Inland Wetlands and Watercourses Permit Application

Contingency Plan
Rev. 1

Soil Remediation Project
Wallingford, CT

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232596.00
Pfizer, Inc.
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ATTACHMENTS

1. INTRODUCTION

Shallow wetland soils located at 21 Toelles Road in Wallingford, Connecticut (the Site) will be excavated for off-site disposal within the expected limits of excavation depicted on **Sheet C-003** (See Attachment A to the permit narrative). Excavation will result in temporary disturbance to wetlands within the excavation areas as well as in upland areas used for access and materials management. These wetlands currently consist primarily of forested wetlands adjacent to Wharton Brook.

Remediation and restoration of the wetland areas will require excavation and backfilling within the Floodway of Wharton Brook. The following plan has been prepared to describe: (1) pre-emptive erosion and sedimentation and flood control measures; and (2) contingency and response measures to address potential large precipitation events and flood waters, and to minimize effects of potential associated erosion and sedimentation during the work. The construction contractor will be required to submit a Flood Mitigation Plan which incorporates the aspects of this plan.

Moreover, this plan is adaptive in nature and is intended to be implemented based on site-specific data and observations obtained during the construction and restoration phases of the project.

2. EROSION AND SEDIMENTATION CONTROL MEASURES

As depicted on **Sheet C-001** erosion and sediment controls will be utilized at the site where potential for erosion concerns may be possible. A silt fence lined with a straw wattle, straw bale, or similar product, will be placed around the entirety of the excavation area, as detailed in **Sheet C-001**. In locations where the excavation area is in proximity to Wharton Brook, and the excavation bottom will be below the ordinary high-water mark, two rows of silt fence and wattles, facing opposite directions, and a silt curtain will be used for additional erosion and sediment controls. The details of the installation of the silt fence sedimentation barriers are illustrated in **Sheets C-201** and **C-202**.

As depicted on **Sheet C-001,** erosion and sediment controls and a water diversion measure will be utilized at the site where the potential for significant erosion concerns and flooding exist. The water diversion measures are anticipated to be placed on the ground surface on the exterior of the erosion and sedimentation controls. At the western end of the water diversion devices, the topography rises by several feet, providing a natural impediment to flow around this portion of the flood control device. Surface runoff would be contained within the confines of the erosion and sedimentation controls.

It is anticipated that there would be de minimis effect to the flood flow in Wharton Brook. As depicted on the Floodway mapping for this area (see **Attachment B** to the Plan), there is a wide expanse of Floodway in this area of, and downstream in, Wharton Brook. The Project area represents a small portion of the overall floodplain in this area.

Additional erosion, sedimentation, and flood control measures are described below.

2.1 Preconstruction

- Install erosion control barriers: Erosion and sedimentation control measures will be installed around the limit of work. The controls will include lines of silt fence and straw bales (or equivalent), straw wattles, silt/turbidity curtains, tracking pads, and stormwater catch basin silt sacks. Erosion controls will also be installed as needed in strategic locations based on visual observance of surface water flow patterns and topography of work areas to control sediment-entrained stormwater from exiting and entering work areas. Erosion and sedimentation controls will be installed and functional prior to initiating land disturbing activities, including tree/vegetation clearing.
- Additional erosion and sedimentation control measures will be staged on-site and stored out of the floodway/work area. These will include straw bales, straw wattles, silt fence, and erosion control blankets.
- Water diversion: Coffer dams or equivalent water diversion measures will be used in low lying areas (e.g., where the Ordinary High-Water Mark intersects with the excavation limit) to mitigate infiltration of water into the excavation area. The location where the diversion measures will be deployed are shown on **Sheet C-001** of the drawings. The specific diversion methodology (e.g., HydraBarrier, Aqua Barrier coffer dam, WIPP system, PortaDam) will be determined and designed as part of Contractor means and methods development. Examples of these diversion methods are provided as **Attachment A** to this plan. The use of the diversion measures may be expanded depending on the magnitude of storm event and river stage that is anticipated. As included in a call-out note on **Sheet C-001**, the installation area will be accessed via the excavation areas. The equipment for installation will be specified by the selected contractor but is anticipated to be similar to that used for the excavation work. These devices are designed to be installed on the ground. It is anticipated that the devices would be installed on the ground surface adjacent to the erosion and sedimentation controls, resulting in no expansion of the project area.
- Stormwater entering the wetland from the existing outfall will be temporarily rerouted to outside of the excavation during the duration of excavation construction.

