- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge, or describe subsurface disposal plans):

_____

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☐Yes ☑No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or _____ acres (impervious surface)

_____ Square feet or _____ acres (parcel size)

ii. Describe types of new point sources. _____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

_____

- If to surface waters, identify receiving water bodies or wetlands: _____
- Will stormwater runoff flow to adjacent properties? ☐Yes ☐No

iv. Does proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

_____

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

_____

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

_____

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:
- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of semi-trailer truck trips/day: _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☐Yes ☑No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

iii. Will the proposed action require a new, or an upgrade to, an existing substation? ☐Yes ☐No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 8:00 am to 6:00 pm
- Saturday: 8:00 am to 6:00 pm
- Sunday: None
- Holidays: None

ii. During Operations:

- Monday - Friday: 7:00 am to 7:00 pm
- Saturday: 7:00 am to 7:00 pm
- Sunday: 7:00 am to 7:00 pm
- Holidays: None

m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

General Construction Activities, 8:00 am to 6:00 pm Monday-Saturday During construction. No Blasting required.

ii. Will proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe:

n.. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Refer to Lighting Plan

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe:

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures:

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally describe proposed storage facilities:

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☐ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: 500 tons per 52 Weeks (unit of time)
- Operation : 25 lbs. tons per Week (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: Wood, Steel, and concrete will be recycled/reused if possible.
- Operation: paper, cardboard, and plastics will be recycled per Village of Mamaroneck and Westchester county policies

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: 30 Yard Container to be removed and replaced by outside carting company when full.
- Operation: Dumpster to be provided by outside carting company

s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☑ Urban ☑ Industrial ☐ Commercial ☐ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): _____

ii. If mix of uses, generally describe:

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0.950	0.933	-0.017
• Forested			
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)			
• Agricultural (includes active orchards, field, greenhouse etc.)			
• Surface water features (lakes, ponds, streams, rivers, etc.)			
• Wetlands (freshwater or tidal)			
• Non-vegetated (bare rock, earth or fill)			
• Other Describe: Lawn & Landscaping	0.064	.081	+0.017

c. Is the project site presently used by members of the community for public recreation? ☐Yes ☑No

i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐Yes ☑No

If Yes,

i. Identify Facilities:

_____

_____

e. Does the project site contain an existing dam? ☐Yes ☑No

If Yes:

i. Dimensions of the dam and impoundment:

- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____

iii. Provide date and summarize results of last inspection:

_____

_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes ☑No

If Yes:

i. Has the facility been formally closed? ☐Yes ☐ No

- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

_____

_____

iii. Describe any development constraints due to the prior solid waste activities: _____

_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes ☑No

If Yes:

i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

_____

_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☑Yes ☐ No

If Yes:

i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☑Yes ☐No

☑ Yes – Spills Incidents database — Provide DEC ID number(s): 0304697, 0304698

☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____

☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____

None

_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☑Yes ☐No

If yes, provide DEC ID number(s): 360025 , C360108A, 360045 , 360027

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

Items 0304697 and 0304698 on the spill incident database for the site have been closed. Items 360025, C360108A, 360045 and 360027 on the NYSDEC Environmental Site Remediation database remain open.

v. Is the project site subject to an institutional control limiting property uses? ☐Yes ☑No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐Yes ☐No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >6.5 feet

b. Are there bedrock outcroppings on the project site? ☐Yes ☑No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____%

c. Predominant soil type(s) present on project site:

Urban Land	100 %
	%
	%

d. What is the average depth to the water table on the project site? Average: >6.5 feet

e. Drainage status of project site soils:

☐ Well Drained:	% of site
☐ Moderately Well Drained:	% of site
☑ Poorly Drained	100 % of site

f. Approximate proportion of proposed action site with slopes:

☑ 0-10%:	100 % of site
☐ 10-15%:	% of site
☐ 15% or greater:	% of site

g. Are there any unique geologic features on the project site? ☐Yes ☑No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☐Yes ☑No

ii. Do any wetlands or other waterbodies adjoin the project site? ☐Yes ☑No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☐Yes ☐No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name _____ Approximate Size _____
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐Yes ☐No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐Yes ☑No

j. Is the project site in the 100-year Floodplain? ☑Yes ☐No

k. Is the project site in the 500-year Floodplain? ☑Yes ☐No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☑Yes ☐No
If Yes:

i. Name of aquifer: Principal Aquifer

m. Identify the predominant wildlife species that occupy or use the project site:
Small Mammals

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐Yes ☑No

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on, or has been nominated by the NYS Board of Historic Preservation for inclusion on, the State or National Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource: _____

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): _____

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name Hudson Engineering & Consulting-Michael Stein Date January 14, 2019

Signature _____ Title President

PRINT FORM

Stormwater Pollution Prevention Plan

STORMWATER POLLUTION PREVENTION PLAN & DRAINAGE ANALYSIS

Self Storage Addition
560 Fenimore Road
Mamaroneck - New York

February 8, 2018
Revised January 14, 2019

Hudson Engineering & Consulting, P.C.
45 Knollwood Road - Suite 201
Elmsford, NY 10523

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1.) Contractor Certification Statement

CONTRACTOR and SUBCONTRACTOR CERTIFICATION STATEMENT

for the New York State Department of Environmental Conservation (DEC) State Pollutant Discharge Elimination System Permit for Stormwater Discharges from Construction Activity (GP-0-15-002)

As per *Part III.A.5* on page 19 of *GP-0-15-002* (effective January 29, 2015):

'Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor*. The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.'

The *owner or operator* shall have each contractor and subcontractor involved in soil disturbance sign a copy of the following certification statement before they commence any *construction activity*:

416 Waverly Avenue	**NYR** _____	Village of Mamaroneck
Name of Construction Site	*DEC Permit ID*	*Municipality (MS4)*

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

Responsible Corporate Officer/Partner Signature	Date
Name of above Signatory	Name of Company
Title of above Signatory	Mailing Address
Telephone of Company	City, State and Zip

Identify the specific elements of the SWPPP the contractor or subcontractor is responsible for:
The contractor shall be responsible for the installation and maintenance of all temporary and permanent erosion
and sediment control practices for the duration of construction activities.

***'TRAINED CONTRACTOR'* FOR THE CERTIFIED CONTRACTOR OR SUBCONTRACTOR**

Name of Trained Employee	*Title of Trained Employee*	*NYSDEC SWT #*

A copy of this signed contractor certification statement must be maintained at the SWPPP on site

2.) Narrative

STORMWATER POLLUTION PREVENTION PLAN
Self Storage Addition
560 Fenimore Road
Mamaroneck - New York

A. INTRODUCTION

This Stormwater Pollution Prevention Plan & Stormwater Analysis presents the proposed Best Management Practices (BMPs) to control erosion, sedimentation, and manage stormwater during the construction of a new four (4) story addition to an existing self storage building, and associated parking and landscaping, located at 560 Fenimore Road (SBL 8-25-70) in the Village of Mamaroneck, Westchester County, New York.

This Plan consists of this narrative and a plan set entitled: "Self Storage Building Addition, 560 Fenimore Road, Village of Mamaroneck, Westchester County, New York", all as prepared by Hudson Engineering and Consulting, P.C., Elmsford, New York, last revised January 14, 2019. The design is in accordance with the Village of Mamaroneck requirements. The plans have also been prepared to meet the requirements of the New York State Department of Environmental Conservation (NYSDEC), per the Village code.

B. METHODOLOGY

The stormwater analysis was developed utilizing the Soil Conservation Service (SCS) TR-20 methodologies (HydroCad®) to assist with the drainage analysis and design of the mitigating practice. The "Complex Number" (CN) value determination is based on soil type, vegetation and land use. *See Soil Map & Report contained herein.* The "Time of Concentration" (T_c) is determined by the time wise longest flow path within each watershed. The CN and T_c data is input into the computer model. This project involves modifications to an existing developed property; therefore, this will be classified as redevelopment per the NYSDEC Phase II regulations.

The pre-developed and post-developed impervious area coverage was calculated as follows:

Pre and Post Impervious Coverage	
Total Existing Impervious Area	41,390-square feet
Total Proposed Impervious Area	40,675-square feet
Total Decrease in Impervious Area	715-square feet
Percent Decrease	1.73%

Per Section 9.2.1, B-III of the NYSDEC Manual, 75% of the Water Quality Volume from the disturbed, impervious area, as well as any additional runoff from tributary areas that are undisturbed, can be treated with the use of Alternative Stormwater Management Practices (SMPs), as listed in Section 9.4 of the NYSDEC Stormwater Management Design Manual.

The stormwater management design is based on the NYSDEC "New York State Stormwater Management Design Manual", latest edition and "Controlling Urban Runoff: A practical Manual for Planning and Designing Urban BMP'S", by the Metropolitan Washington Council of Governments. Stormwater quality has been analyzed in accordance with the guidelines set forth in the New York State General Permit for Storm Water Discharge, GP-0-15-002.

C. LIST OF PERMITS

The following is a list of permits and approvals required for the project along with the status.

- Village of Mamaroneck – Building Permit – Pending
- Village of Mamaroneck – Zoning Board Approval – Pending
- Village of Mamaroneck – Planning Board Approval – Pending
- Harbor Coastal Zone Management Commission – Pending

D. PRE-DESIGN INVESTIGATIVE ANALYSIS

Due to the site's location partially within the 100-year flood limit line, it has been determined that percolation is not a viable option for stormwater on this site, and conventional stormwater management practices could not be utilized in the stormwater design (i.e. infiltration chambers, infiltration basins, etc.). Therefore, no deep hole testing or percolation testing was performed.

E. PRE-DEVELOPED CONDITION

In the pre-developed conditions, the proposed redevelopment project was modeled as six watersheds, Watershed 1A, 1B, 1C, 1D, 2 and 3. Watersheds 1A, 1B, 1C, 1D and 2 are all tributary to Design Point 1. Watershed 3 is tributary to DP-2. Each watershed was analyzed as follows:

Watershed 1A is comprised of 2,252 square feet, of which all is impervious in the form of a portion of the existing 2 story building and driveway surface. The watershed has a weighted complex number (CN) value of 98 and a calculated time of concentration (Tc) of 0.8 Minutes. Stormwater from this tributary area flows overland to an existing catch basin located in the center of the parking area. The runoff is then conveyed via pipe to an existing hydrodynamic separator and enters the village's drainage system at Design Point DP-1.

Watershed 1B is comprised of 5,979 square feet, of which 5,522 square feet is impervious in the form of a portion of the driveway and 457 square feet is pervious in the form of lawn and landscaping. The watershed has a weighted complex number (CN) value of 97 and a calculated time of concentration (Tc) of 1.1 Minutes. Stormwater from this tributary area flows overland to an existing catch basin located in the center of the parking area. The runoff is then conveyed via pipe to an existing hydrodynamic separator and enters the village's drainage system at Design Point DP-1.

Watershed 1C is comprised of 2,849 square feet, of which 2,119 square feet is impervious in the form of a portion of the driveway and 730 square feet is pervious in the form of lawn and landscaping. The watershed has a weighted complex number (CN) value of 93 and a calculated time of concentration (Tc) of 0.9 Minutes. Stormwater from this tributary area flows overland to an existing catch basin located adjacent to the Waverly Avenue right-of-way. The runoff is then conveyed via pipe to an existing hydrodynamic separator and enters the village's drainage system at Design Point DP-1.

Watershed 1D is comprised of 786 square feet, all of which is impervious in the form of a portion of an existing building. The watershed has a weighted complex number (CN) value of 98 and a calculated time of concentration (Tc) of 1.0 Minute (direct entry). Stormwater from this roof area is collected and conveyed via pipe to an existing catch basin (private) located within the village's Right of Way. The runoff then enters the village's drainage system at Design Point DP-1.

Watershed 2 is comprised of 10,733 square feet, of which 10,056 square feet is impervious in the form of the existing storage building and 677 square feet is pervious in the form of an existing stormwater planter. The watershed has a weighted complex number (CN) value of 97 and a calculated time of concentration (Tc) of 1.0 Minute (direct entry). The existing stormwater planter was sized to provide water quality treatment for the runoff from this watershed. The planter is designed with overflows to bypass larger storms. All runoff from the planter is conveyed via pipe the hydrodynamic separator and enters the village's drainage system at design point DP-1.

Watershed 3 is comprised of 21,557 square feet, of which 20,655 is impervious in the form of a portion of the driveway, and buildings and 902 square feet is pervious in the form of lawn and landscaping. The watershed has a weighted complex number (CN) value of 97 and a calculated time of concentration (Tc) of 1.4 Minutes. Stormwater from this tributary area flows overland from the center of the site in a northwesterly direction where it exits the site into the Fenimore Road right-of-way at Point C. The runoff flows overland (R1) to design point DP-1 where it enters the village's drainage system.

The rate off runoff at the design point are calculated as follows:

Pre-Developed Conditions			
Design Point	1-Year	10-Year	25-Year
	cfs	cfs	cfs
DP-1	0.89	3.02	3.81
DP-2	1.58	2.89	3.64

F. POST-DEVELOPED CONDITION

In the post-developed condition, the project site has been modeled as nine (9) watersheds, Watershed 1A, 1B, 1C, 1D, 1E, 2, 3, 3A and 3B. Watersheds 1A, 1B, 1C, 1D, 1E, and 2 are tributary to design point DP-1. Watersheds 3, 3A, and 3B are tributary to DP-2. Each watershed is analyzed as follows:

Watershed 1A is made up of the portion of the proposed parking area adjacent to the proposed building addition. This watershed contains 2,893-square feet of tributary area, all of which is impervious area in the form of the driveway. This watershed has a weighted complex number (CN) value of 98 and a calculated Time of Concentration (Tc) of 1.2 minutes. Stormwater from this area flows overland to an existing catch basin. From here the runoff is captured and conveyed to an existing hydrodynamic separator, where it meets with the runoff from Watersheds 1B, 1C, 1E and 2. The hydrodynamic separator is capable of treating the entire water quality volume from the tributary area. The treated runoff is then conveyed to an existing catch basin located at the corner of Waverly Avenue and Fenimore Road where it enters the village's drainage system at design point DP-1.

Watershed 1B is made up of the portion of the proposed parking area adjacent to the entrance to the existing storage building. This watershed contains 3,079-square feet of tributary area, which consists of 3,008-square feet of impervious area, with the remaining 71-square feet of area in the form of lawn and landscaping. This watershed has a weighted complex number (CN) value of 97 and a calculated Time of Concentration (Tc) of 0.8 minutes. Stormwater from this area flows overland to a relocated catch basin located adjacent to a proposed loading area. From here the runoff is captured and conveyed to an existing hydrodynamic separator, where it meets with the runoff from Watersheds 1A, 1C, 1E and 2. As previously mentioned, the hydrodynamic separator is capable of treating the entire water quality volume from the tributary area. The treated runoff is then conveyed to an existing catch basin located at the corner of Waverly Avenue and Fenimore Road where it enters the village's drainage system at design point DP-1.

Watershed 1C is made up of the portion of the proposed parking area adjacent to the existing stucco building to remain. This watershed contains 3,283-square feet of tributary area, which consists of 3,039-square feet of impervious area, with the remaining 244-square feet of area in the form of lawn and landscaping. This watershed has a weighted complex number (CN) value of 96 and a calculated Time of Concentration (Tc) of 0.9 minutes. Stormwater from this area flows overland to an existing catch basin located just upstream of the existing hydrodynamic separator. From here the runoff is captured and conveyed to the existing hydrodynamic separator, where it meets with the runoff from Watersheds 1A, 1B, 1E and 2. As previously mentioned, the hydrodynamic separator is capable of treating the entire water quality volume from the tributary area. The treated runoff is then conveyed to an existing catch basin located at the corner of Waverly Avenue and Fenimore Road where it enters the village's drainage system at design point DP-1.

Watershed 1D is comprised of 786 square feet, all of which is impervious in the form of a portion of an existing building. The watershed has a weighted complex number (CN) value of 98 and a calculated time of concentration (Tc) of 1.0 Minute (direct entry). Stormwater from this roof area is collected and conveyed via pipe to an existing catch basin (private) located within the village's ROW. The runoff then enters the village's drainage system at Design Point DP-1.

Watershed 1E is made up of the portion of the proposed parking area adjacent to the main driveway entrance. This watershed contains 1,428-square feet of tributary area, which consists of 1,402-square feet of impervious area, with the remaining 26-square feet of area in the form of lawn and landscaping. This watershed has a weighted complex number (CN) value of 98 and a calculated Time of Concentration (Tc) of 0.7 minutes. Stormwater from this area flows overland to a proposed trench drain located across the driveway entrance. From here the runoff is captured and conveyed to an existing hydrodynamic separator, where it meets with the runoff from Watersheds 1A, 1B, 1C and 2. As previously mentioned, the hydrodynamic separator is capable of treating the entire water quality volume from the tributary area. The treated runoff is then conveyed to an existing catch basin located at the corner of Waverly Avenue and Fenimore Road where it enters the village's drainage system at design point DP-1.

Watershed 2 is made up of the existing roof area and associated stormwater planter. This watershed contains 10,733-square feet of tributary area, which consists of 10,056-square feet of impervious area, with the remaining 677-square feet of area in the form of an existing stormwater planter. This watershed has a weighted complex number (CN) value of 97 and a direct entry Time of Concentration (Tc) of 1.0 minute. Stormwater from this area is collected via a series of roof drains and is conveyed directly to an existing stormwater planter located adjacent to the existing building. The stormwater planter is sized to treat the entire water quality volume from the watershed, as well as bypass storm events up to and including the 25-year storm. From here the treated runoff is conveyed to an existing hydrodynamic separator, where it meets with the runoff

from Watersheds 1A, 1B, 1C and 1E. The treated runoff is then conveyed to an existing catch basin located at the corner of Waverly Avenue and Fenimore Road where it enters the village's drainage system at design point DP-1.

Watershed 3 is made up of portions of sidewalk and landscaped area encompass the perimeter of the property. This watershed contains 2,071 square feet of tributary area, consisting of 416 square feet of impervious area in the form of sidewalks, with the remaining 1,655 square feet pervious area. The watershed has a weighted complex number (CN) value of 79 and a calculated time of concentration (Tc) of 1.0 minute (direct entry). The runoff flows overland within the right-of-way to an existing catch basin where it enters the village's drainage system and is conveyed to the design point DP-2.

Watershed 3A is made up of the proposed roof area and associated stormwater planter. This watershed contains 14,755-square feet of tributary area, which consists of 14,082-square feet of impervious area, with the remaining 673-square feet of area in the form of a proposed stormwater planter. This watershed has a weighted complex number (CN) value of 97 and a direct entry Time of Concentration (Tc) of 1.0 minute. Stormwater from this area is collected via a series of roof drains and is conveyed directly to a proposed stormwater planter, which has been sized to treat the entire water quality volume from watersheds 3A and 3B, as well as bypass storm events up to and including the 25-year storm. The treated runoff is conveyed via pipe to design point DP-2 where it enters the village's drainage system.

