APPENDIX C
EROSION AND SEDIMENT CONTROL PLAN

SOIL EROSION AND SEDIMENT CONTROL PLAN

Site 063/065 Remediation Project
1 Burma Road
Jersey City, Hudson County, New Jersey

Prepared for:

PPG Industries
Allyson Park, Pennsylvania

Hudson, Essex, Passaic Soil Conservation District
15 Bloomfield Avenue
North Caldwell, New Jersey 07006

Prepared by:

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A CB&I Company
200 Horizon Center Boulevard
Trenton, New Jersey 08691

Project No. 146429
April 2013

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Soil Erosion and Sediment Control Plan Narrative
Site 063/065 Remediation Project
Jersey City, Hudson County, New Jersey
April 2013

This Soil Erosion and Sediment Pollution Control Plan (SESCP) has been prepared in accordance with the New Jersey Soil Erosion and Sediment Control Act, Chapter 251, P.L. 1975 as amended (New Jersey Statutes Annotated [NJSA] 4:24-39 et. seq.) for the Site 063/065 Remediation Project located at 1 Burma Road in Jersey City, Hudson County, New Jersey (Figure 1). The site is designated as Block 2154.4; Lot 4 (also known as Block 1497, Lot 4) on the city tax maps. Block 2154.4, Lot 4 is comprised of an area of approximately 2.66 acres. This SESCP describes the best management practices (BMPs) and measures to be implemented for storm water runoff management and erosion and sediment control during the remediation project.

Site 063/065 will undergo environmental remediation activities under the jurisdiction of the New Jersey Department of Environmental Protection (NJDEP). The remediation activities to be implemented involve excavation of soil for off-site disposal and restoration of the site to pre-construction site conditions. Implementation of the remedial activities will involve earth disturbance over an aggregate area of approximately 2.66 acres (Sheet C-1), which will require issuance of an SESCP Certification by the Hudson, Essex, Passaic County Soil Conservation District (HEPSCD) and a New Jersey Pollutant Discharge Elimination System Discharge to Surface Water General Permit for Construction Activity Stormwater (5G3) (NJ0088323).

The excavation activities will generally involve shallow excavations to remove contaminants identified during site characterization activities. The location of the remediation area is shown on Sheet C-1. The excavation depth in the area to be remediated will extend to approximately 4 feet below existing ground surface over an area of approximately 1.69 acres. Following completion of the excavation to remove contaminants, the disturbed areas will be graded to the lines and grades shown on Sheet C-2 and restored by reinstalling the gravel surface cover to match the existing pre-construction cover.

The format of this SESCP follows the requirements of the Soil Erosion and Sediment Control Act Rules, New Jersey Administrative Code (NJAC) 2:90-1.4(a) through 2:90-1.4(g), as applicable and the requirements of the HEPSCD. It has been prepared based on preliminary design information and shall be refined, as necessary, upon completion of the final remedial design. Additionally, a site meeting with a representative of HEPSCD is strongly recommended before submittal of the SESCP.

HEPSCD Requirements per NJAC 2:90-1.4(a) through 2:90-1.4(g)

1. Application for SESC Plan Certification - 2:90 - 1.4(a)

Upon completion of the final remediation design, the Application for Soil Erosion and Sediment Control Plan Certification (Application) will be completed and submitted to HEPSCD for approval. This SESCP will be prepared by Shaw Environmental, Inc. (Shaw), a CB&I company, under the direction of Ronald W. Grapin, P.E., a New Jersey licensed engineer with experience in remediation projects that involve earth disturbance.

2. Required Information – Site Plan - 2:90 – 1.4(b)(1)

The required Site Plan is enclosed with this SESCP as Sheet C-1. The information required by 2:90-1.4(b)(1) is provided in the following sections:

The Location of Present and Proposed Drains and Culverts and their Discharge Capacities and Velocities and Supporting Computations and Identification of Conditions Below Outlets - 2:90 – 1.4(b)(1)(i)

Three storm water catch basins are located along the northern shoulder of Burma Road. The locations of these catch basins are shown on Sheet C-1 and include: one catch basin located at the intersection of Morris Pesin Drive and Burma Road, one catch basin located central to the site boundary along Burma Road, and one catch basin located along Burma Road near the northern boundary of the site. The centrally located catch basin also includes a culvert oriented to the west to allow for capture of storm water runoff from the Fabriform® drainage structure that borders Burma Road as shown on Sheet C-1.

The storm water catch basins are connected to a 45-inch diameter combined sewer pipe that conveys water to the local Publically Owned Treatment Works (POTW) as reported by The Jersey City Municipal Utilities Authority.

Following completion of site remediation activities, the existing Fabriform® drainage structure will be replaced by a grassed waterway as shown on Sheet C-2. Supporting computations for the design of the grassed waterway are included in Appendix A. This channel shall discharge to the existing culvert and, based on the supporting computations of post-construction runoff, will not result in an increase of volume or flow velocity below this point including the combined sewer conveyance system or the POTW.

No new drains or culverts are proposed for installation on the property during this remediation project.

A Delineation of any Area Subject to Flooding from the 100-Year Storm in Compliance with the Flood Hazard Control Map - 2:90 – 1.4(b)(1)(ii)

Figure 3 is a map that shows the 100-year floodplains of the Hudson River as mapped by the Federal Emergency Management Administration (FEMA). As shown on Figure 3, the property

is not located within the special flood hazard area or floodway of the 1 percent annual flood chance. FEMA indicates that the area is possibly within the floodway; however, the risk is yet undetermined.

A Delineation of Streams and Wetlands Pursuant to N.J.S.A. 13:9A-1 et seq. and 13:9B-1 et seq., and Other Significant Natural Features within the Project Area - 2:90 – 1.4(b)(1)(iii)

No mapped wetland areas are shown to be present at the site upon review of the NJDEP Geographic Information System. Figure 4 provides a map of Site 063/065 and the surrounding area indicating the presence of mapped wetlands located in the vicinity of the site. The map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Additionally, there are no streams or other significant natural features within the project area.

The Soils and Other Natural Resource Information Used - 2:90 – 1.4(b)(1)(iv)

Figure 5 is a Soil Map that identifies the type and distribution of soil units that are mapped for the site as indicated by the Natural Resource Conservation Service. No other natural resources have been identified or are known to exist on property of Site 063/065.

The Land Cover and Use of Area Adjacent to the Land Disturbance - 2:90 – 1.4(b)(1)(v)

The former Baldwin Oils facility and Burma Road sites are located at 1 Burma Road in Jersey City, New Jersey (Figure 1). Both sites were identified as Non-Residential Hudson County Chrome (HCC) sites by the NJDEP and are designated as HCC Sites 063 and 065, respectively, in the July 19, 1990 Administrative Consent Order between the NJDEP and PPG Industries, Inc. (PPG).

The NJDEP Site Remediation Program's Program Interest number for Site 063 is G000008691 and for Site 065 is G000008693. Site 063 is identified as Block 2154.4, Lot 4 on the most recent Hudson County Tax Map but is also identified as Block 1497, Lot 4 on the most recent Hudson County Tax Parcel database (HCDP, 2007; NJOIT, 2010). Site 065 is the narrow strip of land on the west side of Burma Road between Burma Road and Site 063. Site 065 appears to be part of the Burma Road right-of-way and has no assigned block or lot number. The majority of the site is currently unused. A portion of the southern end of the site is used for temporary parking of tractor trailers.

The topography of Site 063/065 is typical of the area with topographic elevation ranging between 7 and 10 feet above mean sea level. The pre-existing topography and natural drainage associated with Site 063/065 have been modified during previous development activities on the property. The topography is depicted on Sheet C-1.

Current surface cover of Site 063/065 consists of gravel with sparse areas of small trees and brush growth that are denser in the northern portion of the property. A high-density polyethylene (HDPE) liner that was installed following completion of historical remediation activities is present beneath the gravel surface layer throughout the majority of the central portion of the site. A temporary polyvinyl chloride (PVC) liner has been placed on areas of the northern portion of the site. Surface drainage occurs as sheet flow runoff generally from the northwest to southeast towards Burma Road.

The land use immediately adjacent to Site 063/065 is shown in Sheet C-1. As shown, the site is bordered to the southeast by Burma Road and to the southwest by Morris Pesin Drive, across which are properties with various industrial uses and the boundary for Liberty State Park, respectively. A New Jersey Department of Transportation maintenance facility is located adjacent to the west. The property to the north of Site 063/065 is a densely wooded right-of-way associated with the New Jersey Turnpike (Interstate 78) on ramp.

The remediation project will occur entirely within the boundary of Site 063/065 such that no earth disturbance activities will occur on neighboring properties.

All Hydraulic and Hydrologic Data Describing Existing and Proposed Watershed Conditions and a Completed Copy of the Hydraulic and Hydrologic Data Base Summary Form SSCC251 HDF1 - 2:90 – 1.4(b)(1)(vi)

Hydraulic and hydrologic data for existing and proposed post-construction watershed conditions are contained in Appendix A. As storm water management basins are not required for this project given the hydraulic and hydrologic calculations, Form SSCC HDF1 (which is used for storm water basin design) is not included with this SESCP. Appendix A contains the computer generated output for the hydraulic and hydrologic calculations using the computer program HydroCAD® Version 8.5. Table 1 presented below contains a summary of the HydroCAD® pre-construction and post-construction total and peak flow rates and total runoff for the 2-year, 24-hour storm event; 10-year, 24-hour storm event; and 100-year, 24-hour storm event.

Table 1: Total Pre-Construction and Post-Construction Storm Water Runoff Calculations

Storm Event	Pre-Construction Peak Flow (cfs)[1]	Pre-Construction Runoff Volume (af)[2]	Post-Construction Peak Flow (cfs)	Post-Construction Runoff Volume (af)
2-year, 24-hour	12.94	0.562	10.68	0.444
10-year, 24-hour	23.91	1.066	22.28	0.959
100-year, 24-hour	32.67	1.478	31.53	1.391

[1] cfs = cubic feet per second.
[2] af = acre feet.

Following completion of the proposed excavation activities, changes in site conditions impacting runoff volume and flows will include the removal of the HDPE liner within the central portion of the site and the PVC liner on the north portion of the site and the construction of a grassed waterway to be graded toward the storm water culvert located adjacent to Burma Road along the eastern boundary of the site as shown in Sheets C-1 through C-3. Removal of the HDPE and PVC liners will reduce the impervious surface area of the site and thereby result in a reduced runoff volume. Additionally, the construction of the grassed waterway will serve to direct surface runoff from the southern and central portions of the site as well as the western portion of Burma Road to the existing culvert inlet.

3. Four Copies if the SESCP at the Same Scale as the Site Plan Submitted to the Municipality or Other Land Use Approval Agency which Includes the Following Information Detailed at the Plat – 2:90-1.4(b)(2)

HEPSCD requires a single set of signed and sealed plans for review and reference in lieu of the four copies requested in state regulations. The information requested under NJAC 2:90-1.4(b)(2), however, is consistent with HEPSCD and is provided below in the following sections.

The Proposed Sequence of Development Including Duration of Each Phase in the Sequence - 2:90 – 1.4(b)(2)(i)

A proposed general Sequence of Construction is contained in Appendix B. The Sequence of Construction will be refined and further detail provided for submittal of the SESCP to HEPSCD upon completion of the final remedial design.

A Site Grading Plan Delineating the Areas to be Disturbed Including Proposed Cut and Fill Areas Together with Existing and Proposed Profiles of these Areas - 2:90 – 1.4(b)(2)(ii)

Sheet C-1 in Appendix C is the grading plan for the remediation of Site 063/065. The drawing shows the excavation plans and current grade for the area that will be remediated. Proposed soil erosion and sediment control measures that will be implemented during the remediation activities are shown on this drawing. Sheet C-2 contains the post-construction site conditions and grading plan for restoration activities. Details for the installation of the soil erosion and sediment control measures, general notes, and the sequence of construction related to the SESC Plan are shown on Sheet C-3.

Contours at a Two-Foot Interval, Showing Present and Proposed Ground Elevations - 2:90 – 1.4(b)(2)(iii)

The grading plans shown on Sheets C-1 and C-2 represent the existing and proposed ground surface elevations, respectively. These grading plans have contour lines with an interval of one foot.

The Locations of All Streams and Existing and Proposed Drains and Culverts - 2:90 – 1.4(b)(2)(iv)

Three storm water catch basins are located along the northern shoulder of Burma Road. The locations of these catch basins are shown on Sheet C-1 and include: one catch basin located at the intersection of Morris Pesin Drive and Burma Road, one catch basin located central to the site boundary along Burma Road, and one catch basin located along Burma Road near the northern boundary of the site. The centrally located catch basin also includes a 12-inch diameter culvert oriented to the west to allow for capture of storm water runoff from the Fabriform® drainage structure that borders Burma Road as shown on Sheet C-1.

The storm water catch basins are connected to a 45-inch diameter combined sewer pipe that conveys water to the local POTW as reported by The Jersey City Municipal Utilities Authority.

Following completion of site remediation activities, the existing Fabriform® drainage structure will be replaced by a grassed waterway as shown on Sheet C-2. No new drains or culverts are proposed for installation on the property during this remediation project.

A Stability Analysis of all Channels below all Points of Storm Water Discharge which Demonstrates that a Stable Condition will Exist or there will be no Degradation of the Existing Conditions - 2:90 – 1.4(b)(2)(v)

Currently, runoff from the project area is by sheet flow in all proposed remediation areas. Post-construction grade is intended to mimic the pre-construction grade and the gravel surface cover will be restored following completion of remediation activities. Additionally, the HDPE liner covering the central portion of the site and the PVC liner covering the north portion of the site will be removed. As a result, no concentration of runoff flow will occur.

The proposed grassed waterway adjacent to a portion of Burma Road shall serve the purpose of the existing Fabriform® structure and direct storm water runoff from Burma Road to the existing drainage culvert. The drainage culvert is connected to a 45-inch diameter combined sewer pipe that conveys water to the local POTW as reported by The Jersey City Municipal Utilities Authority with no known discharge point outside of this system. Therefore, a stability analysis was not conducted for Site 063/065.

The Location and Detail of all Proposed Erosion and Sediment Control Structures Including Profiles, Cross Sections, and Appropriate Notes, and Supporting Computations - 2:90 – 1.4(b)(2)(vi)

The locations of the soil erosion and sediment control structures are shown on Sheet C-1. These structures include a stabilized construction entrance, inlet protection, culvert protection, and filter fabric fence. These structures are proposed given the minimal grades at Site 063/065. The details for the erosion and sediment control measures are shown on Sheet C-3 along with the general notes and the sequence of construction.

The Location and Detail of all Proposed Nonstructural Methods of Soil Stabilization Including Types and Rates of Lime, Fertilizer, Seed, and Mulch to be Applied - 2:90 – 1.4(b)(2)(vii)

Vegetative soil stabilization is proposed for the grassed waterway to be installed following completion of remediation activities. The detail for types and rates of lime, fertilizer, seed, and mulch to be applied are included on Sheet C-3 in accordance with the Standard for Permanent Vegetative Cover for Soil Stabilization from the Standards for Soil Erosion and Sediment Control in New Jersey.

Erosion Control Measures for Non-Growing Season Stabilization of Exposed Areas where the Establishment of Vegetation is Planned as the Final Control Measure - 2:90 – 1.4(b)(2)(viii)

Permanent vegetative cover is planned for the grassed waterway to be constructed along Burma Road (Sheet C-2) following completion of the remediation activities. In the event that construction of this grassed waterway is completed during the non-growing season (November 15 to March 1), all proposed erosion and sediment control measures shall be left in place and maintained until adequate vegetative cover can be established as required.

For Residential Development, Erosion Control Measures which Apply to Dwelling Construction or Individual Lots with Notation on the Final Plat that Requirement for Installation of Such Control Measures shall Apply to Subsequent Owners if Title is Conveyed - 2:90 – 1.4(b)(2)(ix)

This requirement is not applicable because the remediation project does not involve the construction of residential dwellings.

Plans for Maintenance of Permanent Soil Erosion and Sediment Control Measures and Facilities During and After Construction, which Include the Designation of Persons or Entity Responsible for Such Maintenance - 2:90 – 1.4(b)(2)(x)

The erosion and sediment control measures that will be installed prior to commencement of excavation activities are temporary rather than permanent. Therefore, after the site has been stabilized and certified as such by the HEPSCD, all temporary erosion and sediment control measures will be removed and properly disposed at a landfill permitted to accept these materials.

4. Ownership Disclosure Affidavit Form - 2:90 – 1.4(b)(3)

The Ownership Disclosure Affidavit Form will be completed and submitted upon completion of the final SESCP.

5. Appropriate Fees - 2:90 – 1.4(b)(4)

The application fee of $1,350 is estimated to be required for submittal of the SESCP based on the HEPSCD Fee Schedule effective April 1, 2013. The actual application fee will be calculated based on the final remedial design and submitted to HEPSCD with the SESCP.

6. Additional Information as May be Required by the District Depending upon the Scope Topography and Complexity of the Project – 2:90 – 1.4(b)(5)

The project involves a site remediation that is being performed at Site 063/065 under the auspices of the NJDEP. All earth disturbance activities associated with this remediation project will comply with the requirements of NJAC 2:90.

7. Certifications – 2:90 – 1.4(c)

2:90 – 1.4(c)(1) This is to certify that all erosion and sediment control measures are designed in accordance with current Standards for Erosion and Sediment Control in New Jersey as promulgated by the Committee and found at NJAC 2:90-1.3 and will be installed in accordance with the plans as approved by HEPSCD.

2:90 – 1.4(c)(2) Only non-structural measures are proposed for erosion and sediment control measures for this project.

2:90 – 1.4(c)(3) This is to certify that PPG will retain full responsibility for any damages which may result from any construction activity notwithstanding district certification of the SESCP.

2:90 – 1.4(c)(4) This is to certify that all engineering related items of this SESCP have been prepared under the direction of and have been sealed by a professional engineer licensed in the State of New Jersey in accordance with NJAC 13:27-6.

2:90 – 1.4(c)(5) This is to certify that any conveyance of the project or portion thereof to a subsequent owner shall include transfer of full responsibility for compliance with the certified SESCP.

2:90 – 1.4(c)(6) This is to certify that a copy of the certified SESCP shall be maintained on the project site during construction.

2:90 – 1.4(c)(7) This is to certify that PPG and any agents acting on behalf of PPG will allow HEPSCD agents and representatives on the project lands for the purpose of performing an inspection through the course of the project and after completion of the project.

2:90 – 1.4(c)(8) This is to certify that PPG or any agent acting on behalf of PPG will notify HEPSCD in writing at least 48 hours in advance of any land disturbance activity and upon completion of the remediation project.

8. Notarized Authorization - 2:90 – 1.4(d)

A notarized authorization indicating that Shaw was authorized to prepare this SESCP on behalf of PPG will be included in the final SESCP submittal.

9. Exemption Request – 2:90 – 1.4(e)

This remediation project does not meet the requirements for an exemption request. Therefore, an exemption is not being requested.

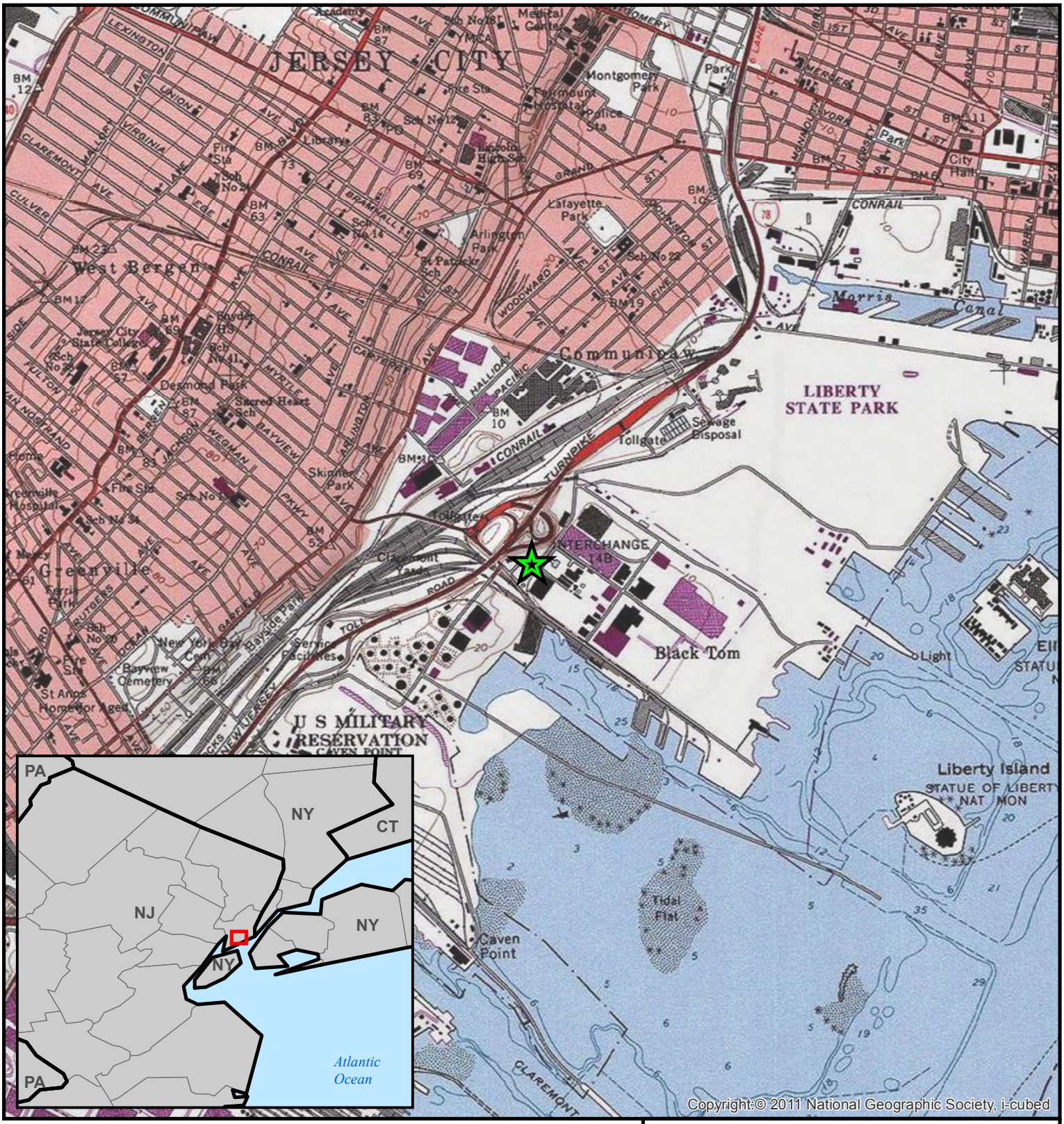
10. Initially Exempt Land Disturbance Activity that Subsequently Falls with the Definition of a Project Shall be Subject to the Rules of this Subchapter – 2:90 – 1.4(f)

This remediation project is not seeking an exemption under the rules of this subchapter.