2.2 During Construction

- Visual inspections: Personnel will inspect erosion and sedimentation controls daily during active work and after significant storm events to identify areas where sediment has accumulated in order to target removal of this material. Inspections will include an evaluation of the condition of the controls, including damage, gaps, undermined areas, etc. Damaged or inadequate areas will be repaired or replaced.
- Additional stocks of erosion and sedimentation control materials will be staged on-site and stored out of the floodway/work area. These will include straw bales, straw wattles, silt fence, and erosion control blankets. These will be deployed if needed during significant precipitation events.
- The entrance to each equipment access point will have anti-tracking pads. A separate truck soil loading and tire and track washdown pad will also be constructed at each of the areas. Physical removal of soil and sediment from truck tires and equipment prior to leaving the excavation area will be performed on the pad. The pad will be designed in a fashion to collect the soil and sediment following removal from the equipment, for proper storage and offsite disposal. The proposed locations for the features described above are depicted on **Sheet C-002**. The details of the construction of these pads are detailed in **Sheets C-201** and **C-202**.
- The excavation will proceed in a series of small "cells" to minimize the area of open excavation at any given time. It is anticipated that the cells can each be completed within several days. Cells will be excavated, restored, and stabilized before moving on to the next portion of the excavation. To the extent possible, excavations will not be left open overnight or through non-workdays. The cells are depicted on **Sheet C-003**.
- Silt fence and wattles will be placed, in a similar fashion as the wetland excavation area, around each of the soil staging areas and the material management area. Additionally, a minimum of 10-millimeter thick polyethylene sheeting will be placed underneath each of the soil staging areas prior to placing the materials. At the end of each workday the piles will be covered and secured with a minimum of 6-millimeter thick polyethylene sheeting.
- Equipment will be staged at the upgradient edge of the excavation, away from Wharton Brook. Fuel will be securely staged outside of the wetland limits and Upland Review Area.
- The backfilling and stabilization of areas around the large trees to be preserved as well as areas within the Ordinary High-Water Mark will be prioritized.
- The weather forecast will be monitored daily over the course of the excavation work. Work will be suspended if significant precipitation is forecasted and flooding of Wharton Brook is anticipated. Additional stabilization, erosion/sedimentation controls, and diversion controls will be installed if excessive rain is expected. These may include:
  - use of straw mulch or erosion control blankets on exposed areas;
  - use of stone to temporarily stabilize exposed or unstable areas prone to washout;
  - installation of straw wattles on slopes; or
  - installation of additional flood diversion along the brook.
- Temporary water diversion measures near Wharton Brook will be removed following placement of backfill in, and stabilization of (i.e., erosion control blankets), the excavation areas.
- As discussed in **Section 4.3** of the permit application, a number of large trees (native species only, at least 15" diameter at breast height) will be left standing throughout the proposed excavation area.

Retention of large trees will provide habitat value, aid in soil stabilization, provide shade to the replanted area, and provide a seed source for native volunteer plants. The soil excavation around these large trees will only extend up to a radius around these trees approximately equal to the canopy drip line. Minimal removal of soil to the top of root zones up to six inches using small equipment or hand tools will be completed within the tree dripline.

- Once areas are backfilled to final elevations and seeded, the restored area will be stabilized using a fully biodegradable fiber erosion control blanket. The blanket will be secured to the ground using biodegradable anchors. During the planting season, plantings (trees, shrubs, herbaceous plugs) will be installed through the blanket.

2.3 Post-Restoration

- The erosion controls will be maintained following site restoration until soils in the area have been stabilized with vegetation. A stock of additional erosion control blankets and other erosion and sedimentation control materials will be maintained in the uplands or paved areas adjacent to the restored areas.

3. EROSION AND FLOOD CONTINGENCY RESPONSE MEASURES

A series of metrics and response actions were developed to address different potential flood levels and potential erosion issues during the excavation and restoration phases of the project. These measures and the data used to develop metrics for implementing these measures are described below.