Watershed 3B is made up of a portion of the driveway area, existing 2 story building and landscaped area located along Fenimore Road. This watershed contains 5,128-square feet of tributary area, which consists of 4,993-square feet of impervious area, with the remaining 135-square feet of area pervious in the form of lawn and landscaping. This watershed has a weighted complex number (CN) value of 97 and a Time of Concentration (Tc) of 1.0 minute. Stormwater from this area originates adjacent to the existing two-story building and flows in an easterly direction where it flows into the proposed stormwater planter. The stormwater planter has been sized to treat the entire water quality volume from watershed 3A and 3B, as well as bypass storm events up to and including the 25-year storm. The treated runoff is conveyed via pipe to design point DP-2 where it enters the village's drainage system.

The rate off runoff at the design point are calculated as follows:

Post-Developed Conditions			
Design Point	**1-Year**	**10-Year**	**25-Year**
	cfs	**cfs**	**Cfs**
DP-1	**0.89**	**2.98**	**3.75**

DP-2	**1.48**	**2.85**	**3.62**

G. SUMMARY OF FLOWS

Pre- and Post-Developed Conditions						
Design Point	**1-Year**		**10-Year**		**25-Year**	
	Pre-	**Post-**	**Pre-**	**Post-**	**Pre-**	**Post-**
DP-1	0.89	**0.89**	3.02	**2.98**	3.81	**3.75**
DP-2	1.58	**1.48**	2.89	**2.85**	3.64	**3.62**

Post-developed flows rates at each design point are equal to or less than those in the pre-developed conditions.

H. WATER QUALITY VOLUME

The Water Quality Volume (WQv) calculations were performed for the entire site as well as for the tributary areas to each water quality practice. The calculations are as follows:

ENTIRE SITE

P= 90% Rainfall 1.5 -inches

A_i = Impervious Area = 40,675 -square feet

A_i = 0.9338 -acres

A_t = Tributary Area = 44,156 -square feet

A_t = 1.0137 -acres

I = % Impervious = 92.12%

R_v= 0.05+0.009(I); where I = Percent Impervious written as a percent

R_v= 0.879 **(0.20 minimum)**

R_v= 0.879

$$WQ_v = \frac{(P \times R_v \times A_t)}{12} = 0.11138 \text{ acre-feet} = 4851.91 \text{ cubic feet}$$

Total Water Quality Volume: 4851.91 cubic feet

*Water Quality treatment provided: 100.04% (4,854.00 cubic feet)

Due to the configuration of the site, water quality treatment could not be provided for watershed 1D and Watershed 3. Watershed 1D consists of a portion of the existing building that will not be altered as a result of the improvements and watershed 3 consists of the small areas around the perimeter of the site that flow overland into the right-of-way.

To compensate for these two areas, additional treatment was provided for Watershed 1A, 1B, 1C, 1E, 2, 3A, and 3B. Since Watersheds 1A, 1B, 1C, 1E and 3A are more susceptible to pollutants as they are mostly made up of driving

surfaces, the increase of treatable volume will have greater overall benefits than trying to capture the roof area.

WATERSHEDS 1A, 1B, 1C & 1E

P= 90% Rainfall 1.5 -inches

A_i = Impervious Area = 10,297 -square feet

A_i = 0.2364 -acres

A_t = Tributary Area = 10,638 -square feet

A_t = 0.2442 -acres

I = % Impervious = 96.79%

R_v= 0.05+0.009(I); where I = Percent Impervious written as a percent

R_v= 0.921 **(0.20 minimum)**

R_v= 0.921

$$WQ_v = \frac{(P \times R_v \times A_t)}{12} = 0.02812 \text{ acre-feet} = 1224.90 \text{ cubic feet}$$

Rainfall = 1.73 -inches → 1263 cubic feet OKAY

The Water Quality Volume (WQv) from the proposed parking area comprises of approximately 26.03% of the overall WQv for the entire property. This volume is equal to a 1.73-inch, 24-hour storm event from tributary area, which produces a flow rate of approximately 0.45-cfs*. The entire volume is treated via an existing AquaSwirl AS-2 hydrodynamic device, which is capable of treating up to 1.10-cfs. The existing device is also capable of bypassing the 25-year storm event from the watershed. *Water Quality routing calculations are contained within Section 8 of this report. The AquaSwirl Sizing Chart is contained within Section 9 of this report.*

**Note, the existing hydrodynamic separator also receives flows from watershed 2. For the water quality storm event the peak flow is 0.03 cfs.*

WATERSHED 2

P= 90% Rainfall 1.5 -inches

A_i = Impervious Area = 10,086 -square feet

A_i = 0.2315 -acres

A_t = Tributary Area = 10,755 -square feet

A_t = 0.2469 -acres

I = % Impervious = 93.78%

R_v= 0.05+0.009(I); where I = Percent Impervious written as a percent

R_v= 0.894 **(0.20 minimum)**

R_v= 0.894

$$WQ_v = \frac{(P \times R_v \times A_t)}{12} = 0.02759 \text{ acre-feet} = 1201.89 \text{ cubic feet}$$

Rainfall = 1.73 -inches → 1259 cubic feet OKAY

The Water Quality Volume (WQv) from the existing roof area comprises of approximately 25.95% of the overall WQv for the entire property. This volume is equal to a 1.73-inch, 24-hour storm event. The entire volume is treated via an existing Stormwater Planter, which was previously approved by the Village and was designed to treat the entire WQV from this watershed. The existing planter is also capable of bypassing the 25-year storm event from the watershed without overflow. *Water Quality routing calculations are contained within Section 8 of this report.*

WATERSHED 3A & 3B

P= 90% Rainfall 1.5 -inches

A_i = Impervious Area = 19,075 -square feet

A_i = 0.4379 -acres

A_t = Tributary Area = 19,883 -square feet

A_t = 0.4565 -acres

I = % Impervious = 95.94%

R_v= 0.05+0.009(I); where I = Percent Impervious written as a percent

R_v= 0.913 **(0.20 minimum)**

R_v= 0.913

$$WQ_v = \frac{(P \times R_v \times A_t)}{12} = 0.05212 \text{ acre-feet} = 2270.21 \text{ cubic feet}$$

Rainfall = 1.73 -inches → 2332 cubic feet OKAY

The Water Quality Volume (WQv) from the proposed roof area comprises of approximately 48.06% of the overall WQv for the entire property. This volume is equal to a 1.73-inch, 24 hour storm event over the tributary area. This volume is treated via a proposed Stormwater Planter with a Focal Point biofilter system. The proposed planter is also capable of bypassing the 25-year storm event from the watershed without overflow. The FocalPoint biofilter system is approved as a proprietary practice for redevelopment under the NYSDEC guidelines. Additional information for this practice has been provided in *Section 10* of this report. *Water Quality routing calculations are contained within Section 8 of this report.*

100% of the Water Quality Volume is treated with a combination of a proposed stormwater planter for all new roof area, an existing stormwater planter for the existing roof area, and an AquaSwirl AS-2 hydrodynamic device for the existing/revised parking area. All practices have also been sized to bypass the 25-year storm event. Each practice is an approved Alternate SMP, as outlined in Section 9.4 of the NYSDEC Stormwater Management Design Manual.

I. NYSDEC TABLE 3.1 DESIGN REGULATIONS:

Each mitigation practice is contained in Table 3.1 of the NYSDEC design regulations and is discussed below.

- Preservation of Undisturbed Areas: Permanent conservation easements of undisturbed areas are not proposed for this site
- Preservation of Buffers. See above.
- Reduction of Clearing and Grading: All construction is occurring in areas previously disturbed.
- Locating Development in Less Sensitive Areas: No development is planned within sensitive areas.
- Open Space Design: Not applicable to this application.
- Soil Restoration: As required, all disturbed soil areas will be "deep tilled" prior to the establishment of ground cover. Deep tilling restores the absorptive quality of the soil.
- Roadway Reduction: No roadways are being proposed as part of this application.
- Sidewalk Reduction: All sidewalks have been designed to the minimum extent possible per the Village of Mamaroneck requirements, in order meet the required pedestrian traffic on and off-site.
- Driveway Reduction: All driveways have been designed to the minimum extent possible to provide adequate access for the proposed use.
- Cul-de-sac Reduction: No Cul-de-sacs are being proposed as part of this application.
- Building Footprint Reduction: The proposed building footprint is considered the minimum footprint desired for this use.
- Parking Reduction: Parking for the proposed use has been provided to the maximum extent possible.
- Conservation of Natural Areas: Not applicable to this application.
- Sheet Flow to riparian buffers or filter strips: Not applicable to this application.
- Vegetated Open Swale: An "O-Type Swale" is not applicable to this site.
- Tree Planting/Tree Boxes: Landscaped Islands have been provided wherever possible.
- Disconnection of Rooftop Runoff: Not applicable to this application.
- Stream Daylighting for Redevelopment Projects: Not applicable to this application.
- Rain Gardens: Due to the location of the property within the existing 100-year flood zone, standard exfiltration practices were determined to be ineffective for this application.
- Green Roof: Green roof technology could be incorporated into the design if desired, however, the required water quality volume is already being

treated via existing and proposed stormwater planters and an existing hydrodynamic separator.

- Stormwater Planters: Stormwater Planters have been incorporated into the design to treat the runoff from both existing and proposed roof areas.
- Rain tank/Cistern: Rain tanks/Cisterns could be incorporated if desired.
- Porous Pavement: Porous Pavement could be incorporated into the design, however, due to the location of the property within the existing 100-year flood zone, standard exfiltration practices were determined to be ineffective for this application.

J. CONSTRUCTION PHASE

During the construction phase of the project, a sediment and erosion control plan shall be implemented in accordance with the New York State Department of Environmental Conservation's Best Management Practices (BMP). The primary goals of the sediment and erosion control plan are to prevent the tracking of dirt and mud onto adjacent roads, to prevent mud and silt from entering into existing and proposed drainage facilities, and to protect the receiving waters from contamination during the construction.

During construction, the party responsible for implementing the temporary (during construction) Stormwater Management facilities Maintenance Program will be the owner. Contact information will be filed with the Village.

A New York State Professional Engineer or Certified Professional In Erosion and Sediment Control (P.E. or CPESC) shall conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls shown on the plan have been adequately installed and/or implemented to ensure overall preparedness of the site for construction. Following the commencement of construction, site inspections shall be conducted by the P.E. or CPESC at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.

During each inspection, the representative shall record the following:

1. On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

2. Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

3. Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

4. Inspect all sediment control practices and record approximate degree of sediment accumulation as a percentage of the sediment storage volume;

5. Inspect all erosion and sediment control practices and record all maintenance requirements. Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along the barrier. Record the depth of sediment within containment structures and any erosion near outlet and overflow structures.

6. All identified deficiencies.

The construction manager shall maintain a record of all inspection reports in a site logbook. The site logbook shall be maintained on-site and be made available to the Village of Mamaroneck. A summary of the site inspection activities shall be posted on a monthly basis in a public accessible location at the site.

The projects anticipated start date is Spring 2019 and the anticipated completed date is spring 2020.

K. CONSTRUCTION SEQUENCING

The following erosion control schedule shall be utilized:

1. Install construction entrance to the development area.

2. Establish construction staging area.

3. Selective vegetation removal for silt fence installation.

4. Install silt fence down slope of all areas to be disturbed as shown on the plan.

5. Strip topsoil and stockpile at the locations specified on the plans (up gradient of erosion control measures). Temporarily stabilize topsoil stockpiles (hydroseed during May 1st through October 31st planting season or by covering with a tarpaulin(s) November 1st through April 30th. Install silt fence around toe of slope.

6. Demolish any existing site features and/or structures noted as being removed on the construction documents, and dispose of off-site.

7. Rough grade site.

8. Install additional silt fencing as necessary.

9. Rough grade parking lot and install trench drains and drain inlets, as well as all associated onsite piping.

10. Obtain street opening permit for drainage connection to existing catch basin in Fenimore Road, as well as proposed curb cut widenings.

11. Install drainage work tributary to existing municipal catch basin in Fenimore Road up to location of proposed stormwater planter.

12. Excavate and construct foundations for new building.

13. Construct stormwater planter adjacent to building addition.

14. Construct building. Install and connect all roof drain leaders to previously installed stormwater planter.

15. Install curbing, and sub-base courses. Fine grade and seed all disturbed areas. Spread salt hay over seeded areas.

16. Install bituminous concrete top course.

17. Clean pavement, drain lines, catch basins and pretreatment devices. Clean exfiltration/attenuation galleries.

18. Remove all temporary soil erosion and sediment control measures after the site is stabilized with vegetation.

* Soil erosion and sediment control maintenance must occur weekly and prior to and after every ½" or greater rainfall event.

L. EROSION AND SEDIMENT CONTROL COMPONENTS

The primary aim of the soil and sediment control measures is to reduce soil erosion from areas stripped of vegetation during and after construction and to prevent silt from reaching the off-site drainage structures and downstream properties. As outlined in the Construction Sequencing schedule, the Sediment and Erosion Control Components are an integral component of the construction sequencing and will be implemented to control sedimentation and re-establish vegetation as soon as practicable.

Planned erosion and sedimentation control practices during construction include the installation, inspection and maintenance of the inlet protection, soil stockpile areas, diversion swales, sediment traps and silt fencing. General land grading practices, including land stabilization and construction sequencing are also integrated into the Sediment and Erosion Control Plan. Dust control is not expected to be a problem due to the relatively limited area of exposure, the undisturbed perimeter of trees around the project area and the relatively short time of exposure. Should excessive dust be generated, it will be controlled by sprinkling.

All proposed soil erosion and sediment control practices have been designed in accordance with the following publications:

- New York State standards and Specifications for Urban Erosion and Sediment Control, latest edition.
- New York State General Permit for Stormwater Discharges, GP-0-15-002 (General permit).
- "Reducing the Impacts of Stormwater Runoff from New Development", as published by the New York State Department of Environmental Conservation (NYSDEC), second edition, April, 1993.

The proposed soil erosion and sediment control devices include the planned erosion control practices outlined below. Maintenance procedures for each erosion control practice have also been outlined below.

- **SILT FENCE**

  Silt fence (geo-textile filter cloth) shall be placed in locations depicted on the approved plans. The purpose of the silt fence is to reduce the velocity of sediment laden stormwater from small drainage areas and to intercept the transported sediment load. In general, silt fence shall be used at the toe of slopes or intermediately within slopes where obvious channel concentration of stormwater is not present.

  Maintenance

  Silt fencing shall be inspected at a minimum of once per week and prior to and within 48 hours following a rain event ½" or greater. Inspections shall include ensuring that the fence material is tightly secured to the woven wire and the wire is secured to the wood posts. In addition, overlapping filter fabric shall be secure and the fabric shall be maintained a minimum of six (6) inches below grade. In the event that any "bulges" develop in the fence, that section of fence shall be replaced within 48 hours with new fence section. Any sediment build-up against the fence shall be removed within 48 hours and deposited on-site a minimum of 100 feet outside of any wetland or watercourse.

- **INLET PROTECTION**

  After driveway catch basins and surface inlets have been installed, these drain inlets will receive stormwater from the driveway, Temporary Diversion Swales and surrounding overland watersheds. In order to protect the receiving waters from sedimentation, the contractor shall install ¾ inch stone aggregate around the perimeter of all catch basins and surface inlets as illustrated on the approved plans. This barrier will allow stormwater to be filtered prior to reaching the basin inlet grate.

Maintenance

The stone aggregate shall be inspected weekly prior to and within 48 hours following a rain event ½" or greater. Care shall be taken to ensure that all stone aggregate are properly located and secure and do not become displaced. The stone aggregate shall be inspected for accumulated sediments and any accumulated sediment shall be removed from the device and deposited not less than 100 feet from wetland or watercourse.

- **SOIL/SHOT ROCK STOCKPILING**

All soil and shot rock stripped from the construction area during grubbing and mass grading shall be stockpiled in locations approved by the Town/Village's representative, but in no case shall they be placed within 100' of a wetland or watercourse. The stockpiled soils shall be re-used during finish-grading to provide a suitable growing medium for plant establishment. Soil stockpiles shall be protected from erosion by vegetating the stockpile with rapidly – germinating grass seed or covering the stockpile with tarpaulin and surrounding it with either silt fence.

Maintenance

Sediment controls (silt fence) surrounding the stockpiles shall be inspected according to the recommended maintenance outline above. All stockpiles shall be inspected for signs of erosion or problems with seed establishment weekly and prior to and within 48 hours following a rain event ½" or greater.

- **GENERAL LAND GRADING**

The intent of the Erosion & Sediment Control Plan is to control disturbed areas such that soils are protected from erosion by temporary methods and, ultimately, by permanent vegetation. Where practicable, all cut and fill slopes shall be kept to a maximum slope of 2:1. In the event that a slope must exceed a 2:1 slope, it will be stabilized with stone riprap. On fill slopes, all material will be placed in layers not to exceed 12 inches in depth and adequately compacted. Where practicable, diversion swales shall be constructed on the top of all fill embankments to divert any overland flows away from the fill slopes.

- **SURFACE STABILIZATION**

All disturbed will be protected from erosion with the use of vegetative measures (i.e., grass seed mix, sod) hydromulch netting or hay. When activities temporarily cease during construction, soil stockpiles and exposed soil should be stabilized by seed, mulch or other appropriate measures as soon as possible, but in no case more than 14 days after construction activity has ceased. All seeded areas will be re-seeded areas as necessary and

mulch according to the site plan to maintain a vigorous, dense vegetative cover,

Erosion control barriers consisting of silt fencing shall be placed around exposed areas during construction. Where exposed areas are immediately uphill from a wetland or watercourse, the erosion control barrier will consist of double rows of silt fencing. Any areas stripped of vegetation during construction will be vegetated and/or mulch as soon as possible, but in no case more than 14 days to prevent erosion of the exposed soils. And topsoil removed during construction will be temporarily stockpiled for future use in grading and landscaping.

As mentioned above, temporary vegetation will be established to protect exposed soil areas during construction. If growing conditions are not suitable for the temporary vegetation, mulch will be used to the satisfaction of the Commissioner of Public Works. Materials that may be used for mulching include straw, hay, salt hay, wood fiber, synthetic soil stabilizers, mulch netting, sod or hydromulch. In site areas where significant erosion potential exists (steep slopes) and where specifically directed by the Town/Village's representative, Curlex Excelsior erosion control blankets (manufactured by American Excelsior, or approved equal) shall be installed. A permanent vegetative cover will be established upon completion of construction of those areas that have been brought to finish-grade and to remain undisturbed.

- **DEWATERING**

Prevent surface water and subsurface or ground water from flowing into excavations and trenches. Pump out any accumulated water.

Do not allow water to accumulate in excavations or trenches. Remove water from all excavations immediately to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to the stability of subgrades and foundations. Furnish and maintain pumps, sumps, suction and discharge piping systems, and other system components necessary to convey the water away from the Site.

Convey water removed from excavations, and rain water, to collecting or run-off area. Cut and maintain temporary drainage ditches and provide other necessary diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.

Provide temporary controls to restrict the velocity of discharged water as necessary to prevent erosion and siltation of receiving areas.

M. CONSTRUCTION PRACTICES TO MINIMIZE STORMWATER CONTAMINATION

General:

Adequate measures shall be taken to minimize contaminant particles arising from the discharge of solid materials, including building materials, grading operations, and the reclamation and placement of pavement, during project construction, including but not limited to:

- Building materials, garbage, and debris shall be cleaned up daily and deposited into dumpsters, which will be periodically removed from the site and appropriately disposed of. All dumpsters and containers left on-site shall be covered and surrounded with silt fence in order to prevent contaminants from leaving the site. Silt fencing shall be inspected on a weekly basis.