11. Any Application for Development for a Project that was Approved by the State, any County, Municipality, or any Instrumentality thereof, without the Condition that the Application for Development Comply with the Act Pursuant to N.J.S.A. 4:24-43 and this Subchapter, shall not be Relieved of the Obligations to Conform to the Act and this Subchapter – 2:90 – 1.4(g)

PPG acknowledges this regulatory requirement, will comply with it, and will ensure that any successors in title to this project also comply with this regulatory requirement.

Figures



Legend

Project Location

Coordinates:
74°4'0.0876"W
40°42'2.2392"N

1 in = 2,000 ft

N

Coordinate System: GCS NAD 1983 StatePlane NJ

Date Saved: 3/28/2013
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Jersey City, NJ
PPG Industries, Inc.

PPG Industries, Inc.
Site 063 / 065

FIGURE 1

Project Location

Shaw Environmental, Inc. (A CB&I Company)
2790 Mosside Boulevard
Monroeville, PA 15146
www.CBI.com

Boundary

Project Area

1 in = 400 ft

N

Coordinate System: GCS NAD 1983 StatePlane NJ

Date Saved: 3/28/2013
Document Path: G:\PPG\GIS_Documents\Project_Maps\Site63_65\Fig2_Project_Area_Site6365.mxd

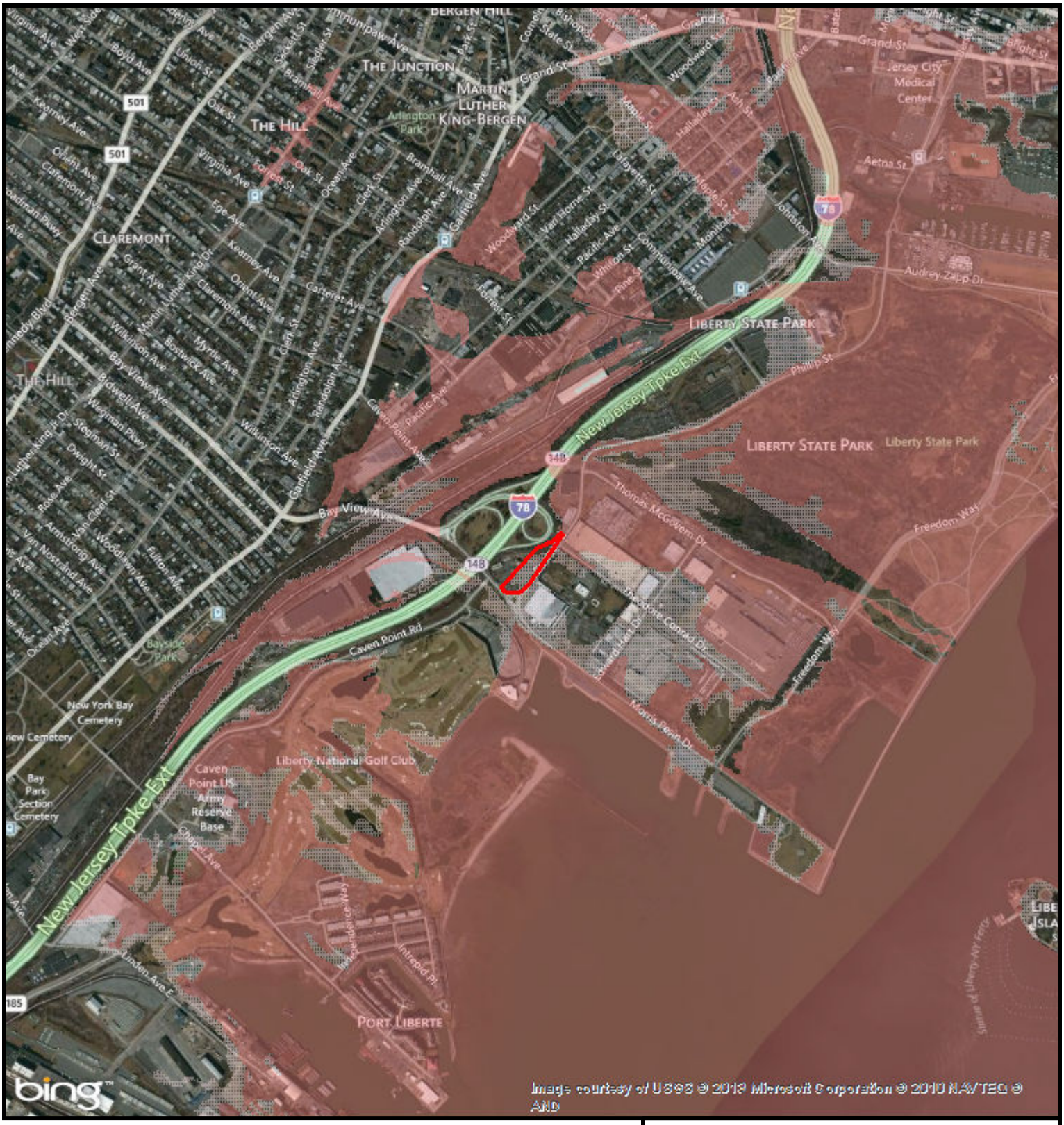
Jersey City, NJ
PPG Industries, Inc.

PPG Industries, Inc.
Site 063 / 065

FIGURE 2

Project Area

Shaw Environmental, Inc. (A CB&I Company)
2790 Mosside Boulevard
Monroeville, PA 15146
www.CBI.com



FEMA Flood Boundaries

100 Year Floodplain

Possible, but Undetermined Risk Area

Boundary

Project Area

1 in = 1,500 ft

Source: FEMA

Coordinate System: GCS NAD 1983 StatePlane NJ

Date Saved: 3/28/2013

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N

Jersey City, NJ
PPG Industries, Inc.

PPG Industries, Inc.
Site 063 / 065

FIGURE 3

100 Year Flood

Shaw Environmental, Inc. (A CB&I Company)
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Monroeville, PA 15146
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NJDEP Wetlands

Herbaceous Wetlands

Boundary

Project Area

1 in = 400 ft

Source: New Jersey Department of Environmental Protection
Coordinate System: GCS NAD 1983 StatePlane NJ
Date Saved: 3/28/2013
Document Path: G:\PPG\GIS_Documents\Project_Maps\Site63_65\Fig4_Wetlands_Site6365.mxd

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Jersey City, NJ
PPG Industries, Inc.

PPG Industries, Inc.
Site 063 / 065

FIGURE 4

NJDEP Wetlands

Shaw Environmental, Inc. (A CB&I Company)
2790 Mosside Boulevard
Monroeville, PA 15146
www.CBI.com

Soil Classification

- Greenbelt loam, 3 to 8 percent slopes
- Ladyliberty fine sandy loam, 0 to 3 percent slopes
- Laguardia artifactual coarse sandy loam, 0 to 3 percent slopes
- Laguardia artifactual coarse sandy loam, 3 to 8 percent slopes
- Urban land, wet substratum, 0 to 8 percent slopes
- Water

Boundary

- Project Area

1 in = 400 ft

N

Source: Natural Resource Conservation Service
Coordinate System: GCS NAD 1983 StatePlane NJ
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Jersey City, NJ
PPG Industries, Inc.

PPG Industries, Inc.
Site 063 / 065

FIGURE 5

Soil Types

Shaw Environmental, Inc. (A CB&I Company)
2790 Mosside Boulevard
Monroeville, PA 15146
www.CBI.com

Appendix A

Hydrology and Hydraulic Calculations

Hydraulic and Hydrologic Data Summary
Site 063/065 Remediation Project
Jersey City, Hudson County, New Jersey

Purpose

To determine the storm water runoff characteristics for the Site 063/065 Remediation Project located in Hudson County, New Jersey.

References

- New Jersey Department of Transportation Soil Erosion and Sediment Control Standards 2008 Edition
- Hudson County, New Jersey, Custom Soil Resource Report (U.S. Department of Agriculture)
- TR-55 (Urban Hydrology for Small Watersheds)
- HydroCAD® Version 8.5 Storm Water Modeling System
- Technical Release Paper 40 (Rainfall Frequency Atlas of the United States)

Runoff Calculations

Runoff calculations for both the existing pre-construction and the proposed post-construction site conditions were performed utilizing the HydroCAD® Version 8.5 Storm Water Modeling System. This version of the program was released in 2006. A summary of input information is presented in Tables 1 and 2 below.

Table 1: Pre-Construction Storm Water Runoff Calculations Inputs

Input	Value	Comments
Storm Event (inches): - 2 year – 24 hour - 10 year – 24 hour - 100 year – 24 hour	 3.5” 6.0” 8.0”	Technical Release Paper No. 40
Storm Type	II	TR-55
Curve Number (CN)	98 85	Paved parking & roofs – Impervious Gravel, HSG B
Manning’s Number (n): - Sheet Flow	0.011	Smooth Surfaces

Table 2: Post-Construction Storm Water Runoff Calculations Inputs

Input	Value	Comments
Storm Event (inches): - 2 year – 24 hour - 10 year – 24 hour - 100 year – 24 hour	 3.5” 6.0” 8.0”	Technical Release Paper No. 40
Storm Type	II	TR-55
Curve Number (CN)	85	Gravel, HSG B
Manning’s Number (n): - Sheet Flow - Channel Flow	 0.022 0.030	 Smooth Surfaces Short Grass

The following areas that were used in the computations are shown on the site plans included in Appendix A. These areas were determined by the pre-construction and post-construction gradation of the site and include the following watersheds:

Pre-Construction

- Area 1 Watershed = 24,021 square feet
- Area 2 Watershed = 62,370 square feet
- Area 3 Watershed = 29,628 square feet

Post-Construction

- Area 1 Watershed = 24,021 square feet
- Area 2 Watershed = 62,370 square feet
- Area 3 Watershed = 29,628 square feet
- Area 4 Watershed = 8,729 square feet

Flows were determined using the 2-year, 10-year, and 100-year 24-hour storm events as interpreted for the local area from the Technical Release Paper 40 (Rainfall Frequency Atlas of the United States) as shown in Appendix B.

Pre-Construction Storm Water Runoff Volumes and Peak Flows

The results of the storm water runoff calculations are summarized in the tables presented below. The computer generated HydroCAD® Storm Water Modeling System outputs are provided in Appendix C.

Table 3: Pre-Construction 2-Year, 24-Hour Storm Event

Watershed	Runoff Volume (acre-feet)	Peak Flow (cfs)*
Area 1 Watershed	0.086	2.26
Area 2 Watershed	0.370	7.89
Area 3 Watershed	0.106	2.79
TOTAL	0.562	12.94

**cfs – cubic feet per second.*

Table 4: Pre-Construction 10-Year, 24-Hour Storm Event

Watershed	Runoff Volume (acre-feet)	Peak Flow (cfs)*
Area 1 Watershed	0.185	4.61
Area 2 Watershed	0.653	13.61
Area 3 Watershed	0.228	5.69
TOTAL	1.066	23.91

**cfs – cubic feet per second.*

Table 5: Pre-Construction 100-Year, 24-Hour Storm Event

Watershed	Runoff Volume (acre-feet)	Peak Flow (cfs)*
Area 1 Watershed	0.268	6.49
Area 2 Watershed	0.879	18.18
Area 3 Watershed	0.331	8.00
TOTAL	1.478	32.67

**cfs – cubic feet per second.*

Post-Construction Storm Water Runoff Volumes and Peak Flows

The results of the post-construction storm water runoff calculations are summarized in the tables presented below. The computer generated HydroCAD® Storm Water Modeling System outputs are provided in Appendix D.

For the post-construction calculations, Watershed Areas 1, 2, and 4 ultimately drain into a proposed grassed waterway along the southeastern boundary of the site. This grassed waterway shall take the place of the existing Fabriform® channel that is to be removed during excavation. The grass waterway is to be constructed in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey (July 1999) and shall be graded to promote flow towards the existing drainage culvert located along the eastern boundary of the site with Burma Road. The

preliminary design of the grassed waterway includes a trapezoidal shape with a top width of 10 feet, a bottom width of 2 feet, and a depth of 2 feet. The grassed waterway is anticipated to be approximately 338 feet long with a slope of approximately 0.003 foot per foot. However, the final design of the grassed waterway will be determined upon completion of the final remedial design.

The volumes and flows presented in Tables 6 through 8 below account for the cumulative values of these areas which are represented as the total runoff volume and flow of the grassed waterway.

Table 6: Post-Construction 2-Year, 24-Hour Storm Event

Watershed	Runoff Volume (acre-feet)	Peak Flow (cfs)*
Grassed Waterway	0.338	7.89
Area 3 Watershed	0.106	2.79
TOTAL	0.444	10.68

**cfs – cubic feet per second.*

Table 7: Post-Construction 10-Year, 24-Hour Storm Event

Watershed	Runoff Volume (acre-feet)	Peak Flow (cfs)*
Grassed Waterway	0.731	16.59
Area 3 Watershed	0.228	5.69
TOTAL	0.959	22.28

**cfs – cubic feet per second.*

Table 8: Post-Construction 100-Year, 24-Hour Storm Event

Watershed	Runoff Volume (acre-feet)	Peak Flow (cfs)*
Grassed Waterway	1.060	23.53
Area 3 Watershed	0.331	8.00
TOTAL	1.391	31.53

**cfs – cubic feet per second.*

Summary

The HydroCAD® Version 8 Storm Water Modeling System was used to compile storm water runoff and peak flow data for the pre-construction and post-construction conditions at

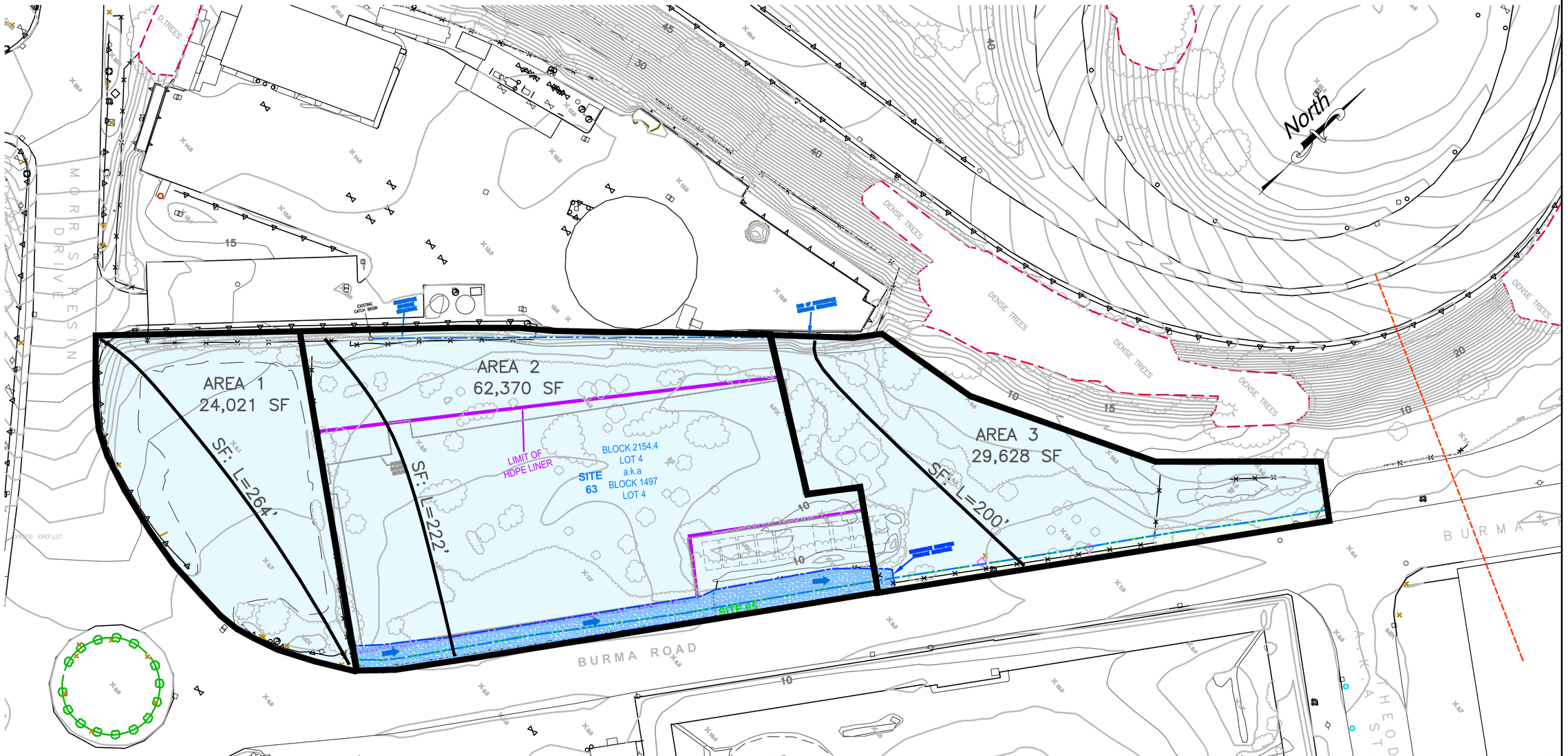
Site 063/065. The calculated pre-construction runoff volume and flow values were calculated by dividing the site into three drainage areas as shown in Appendix A.

Following completion of the proposed excavation activities, changes in site conditions impacting runoff volume and flows will include the removal of the HDPE liner within the central portion of the site and the construction of a grassed waterway to be graded toward the storm water culvert located adjacent to Burma Road along the eastern boundary of the site. The resulting runoff volume and flow values were calculated by dividing the site into the drainage areas shown for post-construction conditions in Appendix A. Removal of the HDPE liner will reduce the impervious surface area of the site and thereby result in a reduced runoff volume from the Area 2 watershed. Additionally, the construction of the grassed waterway will serve to direct surface runoff from Watershed Areas 1 and 2 as well as the western portion of Burma Road to the existing culvert inlet.

Appendix A: Site Plans

OFFICE
Pittsburgh, PA

DRAWING NUMBER
1

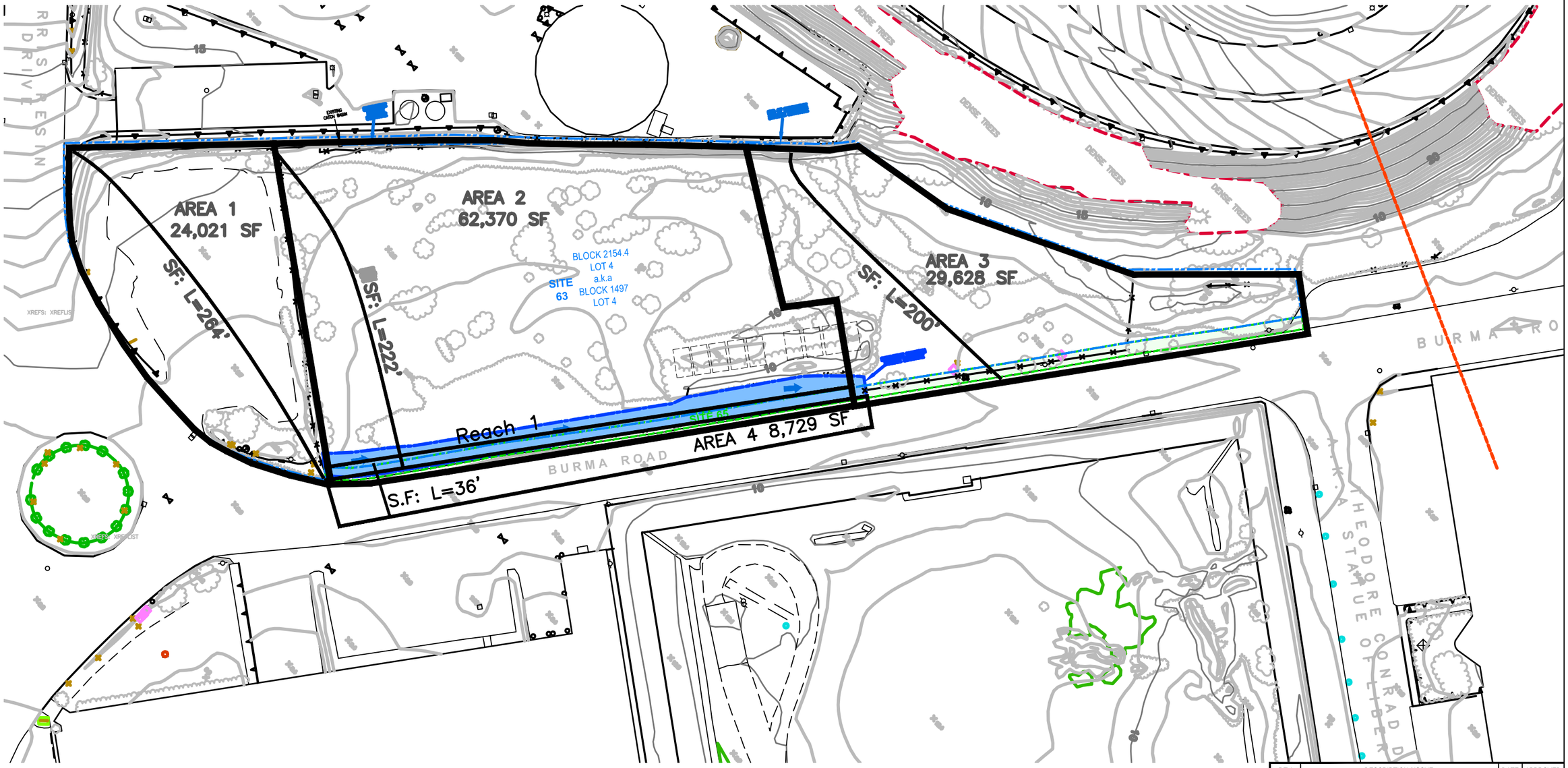


NOTE: NOT TO SCALE

REV	DESCRIPTION / ISSUE	DATE	APPROVED

2790 Mosside Boulevard
Monroeville, PA 15146-2792

DESIGNED BY: --	PPG INDUSTRIES HUDSON COUNTY, NEW JERSEY			
DRAWN BY: --	APPENDIX A PRE-CONSTRUCTION SITE 063/065 JERSEY CITY, NEW JERSEY			
CHECKED BY: --				
APPROVED BY: --	DATE: 4/1/13	SCALE: AS SHOWN	DRAWING NO. 1	SHEET NO.