3.1 Flood and Rainfall Data

FEMA's Federal Insurance Rate Map (FIRM) (May 2017) applicable to the project area is provided as **Attachment B**. The 1% Annual Chance Flood (100 Year return period), 0.2% Annual Chance Flood (500 Year return period), and Floodway (recommended no build area) boundaries are shown on this map and on the project plans.

FEMA Flood Insurance Study (October 2013) flood profiles for the portion of Wharton Brook applicable to the project area is provided as **Attachment C**. The profiles for the 10% Annual Chance Flood (10 Year return period), 2% Annual Chance Flood (50 Year return period), 1% Annual Chance Flood (100 Year return period), and 0.2% Annual Chance Flood (500 Year return period) are shown. The 10 Year return period flood is predicted to reach an elevation of approximately 26.5 feet (NAVD 88).

Rainfall frequency data is provided in **Attachment D**. The rainfall data for varying storm durations and return periods is provided. A summary of rainfall data from January 1, 2000 through October 20, 2020 (approximately 20.7 years) for the Meriden Markham Municipal Airport station is provided. Key aspects of the dataset include the following:

- 1 to 1.5 inches of rain fell on 2% of the days, or on average 7.5 days per year;
- 1.5 to 2 inches of rain fell on 0.6% of the days, or on average 2 days per year;
- 2 to 2.5 inches of rain fell on 0.3% of the days, or on average 1 day per year;
- Greater than 2.5 inches of rain fell on less than 0.3% of the days, or on average 1 day per year; and
- For the top 30 rainfall events over the 20.7-year timeframe, which encompassed the greater than 2.2 inches of rain events, 25 were classified as 1 to 5 Year Floods, while two and three were classified as 10 Year and 25 Year Floods, respectively.

Based on the dataset, rainfall events with 1.5 or more inches of rain are expected to occur relatively infrequently during the year. However, the rainfall dataset will be used as a guide for response measures during the construction and restoration phases, as described below.

3.2 Response Measures During Construction Phase

The Project Engineer and on-site Construction Manager representing the consulting/engineering company working on behalf of the Applicant will be responsible for overseeing and coordinating response measures. The response measures will be implemented by the Contractor performing the construction activities. The Contractor's on-site Construction Supervisor will direct the implementation of the response measures. The Project Engineer, Construction Manager, and Construction Supervisor will be in communication with one another before, during and after implementation of response measures.

The weather forecast (predicted rainfall amounts and storm durations) will be monitored daily over the course of the excavation, backfilling, and site stabilization work. Work will be suspended if significant precipitation is forecasted and flooding of Wharton Brook is anticipated. Additional stabilization, erosion/sedimentation controls, and diversion controls

will be installed if excessive rain is expected. A tiered approach will be followed, based on knowledge of predicted weather forecasts. The approach is summarized in the following table.

Construction Phase Flood Event Response Measures

Predicted Flood Event [3]	Seven days before the event	Five days before the event	Three days before the event	One day before the event
Less than 1 Year	Hold meeting between key project personnel to discuss weather forecast and plans for response measures[1]	Same as prior	Complete excavation and backfill of cells in progress Install rows of straw wattles around new excavation cells	Inspect all E&S controls and make any outstanding repairs and secure them[2] Install and secure erosion control blankets over backfilled areas
1 Year	Hold meeting between key project personnel to discuss weather forecast and plans for response measures[1]	Same as prior Do not initiate excavation cells below elevation 23 unless they can be completed, backfilled, and stabilized three days before the storm event	Complete excavation and backfill of cells in progress Install and secure erosion control blankets over backfilled areas Install rows of straw wattles around new excavation cells Deploy a row of staked straw bales at approximately elevation 23	Inspect all E&S controls and make any outstanding repairs and secure them Remove construction equipment and supplies from areas located below approximately elevation 23
2 Year	Same as above	Same as above Do not initiate excavation cells below elevation 25 unless they can be completed, backfilled, and stabilized three days before the storm event	Complete excavation and backfill of cells in progress Install and secure erosion control blankets over backfilled areas Install rows of straw wattles around new excavation cells Deploy rows of staked straw bales at approximately elevation 23 and 25	Inspect all E&S controls and make any outstanding repairs and secure them Remove construction equipment and supplies from areas located below approximately elevation 25