- Dump trucks hauling material from the construction site will be covered with a tarpaulin.

- The paved street adjacent to the site entrance will be swept daily to remove excess mud, dirt, or rock tracked from the site.

- Petroleum products will be stored in tightly sealed containers that are clearly labeled.

- All vehicles on site will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage.

- All spills will be cleaned up immediately upon discovery. Spills large enough to reach the storm system will be reported to the National Response Center at 1-800-424-8802.

- Materials and equipment necessary for spill cleanup will be kept in the temporary material storage trailer onsite. Equipment will include, but not be limited to, brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, saw dust, and plastic and metal trash containers.

- All paint containers and curing compounds will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm system, but will be properly disposed according to the manufacturer’s instructions.

- Sanitary waste will be collected from portable units a minimum of two times a week to avoid overfilling. All sanitary waste units shall be surrounded by silt fence to prevent contaminants from leaving the site. Silt fencing shall be inspected on a weekly basis.

- Any asphalt substances used on-site will be applied according to the manufacturer's recommendation.

- Fertilizers will be stored in a covered shed and partially used bags will be transferred to a sealable bin to avoid spills and will be applied only in the minimum amounts recommended by the manufacturer and worked into the soil to limit exposure to stormwater.

- No disturbed area shall be left un-stabilized for longer than 14 days during the growing season.

- When erosion is likely to be a problem, grubbing operations shall be scheduled and performed such that grading operations and permanent erosion control features can follow within 24 hours thereafter.

- As work progresses, patch seeding shall be done as required on areas previously treated to maintain or establish protective cover.

- Drainage pipes and swales/ditches shall generally be constructed in a sequence from outlet to inlet in order to stabilize outlet areas and ditches before water is directed to the new installation or any portion thereof, unless conditions unique to the location warrant an alternative method.

Spill Control & Spill Response:

- For all hazardous materials stored on site, the manufacturer's recommended methods for spill clean up will be clearly posted. Site personnel will be made aware of the procedures, and the locations of the information and cleanup supplies.
- Appropriate cleanup materials and equipment will be maintained by the Contractor in the materials storage area on-site. As appropriate, equipment and materials may include items such as booms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for clean up purposes.
- All spills will be cleaned immediately after discovery and the materials disposed of properly.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- After a spill, a report will be prepared describing the spill, what caused it, and the cleanup measures taken. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring, as well as clean up instructions in the event of reoccurrences.
- The Contractor's site superintendent, responsible for day-to-day operations, will be the spill prevention and cleanup coordinator. The Contractor is responsible for ensuring that the site superintendent has had

appropriate training for hazardous materials handling, spill management, and cleanup.

- The Contractor's site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.
- If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.
- Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the Contractor at the site.
- If oil sheen is observed on surface water, action will be taken immediately to remove the material causing the sheen. The Contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.
- If a spill occurs the superintendent or the superintendent's designee will be responsible for completing the spill reporting form and for reporting the spill to the contacts listed below.
- Personnel with primary responsibility for spill response and clean up will receive training by the Contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

Spill Control Notification:

- A reportable spill is a quantity of five (5) gallons or more or any spill of oil which: (1) violates water quality standards, (2) produces a "sheen" on a surface water, or (3) causes a sludge or emulsion. This spill must be reported immediately to the agencies listed below.

- Any spill of oil or hazardous substance to waters of the state must be reported immediately by telephone to the following agencies:

  - 911 – Police, Fire and EMS
  - Village of Mamaroneck Engineering Department
    169 Mount Pleasant Avenue

Phone: (914) 777-7731

- Mamaroneck Fire Department
  123 Mamaroneck Avenue
  Phone: (914) 825-8777
- NYS Department of Environmental Conservation (NYSDEC)
  Spill Reporting Hotline
  (1800) 457–7362
- National Response Center: (1800) 424-8802
- Local Emergency Planning Committee (LEPC)
  Westchester County Office of Emergency Management
  200 Bradhurst Avenue
  Hawthorne, NY 10532
  (914) 864–5450
- Westchester County Department of Health (WCDOH)
  Spill Reporting Hotline
  (914) 813-5000
- U.S. Environmental Protection Agency (USEPA)
  EPCRA Information Hotline
  1(800) 535–0202
- U.S. Department of Labor and Occupational Safety and Health Administration (OSHA)
  Tarrytown, NY
  (914) 524–7510

N. STORMWATER MANAGEMENT FACILITIES MAINTENANCE PROGRAM

The following maintenance plan has been developed to maintain the proper function of all drainage and erosion and sediment control facilities:

- Erosion & Sediment Control Maintenance:

  During the construction of the project, the site erosion and sediment control measures as well as basin embankments and outlet structures will be inspected by the project superintendent once a week and/or within 24 hours following a rainstorm ½" or greater. Any repairs required shall be performed in a timely manner. All sediment removal and/or repairs will be followed within 24 hours by re-vegetation. Remove sediment and correct erosion by re-seed eroded areas and gullies within 7 days.

- General Stormwater Facilities Maintenance (Storm Sewer, Catch Basins/Drain Inlets, Manholes, Pre-treatment Device and Subsurface Infiltration System)

All stormwater facilities shall be inspected immediately after completion of construction, and then monthly for the first three (3) months following the completion of the Project. Within the first three (3) months, inspections shall immediately be performed following a large storm event (i.e. producing 1/2" (one-half inch) of rain or greater. Thereafter, these facilities shall be inspected as described as follows. Upon inspection, facilities shall be immediately maintained and/or cleaned as may be required. Any site areas exhibiting soil erosion of any kind shall be immediately restored and stabilized with vegetation, mulch or stone, depending on the area to be stabilized.

Upon each inspection, all visible debris including, but not limited to, twigs, leaf and forest litter shall be removed from the swales, overflow discharge points and frames and grates of drainage structures.

- Sumps − Catch Basin/Drain Inlets and Drain Manholes

  All catch basin/drain inlets and drain manholes with sumps have been designed to trap sediment prior to its transport to the infiltration practice and, ultimately, downstream. These sumps will require periodic inspection and maintenance to ensure that adequate depth is maintained within the sumps.

  All sumps shall be inspected once per month for the first three (3) months (after drainage system has been put into service). Thereafter, all sumps shall be inspected every four (4) months. The Owner, or their duly authorized representative, shall take measurements of the sump depth.

  If sediment has accumulated to 1/2 (one-half) the depth of the sump, all sediment shall be removed from the sump. Sediments can be removed with hand-labor or with a vacuum truck.

  The use of road salt shall be minimized for maintenance of roadway and driveway areas.

- Hydrodynamic Separator:

  The hydrodynamic separator (Aquaswirl unit) shall be inspected every six (6) months (Spring and Fall) for excess sediment accumulation. During dry weather conditions, accumulated sediments shall be vacuumed out when sediment has reached 1/2 (one-half) the capacity of the isolated sump, or when an appreciable level of hydrocarbons and trash has accumulated, whichever occurs first.

  Upon completion of construction, the Aquaswirl Unit should be inspected quarterly during the first year in order to develop an appropriate schedule of

maintenance. When the sediment pile is within 30 to 36 inches of the water surface, the system should be maintained. A vacuum truck shall be used to remove the accumulated sediment and debris. Refer to manufacturer's literature for detailed maintenance instructions.

- Stormwater Planter:

  The stormwater planters shall be inspected twice within the first six (6) months, and after each storm event greater than 0.5-inches (Spring and Fall) for excess sediment accumulation and for surface ponding. After the first year, the planter shall be inspected every four (4) months and after storm events greater than the 1-year storm.

  During dry weather conditions, all accumulated sediment shall be removed from the planter, and the existing topsoil shall be retiled to promote exfiltration of the stormwater thought the practice.

  Routine maintenance activities shall be performed weekly, and shall include running and replacing dead or dying vegetation, plant thinning, and erosion repair.

- FocalPoint Biofilter System:

  The Focalpoint Biofilter System shall be inspected twice within the first six (6) months, and after each storm event greater than 1.0-inches (Spring and Fall) for excess sediment accumulation and for surface ponding. After the first year, the planter shall be inspected every six (6) months and after storm events greater than the 1-year storm.

  During dry weather conditions, all accumulated sediment shall be removed from the planter, and the existing topsoil shall be retiled to promote exfiltration of the stormwater thought the practice.

  Routine maintenance activities shall be performed weekly and shall include running and replacing dead or dying vegetation, plant thinning, and erosion repair.

  All maintenance shall be completed in accordance with the manufacturer's guidelines outlined in the Operations & Maintenance manual located in *Section 8* of this report.

O. CONCLUSION:

The stormwater management plan proposed meets and exceeds all the requirements set forth by the Village of Mamaroneck and the New York State Department of Environmental Conservation (NYSDEC) for redevelopment projects. Design modification requirements that may occur during the approval process, will be performed and submitted for review to the Village of Mamaroneck.

3.) Extreme Precipitation Table

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New York
Location	
Longitude	73.743 degrees West
Latitude	40.950 degrees North
Elevation	0 feet
Date/Time	Fri, 19 Jan 2018 11:31:10 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.34	0.51	0.64	0.84	1.05	1.31	**1yr**	0.90	1.23	1.50	1.86	2.31	2.86	3.22	**1yr**	2.53	3.10	3.58	4.31	4.94	**1yr**
2yr	0.41	0.63	0.78	1.02	1.28	1.59	**2yr**	1.11	1.50	1.83	2.26	2.80	3.45	3.87	**2yr**	3.05	3.72	4.27	5.07	5.75	**2yr**
5yr	0.47	0.74	0.92	1.24	1.58	2.00	**5yr**	1.37	1.85	2.31	2.86	3.52	4.31	4.89	**5yr**	3.82	4.70	5.45	6.38	7.13	**5yr**
10yr	0.53	0.84	1.06	1.43	1.86	2.37	**10yr**	1.61	2.18	2.75	3.41	4.19	5.11	5.84	**10yr**	4.53	5.62	6.56	7.59	8.38	**10yr**
25yr	0.62	0.98	1.25	1.73	2.31	2.97	**25yr**	1.99	2.69	3.45	4.30	5.28	6.41	7.40	**25yr**	5.67	7.11	8.37	9.56	10.39	**25yr**
50yr	0.70	1.13	1.45	2.02	2.72	3.53	**50yr**	2.35	3.17	4.11	5.11	6.27	7.60	8.85	**50yr**	6.73	8.51	10.08	11.38	12.23	**50yr**
100yr	0.80	1.29	1.66	2.36	3.21	4.19	**100yr**	2.77	3.73	4.89	6.09	7.46	9.02	10.58	**100yr**	7.99	10.18	12.13	13.55	14.41	**100yr**
200yr	0.91	1.48	1.91	2.75	3.79	4.98	**200yr**	3.27	4.40	5.82	7.26	8.88	10.72	12.66	**200yr**	9.48	12.18	14.62	16.13	16.97	**200yr**
500yr	1.09	1.79	2.33	3.38	4.73	6.24	**500yr**	4.08	5.48	7.32	9.14	11.18	13.47	16.06	**500yr**	11.92	15.45	18.71	20.33	21.08	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.25	0.39	0.47	0.63	0.78	0.88	**1yr**	0.67	0.86	1.27	1.54	1.96	2.58	2.97	**1yr**	2.29	2.86	3.31	3.97	4.58	**1yr**
2yr	0.39	0.61	0.75	1.01	1.25	1.50	**2yr**	1.08	1.47	1.71	2.19	2.73	3.35	3.76	**2yr**	2.97	3.61	4.14	4.93	5.61	**2yr**
5yr	0.44	0.68	0.84	1.16	1.47	1.79	**5yr**	1.27	1.75	2.02	2.57	3.20	4.03	4.54	**5yr**	3.56	4.37	5.06	5.95	6.70	**5yr**
10yr	0.49	0.75	0.93	1.31	1.69	2.04	**10yr**	1.46	1.99	2.29	2.91	3.58	4.62	5.21	**10yr**	4.09	5.01	5.90	6.82	7.63	**10yr**
25yr	0.56	0.85	1.06	1.52	1.99	2.42	**25yr**	1.72	2.36	2.71	3.42	4.15	5.53	6.22	**25yr**	4.90	5.98	7.22	8.17	9.07	**25yr**
50yr	0.62	0.94	1.17	1.69	2.27	2.73	**50yr**	1.96	2.67	3.09	3.89	4.59	6.32	7.11	**50yr**	5.60	6.83	8.44	9.34	10.35	**50yr**
100yr	0.69	1.05	1.31	1.90	2.60	3.09	**100yr**	2.24	3.02	3.54	4.43	5.12	7.23	8.11	**100yr**	6.40	7.80	9.85	10.69	11.80	**100yr**
200yr	0.78	1.17	1.48	2.15	3.00	3.52	**200yr**	2.59	3.44	4.06	5.05	5.68	8.27	9.27	**200yr**	7.32	8.91	11.52	12.23	13.47	**200yr**
500yr	0.91	1.36	1.75	2.54	3.62	4.22	**500yr**	3.12	4.12	4.88	6.08	8.37	9.87	11.05	**500yr**	8.73	10.63	14.20	14.60	16.05	**500yr**

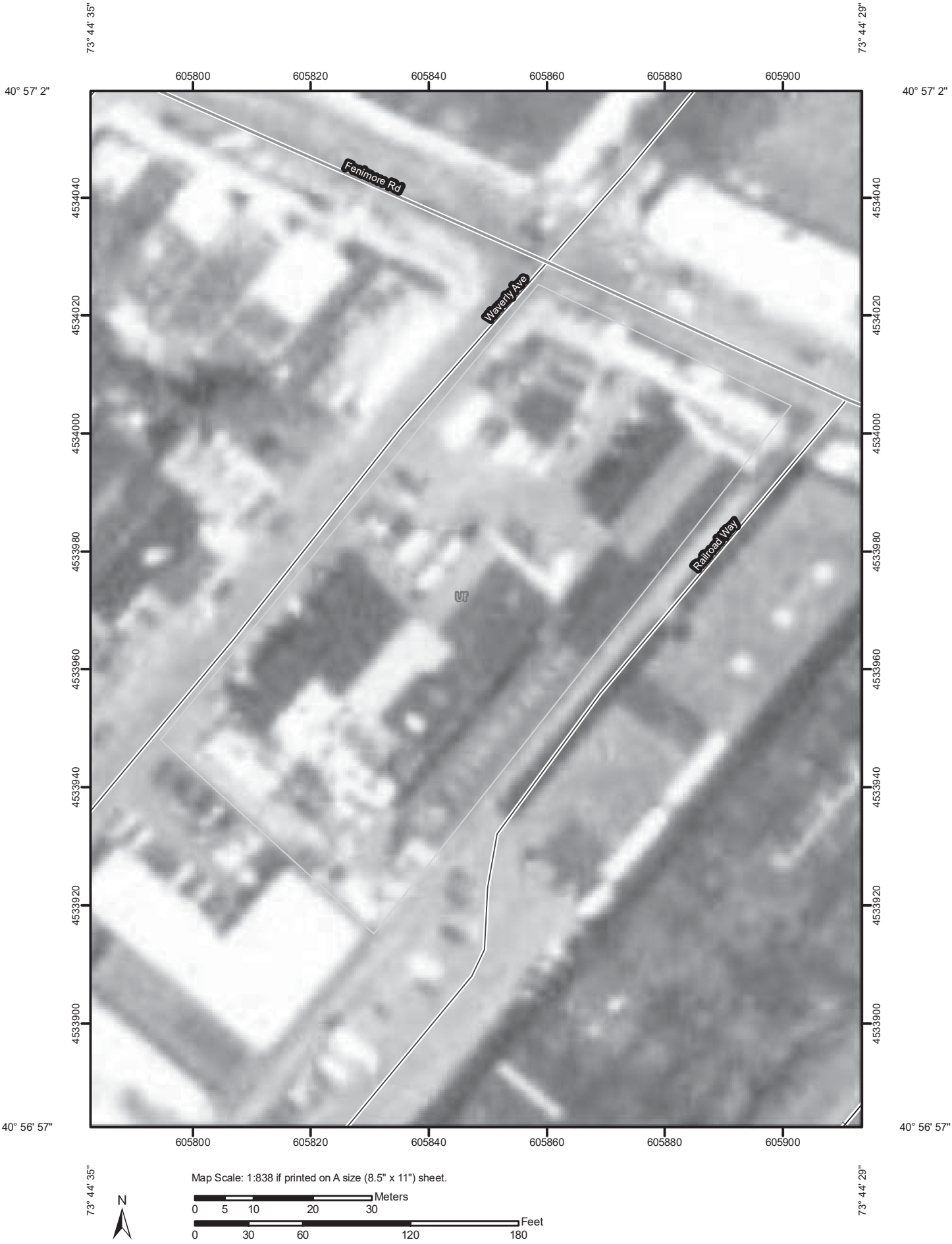
Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.37	0.58	0.71	0.95	1.17	1.38	**1yr**	1.01	1.35	1.63	2.14	2.61	3.13	3.48	**1yr**	2.77	3.35	3.85	4.63	5.26	**1yr**
2yr	0.42	0.65	0.80	1.08	1.33	1.63	**2yr**	1.15	1.59	1.90	2.38	3.01	3.55	4.03	**2yr**	3.15	3.87	4.40	5.25	5.93	**2yr**
5yr	0.51	0.78	0.97	1.33	1.70	1.99	**5yr**	1.46	1.95	2.32	3.03	3.75	4.61	5.23	**5yr**	4.08	5.03	5.85	6.83	7.56	**5yr**
10yr	0.60	0.92	1.14	1.59	2.05	2.38	**10yr**	1.77	2.33	2.81	3.67	4.53	5.63	6.42	**10yr**	4.98	6.17	7.25	8.37	9.12	**10yr**
25yr	0.74	1.12	1.40	2.00	2.63	3.01	**25yr**	2.27	2.94	3.64	4.74	5.83	7.31	8.41	**25yr**	6.47	8.09	9.64	10.99	11.68	**25yr**
50yr	0.86	1.32	1.64	2.35	3.17	3.61	**50yr**	2.73	3.52	4.42	5.76	7.06	8.95	10.32	**50yr**	7.92	9.92	11.95	13.50	14.09	**50yr**
100yr	1.02	1.54	1.93	2.79	3.82	4.31	**100yr**	3.30	4.21	5.36	7.00	8.55	10.93	12.68	**100yr**	9.68	12.20	14.82	16.57	17.01	**100yr**
200yr	1.20	1.80	2.29	3.31	4.62	5.16	**200yr**	3.98	5.04	6.49	8.49	10.36	13.35	15.61	**200yr**	11.82	15.01	18.37	20.38	20.52	**200yr**
500yr	1.50	2.23	2.87	4.16	5.92	6.52	**500yr**	5.11	6.37	8.38	10.97	13.30	17.43	20.55	**500yr**	15.42	19.76	24.41	26.80	26.31	**500yr**

Powered by ACIS Northeast Regional Climate Center

4.) Soils Maps & Soils Data

Soil Map—Westchester County, New York
(416 Waverly Avenue)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:838 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 4, Dec 14, 2006