NOTE: NOT TO SCALE

REV	DESCRIPTION / ISSUE	DATE	APPROVED

2790 Mosside Boulevard
Monroeville, PA 15146-2792

DESIGNED BY: --

DRAWN BY: --

CHECKED BY: --

APPROVED BY: --

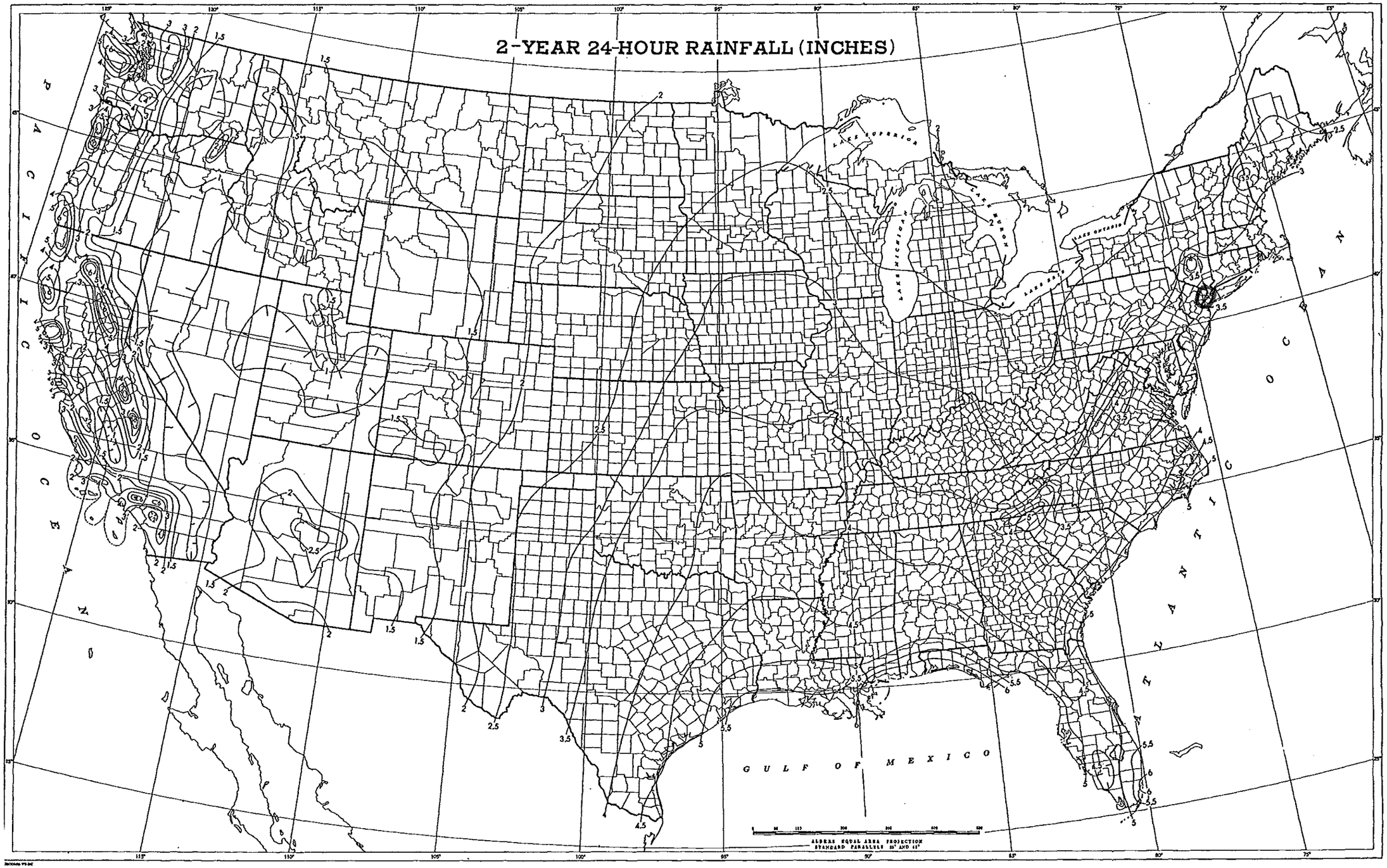
PPG INDUSTRIES
HUDSON COUNTY, NEW JERSEY

APPENDIX A
POST-CONSTRUCTION
SITE 063/065
JERSEY CITY, NEW JERSEY

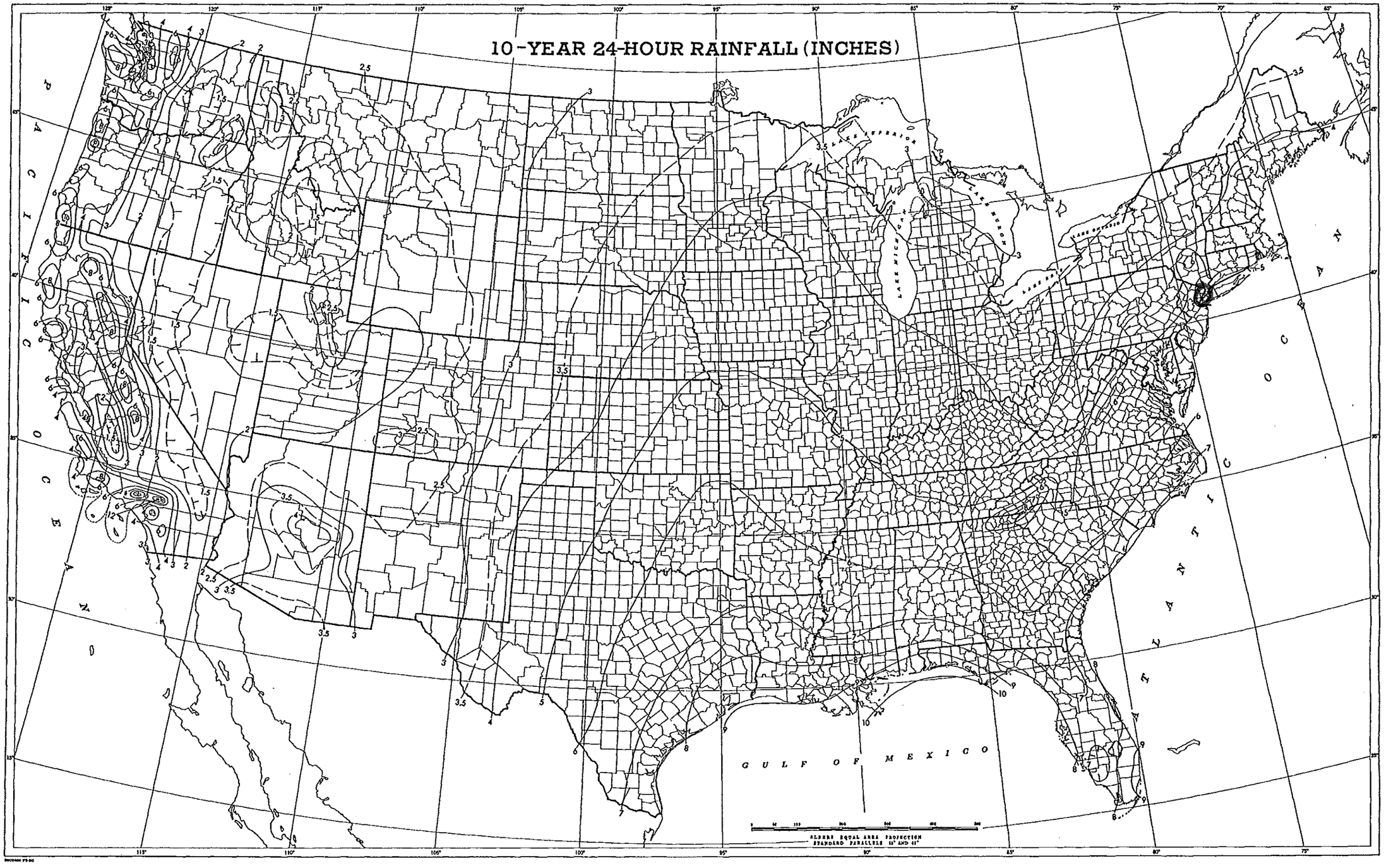
DATE:	SCALE:	DRAWING NO.	SHEET NO.
4/1/13	AS SHOWN	2	--

Appendix B: Technical Release Paper 40 (Rainfall Frequency Atlas of the United States)

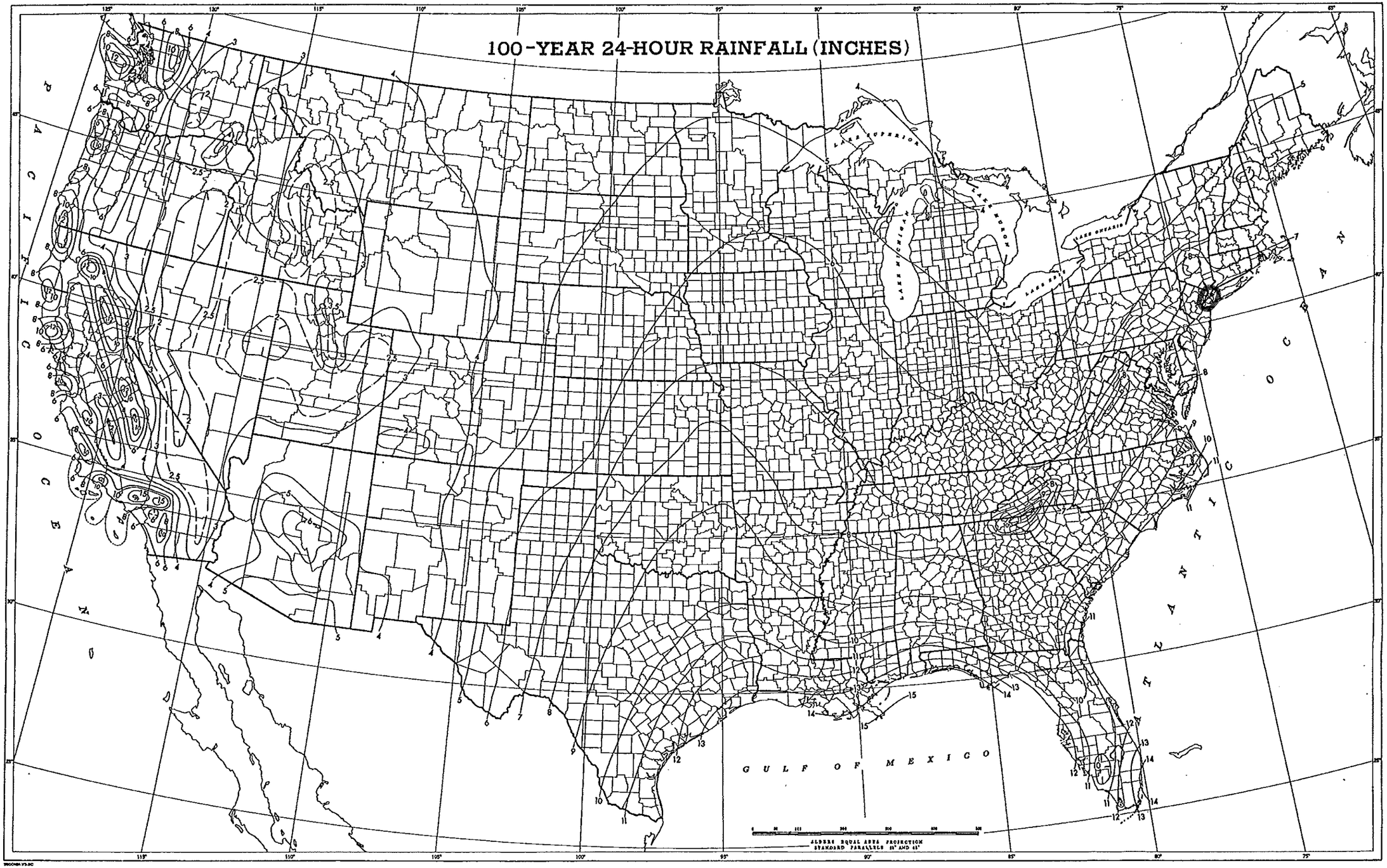
2-YEAR 24-HOUR RAINFALL (INCHES)



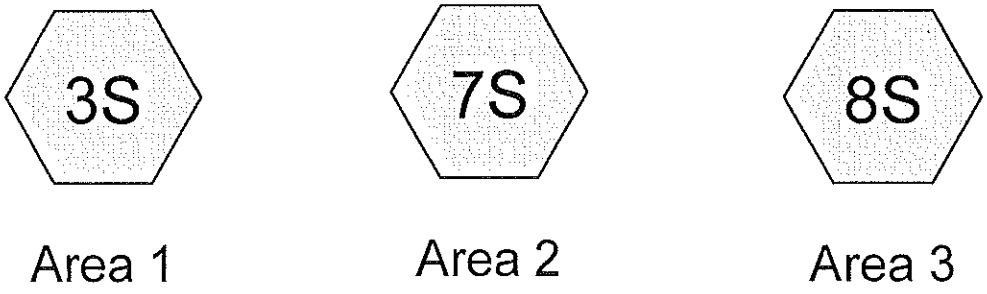
10-YEAR 24-HOUR RAINFALL (INCHES)

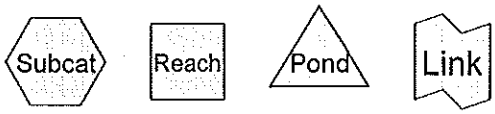


100-YEAR 24-HOUR RAINFALL (INCHES)



Appendix C: Pre-Construction HydroCAD® Output





Drainage Diagram for Hudson County NJ site 63-65 - Pre Construction
Prepared by {enter your company name here}, Printed 3/20/2013

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.232	85	Gravel roads, HSG B (3S,8S)
1.432	98	Paved parking & roofs (7S)
2.663		**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
1.232	HSG B	3S, 8S
0.000	HSG C	
0.000	HSG D	
1.432	Other	7S
2.663		**TOTAL AREA**

Time span=1.00-20.00 hrs, dt=0.01 hrs, 1901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Area 1 Runoff Area=24,021 sf 0.00% Impervious Runoff Depth>1.87"
Flow Length=264' Slope=0.0340 '/' Tc=2.0 min CN=85 Runoff=2.26 cfs 0.086 af

Subcatchment 7S: Area 2 Runoff Area=62,370 sf 100.00% Impervious Runoff Depth>3.10"
Flow Length=222' Slope=0.0135 '/' Tc=2.6 min CN=98 Runoff=7.89 cfs 0.370 af

Subcatchment 8S: Area 3 Runoff Area=29,628 sf 0.00% Impervious Runoff Depth>1.87"
Flow Length=200' Slope=0.0200 '/' Tc=2.0 min CN=85 Runoff=2.79 cfs 0.106 af

Total Runoff Area = 2.663 ac Runoff Volume = 0.561 af Average Runoff Depth = 2.53"
46.24% Pervious = 1.232 ac 53.76% Impervious = 1.432 ac

Summary for Subcatchment 3S: Area 1

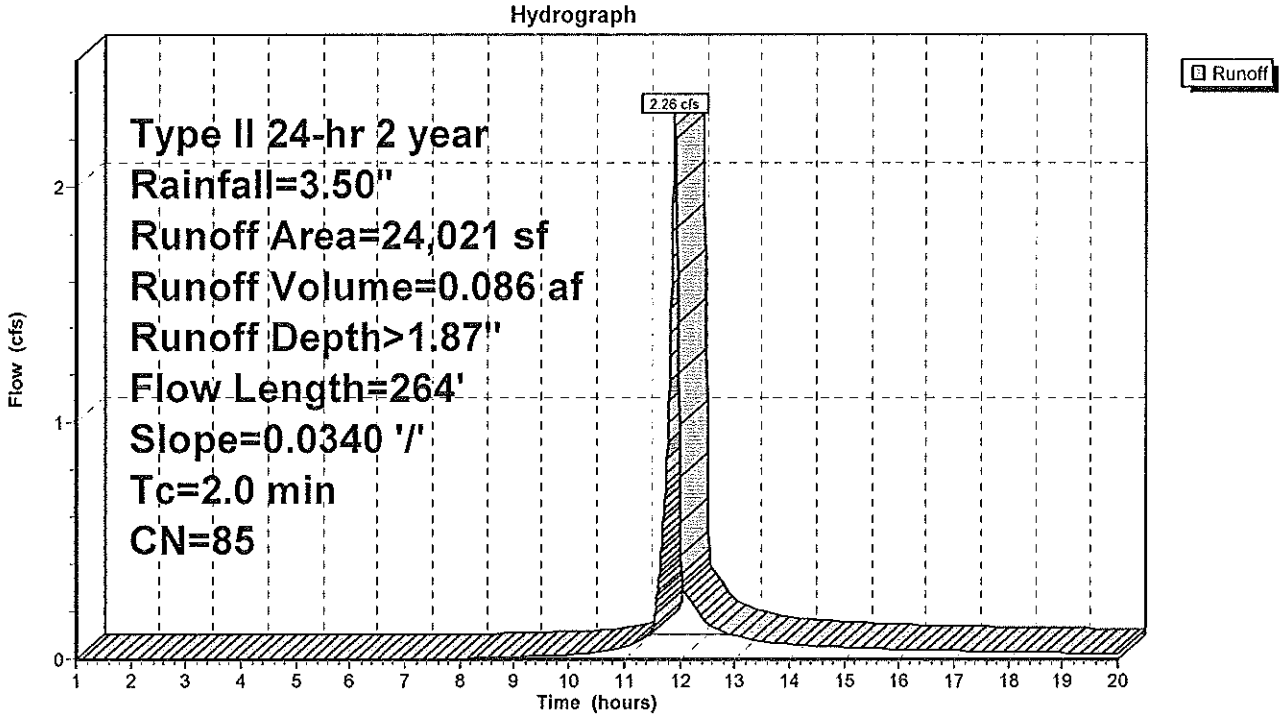
Runoff = 2.26 cfs @ 11.93 hrs, Volume= 0.086 af, Depth> 1.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
24,021	85	Gravel roads, HSG B
24,021		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	264	0.0340	2.16		**Sheet Flow, Area 1** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 3S: Area 1



Summary for Subcatchment 7S: Area 2

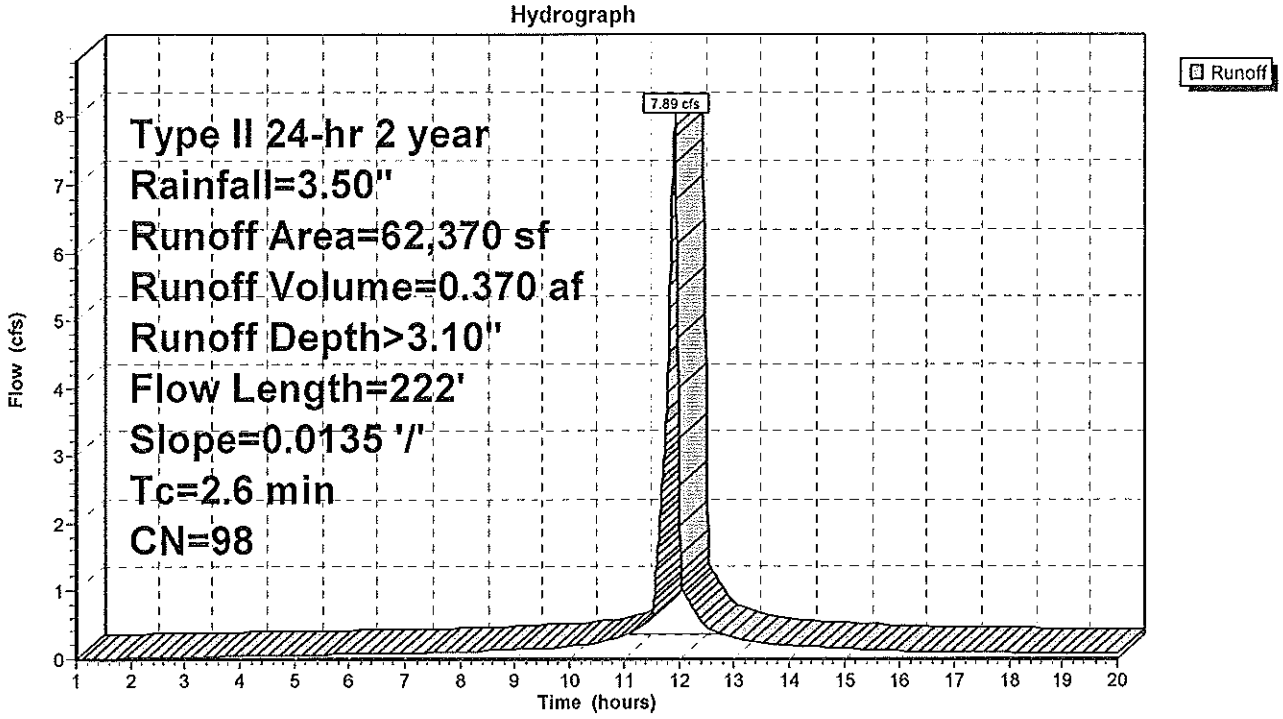
Runoff = 7.89 cfs @ 11.93 hrs, Volume= 0.370 af, Depth> 3.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
62,370	98	Paved parking & roofs
62,370		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	222	0.0135	1.44		**Sheet Flow, Area 2** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 7S: Area 2



Summary for Subcatchment 8S: Area 3

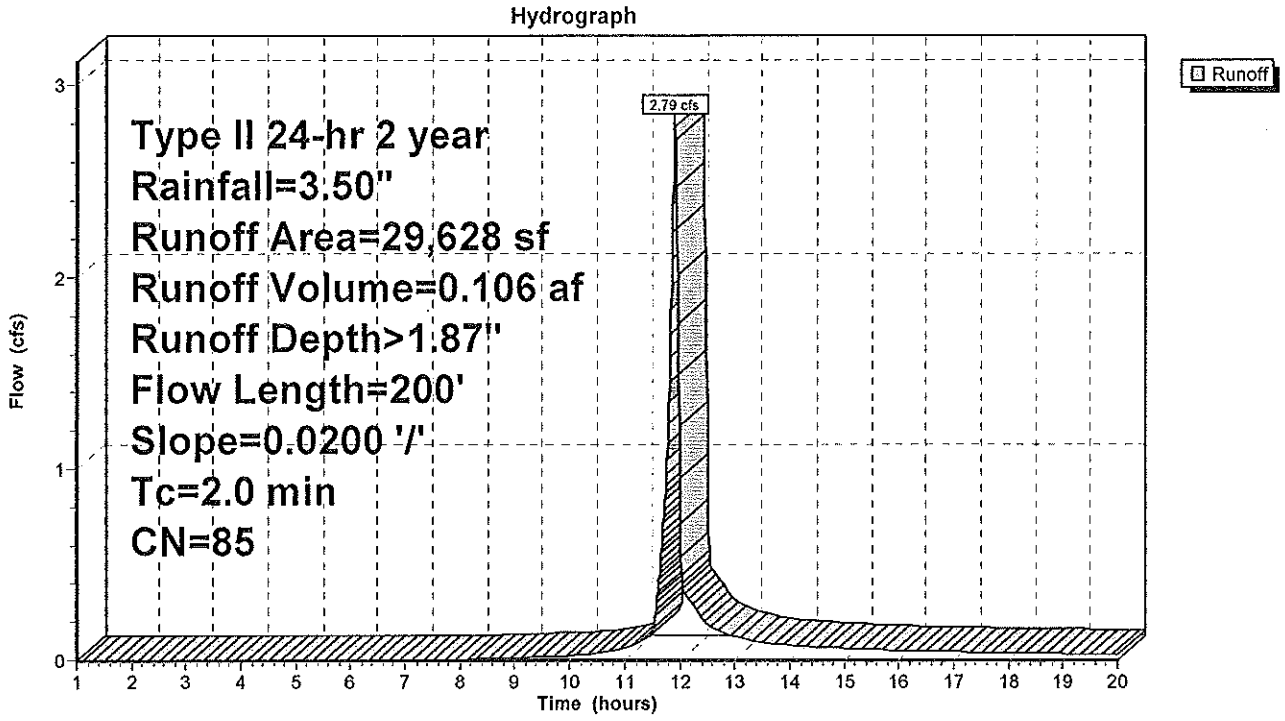
Runoff = 2.79 cfs @ 11.93 hrs, Volume= 0.106 af, Depth> 1.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
29,628	85	Gravel roads, HSG B
29,628		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	200	0.0200	1.65		**Sheet Flow, Area 3** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 8S: Area 3