5 Year	Same as above	Same as above Complete excavation and backfill of cells in progress Install and secure erosion control blankets over backfilled areas Do not initiate excavation cells below elevation 26.5 unless they can be completed, backfilled, and stabilized three days before the storm event	Complete excavation and backfill of cells in progress Install and secure erosion control blankets over backfilled areas Install rows of straw wattles around new excavation cells Deploy rows of staked straw bales at approximately elevation 23, 25, and 26.5 Inspect all E&S controls and make any outstanding repairs and secure them	Remove construction equipment and supplies from areas located below approximately elevation 26.5 (10 Year Flood level)
10 Year or Greater	Same as above Confirm additional flood control measures will be available for the response measures described to the right	Same as above Complete excavation and backfill of cells in progress Install and secure erosion control blankets over backfilled areas Do not initiate new excavation cells	Extend the flood control devices from beyond the Ordinary High-Water Mark Area to across the entire southern edge of the excavation area Deploy rows of staked straw bales at approximately elevation 23, 25, 26.5, and 28 Inspect all E&S controls and make any outstanding repairs and secure them	Remove construction equipment and supplies from areas located below approximately elevation 28 (100 Year Flood level) Postpone further construction activities until after the storm has passed and flood waters have receded

Notes:

1 A meeting will be held between the Project Engineer, On-Site Construction Manager, and On-Site Construction Supervisor to evaluate the weather forecast and to discuss plans for response measures.

2 Securing the E&S controls by using additional anchoring and/or tie downs will be performed to mitigate the potential for them to become detached during flooding.

3 The predicted flood event will be based on a comparison of the forecasted rainfall amount and duration to the data provided in Appendix D.

Following the rainfall and flooding event, the project area will be inspected by the Construction Manager and Supervisor, and the following response actions will be performed within one week of the storm/flooding event:

- Repairs to erosion and sedimentation controls will be performed.

- If soil erosion occurred, soils (to be excavated or having been placed as backfill) that may have eroded will be recovered to the extent practical and placed back in the respective excavation cells.
- If washout of newly installed seeds occurred in an area, the erosion control blankets for the area will be removed, the area will be reseeded, and the erosion control blanket will be replaced.
- If newly installed plants/saplings have become unstable, the newly installed plants/saplings will be re-installed and/or re-placed.

Evaluation of Flood Levels

If, following a rainfall event and additional significant rainfall is not predicted to occur, flooding at the 1, 2, 5, and 10 Year Flood Events does not rise to a level to affect construction work, construction work may proceed in non-flooded areas.

3.3 Response Measures During Restoration Phase

The Project Engineer and wetland scientist representing the consulting/engineering company working on behalf of the Applicant will be responsible for overseeing and coordinating response measures. The response measures will be self-performed by the consulting/engineering company or implemented by a Contractor. The consulting/engineering firm's or Contractor's on-site Construction Supervisor will direct the implementation of the response measures. The Project Engineer and on-site Supervisor will be in communication with one another before, during and after implementation of response measures. A tiered approach will be followed, and the approach is summarized in the following table.

Restoration Phase Flood Event Response Measures

Restoration Time Period	Response Measures
Year 1	• Maintain E&S controls (silt fence around excavations and erosion control blankets) during the first year following restoration.[1] • Perform monitoring and mitigation efforts in accordance with the United States ACOE permit requirements. • Perform site visits and inspections in accordance with the ACOE permit monitoring plan within the first growing season. • During site visits, inspect all E&S controls and make any outstanding repairs. • Document findings of the site visits and inspections. • Hold meetings between key project personnel to discuss results and plans for response measures, if necessary.[2] • If soil erosion occurred resulting in significant scouring, soils that may have eroded will be recovered to the extent practical and placed back in the respective area where the soils eroded from. [3] • If washout of newly installed seeds occurred in an area prior to the seeds germinating, the erosion control blankets for the area will be removed, the area will be reseeded, and the erosion control blanket will be replaced. • If newly installed plants/saplings require re-installation/replacement, the newly installed plants/saplings will be re-installed and/or re-placed, in accordance with the United States ACOE permit requirements.