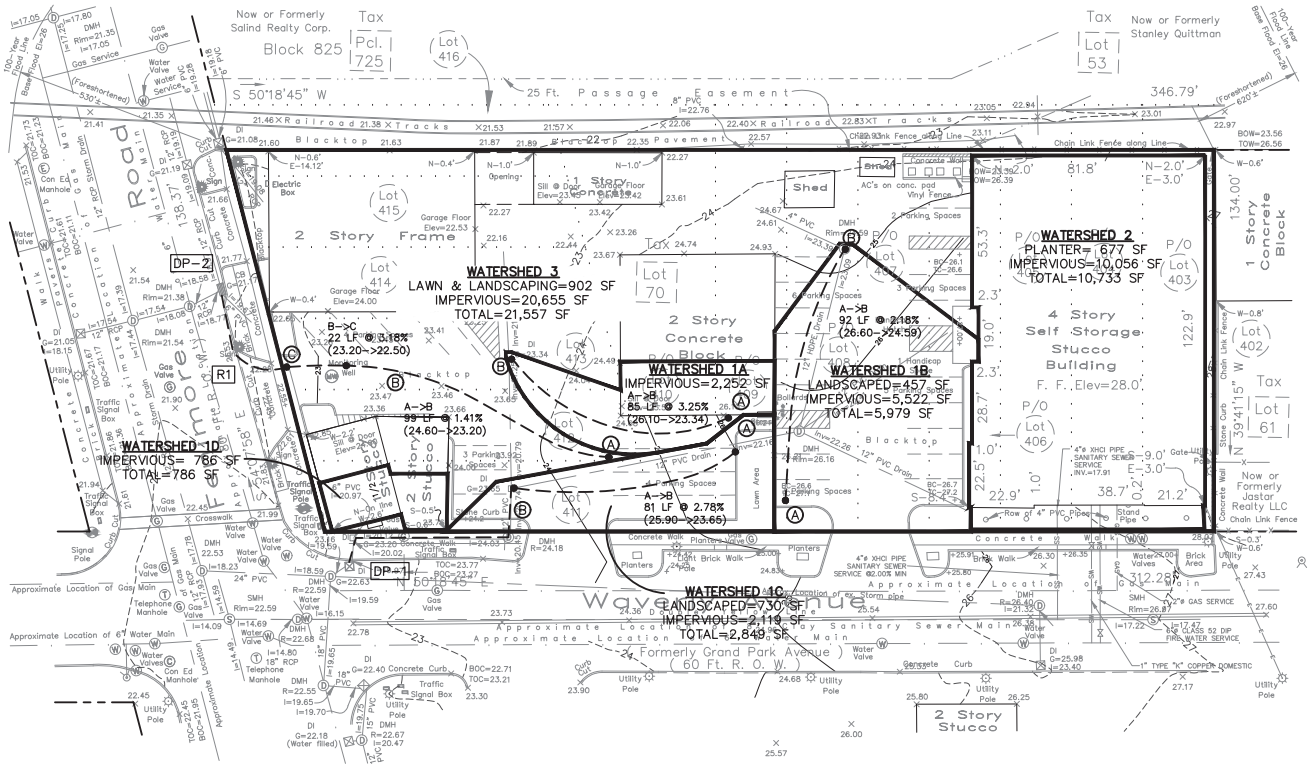
Date(s) aerial images were photographed: 7/31/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Westchester County, New York (NY119)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Uf	Urban land	1.3	100.0%
Totals for Area of Interest		**1.3**	**100.0%**

5.) Watershed Maps



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

ANY ALTERATIONS OR REVISIONS OF THESE PLANS, UNLESS DONE BY OR UNDER THE DIRECTION OF THE NYS LICENSED AND REGISTERED ENGINEER THAT PREPARED THEM, IS A VIOLATION OF THE NYS EDUCATION LAW.

No.	Description	Date
1	REVISED PER TOWN COMMENTS	1-14-19

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

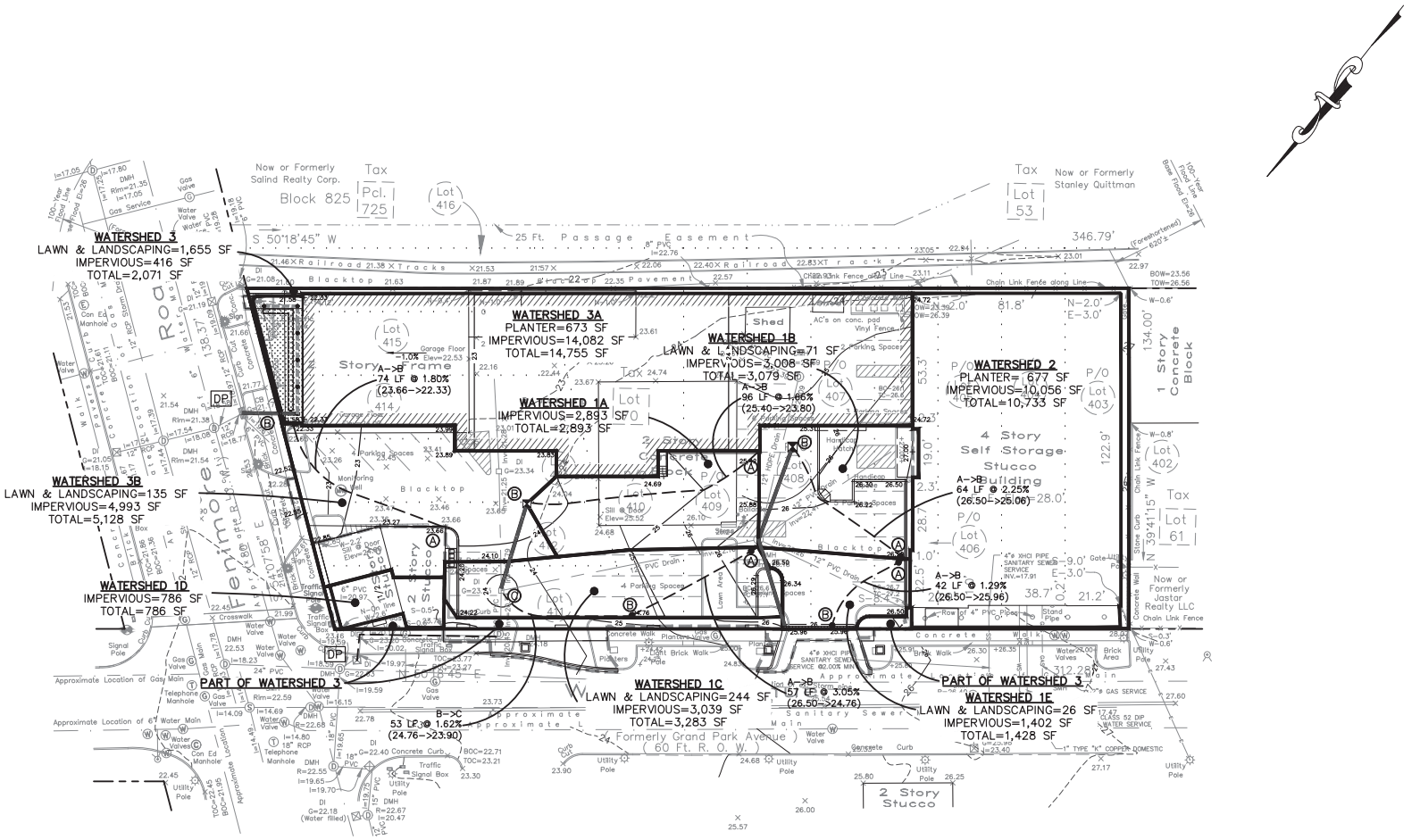
PROJECT:

SELF STORAGE BUILDING ADDITION
560 FENIMORE ROAD
VILLAGE OF MAMARONECK
WESTCHESTER COUNTY – NEW YORK

WATERSHED MAP – EXISTING

HEC HUDSON ENGINEERING & CONSULTING, P.C.
45 Knollwood Road - Suite 201
Elmsford, New York 10523
T: 914-909-0430
F: 914-960-2086

Date: 2/8/18 Sheet 1
Scale: 1" = 20' of 2
Designed By: D.C.
Checked By: M.S.
Sheet No. WS-E



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

ANY ALTERATIONS OR REVISIONS OF THESE PLANS, UNLESS DONE BY OR UNDER THE DIRECTION OF THE NYS LICENSED AND REGISTERED ENGINEER THAT PREPARED THEM, IS A VIOLATION OF THE NYS EDUCATION LAW.

No.	Description	Date
1	REVISED PER TOWN COMMENTS	1-14-19

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

PROJECT:

SELF STORAGE BUILDING ADDITION
560 FENIMORE ROAD
VILLAGE OF MAMARONECK
WESTCHESTER COUNTY – NEW YORK

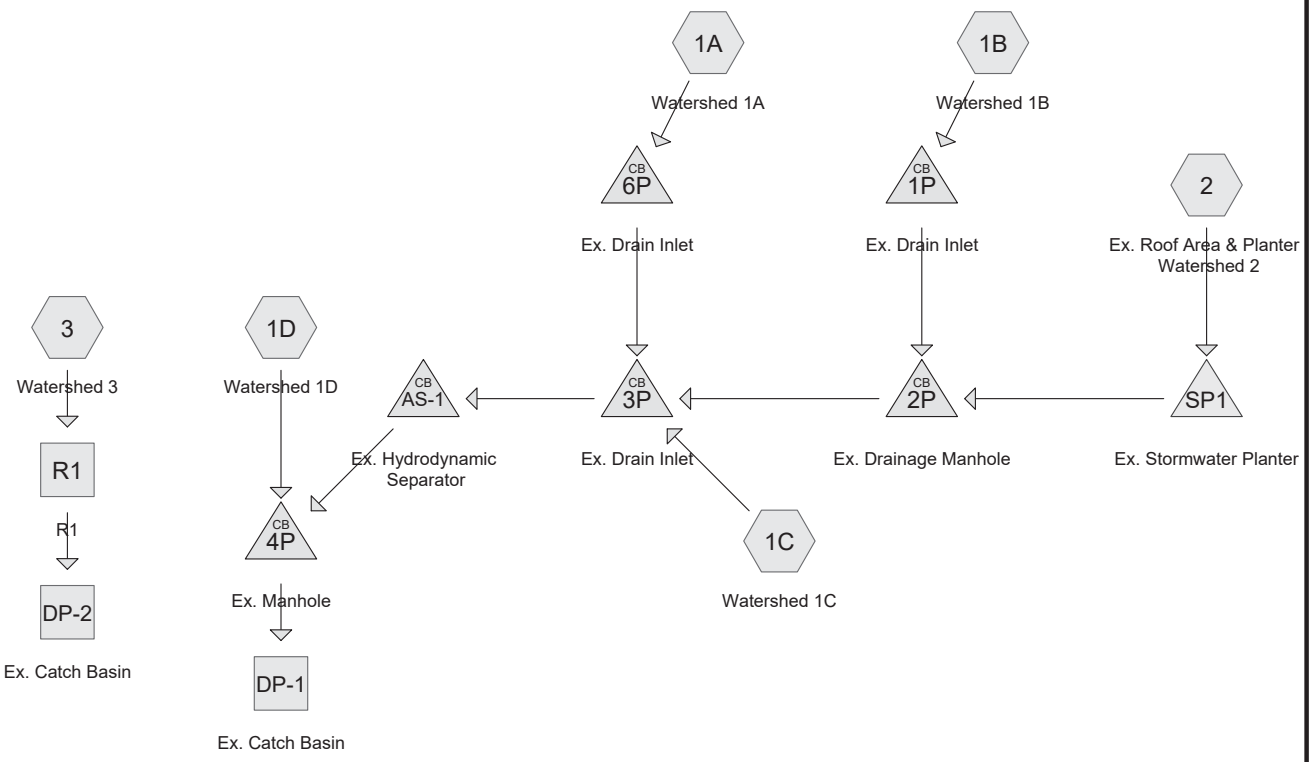
WATERSHED MAP – PROPOSED

HEC HUDSON ENGINEERING & CONSULTING, P.C.
45 Knollwood Road - Suite 201
Elmsford, New York 10523
T: 914-909-0430
F: 914-960-2086

Date:	2/8/18
Scale:	1" = 20'
Designed By:	D.C.
Checked By:	M.S.
Sheet No.	WS-P

Sheet 2 of 2

6.) Pre-Developed Analysis of the 1-, 10-, and 25-year Extreme Storm Events



Subcat Reach Pond Link

Routing Diagram for Existing Condition
Prepared by Hudson Engineering & Consulting

Summary for Subcatchment 1A: Watershed 1A

Runoff = 0.17 cfs @ 12.01 hrs, Volume= 493 cf, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	2,252	98	Parking Lot & part of building
	2,252		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	85	0.0325	1.68		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1B: Watershed 1B

Runoff = 0.44 cfs @ 12.02 hrs, Volume= 1,255 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	457	79	50-75% Grass cover, Fair, HSG C
*	5,522	98	Parking Lot
	5,979	97	Weighted Average
	457		7.64% Pervious Area
	5,522		92.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	92	0.0218	1.45		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1C: Watershed 1C

Runoff = 0.19 cfs @ 12.01 hrs, Volume= 503 cf, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	730	79	50-75% Grass cover, Fair, HSG C
*	2,119	98	Parking Lot
	2,849	93	Weighted Average
	730		25.62% Pervious Area
	2,119		74.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	81	0.0277	1.56		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1D: Watershed 1D

Runoff = 0.06 cfs @ 12.01 hrs, Volume= 172 cf, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	786	98	
	786		100.00% Impervious Area

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

Summary for Subcatchment 2: Ex. Roof Area & Planter Watershed 2

Runoff = 0.80 cfs @ 12.01 hrs, Volume= 2,254 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	10,056	98	Roof
*	677	79	Planter
	10,733	97	Weighted Average
	677		6.31% Pervious Area
	10,056		93.69% Impervious Area

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

Summary for Subcatchment 3: Watershed 3

Runoff = 1.58 cfs @ 12.02 hrs, Volume= 4,526 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	902	79	50-75% Grass cover, Fair, HSG C
*	20,655	98	Parking Lot & Buildings
	21,557	97	Weighted Average
	902		4.18% Pervious Area
	20,655		95.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	99	0.0141	1.24		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"
0.1	22	0.0318	3.62		**Shallow Concentrated Flow, B->C** Paved Kv= 20.3 fps
1.4	121	Total			

Summary for Reach DP-1: Ex. Catch Basin

Inflow Area = 22,599 sf, 91.75% Impervious, Inflow Depth = 2.48" for 1-Year event
Inflow = 0.89 cfs @ 12.01 hrs, Volume= 4,678 cf
Outflow = 0.89 cfs @ 12.01 hrs, Volume= 4,678 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach DP-2: Ex. Catch Basin

Inflow Area = 21,557 sf, 95.82% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 1.58 cfs @ 12.02 hrs, Volume= 4,526 cf
Outflow = 1.58 cfs @ 12.02 hrs, Volume= 4,526 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

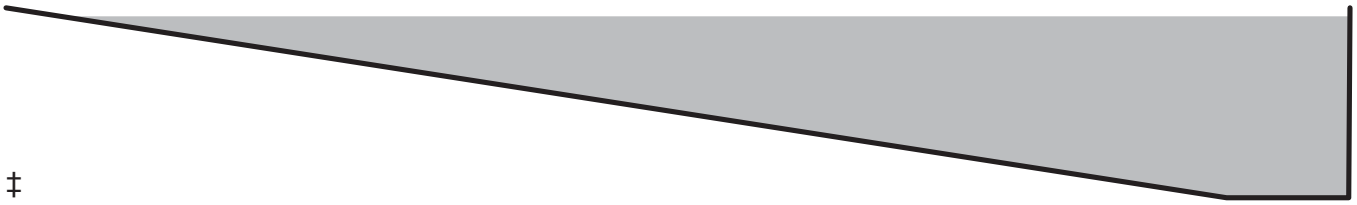
Summary for Reach R1: R1

Inflow Area = 21,557 sf, 95.82% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 1.58 cfs @ 12.02 hrs, Volume= 4,526 cf
Outflow = 1.58 cfs @ 12.02 hrs, Volume= 4,526 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.86 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.01 fps, Avg. Travel Time= 0.7 min

Peak Storage= 23 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 0.10' Flow Area= 0.6 sf, Capacity= 1.77 cfs

1.00' x 0.10' deep channel, n= 0.013 Asphalt, smooth
Side Slope Z-value= 100.0 0.1 '/' Top Width= 11.01'
Length= 41.0' Slope= 0.0324 '/'
Inlet Invert= 22.50', Outlet Invert= 21.17'



‡

Summary for Pond 1P: Ex. Drain Inlet

Inflow Area = 5,979 sf, 92.36% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 0.44 cfs @ 12.02 hrs, Volume= 1,255 cf
Outflow = 0.44 cfs @ 12.02 hrs, Volume= 1,255 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.44 cfs @ 12.02 hrs, Volume= 1,255 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 23.47' @ 12.02 hrs
Flood Elev= 24.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.09'	**12.0" Round 12" HDPE** L= 65.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.09' / 22.26' S= 0.0127 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.44 cfs @ 12.02 hrs HW=23.46' TW=22.55' (Dynamic Tailwater)
↑—**1=12" HDPE** (Inlet Controls 0.44 cfs @ 1.64 fps)

Summary for Pond 2P: Ex. Drainage Manhole

Inflow Area = 16,712 sf, 93.21% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 0.47 cfs @ 12.02 hrs, Volume= 3,509 cf
Outflow = 0.47 cfs @ 12.02 hrs, Volume= 3,509 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.47 cfs @ 12.02 hrs, Volume= 3,509 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 22.55' @ 12.02 hrs
Flood Elev= 26.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.16'	**12.0" Round 12" PVC** L= 101.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.16' / 20.74' S= 0.0140 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.47 cfs @ 12.02 hrs HW=22.55' TW=21.27' (Dynamic Tailwater)
↑—**1=12" PVC** (Inlet Controls 0.47 cfs @ 1.67 fps)

Summary for Pond 3P: Ex. Drain Inlet

Inflow Area = 21,813 sf, 91.45% Impervious, Inflow Depth = 2.48" for 1-Year event
Inflow = 0.84 cfs @ 12.01 hrs, Volume= 4,506 cf
Outflow = 0.84 cfs @ 12.01 hrs, Volume= 4,506 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 12.01 hrs, Volume= 4,506 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 21.27' @ 12.01 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**12.0" Round 12" PVC** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.45' S= 0.0207 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.83 cfs @ 12.01 hrs HW=21.27' TW=20.97' (Dynamic Tailwater)
↑—**1=12" PVC** (Inlet Controls 0.83 cfs @ 1.96 fps)

Summary for Pond 4P: Ex. Manhole

Inflow Area = 22,599 sf, 91.75% Impervious, Inflow Depth = 2.48" for 1-Year event
Inflow = 0.89 cfs @ 12.01 hrs, Volume= 4,678 cf
Outflow = 0.89 cfs @ 12.01 hrs, Volume= 4,678 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.89 cfs @ 12.01 hrs, Volume= 4,678 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 20.59' @ 12.01 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.02'	**15.0" Round Ex. 15" HDPE** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.02' / 19.97' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.89 cfs @ 12.01 hrs HW=20.59' TW=0.00' (Dynamic Tailwater)
↑—**1=Ex. 15" HDPE** (Barrel Controls 0.89 cfs @ 2.39 fps)