Time span=1.00-20.00 hrs, dt=0.01 hrs, 1901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Area 1 Runoff Area=24,021 sf 0.00% Impervious Runoff Depth>4.03"
Flow Length=264' Slope=0.0340 '/' Tc=2.0 min CN=85 Runoff=4.61 cfs 0.185 af

Subcatchment 7S: Area 2 Runoff Area=62,370 sf 100.00% Impervious Runoff Depth>5.47"
Flow Length=222' Slope=0.0135 '/' Tc=2.6 min CN=98 Runoff=13.61 cfs 0.653 af

Subcatchment 8S: Area 3 Runoff Area=29,628 sf 0.00% Impervious Runoff Depth>4.03"
Flow Length=200' Slope=0.0200 '/' Tc=2.0 min CN=85 Runoff=5.69 cfs 0.228 af

Total Runoff Area = 2.663 ac Runoff Volume = 1.066 af Average Runoff Depth = 4.80"
46.24% Pervious = 1.232 ac 53.76% Impervious = 1.432 ac

Summary for Subcatchment 3S: Area 1

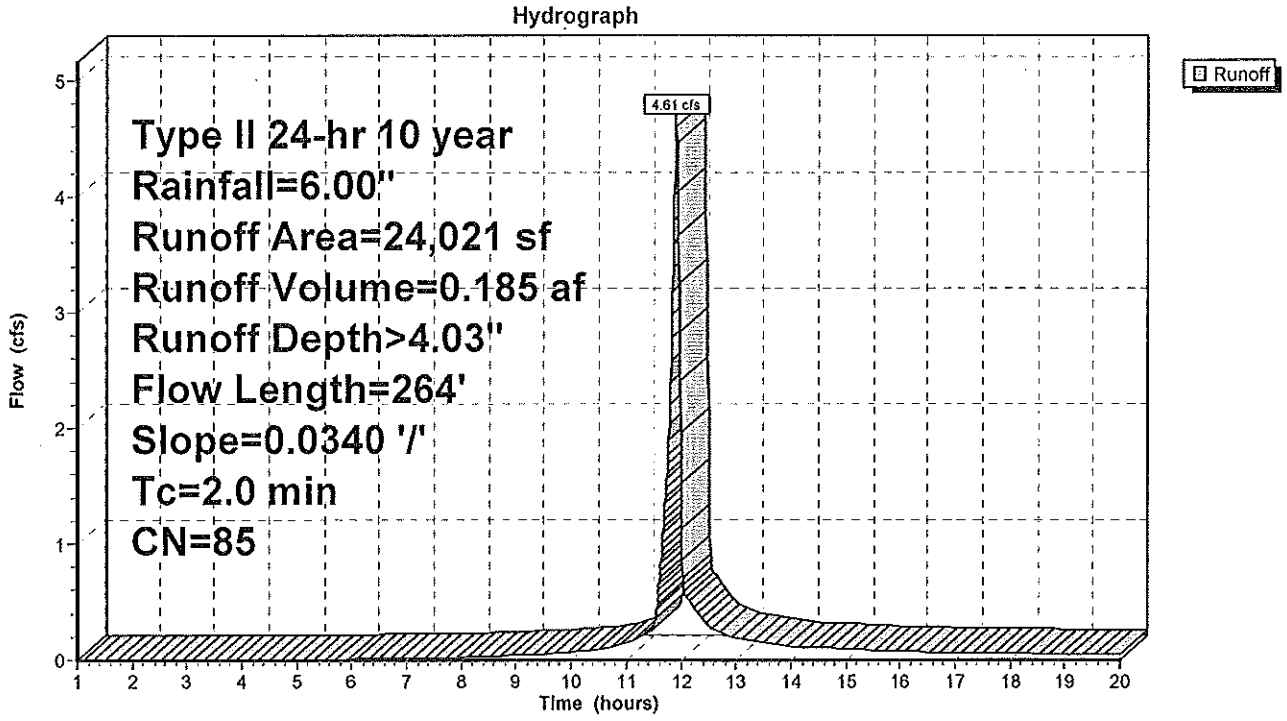
Runoff = 4.61 cfs @ 11.92 hrs, Volume= 0.185 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=6.00"

Area (sf)	CN	Description
24,021	85	Gravel roads, HSG B
24,021		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	264	0.0340	2.16		**Sheet Flow, Area 1** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 3S: Area 1



Summary for Subcatchment 7S: Area 2

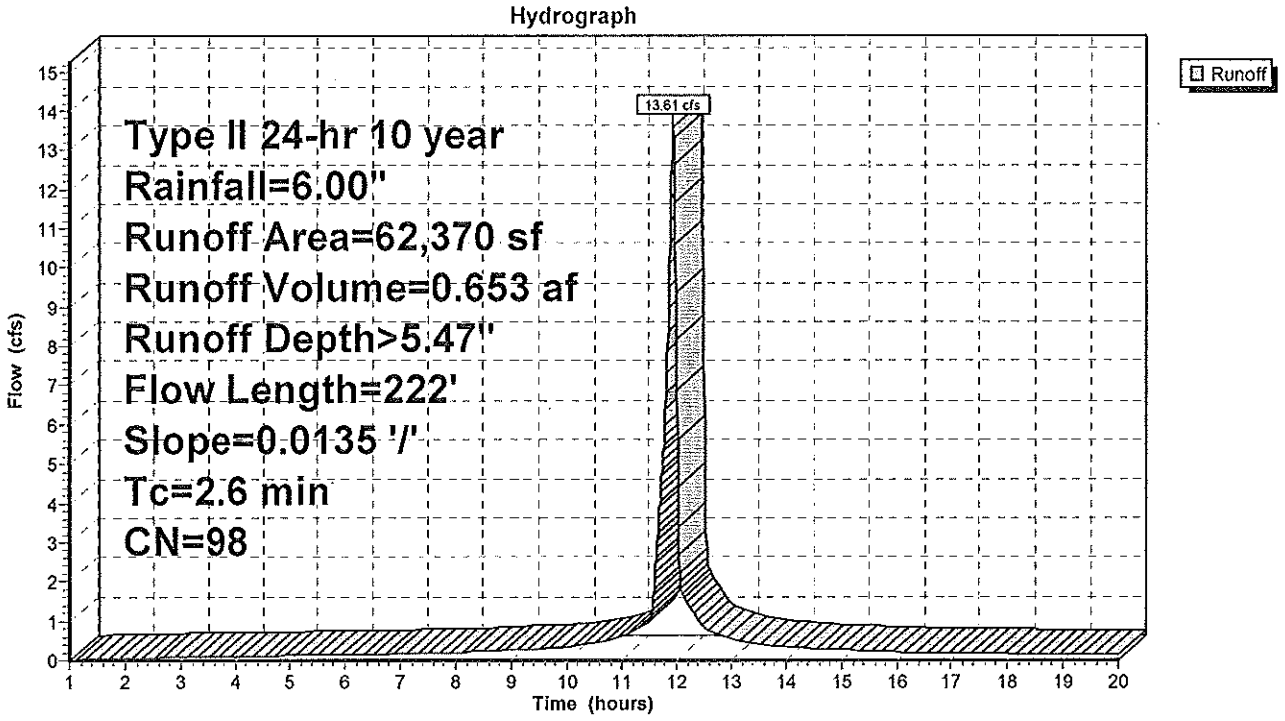
Runoff = 13.61 cfs @ 11.93 hrs, Volume= 0.653 af, Depth> 5.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=6.00"

Area (sf)	CN	Description
62,370	98	Paved parking & roofs
62,370		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	222	0.0135	1.44		**Sheet Flow, Area 2** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 7S: Area 2



Summary for Subcatchment 8S: Area 3

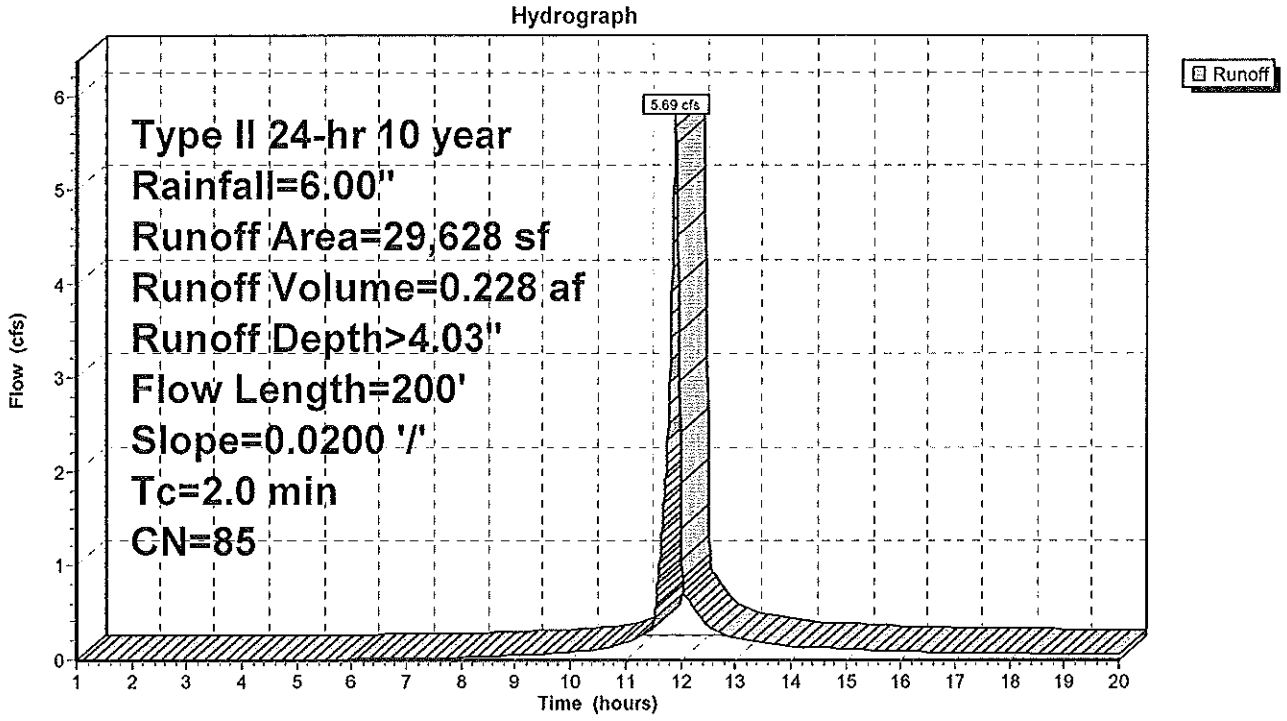
Runoff = 5.69 cfs @ 11.92 hrs, Volume= 0.228 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=6.00"

Area (sf)	CN	Description
29,628	85	Gravel roads, HSG B
29,628		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	200	0.0200	1.65		**Sheet Flow, Area 3** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 8S: Area 3



Time span=1.00-20.00 hrs, dt=0.01 hrs, 1901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Area 1 Runoff Area=24,021 sf 0.00% Impervious Runoff Depth>5.84"
Flow Length=264' Slope=0.0340 '/' Tc=2.0 min CN=85 Runoff=6.49 cfs 0.268 af

Subcatchment 7S: Area 2 Runoff Area=62,370 sf 100.00% Impervious Runoff Depth>7.37"
Flow Length=222' Slope=0.0135 '/' Tc=2.6 min CN=98 Runoff=18.18 cfs 0.879 af

Subcatchment 8S: Area 3 Runoff Area=29,628 sf 0.00% Impervious Runoff Depth>5.84"
Flow Length=200' Slope=0.0200 '/' Tc=2.0 min CN=85 Runoff=8.00 cfs 0.331 af

Total Runoff Area = 2.663 ac Runoff Volume = 1.478 af Average Runoff Depth = 6.66"
46.24% Pervious = 1.232 ac 53.76% Impervious = 1.432 ac

Summary for Subcatchment 3S: Area 1

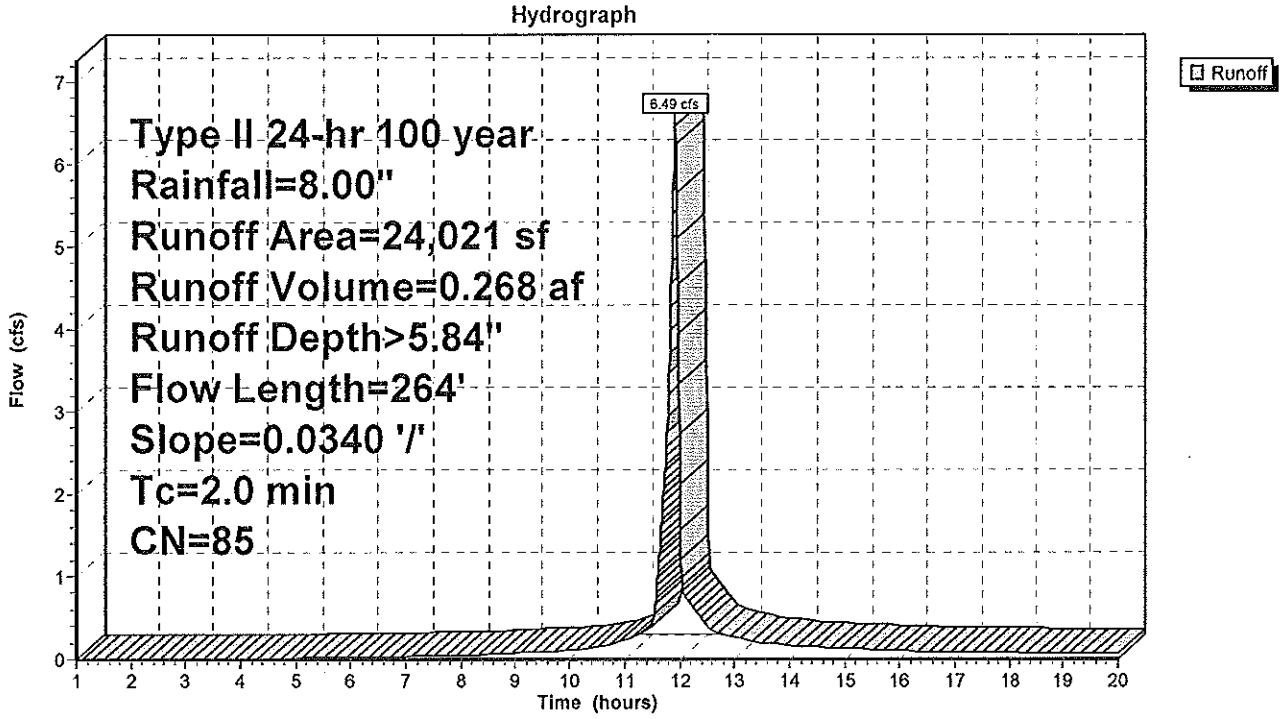
Runoff = 6.49 cfs @ 11.92 hrs, Volume= 0.268 af, Depth> 5.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=8.00"

Area (sf)	CN	Description
24,021	85	Gravel roads, HSG B
24,021		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	264	0.0340	2.16		**Sheet Flow, Area 1** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 3S: Area 1



Summary for Subcatchment 7S: Area 2

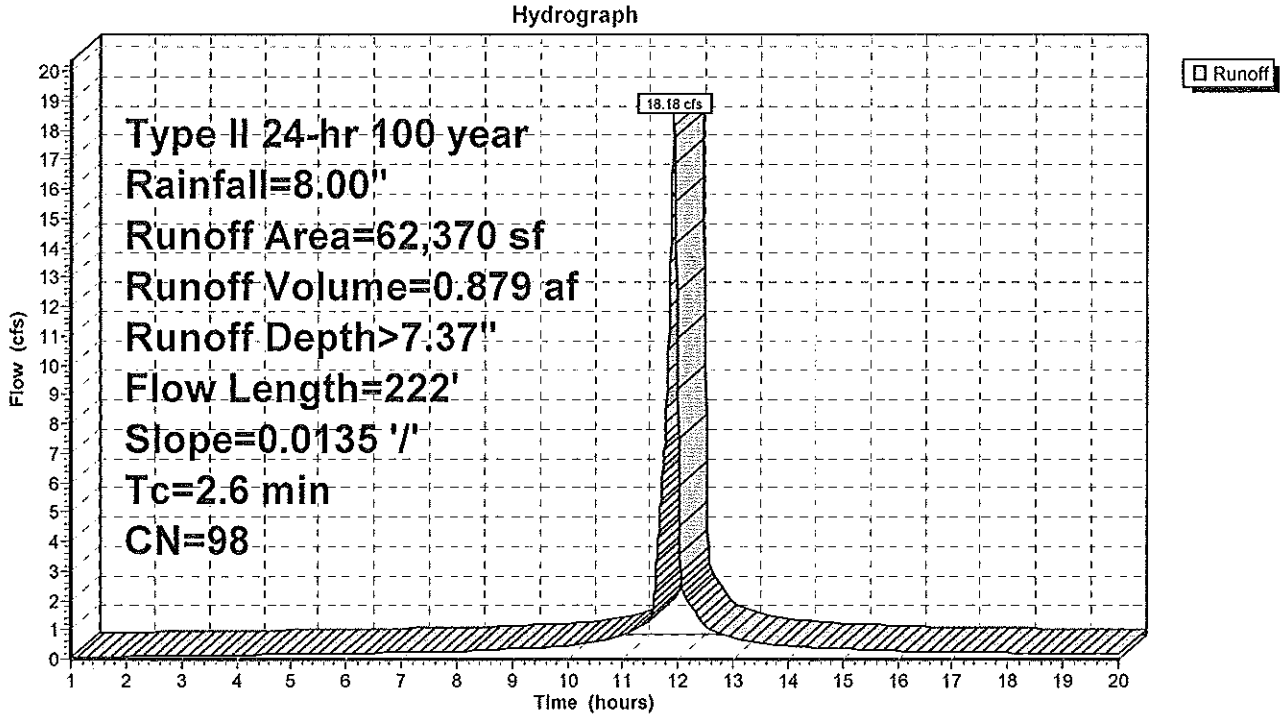
Runoff = 18.18 cfs @ 11.93 hrs, Volume= 0.879 af, Depth> 7.37"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=8.00"

Area (sf)	CN	Description
62,370	98	Paved parking & roofs
62,370		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	222	0.0135	1.44		**Sheet Flow, Area 2** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 7S: Area 2



Summary for Subcatchment 8S: Area 3

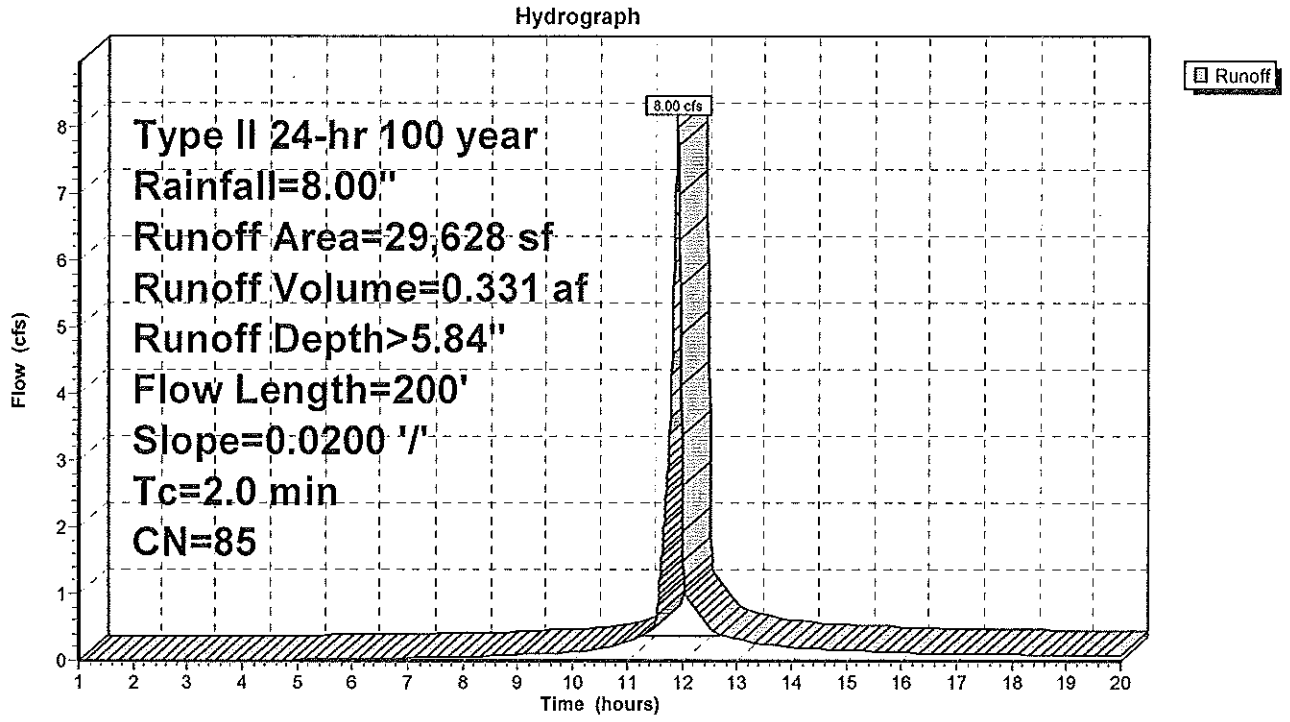
Runoff = 8.00 cfs @ 11.92 hrs, Volume= 0.331 af, Depth> 5.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=8.00"