Summary for Pond 6P: Ex. Drain Inlet

Inflow Area = 2,252 sf,100.00% Impervious, Inflow Depth = 2.63" for 1-Year event
Inflow = 0.17 cfs @ 12.01 hrs, Volume= 493 cf
Outflow = 0.17 cfs @ 12.01 hrs, Volume= 493 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 12.01 hrs, Volume= 493 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 21.49' @ 12.02 hrs
Flood Elev= 23.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.25'	**12.0" Round 12" PVC** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.25' / 20.79' S= 0.0102 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.17 cfs @ 12.01 hrs HW=21.49' TW=21.27' (Dynamic Tailwater)
↑—**1=12" PVC** (Outlet Controls 0.17 cfs @ 1.76 fps)

Summary for Pond AS-1: Ex. Hydrodynamic Separator

Inflow Area = 21,813 sf, 91.45% Impervious, Inflow Depth = 2.48" for 1-Year event
Inflow = 0.84 cfs @ 12.01 hrs, Volume= 4,506 cf
Outflow = 0.84 cfs @ 12.01 hrs, Volume= 4,506 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 12.01 hrs, Volume= 4,506 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 20.97' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.45'	**15.0" Round Ex. 15" RCP** L= 54.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.45' / 20.12' S= 0.0061 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.82 cfs @ 12.01 hrs HW=20.97' TW=20.59' (Dynamic Tailwater)
↑—**1=Ex. 15" RCP** (Outlet Controls 0.82 cfs @ 2.50 fps)

Summary for Pond SP1: Ex. Stormwater Planter

Inflow Area = 10,733 sf, 93.69% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 0.80 cfs @ 12.01 hrs, Volume= 2,254 cf
Outflow = 0.20 cfs @ 12.33 hrs, Volume= 2,254 cf, Atten= 75%, Lag= 18.7 min
Primary = 0.20 cfs @ 12.33 hrs, Volume= 2,254 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 27.77' @ 12.33 hrs Surf.Area= 677 sf Storage= 861 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 209.2 min (973.5 - 764.3)

Volume	Invert	Avail.Storage	Storage Description
#1	26.50'	1,016 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.50	677	0	0
28.00	677	1,016	1,016

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	**12.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.50' / 21.33' S= 0.0339 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	27.75'	**6.0" Horiz. Orifice/Grate X 10.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	26.50'	**2.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.20 cfs @ 12.33 hrs HW=27.77' TW=22.47' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.20 cfs of 5.80 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 0.17 cfs @ 0.48 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.03 cfs)

Summary for Subcatchment 1A: Watershed 1A

Runoff = 0.31 cfs @ 12.01 hrs, Volume= 914 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
*	2,252	98	Parking Lot & part of building
	2,252		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	85	0.0325	1.68		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1B: Watershed 1B

Runoff = 0.81 cfs @ 12.02 hrs, Volume= 2,370 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	457	79	50-75% Grass cover, Fair, HSG C
*	5,522	98	Parking Lot
	5,979	97	Weighted Average
	457		7.64% Pervious Area
	5,522		92.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	92	0.0218	1.45		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1C: Watershed 1C

Runoff = 0.37 cfs @ 12.01 hrs, Volume= 1,022 cf, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	730	79	50-75% Grass cover, Fair, HSG C
*	2,119	98	Parking Lot
	2,849	93	Weighted Average
	730		25.62% Pervious Area
	2,119		74.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	81	0.0277	1.56		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1D: Watershed 1D

Runoff = 0.11 cfs @ 12.01 hrs, Volume= 319 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
*	786	98	
	786		100.00% Impervious Area

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

Summary for Subcatchment 2: Ex. Roof Area & Planter Watershed 2

Runoff = 1.46 cfs @ 12.01 hrs, Volume= 4,254 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
*	10,056	98	Roof
*	677	79	Planter
	10,733	97	Weighted Average
	677		6.31% Pervious Area
	10,056		93.69% Impervious Area

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

Summary for Subcatchment 3: Watershed 3

Runoff = 2.90 cfs @ 12.02 hrs, Volume= 8,545 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	902	79	50-75% Grass cover, Fair, HSG C
*	20,655	98	Parking Lot & Buildings
	21,557	97	Weighted Average
	902		4.18% Pervious Area
	20,655		95.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	99	0.0141	1.24		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"
0.1	22	0.0318	3.62		**Shallow Concentrated Flow, B->C** Paved Kv= 20.3 fps
1.4	121	Total			

Summary for Reach DP-1: Ex. Catch Basin

Inflow Area = 22,599 sf, 91.75% Impervious, Inflow Depth = 4.72" for 10-Year event
Inflow = 3.02 cfs @ 12.02 hrs, Volume= 8,881 cf
Outflow = 3.02 cfs @ 12.02 hrs, Volume= 8,881 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach DP-2: Ex. Catch Basin

Inflow Area = 21,557 sf, 95.82% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 2.89 cfs @ 12.02 hrs, Volume= 8,545 cf
Outflow = 2.89 cfs @ 12.02 hrs, Volume= 8,545 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

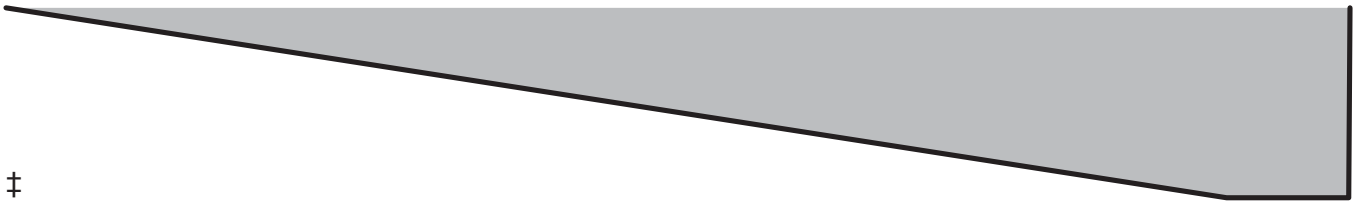
Summary for Reach R1: R1

Inflow Area = 21,557 sf, 95.82% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 2.90 cfs @ 12.02 hrs, Volume= 8,545 cf
Outflow = 2.89 cfs @ 12.02 hrs, Volume= 8,545 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.26 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 0.6 min

Peak Storage= 36 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.10' Flow Area= 0.6 sf, Capacity= 1.77 cfs

1.00' x 0.10' deep channel, n= 0.013 Asphalt, smooth
Side Slope Z-value= 100.0 0.1 '/' Top Width= 11.01'
Length= 41.0' Slope= 0.0324 '/'
Inlet Invert= 22.50', Outlet Invert= 21.17'



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Summary for Pond 1P: Ex. Drain Inlet

Inflow Area = 5,979 sf, 92.36% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 0.81 cfs @ 12.02 hrs, Volume= 2,370 cf
Outflow = 0.81 cfs @ 12.02 hrs, Volume= 2,370 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.81 cfs @ 12.02 hrs, Volume= 2,370 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 23.65' @ 12.02 hrs
Flood Elev= 24.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.09'	**12.0" Round 12" HDPE** L= 65.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.09' / 22.26' S= 0.0127 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.77 cfs @ 12.02 hrs HW=23.64' TW=23.21' (Dynamic Tailwater)
↑—**1=12" HDPE** (Outlet Controls 0.77 cfs @ 2.52 fps)

Summary for Pond 2P: Ex. Drainage Manhole

Inflow Area = 16,712 sf, 93.21% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 2.24 cfs @ 12.02 hrs, Volume= 6,625 cf
Outflow = 2.24 cfs @ 12.02 hrs, Volume= 6,625 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.24 cfs @ 12.02 hrs, Volume= 6,625 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 23.22' @ 12.02 hrs
Flood Elev= 26.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.16'	**12.0" Round 12" PVC** L= 101.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.16' / 20.74' S= 0.0140 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.24 cfs @ 12.02 hrs HW=23.22' TW=22.54' (Dynamic Tailwater)
↑—**1=12" PVC** (Inlet Controls 2.24 cfs @ 2.85 fps)

Summary for Pond 3P: Ex. Drain Inlet

Inflow Area = 21,813 sf, 91.45% Impervious, Inflow Depth = 4.71" for 10-Year event
Inflow = 2.91 cfs @ 12.02 hrs, Volume= 8,562 cf
Outflow = 2.91 cfs @ 12.02 hrs, Volume= 8,562 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.91 cfs @ 12.02 hrs, Volume= 8,562 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 22.55' @ 12.02 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**12.0" Round 12" PVC** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.45' S= 0.0207 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.85 cfs @ 12.02 hrs HW=22.53' TW=21.62' (Dynamic Tailwater)
↑—**1=12" PVC** (Inlet Controls 2.85 cfs @ 3.63 fps)

Summary for Pond 4P: Ex. Manhole

Inflow Area = 22,599 sf, 91.75% Impervious, Inflow Depth = 4.72" for 10-Year event
Inflow = 3.02 cfs @ 12.02 hrs, Volume= 8,881 cf
Outflow = 3.02 cfs @ 12.02 hrs, Volume= 8,881 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.02 cfs @ 12.02 hrs, Volume= 8,881 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 21.19' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.02'	**15.0" Round Ex. 15" HDPE** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.02' / 19.97' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.01 cfs @ 12.02 hrs HW=21.19' TW=0.00' (Dynamic Tailwater)
↑—**1=Ex. 15" HDPE** (Barrel Controls 3.01 cfs @ 3.28 fps)

Summary for Pond 6P: Ex. Drain Inlet

Inflow Area = 2,252 sf,100.00% Impervious, Inflow Depth = 4.87" for 10-Year event
Inflow = 0.31 cfs @ 12.01 hrs, Volume= 914 cf
Outflow = 0.31 cfs @ 12.01 hrs, Volume= 914 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.31 cfs @ 12.01 hrs, Volume= 914 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 22.55' @ 12.03 hrs
Flood Elev= 23.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.25'	**12.0" Round 12" PVC** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.25' / 20.79' S= 0.0102 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=22.34' TW=22.47' (Dynamic Tailwater)
↑—**1=12" PVC** (Controls 0.00 cfs)

Summary for Pond AS-1: Ex. Hydrodynamic Separator

Inflow Area = 21,813 sf, 91.45% Impervious, Inflow Depth = 4.71" for 10-Year event
Inflow = 2.91 cfs @ 12.02 hrs, Volume= 8,562 cf
Outflow = 2.91 cfs @ 12.02 hrs, Volume= 8,562 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.91 cfs @ 12.02 hrs, Volume= 8,562 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 21.63' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.45'	**15.0" Round Ex. 15" RCP** L= 54.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.45' / 20.12' S= 0.0061 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.85 cfs @ 12.02 hrs HW=21.62' TW=21.19' (Dynamic Tailwater)
↑—**1=Ex. 15" RCP** (Outlet Controls 2.85 cfs @ 3.10 fps)

Summary for Pond SP1: Ex. Stormwater Planter

Inflow Area = 10,733 sf, 93.69% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 1.46 cfs @ 12.01 hrs, Volume= 4,254 cf
Outflow = 1.43 cfs @ 12.02 hrs, Volume= 4,255 cf, Atten= 2%, Lag= 0.5 min
Primary = 1.43 cfs @ 12.02 hrs, Volume= 4,255 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 27.84' @ 12.02 hrs Surf.Area= 677 sf Storage= 908 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 150.0 min (900.7 - 750.7)

Volume	Invert	Avail.Storage	Storage Description
#1	26.50'	1,016 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.50	677	0	0
28.00	677	1,016	1,016

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	**12.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.50' / 21.33' S= 0.0339 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	27.75'	**6.0" Horiz. Orifice/Grate X 10.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	26.50'	**2.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=1.43 cfs @ 12.02 hrs HW=27.84' TW=23.22' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.43 cfs of 5.85 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 1.40 cfs @ 0.98 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.03 cfs)

Summary for Subcatchment 1A: Watershed 1A

Runoff = 0.39 cfs @ 12.01 hrs, Volume= 1,158 cf, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	2,252	98	Parking Lot & part of building
	2,252		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	85	0.0325	1.68		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1B: Watershed 1B

Runoff = 1.02 cfs @ 12.02 hrs, Volume= 3,016 cf, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	457	79	50-75% Grass cover, Fair, HSG C
*	5,522	98	Parking Lot
	5,979	97	Weighted Average
	457		7.64% Pervious Area
	5,522		92.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	92	0.0218	1.45		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1C: Watershed 1C

Runoff = 0.47 cfs @ 12.01 hrs, Volume= 1,327 cf, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	730	79	50-75% Grass cover, Fair, HSG C
*	2,119	98	Parking Lot
	2,849	93	Weighted Average
	730		25.62% Pervious Area
	2,119		74.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	81	0.0277	1.56		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1D: Watershed 1D

Runoff = 0.14 cfs @ 12.01 hrs, Volume= 404 cf, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	786	98	
	786		100.00% Impervious Area

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

Summary for Subcatchment 2: Ex. Roof Area & Planter Watershed 2

Runoff = 1.84 cfs @ 12.01 hrs, Volume= 5,414 cf, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	10,056	98	Roof
*	677	79	Planter
	10,733	97	Weighted Average
	677		6.31% Pervious Area
	10,056		93.69% Impervious Area

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

Summary for Subcatchment 3: Watershed 3

Runoff = 3.65 cfs @ 12.02 hrs, Volume= 10,874 cf, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	902	79	50-75% Grass cover, Fair, HSG C
*	20,655	98	Parking Lot & Buildings
	21,557	97	Weighted Average
	902		4.18% Pervious Area
	20,655		95.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	99	0.0141	1.24		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"
0.1	22	0.0318	3.62		**Shallow Concentrated Flow, B->C** Paved Kv= 20.3 fps
1.4	121	Total			

Summary for Reach DP-1: Ex. Catch Basin

Inflow Area = 22,599 sf, 91.75% Impervious, Inflow Depth = 6.01" for 25-Year event
Inflow = 3.81 cfs @ 12.02 hrs, Volume= 11,319 cf
Outflow = 3.81 cfs @ 12.02 hrs, Volume= 11,319 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach DP-2: Ex. Catch Basin

Inflow Area = 21,557 sf, 95.82% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 3.64 cfs @ 12.02 hrs, Volume= 10,874 cf
Outflow = 3.64 cfs @ 12.02 hrs, Volume= 10,874 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

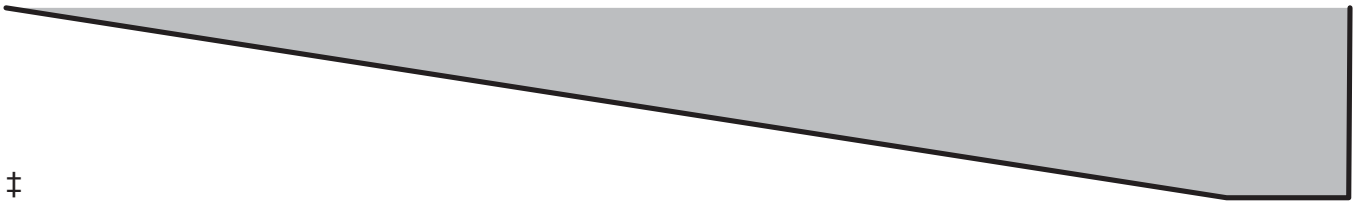
Summary for Reach R1: R1

Inflow Area = 21,557 sf, 95.82% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 3.65 cfs @ 12.02 hrs, Volume= 10,874 cf
Outflow = 3.64 cfs @ 12.02 hrs, Volume= 10,874 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.38 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.28 fps, Avg. Travel Time= 0.5 min

Peak Storage= 44 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 0.10' Flow Area= 0.6 sf, Capacity= 1.77 cfs

1.00' x 0.10' deep channel, n= 0.013 Asphalt, smooth
Side Slope Z-value= 100.0 0.1 '/' Top Width= 11.01'
Length= 41.0' Slope= 0.0324 '/'
Inlet Invert= 22.50', Outlet Invert= 21.17'



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Summary for Pond 1P: Ex. Drain Inlet

Inflow Area = 5,979 sf, 92.36% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 1.02 cfs @ 12.02 hrs, Volume= 3,016 cf
Outflow = 1.02 cfs @ 12.02 hrs, Volume= 3,016 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.02 cfs @ 12.02 hrs, Volume= 3,016 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 24.38' @ 12.04 hrs
Flood Elev= 24.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.09'	**12.0" Round 12" HDPE** L= 65.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.09' / 22.26' S= 0.0127 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.02 hrs HW=23.93' TW=24.04' (Dynamic Tailwater)
↑—**1=12" HDPE** (Controls 0.00 cfs)

Summary for Pond 2P: Ex. Drainage Manhole

Inflow Area = 16,712 sf, 93.21% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 2.82 cfs @ 12.02 hrs, Volume= 8,430 cf
Outflow = 2.82 cfs @ 12.02 hrs, Volume= 8,430 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.82 cfs @ 12.02 hrs, Volume= 8,430 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 24.29' @ 12.03 hrs
Flood Elev= 26.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.16'	**12.0" Round 12" PVC** L= 101.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.16' / 20.74' S= 0.0140 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.53 cfs @ 12.02 hrs HW=24.16' TW=23.44' (Dynamic Tailwater)
↑—**1=12" PVC** (Inlet Controls 2.53 cfs @ 3.22 fps)

Summary for Pond 3P: Ex. Drain Inlet

Inflow Area = 21,813 sf, 91.45% Impervious, Inflow Depth = 6.00" for 25-Year event
Inflow = 3.68 cfs @ 12.02 hrs, Volume= 10,915 cf
Outflow = 3.68 cfs @ 12.02 hrs, Volume= 10,915 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.68 cfs @ 12.02 hrs, Volume= 10,915 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 23.45' @ 12.02 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**12.0" Round 12" PVC** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.45' S= 0.0207 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.56 cfs @ 12.02 hrs HW=23.40' TW=21.98' (Dynamic Tailwater)
↑—**1=12" PVC** (Inlet Controls 3.56 cfs @ 4.53 fps)

Summary for Pond 4P: Ex. Manhole

Inflow Area = 22,599 sf, 91.75% Impervious, Inflow Depth = 6.01" for 25-Year event
Inflow = 3.81 cfs @ 12.02 hrs, Volume= 11,319 cf
Outflow = 3.81 cfs @ 12.02 hrs, Volume= 11,319 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.81 cfs @ 12.02 hrs, Volume= 11,319 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 21.39' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.02'	**15.0" Round Ex. 15" HDPE** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.02' / 19.97' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.80 cfs @ 12.02 hrs HW=21.39' TW=0.00' (Dynamic Tailwater)
↑—**1=Ex. 15" HDPE** (Barrel Controls 3.80 cfs @ 3.52 fps)

Summary for Pond 6P: Ex. Drain Inlet

Inflow Area = 2,252 sf,100.00% Impervious, Inflow Depth = 6.17" for 25-Year event
Inflow = 0.39 cfs @ 12.01 hrs, Volume= 1,158 cf
Outflow = 0.39 cfs @ 12.01 hrs, Volume= 1,158 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.39 cfs @ 12.01 hrs, Volume= 1,158 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 23.47' @ 12.03 hrs
Flood Elev= 23.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.25'	**12.0" Round 12" PVC** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.25' / 20.79' S= 0.0102 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=23.04' TW=23.29' (Dynamic Tailwater)
↑—**1=12" PVC** (Controls 0.00 cfs)

Summary for Pond AS-1: Ex. Hydrodynamic Separator

Inflow Area = 21,813 sf, 91.45% Impervious, Inflow Depth = 6.00" for 25-Year event
Inflow = 3.68 cfs @ 12.02 hrs, Volume= 10,915 cf
Outflow = 3.68 cfs @ 12.02 hrs, Volume= 10,915 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.68 cfs @ 12.02 hrs, Volume= 10,915 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 22.00' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.45'	**15.0" Round Ex. 15" RCP** L= 54.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.45' / 20.12' S= 0.0061 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.60 cfs @ 12.02 hrs HW=21.98' TW=21.39' (Dynamic Tailwater)
↑—**1=Ex. 15" RCP** (Inlet Controls 3.60 cfs @ 2.93 fps)

Summary for Pond SP1: Ex. Stormwater Planter

Inflow Area = 10,733 sf, 93.69% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 1.84 cfs @ 12.01 hrs, Volume= 5,414 cf
Outflow = 1.81 cfs @ 12.02 hrs, Volume= 5,414 cf, Atten= 1%, Lag= 0.5 min
Primary = 1.81 cfs @ 12.02 hrs, Volume= 5,414 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 27.86' @ 12.02 hrs Surf.Area= 677 sf Storage= 918 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 133.3 min (879.6 - 746.3)

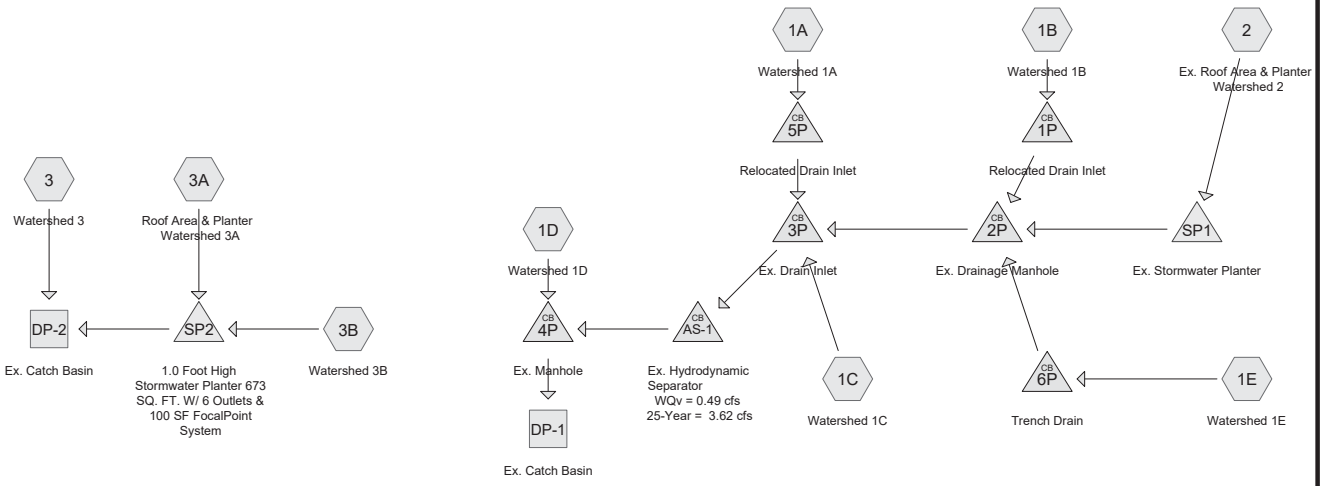
Volume	Invert	Avail.Storage	Storage Description
#1	26.50'	1,016 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.50	677	0	0
28.00	677	1,016	1,016

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	**12.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.50' / 21.33' S= 0.0339 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	27.75'	**6.0" Horiz. Orifice/Grate X 10.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	26.50'	**2.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=1.80 cfs @ 12.02 hrs HW=27.86' TW=24.19' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.80 cfs of 5.72 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 1.77 cfs @ 1.06 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.03 cfs)

7.) Post-Developed Analysis of the 1-, 10-, and 25-year Extreme Storm Events



Subcat Reach Pond Link

Routing Diagram for Proposed Condtion
Prepared by Hudson Engineering & Consulting

Summary for Subcatchment 1A: Watershed 1A

Runoff = 0.22 cfs @ 12.02 hrs, Volume= 634 cf, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	2,893	98	Parking Lot
	2,893		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	96	0.0166	1.31		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1B: Watershed 1B

Runoff = 0.23 cfs @ 12.01 hrs, Volume= 646 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	71	74	>75% Grass cover, Good, HSG C
*	3,008	98	Parking Lot
	3,079	97	Weighted Average
	71		2.31% Pervious Area
	3,008		97.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	64	0.0225	1.37		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1C: Watershed 1C

Runoff = 0.24 cfs @ 12.01 hrs, Volume= 661 cf, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	244	74	>75% Grass cover, Good, HSG C
*	3,039	98	Parking Lot
	3,283	96	Weighted Average
	244		7.43% Pervious Area
	3,039		92.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	57	0.0305	1.51		**Sheet Flow, A->B** Smooth surfaces n= 0.011 P2= 3.45"
0.3	53	0.0162	2.58		**Shallow Concentrated Flow, B->C** Paved Kv= 20.3 fps
0.9	110	Total			

Summary for Subcatchment 1D: Watershed 1D

Runoff = 0.06 cfs @ 12.01 hrs, Volume= 172 cf, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	786	98	building
	786		100.00% Impervious Area

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

Summary for Subcatchment 1E: Watershed 1E

Runoff = 0.11 cfs @ 12.01 hrs, Volume= 313 cf, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	26	74	>75% Grass cover, Good, HSG C
*	1,402	98	Parking Lot
	1,428	98	Weighted Average
	26		1.82% Pervious Area
	1,402		98.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	42	0.0129	1.01		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 2: Ex. Roof Area & Planter Watershed 2

Runoff = 0.80 cfs @ 12.01 hrs, Volume= 2,254 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	10,056	98	Roof
*	677	79	Planter
	10,733	97	Weighted Average
	677		6.31% Pervious Area
	10,056		93.69% Impervious Area

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

Summary for Subcatchment 3: Watershed 3

Runoff = 0.07 cfs @ 12.02 hrs, Volume= 188 cf, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	1,655	74	>75% Grass cover, Good, HSG C
*	416	98	Sidewalks
	2,071	79	Weighted Average
	1,655		79.91% Pervious Area
	416		20.09% Impervious Area

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

Summary for Subcatchment 3A: Roof Area & Planter Watershed 3A

Runoff = 1.10 cfs @ 12.01 hrs, Volume= 3,098 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	14,082	98	Roof
*	673	79	Planter
	14,755	97	Weighted Average
	673		4.56% Pervious Area
	14,082		95.44% Impervious Area

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

Summary for Subcatchment 3B: Watershed 3B

Runoff = 0.38 cfs @ 12.01 hrs, Volume= 1,077 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	135	74	>75% Grass cover, Good, HSG C
*	4,993	98	Parking Lot & portion of ex. building
	5,128	97	Weighted Average
	135		2.63% Pervious Area
	4,993		97.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	74	0.0180	1.29		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Reach DP-1: Ex. Catch Basin

Inflow Area = 22,202 sf, 95.41% Impervious, Inflow Depth = 2.53" for 1-Year event
Inflow = 0.89 cfs @ 12.01 hrs, Volume= 4,680 cf
Outflow = 0.89 cfs @ 12.01 hrs, Volume= 4,680 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP-2: Ex. Catch Basin

Inflow Area = 21,954 sf, 88.78% Impervious, Inflow Depth = 2.39" for 1-Year event
Inflow = 1.48 cfs @ 12.03 hrs, Volume= 4,365 cf
Outflow = 1.48 cfs @ 12.03 hrs, Volume= 4,365 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Summary for Pond 1P: Relocated Drain Inlet

Inflow Area = 3,079 sf, 97.69% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 0.23 cfs @ 12.01 hrs, Volume= 646 cf
Outflow = 0.23 cfs @ 12.01 hrs, Volume= 646 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.23 cfs @ 12.01 hrs, Volume= 646 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.02' @ 12.01 hrs
Flood Elev= 25.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.75'	**12.0" Round 12" HDPE** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.75' / 22.26' S= 0.0140 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.23 cfs @ 12.01 hrs HW=23.01' TW=22.50' (Dynamic Tailwater)
1=12" HDPE (Inlet Controls 0.23 cfs @ 1.38 fps)

Summary for Pond 2P: Ex. Drainage Manhole

Inflow Area = 15,240 sf, 94.92% Impervious, Inflow Depth = 2.53" for 1-Year event
Inflow = 0.37 cfs @ 12.01 hrs, Volume= 3,213 cf
Outflow = 0.37 cfs @ 12.01 hrs, Volume= 3,213 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 12.01 hrs, Volume= 3,213 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.50' @ 12.01 hrs
Flood Elev= 26.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.16'	**12.0" Round 12" PVC** L= 101.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.16' / 20.74' S= 0.0140 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.37 cfs @ 12.01 hrs HW=22.50' TW=21.39' (Dynamic Tailwater)
1=12" PVC (Inlet Controls 0.37 cfs @ 1.57 fps)

Summary for Pond 3P: Ex. Drain Inlet

Inflow Area = 21,416 sf, 95.25% Impervious, Inflow Depth = 2.53" for 1-Year event
Inflow = 0.83 cfs @ 12.01 hrs, Volume= 4,508 cf
Outflow = 0.83 cfs @ 12.01 hrs, Volume= 4,508 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.83 cfs @ 12.01 hrs, Volume= 4,508 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.39' @ 12.01 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**12.0" Round 12" PVC** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.45' S= 0.0207 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.82 cfs @ 12.01 hrs HW=21.39' TW=21.22' (Dynamic Tailwater)
1=12" PVC (Inlet Controls 0.82 cfs @ 1.53 fps)

Summary for Pond 4P: Ex. Manhole

Inflow Area = 22,202 sf, 95.41% Impervious, Inflow Depth = 2.53" for 1-Year event
Inflow = 0.89 cfs @ 12.01 hrs, Volume= 4,680 cf
Outflow = 0.89 cfs @ 12.01 hrs, Volume= 4,680 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.89 cfs @ 12.01 hrs, Volume= 4,680 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 20.59' @ 12.01 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.02'	**15.0" Round Ex. 15" HDPE** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.02' / 19.97' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.88 cfs @ 12.01 hrs HW=20.59' TW=0.00' (Dynamic Tailwater)
↑**1=Ex. 15" HDPE** (Barrel Controls 0.88 cfs @ 2.39 fps)

Summary for Pond 5P: Relocated Drain Inlet

Inflow Area = 2,893 sf,100.00% Impervious, Inflow Depth = 2.63" for 1-Year event
Inflow = 0.22 cfs @ 12.02 hrs, Volume= 634 cf
Outflow = 0.22 cfs @ 12.02 hrs, Volume= 634 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.22 cfs @ 12.02 hrs, Volume= 634 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.53' @ 12.02 hrs
Flood Elev= 23.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.20'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.20' / 20.79' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.22 cfs @ 12.02 hrs HW=21.52' TW=21.38' (Dynamic Tailwater)
↑**1=12" HDPE** (Outlet Controls 0.22 cfs @ 1.47 fps)

Summary for Pond 6P: Trench Drain

Inflow Area = 1,428 sf, 98.18% Impervious, Inflow Depth = 2.63" for 1-Year event
Inflow = 0.11 cfs @ 12.01 hrs, Volume= 313 cf
Outflow = 0.11 cfs @ 12.01 hrs, Volume= 313 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.11 cfs @ 12.01 hrs, Volume= 313 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.53' @ 12.01 hrs
Flood Elev= 25.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.35'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.35' / 22.26' S= 0.0321 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.11 cfs @ 12.01 hrs HW=23.53' TW=22.50' (Dynamic Tailwater)
↑—**1=12" HDPE** (Inlet Controls 0.11 cfs @ 1.14 fps)

Summary for Pond AS-1: Ex. Hydrodynamic Separator WQv = 0.49 cfs 25-Year = 3.62 cfs

Inflow Area = 21,416 sf, 95.25% Impervious, Inflow Depth = 2.53" for 1-Year event
Inflow = 0.83 cfs @ 12.01 hrs, Volume= 4,508 cf
Outflow = 0.83 cfs @ 12.01 hrs, Volume= 4,508 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.83 cfs @ 12.01 hrs, Volume= 4,508 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.23' @ 12.01 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**15.0" Round Ex. 15" RCP** L= 52.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.12' S= 0.0119 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=0.82 cfs @ 12.01 hrs HW=21.22' TW=20.59' (Dynamic Tailwater)
↑—**1=Ex. 15" RCP** (Inlet Controls 0.82 cfs @ 1.87 fps)

Summary for Pond SP1: Ex. Stormwater Planter

Inflow Area = 10,733 sf, 93.69% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 0.80 cfs @ 12.01 hrs, Volume= 2,254 cf
Outflow = 0.21 cfs @ 12.31 hrs, Volume= 2,254 cf, Atten= 74%, Lag= 17.7 min
Primary = 0.21 cfs @ 12.31 hrs, Volume= 2,254 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 27.77' @ 12.31 hrs Surf.Area= 669 sf Storage= 852 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 208.0 min (972.3 - 764.3)

Volume	Invert	Avail.Storage	Storage Description
#1	26.50'	1,004 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.50	669	0	0
28.00	669	1,004	1,004

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	**12.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.50' / 22.26' S= 0.0194 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	27.75'	**6.0" Horiz. Orifice/Grate X 10.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	26.50'	**2.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.21 cfs @ 12.31 hrs HW=27.77' TW=22.46' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.21 cfs of 5.80 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 0.18 cfs @ 0.50 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.03 cfs)

mmary for Pond SP2: 1.0 Foot High Stormwater Planter 673 SQ. FT. W/ 6 Outlets & 100 SF FocalPoint Sy

Inflow Area = 19,883 sf, 95.94% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 1.48 cfs @ 12.01 hrs, Volume= 4,175 cf
Outflow = 1.41 cfs @ 12.03 hrs, Volume= 4,177 cf, Atten= 4%, Lag= 0.9 min
Primary = 1.41 cfs @ 12.03 hrs, Volume= 4,177 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.17' @ 12.03 hrs Surf.Area= 100 sf Storage= 445 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 6.3 min (770.6 - 764.3)

Volume	Invert	Avail.Storage	Storage Description
#1	19.33'	45 cf	**2.00'W x 50.00'L x 2.25'H FocalPoint** 225 cf Overall x 20.0% Voids
#2	21.58'	505 cf	**Stormwater Planter (Prismatic)**Listed below (Recalc) -Impervious
		550 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.58	673	0	0
22.08	673	337	337
22.33	673	168	505

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**12.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.00' / 18.77' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	19.33'	**100.000 in/hr Exfiltration over Surface area**
#3	Device 1	22.08'	**8.0" Horiz. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.41 cfs @ 12.03 hrs HW=22.17' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.41 cfs of 4.88 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.23 cfs)
  └─**3=Orifice/Grate** (Weir Controls 1.18 cfs @ 1.00 fps)

Summary for Subcatchment 1A: Watershed 1A

Runoff = 0.39 cfs @ 12.02 hrs, Volume= 1,175 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
*	2,893	98	Parking Lot
	2,893		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	96	0.0166	1.31		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1B: Watershed 1B

Runoff = 0.42 cfs @ 12.01 hrs, Volume= 1,220 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	71	74	>75% Grass cover, Good, HSG C
*	3,008	98	Parking Lot
	3,079	97	Weighted Average
	71		2.31% Pervious Area
	3,008		97.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	64	0.0225	1.37		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1C: Watershed 1C

Runoff = 0.44 cfs @ 12.01 hrs, Volume= 1,270 cf, Depth= 4.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	244	74	>75% Grass cover, Good, HSG C
*	3,039	98	Parking Lot
	3,283	96	Weighted Average
	244		7.43% Pervious Area
	3,039		92.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	57	0.0305	1.51		**Sheet Flow, A->B** Smooth surfaces n= 0.011 P2= 3.45"
0.3	53	0.0162	2.58		**Shallow Concentrated Flow, B->C** Paved Kv= 20.3 fps
0.9	110	Total			

Summary for Subcatchment 1D: Watershed 1D

Runoff = 0.11 cfs @ 12.01 hrs, Volume= 319 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
*	786	98	building
	786		100.00% Impervious Area

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

Summary for Subcatchment 1E: Watershed 1E

Runoff = 0.20 cfs @ 12.01 hrs, Volume= 580 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	26	74	>75% Grass cover, Good, HSG C
*	1,402	98	Parking Lot
	1,428	98	Weighted Average
	26		1.82% Pervious Area
	1,402		98.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	42	0.0129	1.01		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 2: Ex. Roof Area & Planter Watershed 2

Runoff = 1.46 cfs @ 12.01 hrs, Volume= 4,254 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
*	10,056	98	Roof
*	677	79	Planter
	10,733	97	Weighted Average
	677		6.31% Pervious Area
	10,056		93.69% Impervious Area

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

Summary for Subcatchment 3: Watershed 3

Runoff = 0.19 cfs @ 12.02 hrs, Volume= 500 cf, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	1,655	74	>75% Grass cover, Good, HSG C
*	416	98	Sidewalks
	2,071	79	Weighted Average
	1,655		79.91% Pervious Area
	416		20.09% Impervious Area

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

Summary for Subcatchment 3A: Roof Area & Planter Watershed 3A

Runoff = 2.01 cfs @ 12.01 hrs, Volume= 5,849 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
*	14,082	98	Roof
*	673	79	Planter
	14,755	97	Weighted Average
	673		4.56% Pervious Area
	14,082		95.44% Impervious Area

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

Summary for Subcatchment 3B: Watershed 3B

Runoff = 0.70 cfs @ 12.01 hrs, Volume= 2,033 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	135	74	>75% Grass cover, Good, HSG C
*	4,993	98	Parking Lot & portion of ex. building
	5,128	97	Weighted Average
	135		2.63% Pervious Area
	4,993		97.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	74	0.0180	1.29		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Reach DP-1: Ex. Catch Basin

Inflow Area = 22,202 sf, 95.41% Impervious, Inflow Depth = 4.77" for 10-Year event
Inflow = 2.98 cfs @ 12.02 hrs, Volume= 8,819 cf
Outflow = 2.98 cfs @ 12.02 hrs, Volume= 8,819 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP-2: Ex. Catch Basin

Inflow Area = 21,954 sf, 88.78% Impervious, Inflow Depth = 4.58" for 10-Year event
Inflow = 2.85 cfs @ 12.02 hrs, Volume= 8,383 cf
Outflow = 2.85 cfs @ 12.02 hrs, Volume= 8,383 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Summary for Pond 1P: Relocated Drain Inlet