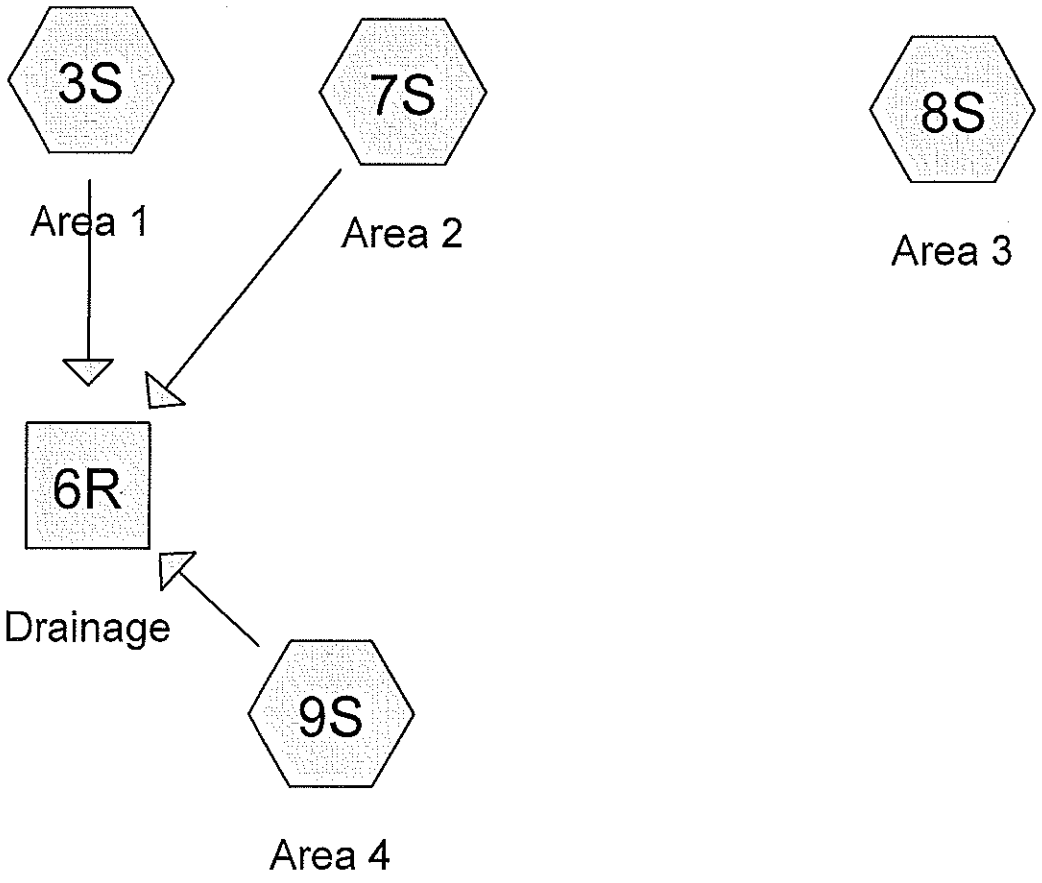
Area (sf)	CN	Description
29,628	85	Gravel roads, HSG B
29,628		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	200	0.0200	1.65		**Sheet Flow, Area 3** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 8S: Area 3



Appendix D: Post-Construction HydroCAD® Output



Subcat Reach Pond Link

Drainage Diagram for Hudson County NJ site 63-65 - Post Construction
Prepared by {enter your company name here}, Printed 4/1/2013

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.864	85	Gravel roads, HSG B (3S,7S,8S,9S)
2.864		**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
2.864	HSG B	3S, 7S, 8S, 9S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
2.864		**TOTAL AREA**

Time span=1.00-20.00 hrs, dt=0.01 hrs, 1901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Area 1 Runoff Area=24,021 sf 0.00% Impervious Runoff Depth>1.87"
Flow Length=264' Slope=0.0340 '/' Tc=2.0 min CN=85 Runoff=2.26 cfs 0.086 af

Subcatchment 7S: Area 2 Runoff Area=62,370 sf 0.00% Impervious Runoff Depth>1.87"
Flow Length=222' Slope=0.0135 '/' Tc=2.6 min CN=85 Runoff=5.75 cfs 0.223 af

Subcatchment 8S: Area 3 Runoff Area=29,628 sf 0.00% Impervious Runoff Depth>1.87"
Flow Length=200' Slope=0.0200 '/' Tc=2.0 min CN=85 Runoff=2.79 cfs 0.106 af

Subcatchment 9S: Area 4 Runoff Area=8,729 sf 0.00% Impervious Runoff Depth>1.87"
Flow Length=36' Slope=0.0278 '/' Tc=0.4 min CN=85 Runoff=0.86 cfs 0.031 af

Reach 6R: Drainage Avg. Depth=1.01' Max Vel=1.96 fps Inflow=8.72 cfs 0.340 af
n=0.030 L=338.0' S=0.0030 '/' Capacity=34.38 cfs Outflow=7.89 cfs 0.338 af

Total Runoff Area = 2.864 ac Runoff Volume = 0.446 af Average Runoff Depth = 1.87"
100.00% Pervious = 2.864 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: Area 1

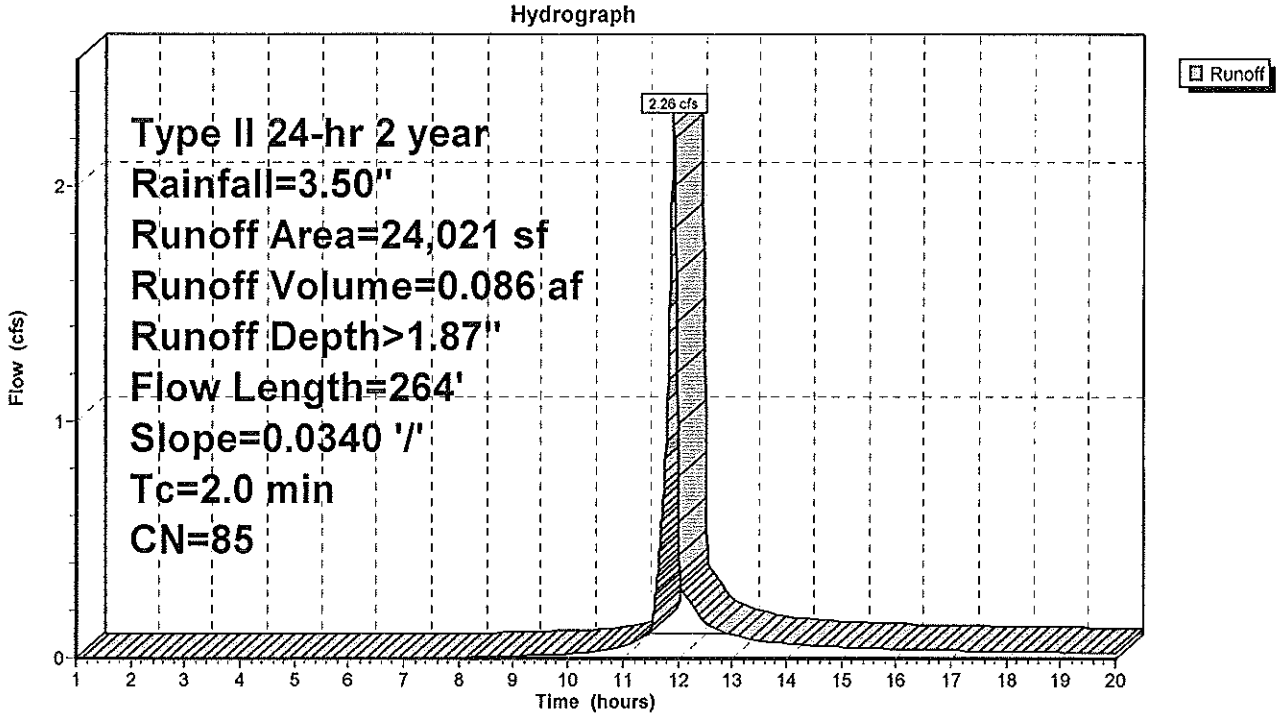
Runoff = 2.26 cfs @ 11.93 hrs, Volume= 0.086 af, Depth> 1.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
24,021	85	Gravel roads, HSG B
24,021		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	264	0.0340	2.16		**Sheet Flow, Area 1** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 3S: Area 1



Summary for Subcatchment 7S: Area 2

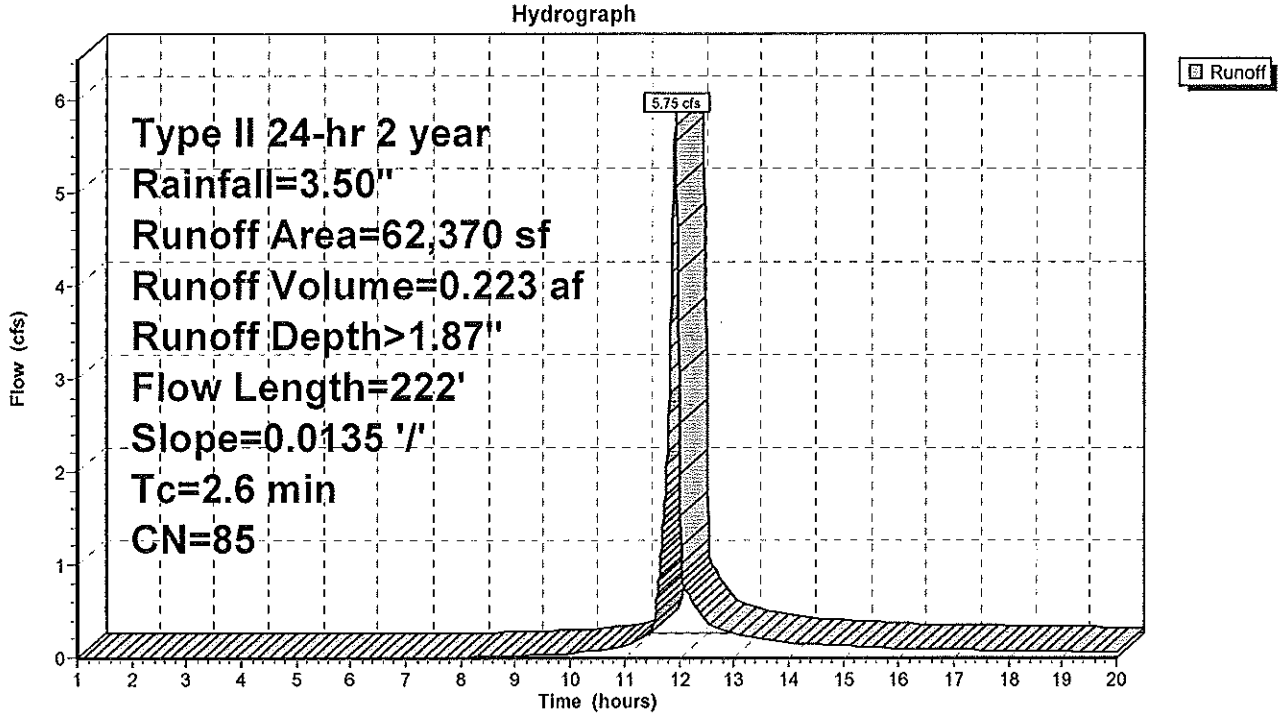
Runoff = 5.75 cfs @ 11.93 hrs, Volume= 0.223 af, Depth> 1.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
62,370	85	Gravel roads, HSG B
62,370		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	222	0.0135	1.44		**Sheet Flow, Area 2** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 7S: Area 2



Summary for Subcatchment 8S: Area 3

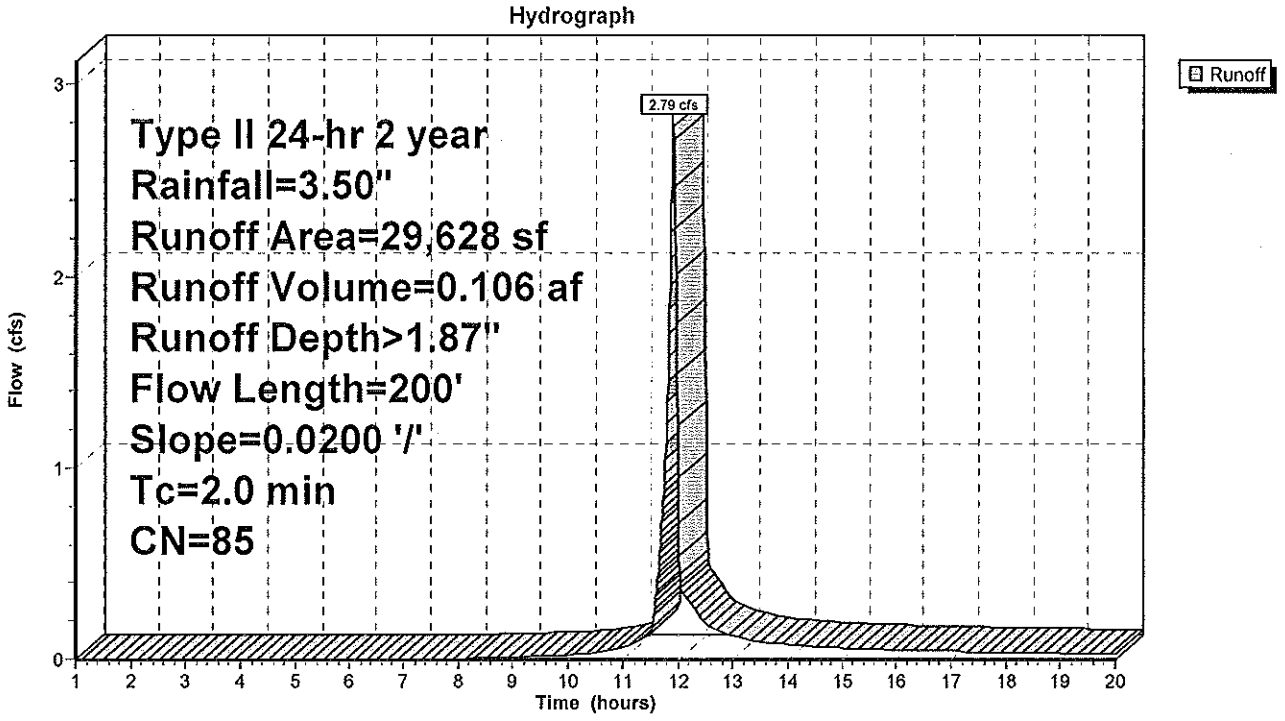
Runoff = 2.79 cfs @ 11.93 hrs, Volume= 0.106 af, Depth> 1.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
29,628	85	Gravel roads, HSG B
29,628		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	200	0.0200	1.65		**Sheet Flow, Area 3** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 8S: Area 3



Summary for Subcatchment 9S: Area 4

[49] Hint: Tc<2dt may require smaller dt

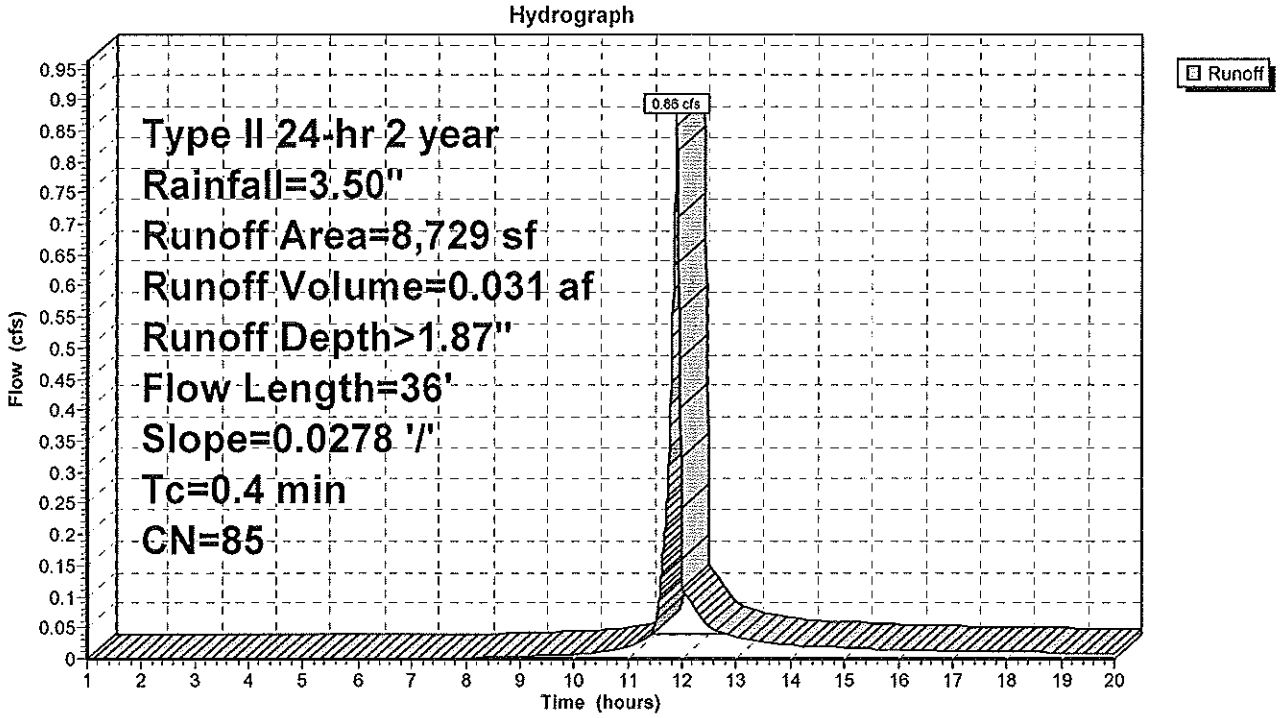
Runoff = 0.86 cfs @ 11.91 hrs, Volume= 0.031 af, Depth> 1.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
8,729	85	Gravel roads, HSG B
8,729		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	36	0.0278	1.34		**Sheet Flow, Area 4** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 9S: Area 4



Summary for Reach 6R: Drainage

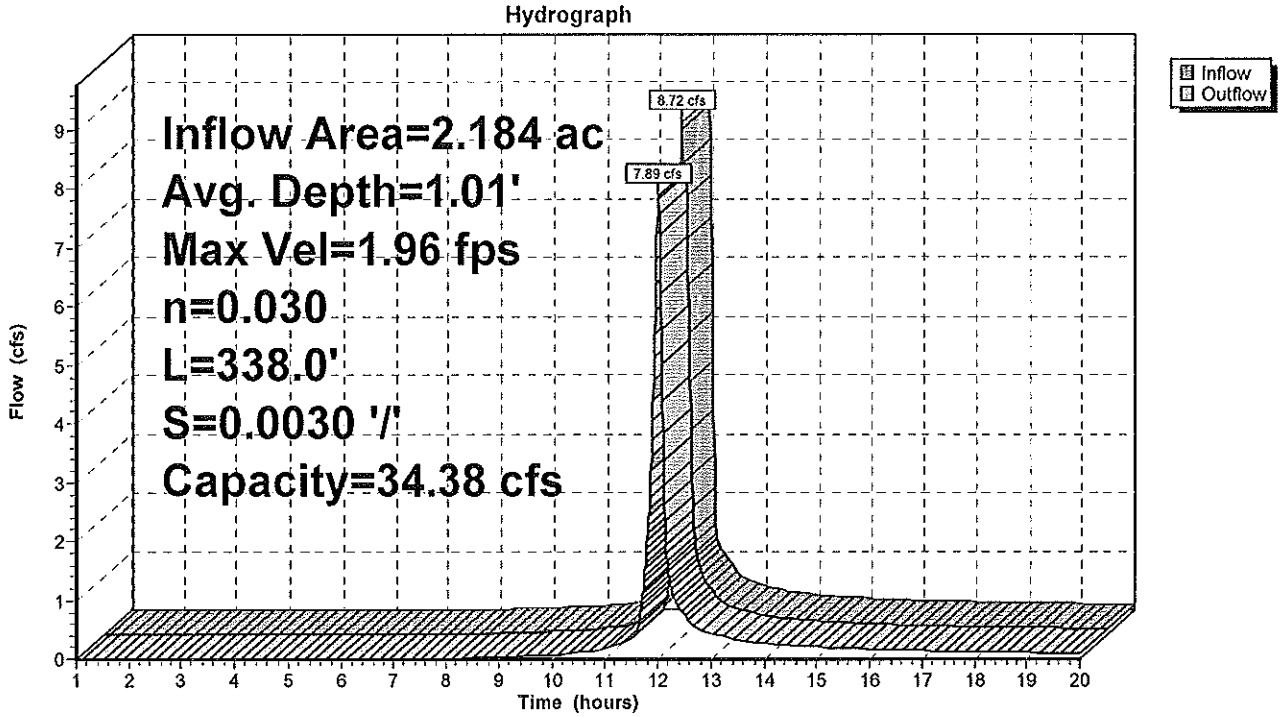
Inflow Area = 2.184 ac, 0.00% Impervious, Inflow Depth > 1.87" for 2 year event
Inflow = 8.72 cfs @ 11.93 hrs, Volume= 0.340 af
Outflow = 7.89 cfs @ 12.00 hrs, Volume= 0.338 af, Atten= 9%, Lag= 4.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.96 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 9.4 min

Peak Storage= 1,363 cf @ 11.95 hrs, Average Depth at Peak Storage= 1.01'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 34.38 cfs

2.00' x 2.00' deep channel, n= 0.030 Short grass
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 338.0' Slope= 0.0030 '/'
Inlet Invert= 7.00', Outlet Invert= 6.00'

Reach 6R: Drainage



Time span=1.00-20.00 hrs, dt=0.01 hrs, 1901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Area 1 Runoff Area=24,021 sf 0.00% Impervious Runoff Depth>4.03"
Flow Length=264' Slope=0.0340 '/' Tc=2.0 min CN=85 Runoff=4.61 cfs 0.185 af

Subcatchment 7S: Area 2 Runoff Area=62,370 sf 0.00% Impervious Runoff Depth>4.03"
Flow Length=222' Slope=0.0135 '/' Tc=2.6 min CN=85 Runoff=11.75 cfs 0.481 af

Subcatchment 8S: Area 3 Runoff Area=29,628 sf 0.00% Impervious Runoff Depth>4.03"
Flow Length=200' Slope=0.0200 '/' Tc=2.0 min CN=85 Runoff=5.69 cfs 0.228 af

Subcatchment 9S: Area 4 Runoff Area=8,729 sf 0.00% Impervious Runoff Depth>4.03"
Flow Length=36' Slope=0.0278 '/' Tc=0.4 min CN=85 Runoff=1.74 cfs 0.067 af