Inflow Area = 3,079 sf, 97.69% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 0.42 cfs @ 12.01 hrs, Volume= 1,220 cf
Outflow = 0.42 cfs @ 12.01 hrs, Volume= 1,220 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.42 cfs @ 12.01 hrs, Volume= 1,220 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.28' @ 12.02 hrs
Flood Elev= 25.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.75'	**12.0" Round 12" HDPE** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.75' / 22.26' S= 0.0140 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.39 cfs @ 12.01 hrs HW=23.27' TW=23.17' (Dynamic Tailwater)
1=12" HDPE (Outlet Controls 0.39 cfs @ 1.39 fps)

Summary for Pond 2P: Ex. Drainage Manhole

Inflow Area = 15,240 sf, 94.92% Impervious, Inflow Depth = 4.77" for 10-Year event
Inflow = 2.04 cfs @ 12.02 hrs, Volume= 6,055 cf
Outflow = 2.04 cfs @ 12.02 hrs, Volume= 6,055 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.04 cfs @ 12.02 hrs, Volume= 6,055 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.19' @ 12.02 hrs
Flood Elev= 26.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.16'	**12.0" Round 12" PVC** L= 101.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.16' / 20.74' S= 0.0140 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.03 cfs @ 12.02 hrs HW=23.18' TW=22.67' (Dynamic Tailwater)
1=12" PVC (Outlet Controls 2.03 cfs @ 3.14 fps)

Summary for Pond 3P: Ex. Drain Inlet

Inflow Area = 21,416 sf, 95.25% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 2.87 cfs @ 12.02 hrs, Volume= 8,500 cf
Outflow = 2.87 cfs @ 12.02 hrs, Volume= 8,500 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.87 cfs @ 12.02 hrs, Volume= 8,500 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.67' @ 12.02 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**12.0" Round 12" PVC** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.45' S= 0.0207 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.86 cfs @ 12.02 hrs HW=22.66' TW=21.75' (Dynamic Tailwater)
1=12" PVC (Inlet Controls 2.86 cfs @ 3.64 fps)

Summary for Pond 4P: Ex. Manhole

Inflow Area = 22,202 sf, 95.41% Impervious, Inflow Depth = 4.77" for 10-Year event
Inflow = 2.98 cfs @ 12.02 hrs, Volume= 8,819 cf
Outflow = 2.98 cfs @ 12.02 hrs, Volume= 8,819 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.98 cfs @ 12.02 hrs, Volume= 8,819 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.18' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.02'	**15.0" Round Ex. 15" HDPE** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.02' / 19.97' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.96 cfs @ 12.02 hrs HW=21.18' TW=0.00' (Dynamic Tailwater)
↑**1=Ex. 15" HDPE** (Barrel Controls 2.96 cfs @ 3.26 fps)

Summary for Pond 5P: Relocated Drain Inlet

Inflow Area = 2,893 sf,100.00% Impervious, Inflow Depth = 4.87" for 10-Year event
Inflow = 0.39 cfs @ 12.02 hrs, Volume= 1,175 cf
Outflow = 0.39 cfs @ 12.02 hrs, Volume= 1,175 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.39 cfs @ 12.02 hrs, Volume= 1,175 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.69' @ 12.02 hrs
Flood Elev= 23.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.20'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.20' / 20.79' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.39 cfs @ 12.02 hrs HW=22.68' TW=22.66' (Dynamic Tailwater)
↑**1=12" HDPE** (Inlet Controls 0.39 cfs @ 0.50 fps)

Summary for Pond 6P: Trench Drain

Inflow Area = 1,428 sf, 98.18% Impervious, Inflow Depth = 4.87" for 10-Year event
Inflow = 0.20 cfs @ 12.01 hrs, Volume= 580 cf
Outflow = 0.20 cfs @ 12.01 hrs, Volume= 580 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 12.01 hrs, Volume= 580 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.59' @ 12.01 hrs
Flood Elev= 25.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.35'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.35' / 22.26' S= 0.0321 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.20 cfs @ 12.01 hrs HW=23.59' TW=23.16' (Dynamic Tailwater)
↑—**1=12" HDPE** (Inlet Controls 0.20 cfs @ 1.33 fps)

Summary for Pond AS-1: Ex. Hydrodynamic Separator WQv = 0.49 cfs 25-Year = 3.62 cfs

Inflow Area = 21,416 sf, 95.25% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 2.87 cfs @ 12.02 hrs, Volume= 8,500 cf
Outflow = 2.87 cfs @ 12.02 hrs, Volume= 8,500 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.87 cfs @ 12.02 hrs, Volume= 8,500 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.75' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**15.0" Round Ex. 15" RCP** L= 52.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.12' S= 0.0119 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=2.86 cfs @ 12.02 hrs HW=21.75' TW=21.18' (Dynamic Tailwater)
↑—**1=Ex. 15" RCP** (Inlet Controls 2.86 cfs @ 2.70 fps)

Summary for Pond SP1: Ex. Stormwater Planter

Inflow Area = 10,733 sf, 93.69% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 1.46 cfs @ 12.01 hrs, Volume= 4,254 cf
Outflow = 1.43 cfs @ 12.02 hrs, Volume= 4,255 cf, Atten= 2%, Lag= 0.5 min
Primary = 1.43 cfs @ 12.02 hrs, Volume= 4,255 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 27.84' @ 12.02 hrs Surf.Area= 669 sf Storage= 897 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 149.2 min (899.8 - 750.7)

Volume	Invert	Avail.Storage	Storage Description
#1	26.50'	1,004 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.50	669	0	0
28.00	669	1,004	1,004

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	**12.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.50' / 22.26' S= 0.0194 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	27.75'	**6.0" Horiz. Orifice/Grate X 10.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	26.50'	**2.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=1.43 cfs @ 12.02 hrs HW=27.84' TW=23.17' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.43 cfs of 5.85 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 1.40 cfs @ 0.98 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.03 cfs)

mmary for Pond SP2: 1.0 Foot High Stormwater Planter 673 SQ. FT. W/ 6 Outlets & 100 SF FocalPoint Sy

Inflow Area = 19,883 sf, 95.94% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 2.70 cfs @ 12.01 hrs, Volume= 7,881 cf
Outflow = 2.66 cfs @ 12.02 hrs, Volume= 7,883 cf, Atten= 2%, Lag= 0.5 min
Primary = 2.66 cfs @ 12.02 hrs, Volume= 7,883 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.23' @ 12.02 hrs Surf.Area= 100 sf Storage= 484 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 5.7 min (756.4 - 750.7)

Volume	Invert	Avail.Storage	Storage Description
#1	19.33'	45 cf	**2.00'W x 50.00'L x 2.25'H FocalPoint** 225 cf Overall x 20.0% Voids
#2	21.58'	505 cf	**Stormwater Planter (Prismatic)**Listed below (Recalc) -Impervious
		550 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.58	673	0	0
22.08	673	337	337
22.33	673	168	505

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**12.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.00' / 18.77' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	19.33'	**100.000 in/hr Exfiltration over Surface area**
#3	Device 1	22.08'	**8.0" Horiz. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.65 cfs @ 12.02 hrs HW=22.23' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.65 cfs of 4.93 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.23 cfs)
  └─**3=Orifice/Grate** (Weir Controls 2.42 cfs @ 1.27 fps)

Summary for Subcatchment 1A: Watershed 1A

Runoff = 0.49 cfs @ 12.02 hrs, Volume= 1,488 cf, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	2,893	98	Parking Lot
	2,893		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	96	0.0166	1.31		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1B: Watershed 1B

Runoff = 0.53 cfs @ 12.01 hrs, Volume= 1,553 cf, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	71	74	>75% Grass cover, Good, HSG C
*	3,008	98	Parking Lot
	3,079	97	Weighted Average
	71		2.31% Pervious Area
	3,008		97.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	64	0.0225	1.37		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1C: Watershed 1C

Runoff = 0.56 cfs @ 12.01 hrs, Volume= 1,624 cf, Depth= 5.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	244	74	>75% Grass cover, Good, HSG C
*	3,039	98	Parking Lot
	3,283	96	Weighted Average
	244		7.43% Pervious Area
	3,039		92.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	57	0.0305	1.51		**Sheet Flow, A->B** Smooth surfaces n= 0.011 P2= 3.45"
0.3	53	0.0162	2.58		**Shallow Concentrated Flow, B->C** Paved Kv= 20.3 fps
0.9	110	Total			

Summary for Subcatchment 1D: Watershed 1D

Runoff = 0.14 cfs @ 12.01 hrs, Volume= 404 cf, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	786	98	building
	786		100.00% Impervious Area

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

Summary for Subcatchment 1E: Watershed 1E

Runoff = 0.25 cfs @ 12.01 hrs, Volume= 734 cf, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	26	74	>75% Grass cover, Good, HSG C
*	1,402	98	Parking Lot
	1,428	98	Weighted Average
	26		1.82% Pervious Area
	1,402		98.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	42	0.0129	1.01		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 2: Ex. Roof Area & Planter Watershed 2

Runoff = 1.84 cfs @ 12.01 hrs, Volume= 5,414 cf, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	10,056	98	Roof
*	677	79	Planter
	10,733	97	Weighted Average
	677		6.31% Pervious Area
	10,056		93.69% Impervious Area

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

Summary for Subcatchment 3: Watershed 3

Runoff = 0.27 cfs @ 12.02 hrs, Volume= 699 cf, Depth= 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	1,655	74	>75% Grass cover, Good, HSG C
*	416	98	Sidewalks
	2,071	79	Weighted Average
	1,655		79.91% Pervious Area
	416		20.09% Impervious Area

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

Summary for Subcatchment 3A: Roof Area & Planter Watershed 3A

Runoff = 2.53 cfs @ 12.01 hrs, Volume= 7,443 cf, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	14,082	98	Roof
*	673	79	Planter
	14,755	97	Weighted Average
	673		4.56% Pervious Area
	14,082		95.44% Impervious Area

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

Summary for Subcatchment 3B: Watershed 3B

Runoff = 0.88 cfs @ 12.01 hrs, Volume= 2,587 cf, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	135	74	>75% Grass cover, Good, HSG C
*	4,993	98	Parking Lot & portion of ex. building
	5,128	97	Weighted Average
	135		2.63% Pervious Area
	4,993		97.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	74	0.0180	1.29		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Reach DP-1: Ex. Catch Basin

Inflow Area = 22,202 sf, 95.41% Impervious, Inflow Depth = 6.06" for 25-Year event
Inflow = 3.75 cfs @ 12.02 hrs, Volume= 11,218 cf
Outflow = 3.75 cfs @ 12.02 hrs, Volume= 11,218 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP-2: Ex. Catch Basin

Inflow Area = 21,954 sf, 88.78% Impervious, Inflow Depth = 5.86" for 25-Year event
Inflow = 3.62 cfs @ 12.02 hrs, Volume= 10,730 cf
Outflow = 3.62 cfs @ 12.02 hrs, Volume= 10,730 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Summary for Pond 1P: Relocated Drain Inlet

Inflow Area = 3,079 sf, 97.69% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 0.53 cfs @ 12.01 hrs, Volume= 1,553 cf
Outflow = 0.53 cfs @ 12.01 hrs, Volume= 1,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.53 cfs @ 12.01 hrs, Volume= 1,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 24.20' @ 12.02 hrs
Flood Elev= 25.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.75'	**12.0" Round 12" HDPE** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.75' / 22.26' S= 0.0140 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=24.09' TW=24.11' (Dynamic Tailwater)
↑—**1=12" HDPE** (Controls 0.00 cfs)

Summary for Pond 2P: Ex. Drainage Manhole

Inflow Area = 15,240 sf, 94.92% Impervious, Inflow Depth = 6.06" for 25-Year event
Inflow = 2.57 cfs @ 12.02 hrs, Volume= 7,702 cf
Outflow = 2.57 cfs @ 12.02 hrs, Volume= 7,702 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.57 cfs @ 12.02 hrs, Volume= 7,702 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 24.18' @ 12.02 hrs
Flood Elev= 26.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.16'	**12.0" Round 12" PVC** L= 101.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.16' / 20.74' S= 0.0140 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.55 cfs @ 12.02 hrs HW=24.16' TW=23.44' (Dynamic Tailwater)
↑—**1=12" PVC** (Inlet Controls 2.55 cfs @ 3.24 fps)

Summary for Pond 3P: Ex. Drain Inlet

Inflow Area = 21,416 sf, 95.25% Impervious, Inflow Depth = 6.06" for 25-Year event
Inflow = 3.62 cfs @ 12.02 hrs, Volume= 10,814 cf
Outflow = 3.62 cfs @ 12.02 hrs, Volume= 10,814 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.62 cfs @ 12.02 hrs, Volume= 10,814 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.45' @ 12.02 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**12.0" Round 12" PVC** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.45' S= 0.0207 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.60 cfs @ 12.02 hrs HW=23.43' TW=21.97' (Dynamic Tailwater)
↑—**1=12" PVC** (Inlet Controls 3.60 cfs @ 4.59 fps)

Summary for Pond 4P: Ex. Manhole

Inflow Area = 22,202 sf, 95.41% Impervious, Inflow Depth = 6.06" for 25-Year event
Inflow = 3.75 cfs @ 12.02 hrs, Volume= 11,218 cf
Outflow = 3.75 cfs @ 12.02 hrs, Volume= 11,218 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.75 cfs @ 12.02 hrs, Volume= 11,218 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.38' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.02'	**15.0" Round Ex. 15" HDPE** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.02' / 19.97' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.74 cfs @ 12.02 hrs HW=21.37' TW=0.00' (Dynamic Tailwater)
↑**1=Ex. 15" HDPE** (Barrel Controls 3.74 cfs @ 3.50 fps)

Summary for Pond 5P: Relocated Drain Inlet

Inflow Area = 2,893 sf,100.00% Impervious, Inflow Depth = 6.17" for 25-Year event
Inflow = 0.49 cfs @ 12.02 hrs, Volume= 1,488 cf
Outflow = 0.49 cfs @ 12.02 hrs, Volume= 1,488 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.49 cfs @ 12.02 hrs, Volume= 1,488 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.47' @ 12.02 hrs
Flood Elev= 23.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.20'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.20' / 20.79' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.39 cfs @ 12.02 hrs HW=23.45' TW=23.43' (Dynamic Tailwater)
↑**1=12" HDPE** (Inlet Controls 0.39 cfs @ 0.49 fps)

Summary for Pond 6P: Trench Drain

Inflow Area = 1,428 sf, 98.18% Impervious, Inflow Depth = 6.17" for 25-Year event
Inflow = 0.25 cfs @ 12.01 hrs, Volume= 734 cf
Outflow = 0.25 cfs @ 12.01 hrs, Volume= 734 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.25 cfs @ 12.01 hrs, Volume= 734 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 24.18' @ 12.02 hrs
Flood Elev= 25.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.35'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.35' / 22.26' S= 0.0321 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=24.05' TW=24.10' (Dynamic Tailwater)
↑—**1=12" HDPE** (Controls 0.00 cfs)

Summary for Pond AS-1: Ex. Hydrodynamic Separator WQv = 0.49 cfs 25-Year = 3.62 cfs

Inflow Area = 21,416 sf, 95.25% Impervious, Inflow Depth = 6.06" for 25-Year event
Inflow = 3.62 cfs @ 12.02 hrs, Volume= 10,814 cf
Outflow = 3.62 cfs @ 12.02 hrs, Volume= 10,814 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.62 cfs @ 12.02 hrs, Volume= 10,814 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.98' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**15.0" Round Ex. 15" RCP** L= 52.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.12' S= 0.0119 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=3.60 cfs @ 12.02 hrs HW=21.97' TW=21.37' (Dynamic Tailwater)
↑—**1=Ex. 15" RCP** (Inlet Controls 3.60 cfs @ 2.94 fps)

Summary for Pond SP1: Ex. Stormwater Planter

Inflow Area = 10,733 sf, 93.69% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 1.84 cfs @ 12.01 hrs, Volume= 5,414 cf
Outflow = 1.81 cfs @ 12.02 hrs, Volume= 5,414 cf, Atten= 1%, Lag= 0.5 min
Primary = 1.81 cfs @ 12.02 hrs, Volume= 5,414 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 27.86' @ 12.02 hrs Surf.Area= 669 sf Storage= 907 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 132.6 min (878.9 - 746.3)

Volume	Invert	Avail.Storage	Storage Description
#1	26.50'	1,004 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.50	669	0	0
28.00	669	1,004	1,004

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	**12.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.50' / 22.26' S= 0.0194 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	27.75'	**6.0" Horiz. Orifice/Grate X 10.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	26.50'	**2.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=1.80 cfs @ 12.02 hrs HW=27.86' TW=24.14' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.80 cfs of 5.75 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 1.77 cfs @ 1.06 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.03 cfs)

mmary for Pond SP2: 1.0 Foot High Stormwater Planter 673 SQ. FT. W/ 6 Outlets & 100 SF FocalPoint Sy

Inflow Area = 19,883 sf, 95.94% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 3.40 cfs @ 12.01 hrs, Volume= 10,030 cf
Outflow = 3.36 cfs @ 12.02 hrs, Volume= 10,031 cf, Atten= 1%, Lag= 0.4 min
Primary = 3.36 cfs @ 12.02 hrs, Volume= 10,031 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.26' @ 12.02 hrs Surf.Area= 100 sf Storage= 502 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 5.8 min (752.1 - 746.3)

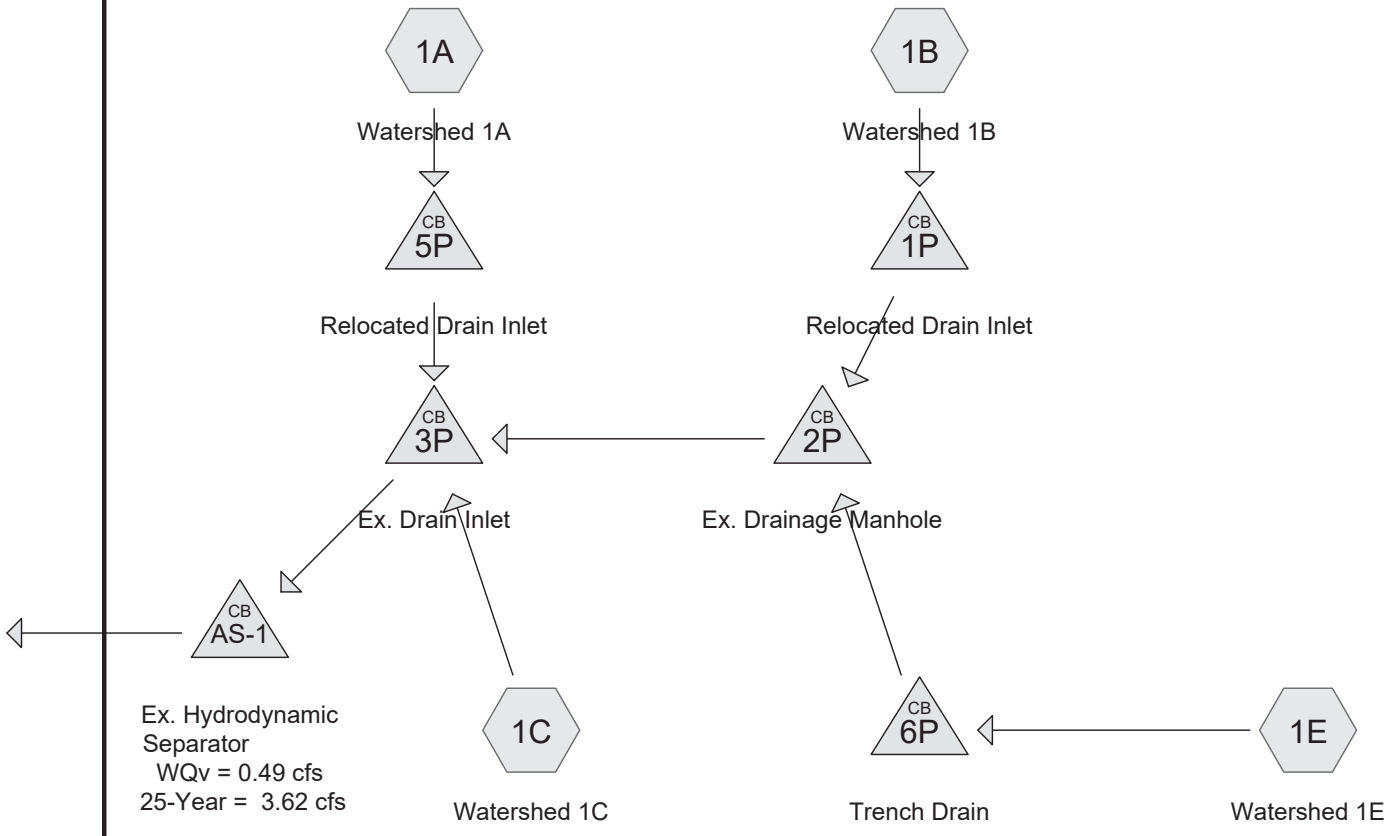
Volume	Invert	Avail.Storage	Storage Description
#1	19.33'	45 cf	**2.00'W x 50.00'L x 2.25'H FocalPoint** 225 cf Overall x 20.0% Voids
#2	21.58'	505 cf	**Stormwater Planter (Prismatic)**Listed below (Recalc) -Impervious
		550 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.58	673	0	0
22.08	673	337	337
22.33	673	168	505

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**12.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.00' / 18.77' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	19.33'	**100.000 in/hr Exfiltration over Surface area**
#3	Device 1	22.08'	**8.0" Horiz. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.35 cfs @ 12.02 hrs HW=22.26' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.35 cfs of 4.96 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.23 cfs)
  └─**3=Orifice/Grate** (Weir Controls 3.11 cfs @ 1.38 fps)

8). Water Quality Calculations



Subcat Reach Pond Link

Routing Diagram for Proposed Condtion
Prepared by Hudson Engineering & Consulting

Summary for Subcatchment 1A: Watershed 1A

Runoff = 0.13 cfs @ 12.02 hrs, Volume= 363 cf, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.73"

	Area (sf)	CN	Description
*	2,893	98	Parking Lot
	2,893		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	96	0.0166	1.31		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1B: Watershed 1B

Runoff = 0.13 cfs @ 12.01 hrs, Volume= 361 cf, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.73"

	Area (sf)	CN	Description
	71	74	>75% Grass cover, Good, HSG C
*	3,008	98	Parking Lot
	3,079	97	Weighted Average
	71		2.31% Pervious Area
	3,008		97.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	64	0.0225	1.37		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1C: Watershed 1C

Runoff = 0.13 cfs @ 12.01 hrs, Volume= 360 cf, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.73"

	Area (sf)	CN	Description
	244	74	>75% Grass cover, Good, HSG C
*	3,039	98	Parking Lot
	3,283	96	Weighted Average
	244		7.43% Pervious Area
	3,039		92.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	57	0.0305	1.51		**Sheet Flow, A->B** Smooth surfaces n= 0.011 P2= 3.45"
0.3	53	0.0162	2.58		**Shallow Concentrated Flow, B->C** Paved Kv= 20.3 fps
0.9	110	Total			

Summary for Subcatchment 1E: Watershed 1E

Runoff = 0.06 cfs @ 12.01 hrs, Volume= 179 cf, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.73"

	Area (sf)	CN	Description
	26	74	>75% Grass cover, Good, HSG C
*	1,402	98	Parking Lot
	1,428	98	Weighted Average
	26		1.82% Pervious Area
	1,402		98.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	42	0.0129	1.01		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Pond 1P: Relocated Drain Inlet

Inflow Area = 3,079 sf, 97.69% Impervious, Inflow Depth = 1.41" for WQv event
Inflow = 0.13 cfs @ 12.01 hrs, Volume= 361 cf
Outflow = 0.13 cfs @ 12.01 hrs, Volume= 361 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.13 cfs @ 12.01 hrs, Volume= 361 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.95' @ 12.01 hrs
Flood Elev= 25.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.75'	**12.0" Round 12" HDPE** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.75' / 22.26' S= 0.0140 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.13 cfs @ 12.01 hrs HW=22.95' TW=22.40' (Dynamic Tailwater)
↑—**1=12" HDPE** (Inlet Controls 0.13 cfs @ 1.20 fps)

Summary for Pond 2P: Ex. Drainage Manhole

Inflow Area = 4,507 sf, 97.85% Impervious, Inflow Depth = 1.44" for WQv event
Inflow = 0.20 cfs @ 12.01 hrs, Volume= 540 cf
Outflow = 0.20 cfs @ 12.01 hrs, Volume= 540 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 12.01 hrs, Volume= 540 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.40' @ 12.01 hrs
Flood Elev= 26.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.16'	**12.0" Round 12" PVC** L= 101.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.16' / 20.74' S= 0.0140 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.20 cfs @ 12.01 hrs HW=22.40' TW=21.21' (Dynamic Tailwater)
↑—**1=12" PVC** (Inlet Controls 0.20 cfs @ 1.33 fps)

Summary for Pond 3P: Ex. Drain Inlet

Inflow Area = 10,683 sf, 96.81% Impervious, Inflow Depth = 1.42" for WQv event
Inflow = 0.46 cfs @ 12.01 hrs, Volume= 1,263 cf
Outflow = 0.46 cfs @ 12.01 hrs, Volume= 1,263 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.46 cfs @ 12.01 hrs, Volume= 1,263 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.21' @ 12.01 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**12.0" Round 12" PVC** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.45' S= 0.0207 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.46 cfs @ 12.01 hrs HW=21.21' TW=21.09' (Dynamic Tailwater)
↑—**1=12" PVC** (Outlet Controls 0.46 cfs @ 1.84 fps)

Summary for Pond 5P: Relocated Drain Inlet

Inflow Area = 2,893 sf,100.00% Impervious, Inflow Depth = 1.51" for WQv event
Inflow = 0.13 cfs @ 12.02 hrs, Volume= 363 cf
Outflow = 0.13 cfs @ 12.02 hrs, Volume= 363 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.13 cfs @ 12.02 hrs, Volume= 363 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.42' @ 12.02 hrs
Flood Elev= 23.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.20'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.20' / 20.79' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.13 cfs @ 12.02 hrs HW=21.42' TW=21.21' (Dynamic Tailwater)
↑—**1=12" HDPE** (Outlet Controls 0.13 cfs @ 1.55 fps)

Summary for Pond 6P: Trench Drain

Inflow Area = 1,428 sf, 98.18% Impervious, Inflow Depth = 1.51" for WQv event
Inflow = 0.06 cfs @ 12.01 hrs, Volume= 179 cf
Outflow = 0.06 cfs @ 12.01 hrs, Volume= 179 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.06 cfs @ 12.01 hrs, Volume= 179 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.49' @ 12.01 hrs
Flood Elev= 25.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.35'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.35' / 22.26' S= 0.0321 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.06 cfs @ 12.01 hrs HW=23.49' TW=22.40' (Dynamic Tailwater)
↑—**1=12" HDPE** (Inlet Controls 0.06 cfs @ 0.99 fps)

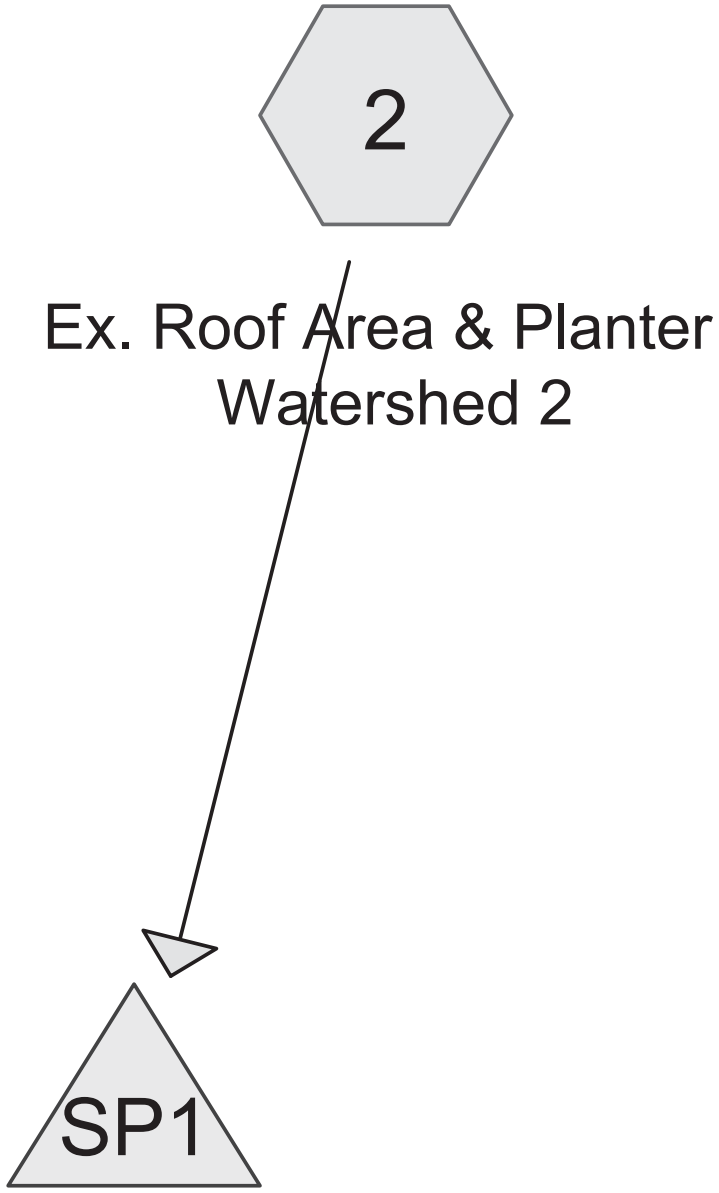
Summary for Pond AS-1: Ex. Hydrodynamic Separator WQv = 0.49 cfs 25-Year = 3.62 cfs

Inflow Area = 10,683 sf, 96.81% Impervious, Inflow Depth = 1.42" for WQv event
Inflow = 0.46 cfs @ 12.01 hrs, Volume= 1,263 cf
Outflow = 0.46 cfs @ 12.01 hrs, Volume= 1,263 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.46 cfs @ 12.01 hrs, Volume= 1,263 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.10' @ 12.01 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**15.0" Round Ex. 15" RCP** L= 52.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.12' S= 0.0119 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=0.46 cfs @ 12.01 hrs HW=21.09' TW=20.43' (Dynamic Tailwater)
↑—**1=Ex. 15" RCP** (Inlet Controls 0.46 cfs @ 1.60 fps)



Subcat Reach Pond Link

Routing Diagram for Proposed Condtion
Prepared by Hudson Engineering & Consulting

Summary for Subcatchment 2: Ex. Roof Area & Planter Watershed 2

Runoff = 0.46 cfs @ 12.01 hrs, Volume= 1,259 cf, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.73"

	Area (sf)	CN	Description
*	10,056	98	Roof
*	677	79	Planter
	10,733	97	Weighted Average
	677		6.31% Pervious Area
	10,056		93.69% Impervious Area

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

Summary for Pond SP1: Ex. Stormwater Planter

Inflow Area = 10,733 sf, 93.69% Impervious, Inflow Depth = 1.41" for WQv event
Inflow = 0.46 cfs @ 12.01 hrs, Volume= 1,259 cf
Outflow = 0.03 cfs @ 11.57 hrs, Volume= 1,259 cf, Atten= 93%, Lag= 0.0 min
Primary = 0.03 cfs @ 11.57 hrs, Volume= 1,259 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 27.22' @ 12.99 hrs Surf.Area= 669 sf Storage= 482 cf

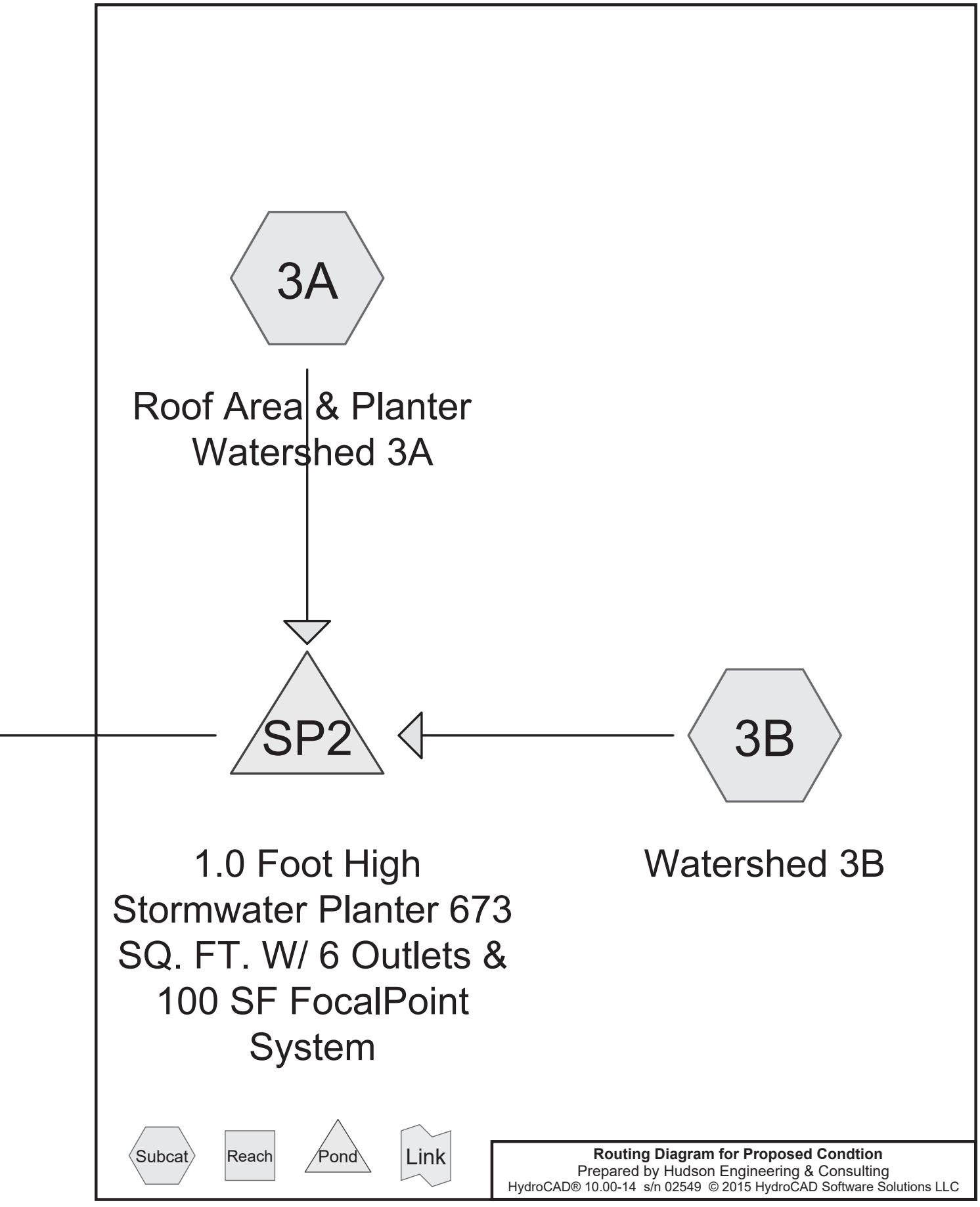
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 120.3 min (899.3 - 778.9)

Volume	Invert	Avail.Storage	Storage Description
#1	26.50'	1,004 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.50	669	0	0
28.00	669	1,004	1,004

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	**12.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.50' / 22.26' S= 0.0194 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	27.75'	**6.0" Horiz. Orifice/Grate X 10.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	26.50'	**2.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.03 cfs @ 11.57 hrs HW=26.52' (Free Discharge)
└─**1=Culvert** (Passes 0.03 cfs of 4.74 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Exfiltration** (Exfiltration Controls 0.03 cfs)



Routing Diagram for Proposed Condtion
Prepared by Hudson Engineering & Consulting

Summary for Subcatchment 3A: Roof Area & Planter Watershed 3A

Runoff = 0.63 cfs @ 12.01 hrs, Volume= 1,730 cf, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.73"

	Area (sf)	CN	Description
*	14,082	98	Roof
*	673	79	Planter
	14,755	97	Weighted Average
	673		4.56% Pervious Area
	14,082		95.44% Impervious Area

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

Summary for Subcatchment 3B: Watershed 3B

Runoff = 0.22 cfs @ 12.01 hrs, Volume= 601 cf, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.73"

	Area (sf)	CN	Description
	135	74	>75% Grass cover, Good, HSG C
*	4,993	98	Parking Lot & portion of ex. building
	5,128	97	Weighted Average
	135		2.63% Pervious Area
	4,993		97.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	74	0.0180	1.29		**Sheet Flow, A-B**
					Smooth surfaces n= 0.011 P2= 3.45"

mmary for Pond SP2: 1.0 Foot High Stormwater Planter 673 SQ. FT. W/ 6 Outlets & 100 SF FocalPoint Sy

Inflow Area = 19,883 sf, 95.94% Impervious, Inflow Depth = 1.41" for WQv event
Inflow = 0.85 cfs @ 12.01 hrs, Volume= 2,332 cf
Outflow = 0.23 cfs @ 11.78 hrs, Volume= 2,334 cf, Atten= 73%, Lag= 0.0 min
Primary = 0.23 cfs @ 11.78 hrs, Volume= 2,334 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.03' @ 12.30 hrs Surf.Area= 100 sf Storage= 347 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 6.4 min (785.4 - 778.9)

Volume	Invert	Avail.Storage	Storage Description
#1	19.33'	45 cf	**2.00'W x 50.00'L x 2.25'H FocalPoint** 225 cf Overall x 20.0% Voids
#2	21.58'	505 cf	**Stormwater Planter (Prismatic)**Listed below (Recalc) -Impervious
		550 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.58	673	0	0
22.08	673	337	337
22.33	673	168	505

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**12.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.00' / 18.77' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	19.33'	**100.000 in/hr Exfiltration over Surface area**
#3	Device 1	22.08'	**8.0" Horiz. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.23 cfs @ 11.78 hrs HW=19.37' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.23 cfs of 0.42 cfs potential flow)
  - **2=Exfiltration** (Exfiltration Controls 0.23 cfs)
  - **3=Orifice/Grate** (Controls 0.00 cfs)

9.) AquaSwirl Sizing Chart & Spec Sheet