Reach 6R: Drainage Avg. Depth=1.43' Max Vel=2.38 fps Inflow=17.80 cfs 0.733 af
n=0.030 L=338.0' S=0.0030 '/' Capacity=34.38 cfs Outflow=16.59 cfs 0.731 af

Total Runoff Area = 2.864 ac Runoff Volume = 0.962 af Average Runoff Depth = 4.03"
100.00% Pervious = 2.864 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: Area 1

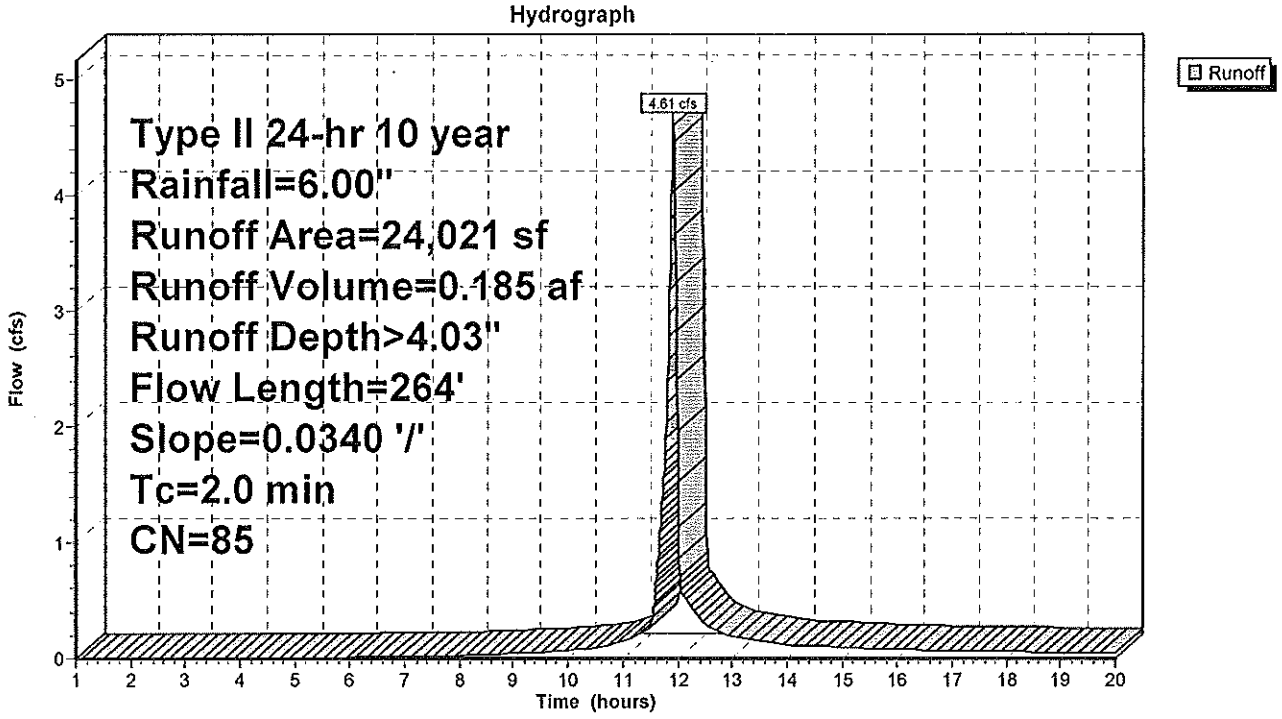
Runoff = 4.61 cfs @ 11.92 hrs, Volume= 0.185 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=6.00"

Area (sf)	CN	Description
24,021	85	Gravel roads, HSG B
24,021		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	264	0.0340	2.16		**Sheet Flow, Area 1** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 3S: Area 1



Summary for Subcatchment 7S: Area 2

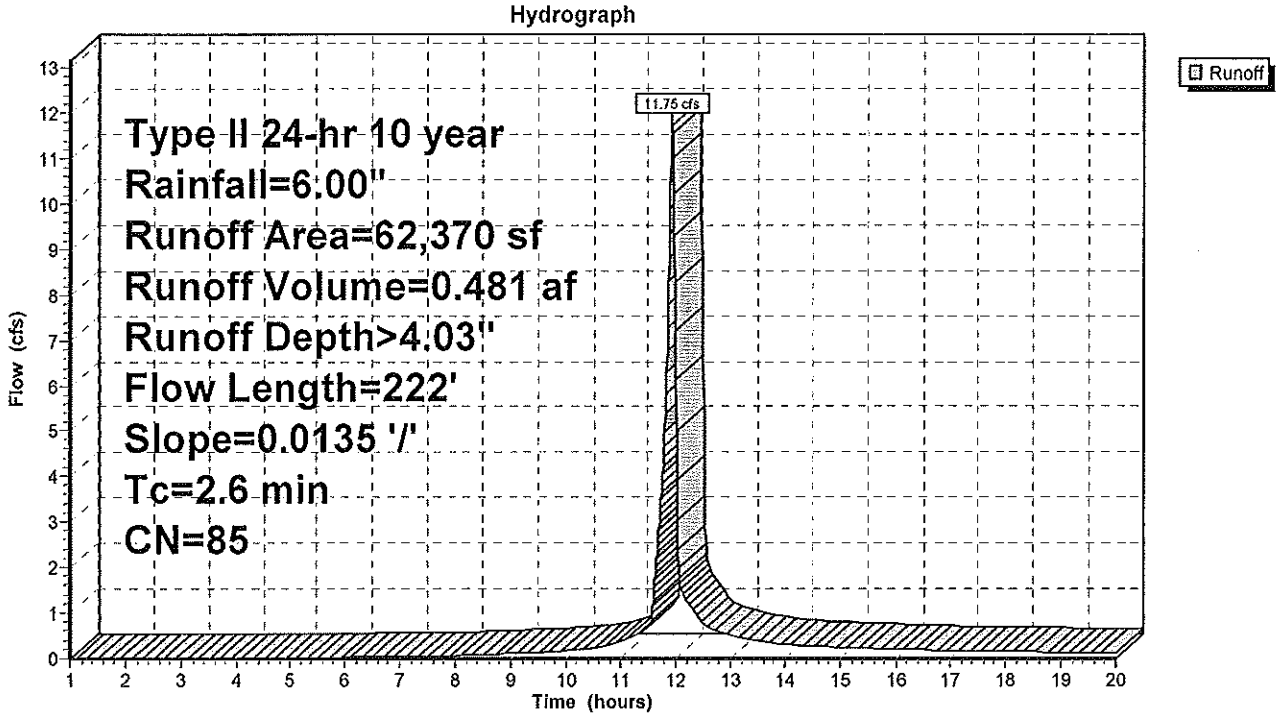
Runoff = 11.75 cfs @ 11.93 hrs, Volume= 0.481 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=6.00"

Area (sf)	CN	Description
62,370	85	Gravel roads, HSG B
62,370		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	222	0.0135	1.44		**Sheet Flow, Area 2** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 7S: Area 2



Summary for Subcatchment 8S: Area 3

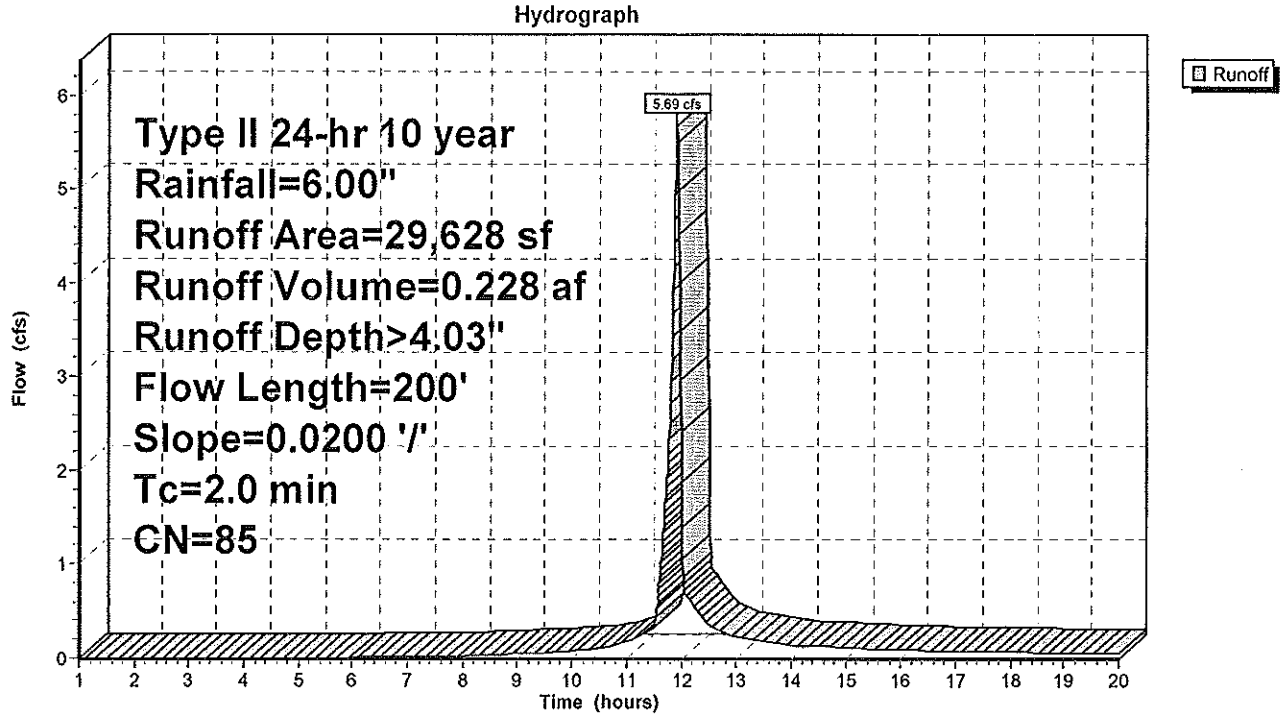
Runoff = 5.69 cfs @ 11.92 hrs, Volume= 0.228 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=6.00"

Area (sf)	CN	Description
29,628	85	Gravel roads, HSG B
29,628		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	200	0.0200	1.65		**Sheet Flow, Area 3** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 8S: Area 3



Summary for Subcatchment 9S: Area 4

[49] Hint: Tc<2dt may require smaller dt

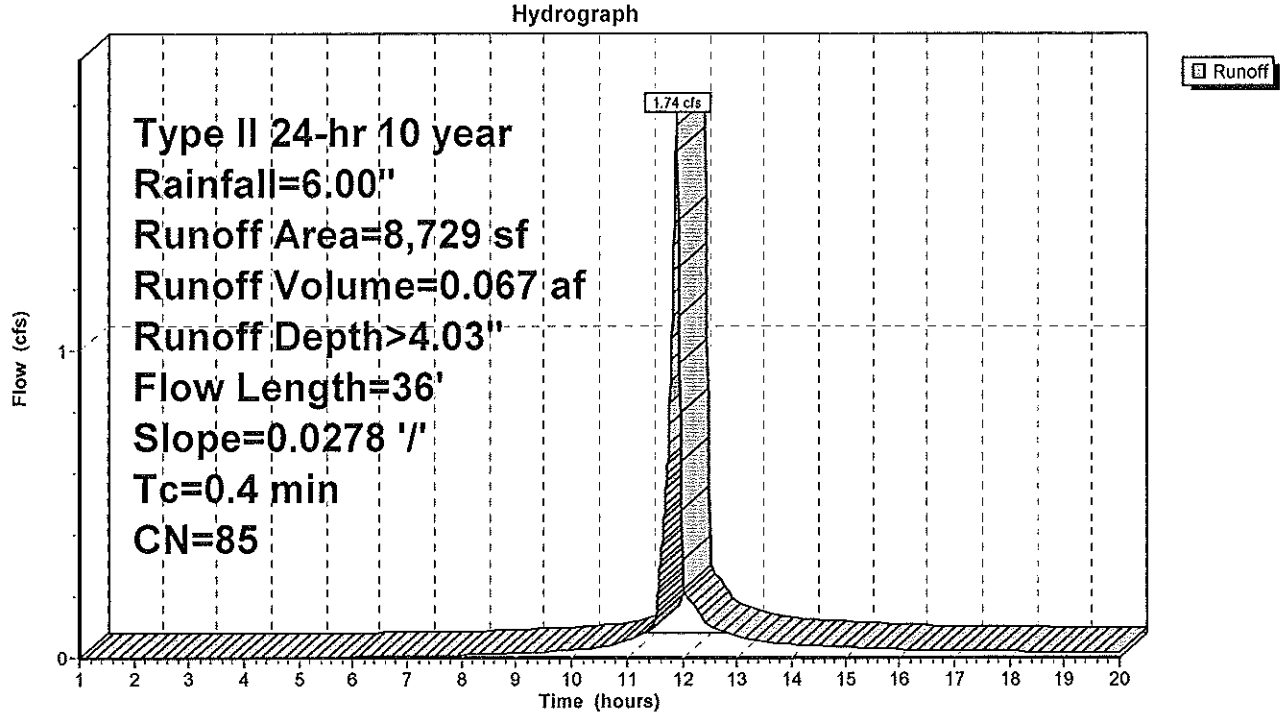
Runoff = 1.74 cfs @ 11.90 hrs, Volume= 0.067 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=6.00"

Area (sf)	CN	Description
8,729	85	Gravel roads, HSG B
8,729		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	36	0.0278	1.34		**Sheet Flow, Area 4** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 9S: Area 4



Summary for Reach 6R: Drainage

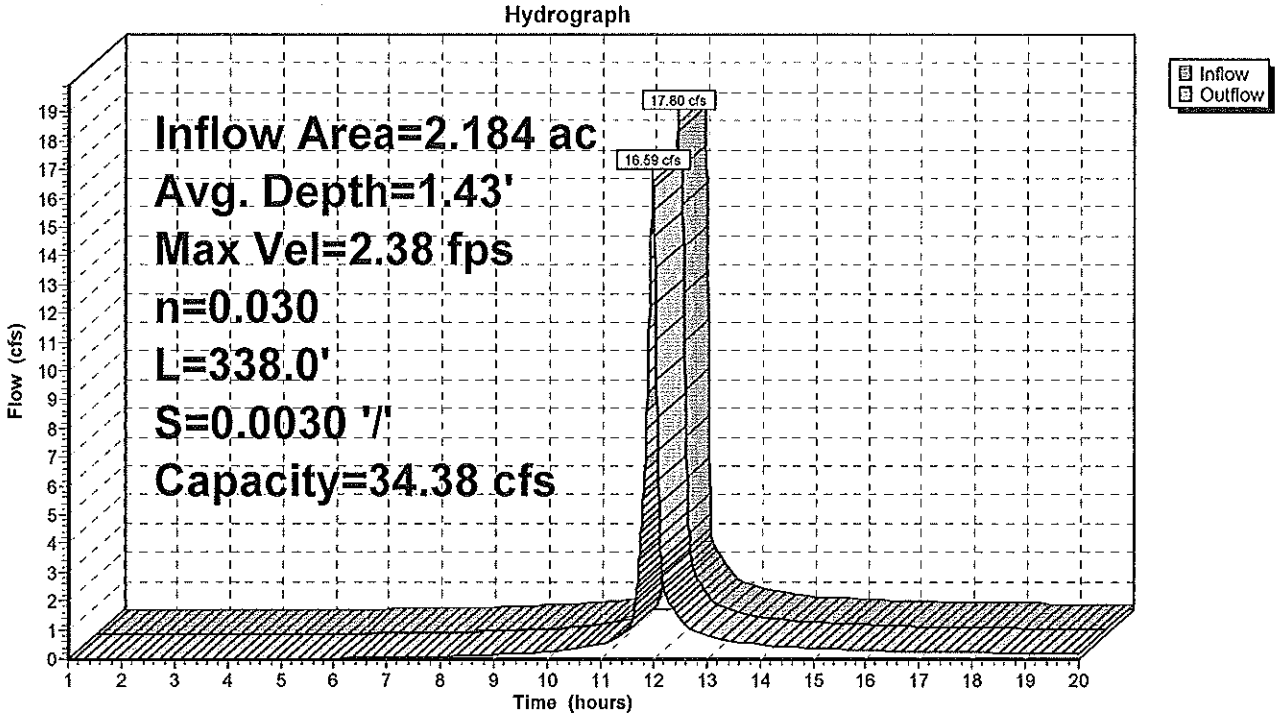
Inflow Area = 2.184 ac, 0.00% Impervious, Inflow Depth > 4.03" for 10 year event
Inflow = 17.80 cfs @ 11.93 hrs, Volume= 0.733 af
Outflow = 16.59 cfs @ 11.99 hrs, Volume= 0.731 af, Atten= 7%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.38 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.72 fps, Avg. Travel Time= 7.8 min

Peak Storage= 2,359 cf @ 11.95 hrs, Average Depth at Peak Storage= 1.43'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 34.38 cfs

2.00' x 2.00' deep channel, n= 0.030 Short grass
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 338.0' Slope= 0.0030 '/'
Inlet Invert= 7.00', Outlet Invert= 6.00'

Reach 6R: Drainage



Time span=1.00-20.00 hrs, dt=0.01 hrs, 1901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Area 1 Runoff Area=24,021 sf 0.00% Impervious Runoff Depth>5.84"
Flow Length=264' Slope=0.0340 '/' Tc=2.0 min CN=85 Runoff=6.49 cfs 0.268 af

Subcatchment 7S: Area 2 Runoff Area=62,370 sf 0.00% Impervious Runoff Depth>5.84"
Flow Length=222' Slope=0.0135 '/' Tc=2.6 min CN=85 Runoff=16.54 cfs 0.697 af

Subcatchment 8S: Area 3 Runoff Area=29,628 sf 0.00% Impervious Runoff Depth>5.84"
Flow Length=200' Slope=0.0200 '/' Tc=2.0 min CN=85 Runoff=8.00 cfs 0.331 af

Subcatchment 9S: Area 4 Runoff Area=8,729 sf 0.00% Impervious Runoff Depth>5.84"
Flow Length=36' Slope=0.0278 '/' Tc=0.4 min CN=85 Runoff=2.45 cfs 0.098 af

Reach 6R: Drainage Avg. Depth=1.69' Max Vel=2.60 fps Inflow=25.05 cfs 1.063 af
n=0.030 L=338.0' S=0.0030 '/' Capacity=34.38 cfs Outflow=23.53 cfs 1.060 af

Total Runoff Area = 2.864 ac Runoff Volume = 1.394 af Average Runoff Depth = 5.84"
100.00% Pervious = 2.864 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: Area 1

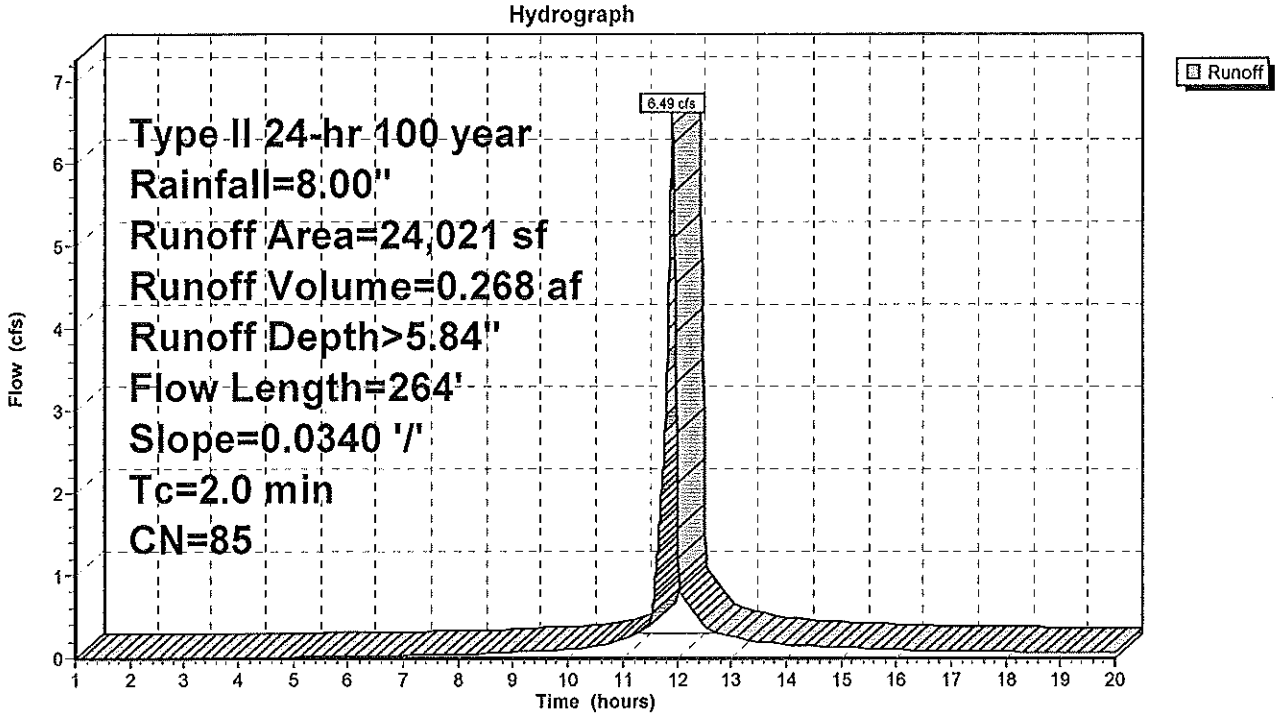
Runoff = 6.49 cfs @ 11.92 hrs, Volume= 0.268 af, Depth> 5.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=8.00"

Area (sf)	CN	Description
24,021	85	Gravel roads, HSG B
24,021		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	264	0.0340	2.16		**Sheet Flow, Area 1** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 3S: Area 1



Summary for Subcatchment 7S: Area 2

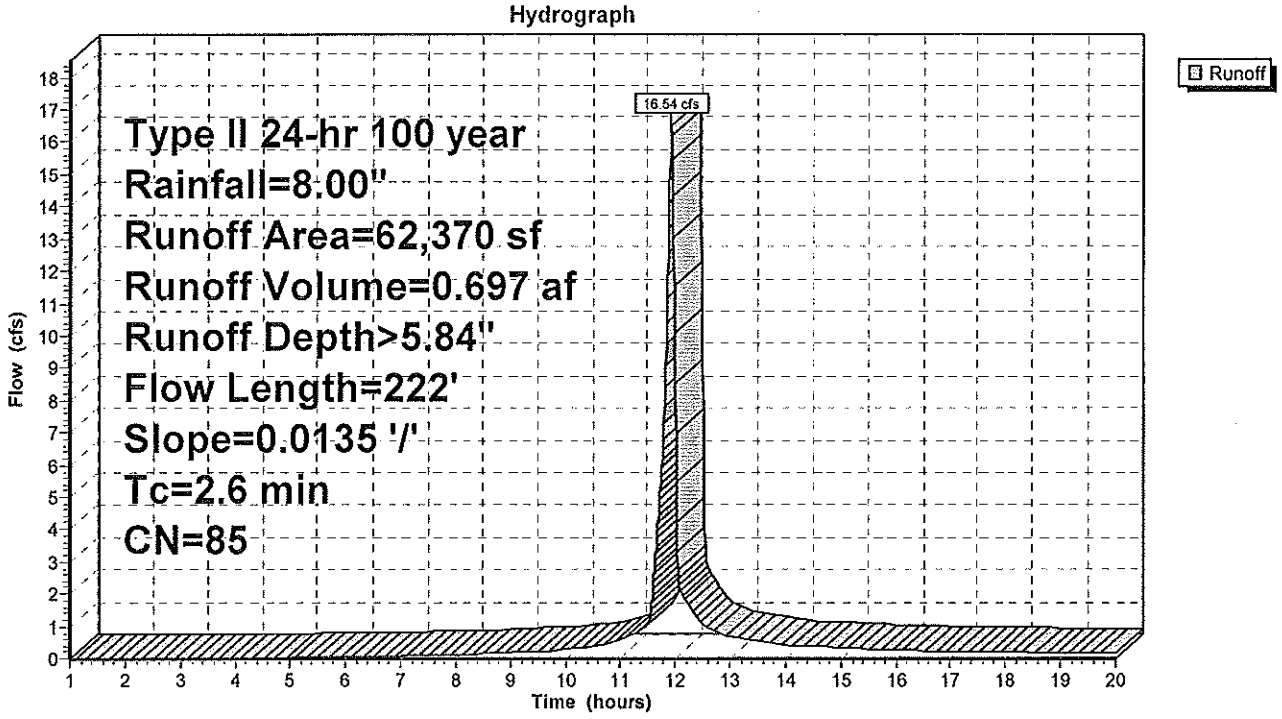
Runoff = 16.54 cfs @ 11.93 hrs, Volume= 0.697 af, Depth> 5.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=8.00"

Area (sf)	CN	Description
62,370	85	Gravel roads, HSG B
62,370		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	222	0.0135	1.44		**Sheet Flow, Area 2** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 7S: Area 2



Summary for Subcatchment 8S: Area 3

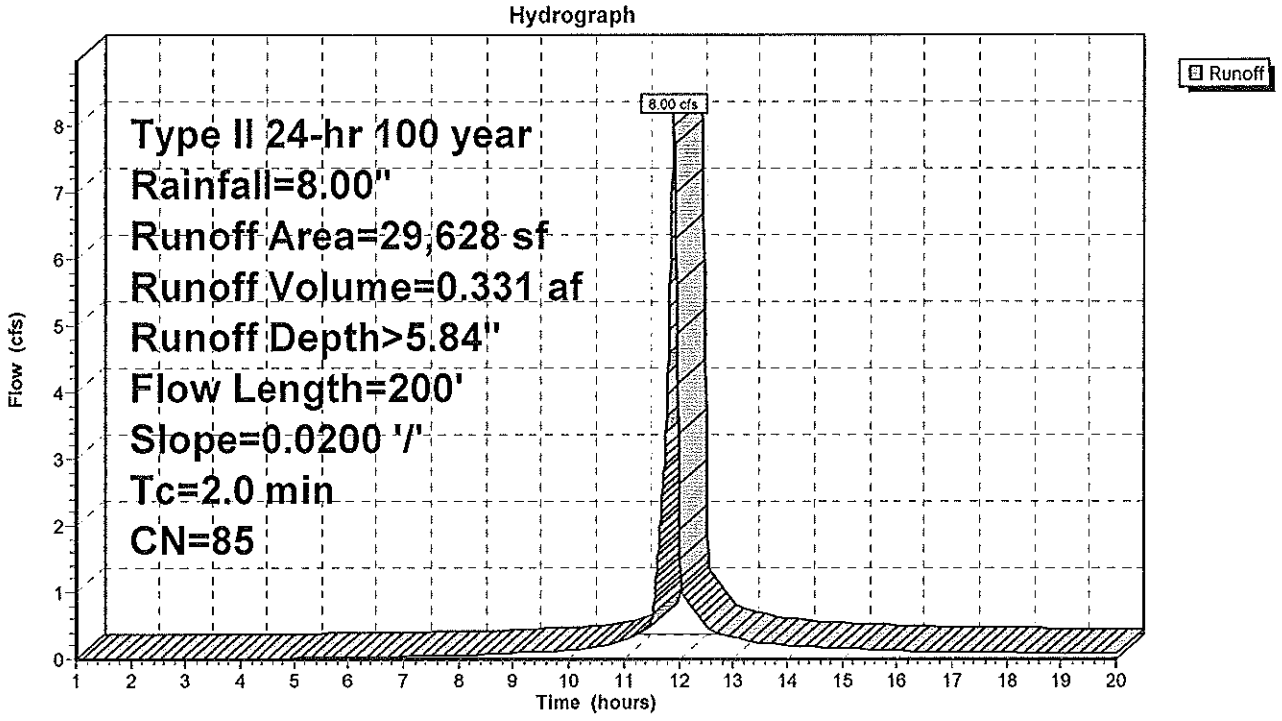
Runoff = 8.00 cfs @ 11.92 hrs, Volume= 0.331 af, Depth> 5.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=8.00"

Area (sf)	CN	Description
29,628	85	Gravel roads, HSG B
29,628		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	200	0.0200	1.65		**Sheet Flow, Area 3** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 8S: Area 3



Summary for Subcatchment 9S: Area 4

[49] Hint: Tc<2dt may require smaller dt

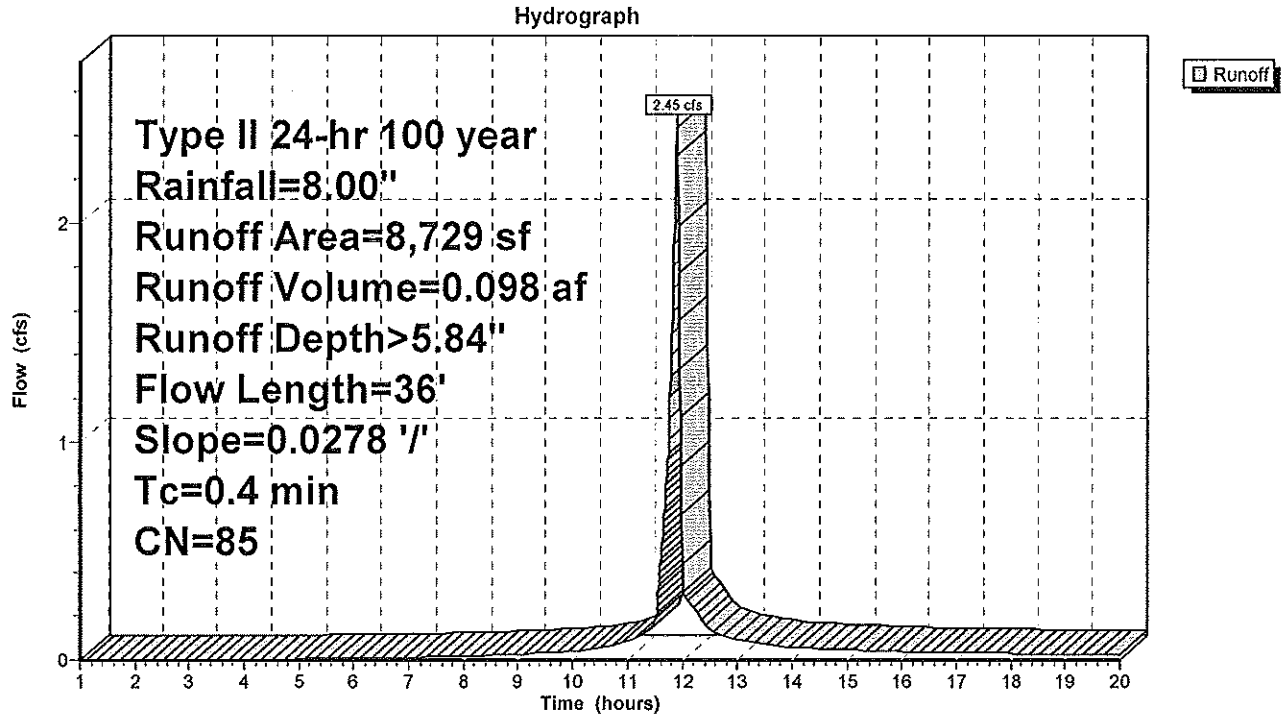
Runoff = 2.45 cfs @ 11.90 hrs, Volume= 0.098 af, Depth> 5.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=8.00"

Area (sf)	CN	Description
8,729	85	Gravel roads, HSG B
8,729		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	36	0.0278	1.34		**Sheet Flow, Area 4** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment 9S: Area 4



Summary for Reach 6R: Drainage

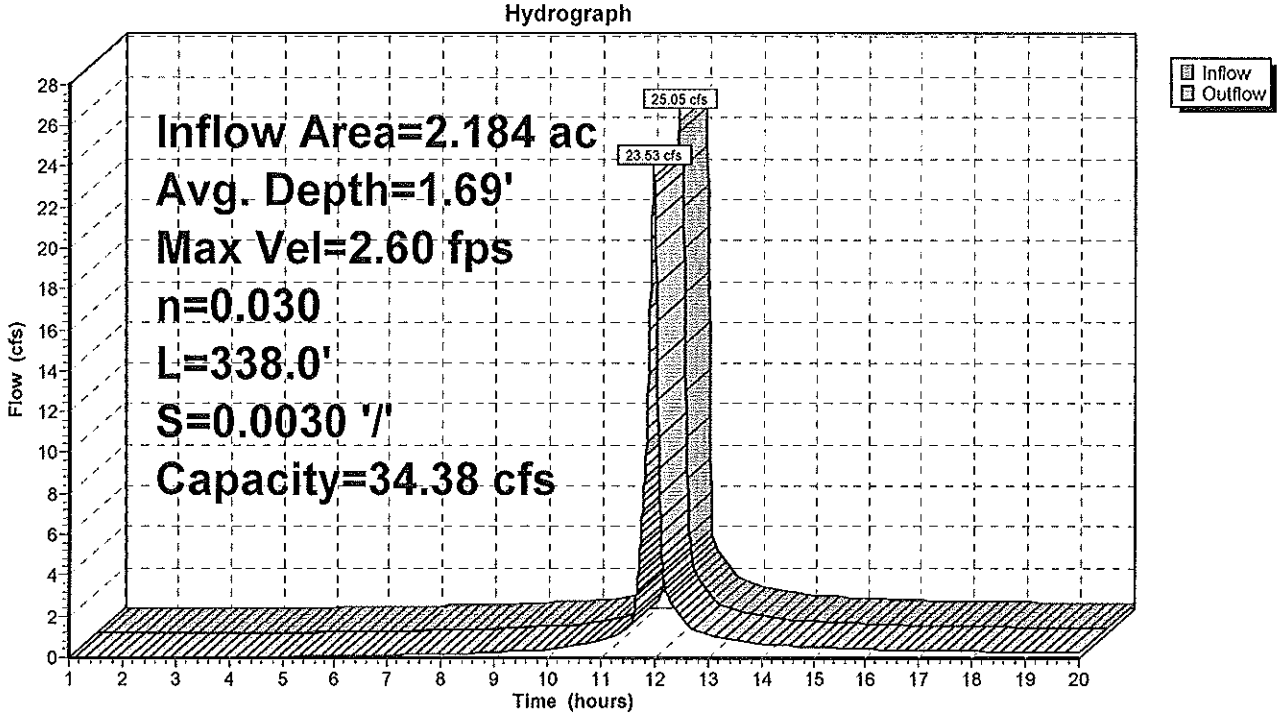
Inflow Area = 2.184 ac, 0.00% Impervious, Inflow Depth > 5.84" for 100 year event
Inflow = 25.05 cfs @ 11.93 hrs, Volume= 1.063 af
Outflow = 23.53 cfs @ 11.98 hrs, Volume= 1.060 af, Atten= 6%, Lag= 3.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.60 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 0.79 fps, Avg. Travel Time= 7.1 min

Peak Storage= 3,063 cf @ 11.94 hrs, Average Depth at Peak Storage= 1.69'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 34.38 cfs

2.00' x 2.00' deep channel, n= 0.030 Short grass
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 338.0' Slope= 0.0030 '/'
Inlet Invert= 7.00', Outlet Invert= 6.00'

Reach 6R: Drainage



Appendix B

Proposed Sequence of Construction

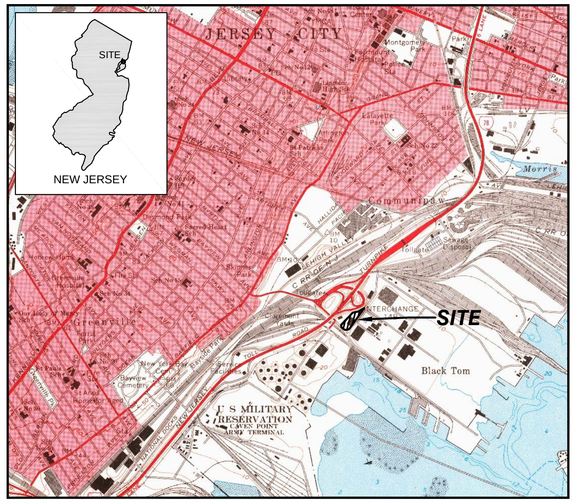
Appendix B
Preliminary Construction Sequence
Site 063/065 Remediation Project
Jersey City, Hudson County, New Jersey
April 2013

Chronological Timeline (Days)	Activity	Duration (Days)
-4	Call New Jersey One Call (811) for subsurface utility location.	1
-2	Submit Start Notice to HEPSCD.	1
1-2	Construct Stabilized Construction Entrance.	1
1-2	Install all storm sewer inlet protection measures for inlet at intersection of Morris Pensin Drive and Burma Road as indicated on the soil erosion and sediment control plan.	1
1-4	Install temporary traffic barrier along eastern boundary of Site 063/065 as indicated on the soil erosion and sediment control plan.	3
4-6	Remove existing Fabriform® drainage channel structure along eastern boundary of Site 065.	2
6-7	Install culvert inlet protection at Burma Road culvert as indicated on the soil erosion and sediment control plan.	1
6-9	Install silt fence along eastern boundary of Site 063/065 as indicated on the soil erosion and sediment control plan.	3
10-70	Excavate impacted soil at Site 063/065 and live load soil into trucks for transportation to off-site disposal location. Excavation to progress generally from northeast to southwest throughout the site. Gravel cover of HDPE liner and HDPE liner to be removed as excavation work progresses to access soil in lined areas. Gravel to be stockpiled on site during excavation for use as final surface cover. HDPE liner to be disposed off site.	60
10-70	Backfill Site 063/065 area and grade to post-construction sub-grade elevations as excavation of impacted soils is completed generally from northeast to southwest throughout the site.	60
10-70	Place gravel surface cover to post-construction grade elevations as backfill of excavation is completed generally from northeast to southwest throughout the site.	60
60-63	Construct grassed waterway in accordance with the final grading plan and the approved soil erosion and sediment control plan.	3
70-73	Remove temporary traffic barrier along eastern boundary of Site 063/065 and Burma Road.	3
77-78	Schedule Final Inspection with HEPSCD to obtain Report of Compliance.	1
80-83	Receive HEPSCD Report of Compliance. Remove silt fence and stabilized construction entrance.	3

Appendix C

Drawings

DRAWING NUMBER 146429-T2



REFERENCE:

U.S.G.S. TOPOGRAPHIC MAP, 7.5 MINUTE SERIES; JERSEY CITY, NEW JERSEY–NEW YORK QUADRANGLE, DATED 1967.

SITE LOCATION MAP

SCALE
0 2,000 4,000 FEET

INDEX OF DRAWINGS

CB&I DRAWING NUMBER	SHEET REFERENCE NUMBER	DESCRIPTION
146429-T2	T-1	TITLE SHEET
146429-D3	C-1	SITE PLAN
146429-D5	C-2	FINAL GRADING PLAN
146429-D4	C-3	DETAILS

REFERENCE:

RAND MCNALLY ROAD MAP, SCALE: 1"=5 MILES, DATED 2011.

SITE VICINITY MAP

SCALE
0 5 10 MILES

VERIFY SCALE 0 1"

SOIL EROSION AND SEDIMENT CONTROL PLAN

PPG INDUSTRIES, SITE 063 AND 065
BURMA ROAD, HUDSON COUNTY, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC.
JERSEY CITY, NEW JERSEY

Shaw Environmental, Inc.
(A CB&I Company)

DESIGNED BY: J. Fronczek	PPG INDUSTRIES, INC. JERSEY CITY, NEW JERSEY			
DRAWN BY: E. Schlegel	TITLE SHEET SOIL EROSION AND SEDIMENT CONTROL PLAN SITES 063 AND 065 BURMA ROAD HUDSON COUNTY, NEW JERSEY			
CHECKED BY: J. Fronczek				
APPROVED BY: --	DATE: 3/13/13	SCALE: AS SHOWN	DRAWING NO. 146429-T2	SHEET NO. T-2

File: O:\Project\146429\sites 63 and 65\146429-T2.dwg
User: greg.jones Apr 02, 2013 - 11:16am Layout: 22 x 34

OFFICE
Pittsburgh, PA

DRAWING NUMBER
146429-D3

VERIFY SCALE
0 1"

Xref :
Image : CBI_LOGO-cmyk.png

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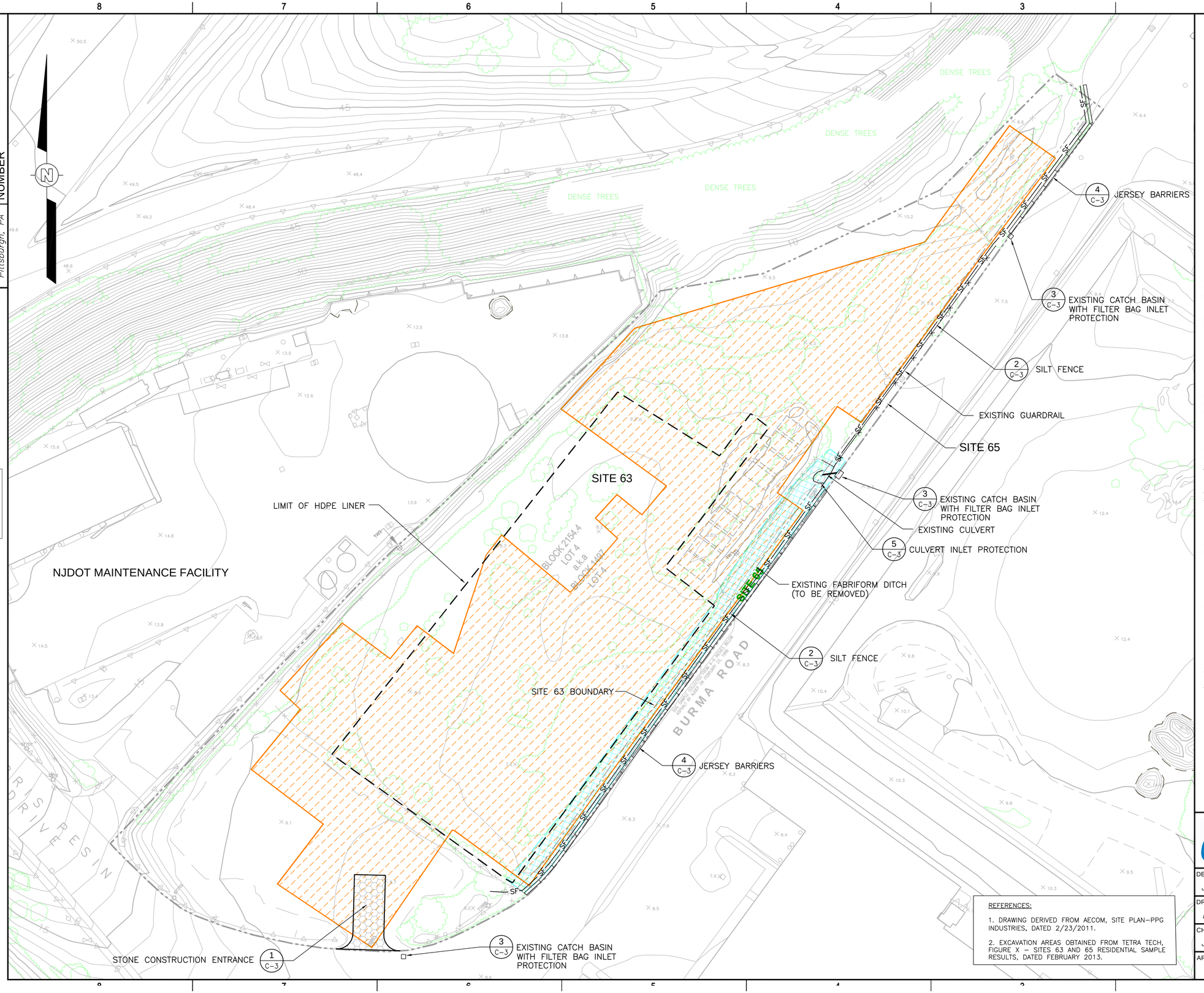
Plotted By: greg.jones



LEGEND

- SITE BOUNDARY (LIMIT OF DISTURBANCE) (TOTAL AREA = 2.66 ACRES)
- AREAS REQUIRING LINER AND GRAVEL REMOVAL
- AREAS REQUIRING EXCAVATION (TOTAL AREA = 1.69 ACRES)
- FABRIFORM TO BE REMOVED
- STONE CONSTRUCTION ENTRANCE
- SF — SILT FENCE

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. All soil erosion and sediment control practices on this plan will be constructed in accordance with the "New Jersey Standards for Soil Erosion and Sediment Control" last revised July 1999. These measures will be installed prior to any major soil disturbance or in their proper sequence and maintained until permanent protection is established.

2. All soil to be exposed or stockpiled for a period of greater than 60 days, and not under active construction, will be temporarily seeded and hay mulched or otherwise provided with vegetative cover. This temporary cover shall be maintained until such time whereby permanent restabilization is established.

3. Seeding Dates: The following seeding dates are best recommended to establish permenent vegetative cover within most locations in the HEPSCD: Spring - 3/1-5/15 and Fall - 8/15 - 10/1

4. Sediment fences are to be properly trenched and maintained until permanent vegetative cover is established

5. All storm drainage inlets shall be protected by one of the practices accepted in the Standards, and protection shall remain until permanent stabilization has been established. Storm drainage outlet points shall be protected as required before they become functional.

6. Mulch materials shall be un-rotted salt hay or small grain straw applied at the rate of 70-90 pounds per 1000 square feet (1.5-2.0 tons/acre). Additional required mulch practices are prescribed in the Standards.

7. All erosion control devices shall be periodically inspected, maintained and corrected by the contractor. Any damage incurred by erosion shall be rectified immediately.

8. The Hudson-Essex-Passaic Soil Conservation District will be notified in writing at least 48 hours prior to any soil disturbing activities.
Fax - (973) 364-0784 email - INFORMATION@HEPSCD.ORG

9. The applicant must obtain a District issued Report-of-Compliance prior to applying for the Certificate of Occupancy or Temporary Certificate of Occupancy from the respective municipality, NJ - DCA or any other controlling agency. Contact the District at 973-364-0786 to request a Final Inspection, giving advanced notice upon completion of the restabilization measures. A performance deposit may be posted with the District when winter weather or snow cover prohibits the proper application of seed, mulch, fertilizer or hydro-seed.

10. Paved roadways must be kept clean at all times. Do not utilize a fire or garden hose to clean roads unless the runoff is directed to a properly designed and functioning sediment basin. All pump dewatering operations shall be directed toward a functioning sediment basin.

11. All surfaces are to be provided with 6 inches of topsoil prior to re-seeding.

12. All plan revisions must be submitted to the District for proper review and approval.

13. A crushed stone wheel cleaning tracking-pad is to be installed at all site exits using 2 ½" crushed stone to a minimum length of 50 feet. All driveways must be provided with crushed stone until paving is complete.

14. Maximum soil slopes shall not exceed 2:1 unless additional measures are taken and approved by the Soil Conservation District. These "special" measures shall be designed by the applicant's engineer.

15. The Hudson-Essex-Passaic Soil Conservation District shall be notified, in writing, for the sale of any portion of the project or for the sale of individual lots. New owners' information shall be provided. Additional measures deemed necessary by District officials shall be implemented as conditions warrant.

SCALE
0 30 60 90 FEET

REFERENCES:

1. DRAWING DERIVED FROM AECOM, SITE PLAN-PPG INDUSTRIES, DATED 2/23/2011.

2. EXCAVATION AREAS OBTAINED FROM TETRA TECH, FIGURE X - SITES 63 AND 65 RESIDENTIAL SAMPLE RESULTS, DATED FEBRUARY 2013.

Shaw Environmental, Inc.
(A CB&I Company)

DESIGNED BY: *J. Fronczek*	PPG INDUSTRIES, INC. JERSEY CITY, NEW JERSEY
DRAWN BY: *E. Schlegel*	SITE PLAN SOIL EROSION AND SEDIMENT CONTROL PLAN SITES 063 AND 065 BURMA ROAD HUDSON COUNTY, NEW JERSEY
CHECKED BY: *J. Fronczek*	

APPROVED BY:	DATE:	SCALE:	DRAWING NO.	SHEET NO.
--	3/13/13	AS SHOWN	146429-D3	C-1

OFFICE
Pittsburgh, PA

DRAWING NUMBER
146429-D5

VERIFY SCALE
0 1"

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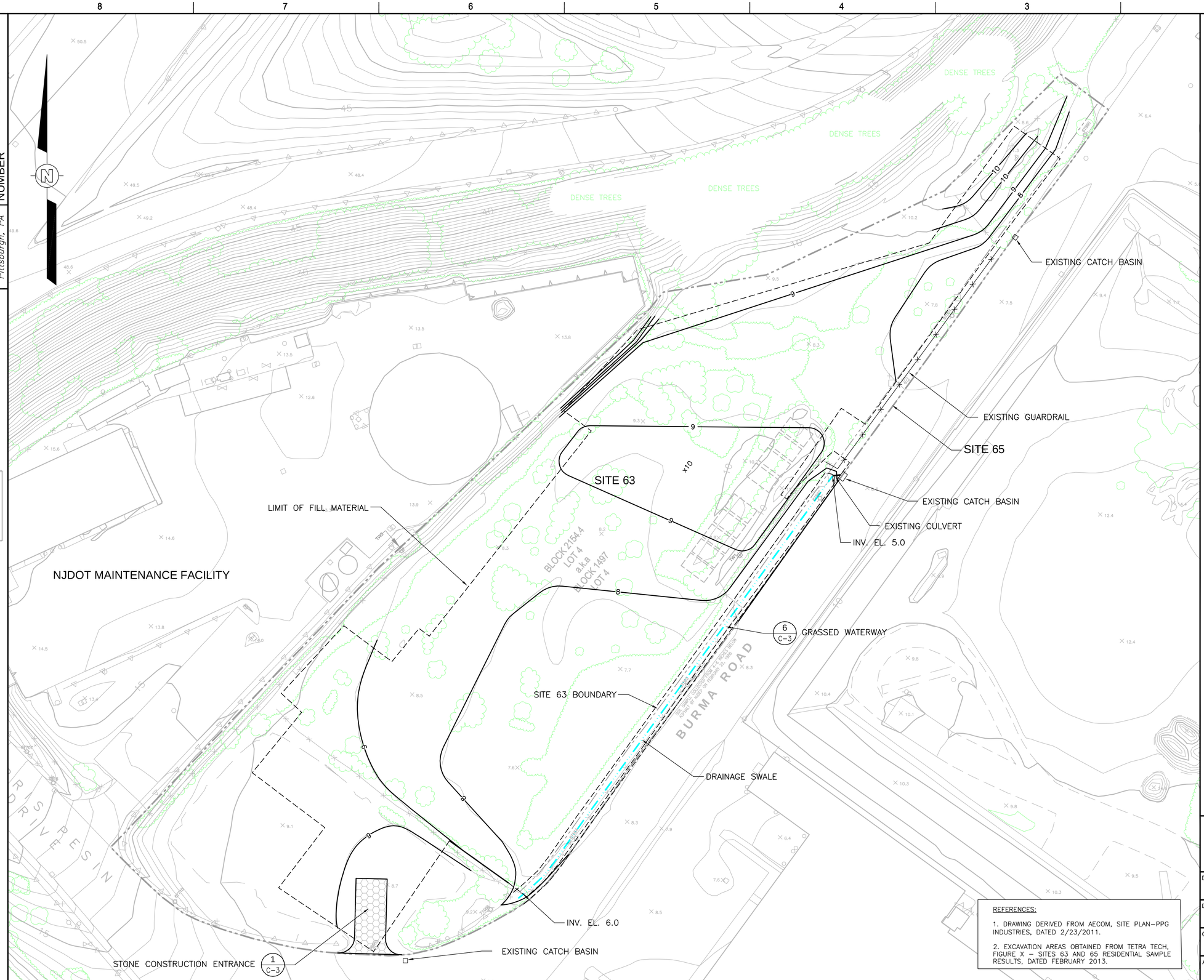
Plot Date/Time: Apr 02, 2013 - 11:13am
Plotted By: greg.jones



LEGEND

- SITE BOUNDARY (LIMIT OF DISTURBANCE)
- AREAS REQUIRING FILL MATERIAL
- 8 FINAL GRADE CONTOUR

NOTE:
FOR BACKFILL SEE DETAIL 7 SHEET C-3.

REFERENCES:

1. DRAWING DERIVED FROM AECOM, SITE PLAN-PPG INDUSTRIES, DATED 2/23/2011.
2. EXCAVATION AREAS OBTAINED FROM TETRA TECH, FIGURE X - SITES 63 AND 65 RESIDENTIAL SAMPLE RESULTS, DATED FEBRUARY 2013.

SCALE
0 30 60 90 FEET

Shaw Environmental, Inc.
(A CB&I Company)

DESIGNED BY: *J. Fronczek*	PPG INDUSTRIES, INC. JERSEY CITY, NEW JERSEY
DRAWN BY: *E. Schlegel*	FINAL GRADING PLAN SOIL EROSION AND SEDIMENT CONTROL PLAN SITE 063 AND 065 BURMA ROAD HUDSON COUNTY, NEW JERSEY
CHECKED BY: *J. Fronczek*	
APPROVED BY: --	DATE: 3/13/13 · SCALE: AS SHOWN · DRAWING NO. 146429-D5 · SHEET NO. C-2

OFFICE Pittsburgh, PA
DRAWING NUMBER 146429-D4
VERIFY SCALE 0 1"
Xref :
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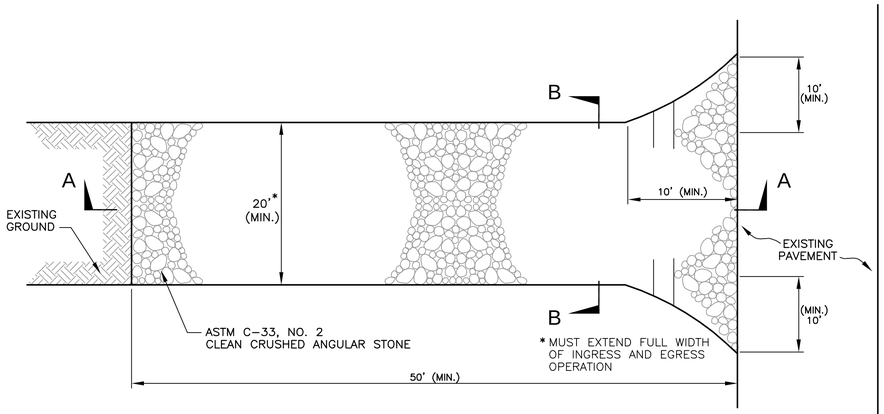
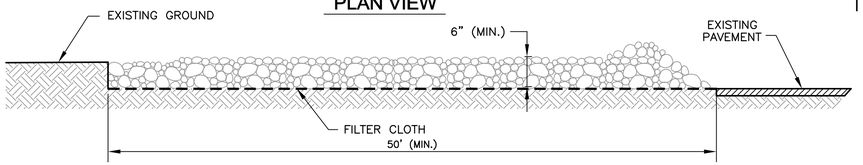
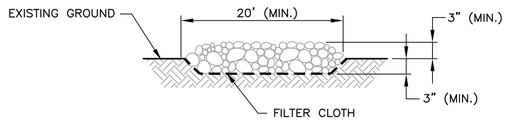
Plotted By: greg.jones



PLAN VIEW



SECTION A-A

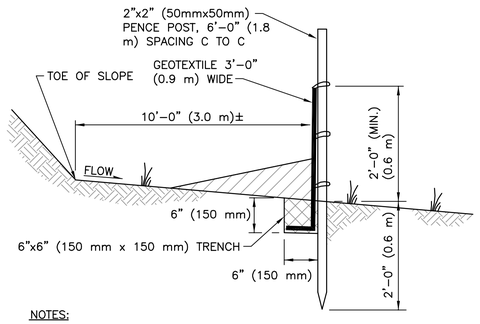


SECTION B-B

DETAIL 1 / C-1

STONE CONSTRUCTION ENTRANCE

"NOT TO SCALE"



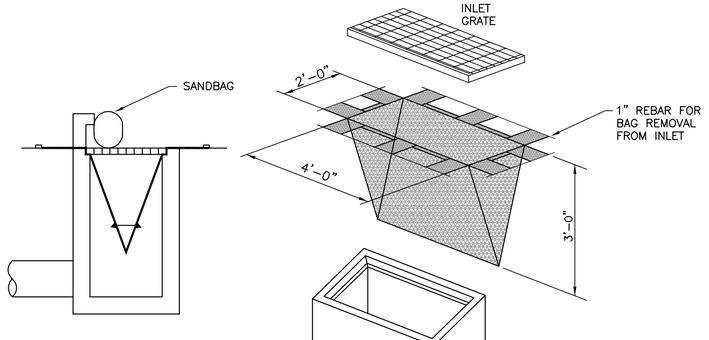
NOTES:

1. GEOTEXTILE TO BE FASTENED SECURELY TO FENCE POST BY USING WIRE TIES OR HOG RINGS. USE 4 TO 6 FASTENERS PER POST.
2. BURY BOTTOM FOOT OF GEOTEXTILE (300 mm) AND TAMP IN PLACE.
3. ENDS OF INDIVIDUAL ROLLS OF GEOTEXTILE SHALL BE SECURELY FASTENED TO A COMMON POST BY WRAPPING EACH END OF THE GEOTEXTILE AROUND THE POST TWICE AND ATTACHING AS SPECIFIED IN THE NOTE ABOVE (FIRST NOTE). SPLICING OF INDIVIDUAL ROLLS SHALL NOT OCCUR AT LOW POINT.

DETAIL 2 / C-1

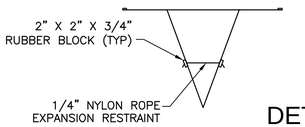
SILT FENCE

"NOT TO SCALE"



INSTALLATION DETAIL

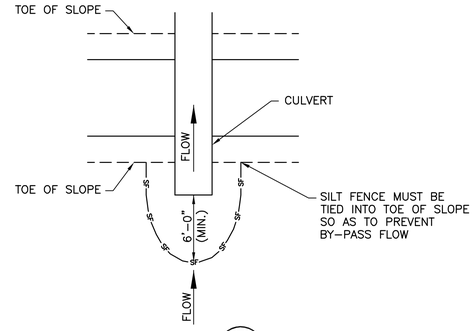
ISOMETRIC VIEW



DETAIL 3 / C-1

FILTER BAG INLET PROTECTION

"NOT TO SCALE"



DETAIL 5 / C-1

CULVERT INLET PROTECTION

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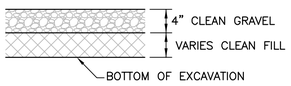
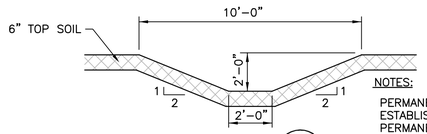


DETAIL 7 / C-2

TYPICAL BACKFILL

"NOT TO SCALE"



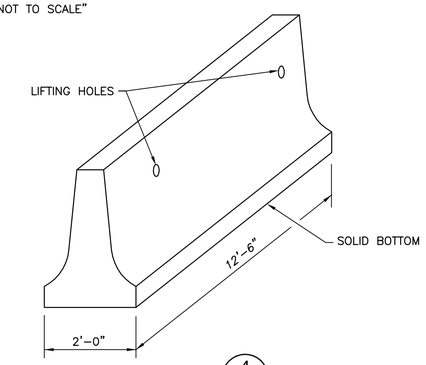
NOTES:

PERMANENT VEGETATIVE COVER TO BE ESTABLISHED IN ACCORDANCE WITH PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION, STANDARDS FOR EROSION AND SEDIMENT CONTROL IN NEW JERSEY (JULY 1999).

DETAIL 6 / C-2

GRASSED WATERWAY

"NOT TO SCALE"



DETAIL 4 / C-1

JERSEY BARRIER

"NOT TO SCALE"

Appendix B
Preliminary Construction Sequence
Site 063/065 Remediation Project
Jersey City, Hudson County, New Jersey
April 2013

Chronological Timeline (Days)	Activity	Duration (Days)
-4	Call New Jersey One Call (811) for subsurface utility location.	1
-2	Submit Start Notice to HEPSCD.	1
1-2	Construct Stabilized Construction Entrance.	1
1-2	Install all storm sewer inlet protection measure for inlet at intersection of Morris Pensin Drive and Burma Road as indicated on the soil erosion and sediment control plan.	1
1-4	Install temporary traffic barrier along eastern boundary of Site 063/065 as indicated on the soil erosion and sediment control plan.	3
4-6	Remove existing Fabriform® drainage channel structure along eastern boundary of Site 065.	2
6-7	Install culvert inlet protection at Burma Road culvert as indicated on the soil erosion and sediment control plan.	1
6-9	Install silt fence along eastern boundary of site 063/065 as indicated on the soil erosion and sediment control plan.	3
10-70	Excavate impacted soil at Site 063/065 and live load soil into trucks for transportation to off-site disposal location. Excavation to progress generally from northeast to southwest throughout the site. Gravel cover of HDEP liner and HDPE liner to be removed as excavation work progresses to access soil in lined areas. Gravel to be stockpiled onsite during excavation for use as final surface cover. HDPE liner to be disposed of offsite.	60
10-70	Backfill Site 063/065 area and grade to post-construction sub grade elevations as excavation of impacted soils is completed generally from northeast to southwest throughout the site.	60
10-70	Place gravel surface cover to post construction grade elevations as backfill of excavation is completed generally from northeast to southwest throughout the site.	60
60-63	Construct grassed waterway in accordance with the final grading plan and the approved soil erosion and sediment control plan.	3
70-73	Remove temporary traffic barrier along eastern boundary of Site 063/065 and Burma Road.	3
77-78	Schedule Final Inspection with HEPSCD to obtain Report of Compliance.	1
80-83	Receive HEPSCD Report of Compliance. Remove silt fence and stabilized construction entrance.	3

Permanent Vegetative Cover for Soil Stabilization Notes

Site Preparation

1. Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. All grading should be done in accordance with Standard for Land Grading.
2. Immediately prior to seeding and topsoil application, the surface should be scarified 6" to 12" where there has been soil compaction.
3. Install needed erosion control practices or facilities such as diversions, grade stabilization structures, channel stabilization measures, sediment basins, and waterways.

Seedbed Preparation

1. Uniformly apply ground limestone and fertilizer according to soil test recommendations such as offered by Rutgers Co-operative Extension for best results to at least 6 inches of topsoil which has been spread and firmed.
2. Fertilizer shall be applied at the rate of 500 pounds per acre or 11 pounds per 1,000 square feet of 10-10-10 or equivalent with 50% water insoluble nitrogen unless a soil test indicates otherwise and incorporated into the surface 4 inches. If fertilizer is not incorporated, apply one half the rate described above during seedbed preparation and repeat another one half rate application of the same fertilizer within 3 to 5 weeks after seeding.
3. Apply limestone at the rate of 4,000 pounds per acre or 90 pounds per 1,000 square feet.
4. Work, lime and fertilizer into the topsoil as nearly as practical to a depth of 4 inches with a disc, springtooth harrow, or other suitable equipment. The final harrowing or disking operation should be on the general contour. Continue tillage until a reasonable uniform seedbed is prepared.

Seeding

1. Seed germination shall have been tested within 12 months of the planting date. No seed shall be accepted with a germination test date more than 12 months old unless retested.

SEED MIXTURE	PLANTING RATE lbs/acre	PLANTING RATE lbs/1000 sq. ft.
Strong Creeping red fescue	60	1.4
Kentucky bluegrass	40	0.92
Perennial ryegrass or	30	0.25
Redtop	3	0.10
plus White clover	5	0.10

2. Optimal planting periods from March 1 through April 30 and August 15 through November 15. Acceptable planting period from May 1 through August 14.
3. Conventional Seeding will be performed by applying seed uniformly by hand, cyclone (centrifugal) seeder, drop seeder, drill or cultipacker seeder. Except for drilled, hydroseeded or cultipacked seedings, seed shall be incorporated into the soil within 24 hours of seedbed preparation to a depth of 1/4 to 1/2 inch, by raking or dragging. Depth of seed placement may be 1/4 inch deeper on coarse textured soil.
4. After seeding, firming the soil with a corrugated roller will assure good seed-to-soil contact, restore capillarity, and improve seedling emergence.

Mulching

1. Straw or Hay. Unrotted small grain straw, hay free of seeds, to be applied at the rate of 1-1/2 to 2 tons per acre (70 to 90 pounds per 1,000 square feet), except that where a crimper is used instead of a liquid mulch-binder (tackifying or adhesive agent), the rate of application is 3 tons per acre. Mulch chopper-blowers must not grind the mulch. The approved rates above have been met when the mulch covers the ground completely upon visual inspection, i.e. the inspector cannot see the ground below the mulch.
   a. Application - Spread mulch uniformly by hand or mechanically so that approximately 85% of the soil surface will be covered. For uniform distribution of hand-spread mulch, divide area into approximately 1,000 square feet sections and distribute 70 to 90 pounds within each section.
   b. Anchoring shall be accomplished immediately after placement to minimize loss by wind or water. This may be done by one of the following methods, depending upon the size of the area, steepness of slopes, and costs.
      i. Peg and Twine. Drive 8 to 10 inch wooden pegs to within 2 to 3 inches of the soil surface every 4 feet in all directions. Stakes may be driven before or after applying mulch. Secure mulch to soil surface by stretching twine between pegs in a criss-cross and a square pattern. Secure twine around each peg with two or more round turns.
      ii. Mulch Nettings - Staple paper, jute, cotton, or plastic nettings to the soil surface. Use degradable netting in areas to be mowed.
2. Liquid Mulch-Binders - May be used to anchor salt hay, hay or straw mulch.
   a. Applications should be heavier at edges where wind may catch the mulch, in valleys, and at crests of banks. The remainder of the area should be uniform in appearance.
   b. Use one of the following:
      i. Organic and Vegetable Based Binders - Vegetable gel shall be physiologically harmless and not result in a phytotoxic effect or impede growth of turf grass. Use at rates and weather conditions as recommended by the manufacturer to anchor mulch materials.
      ii. Synthetic Binders - High polymer synthetic emulsion, miscible with water when diluted and following application to mulch, drying and curing shall no longer be soluble or dispersible in water. It shall be applied at rates recommended by the manufacturer and remain tacky until germination of grass.
3. Note: All names given above are registered trade names. This does not constitute a recommendation of these products to the exclusion of other products.
4. Wood-fiber or paper-fiber mulch - Shall be made from wood, plant fibers or paper containing no growth or germination inhibiting materials, used at the rate of 1,500 pounds per acre (or as recommended by the product manufacturer) and may be applied by a hydroseeder. **Mulch shall not be mixed in the tank with seed**. Use is limited to flatter slopes and during optimum seeding periods in spring and fall.
5. Pelletized mulch - Pelletized mulch shall be applied in accordance with the manufacturer's recommendations. Mulch may be applied by hand or mechanical spreader at the rate of 60-75 lbs/1,000 square feet and activated with 0.2 to 0.4 inches of water.

Irrigation

1. If soil moisture is deficient, supply new seeding with adequate water (a minimum of 1/4 inch applied up to twice a day until vegetation is well established).

Shaw Environmental, Inc.
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DESIGNED BY: J. Fronczek	PPG INDUSTRIES, INC. JERSEY CITY, NEW JERSEY
DRAWN BY: E. Schlegel	DETAILS SOIL EROSION AND SEDIMENT CONTROL PLAN SITES 063 AND 065 BURMA ROAD HUDSON COUNTY, NEW JERSEY
CHECKED BY: J. Fronczek	

APPROVED BY:	DATE:	SCALE:	DRAWING NO.	SHEET NO.
--	3/13/13	AS SHOWN	146429-D4	C-3