Years 2 and up to 10	• Following site stabilization (i.e. Year 2), remove E&S controls (silt fence). • Perform monitoring and mitigation efforts in accordance with the United States ACOE permit requirements. • Perform site visits and inspections in accordance with the ACOE permit monitoring plan. • Document findings of the site visits and inspections. • Hold meetings between key project personnel to discuss results and plans for response measures, if necessary.[2]

Notes:

1 Securing the E&S controls by using additional anchoring and/or tie downs will be performed to mitigate the potential for them to become detached during flooding.

2 Meetings will be held between the Project Engineer, wetland scientist, and on-site Supervisor.

3 If significant soil erosion/loss (greater than several inches) were to occur, additional topsoil may need to be imported to recreate/restore site grades. In the event additional topsoil is placed, wetland seed mix and an erosion control blanket would be applied to the restored areas. The areas would be monitored to confirm the wetland seeds germinate effectively. Additional application of seed mix and/or watering of the newly seeded areas may be required.

ATTACHMENT A: EXAMPLES OF WATER DIVERSION BARRIERS


Aqua-Barrier®
Water-Inflated Dams
Quick Installation • Reusable
Compact • In-Field Repairable
Pipeline Projects and Construction
Boat Ramps
Bridges/Dams
Concrete Repair
Canals/Culverts
Diversion Pipes
Dredging
Intake/Outfall
Pipeline Construction
Sediment Control
Shoreline Restoration
Utility Lines
Pool Maintenance
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And More!
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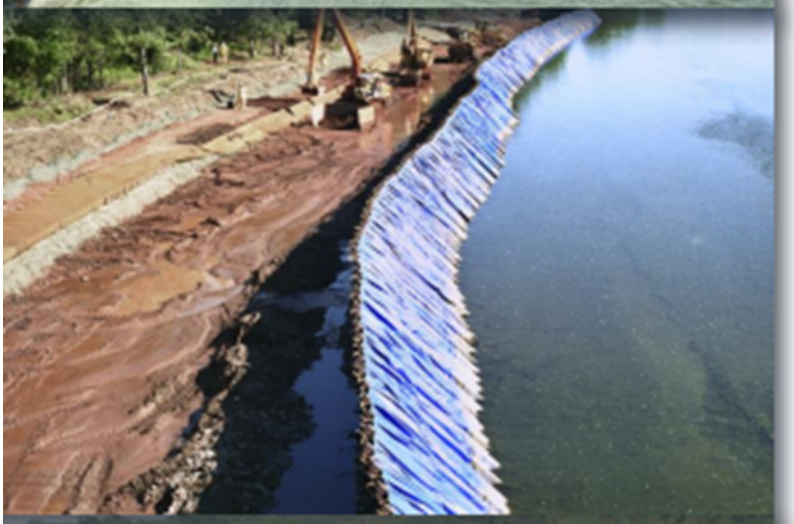
SITE SPECIFIC WATER CONTROL SOLUTIONS

Environmental Remediation



PORTADAM

Keeping the affected area separated from the clean area is a major consideration on all HazMat remediation sites. Specifically for work in or near water, there is a great advantage to keeping the clean water from making contact with the contaminated materials.

For over 20 years the Portadam system has been used as an effective method of surrounding an in-water remediation site and separating the clean water from the work area while maintaining natural stream or river flow.

This cofferdam method is clean and re-usable. It can be utilized in a multi-phase remediation project while offering clear, unobstructed access to the work area. No fill material is typically required, therefore the customer does not need to remediate additional material.

Our solution has the advantage of leaving subsurface conditions undisturbed which will help prevent further challenges in remediation efforts. In addition, by working in a dry area, dewatering of excavated material is minimized.

Key Advantages

- Flexible design allows custom layout
- Can be used in flowing waters
- Leaves subsurface undisturbed
- Quicker, less manpower and equipment for setup/removal than sandbags
- Minimizes dewatering of excavated material

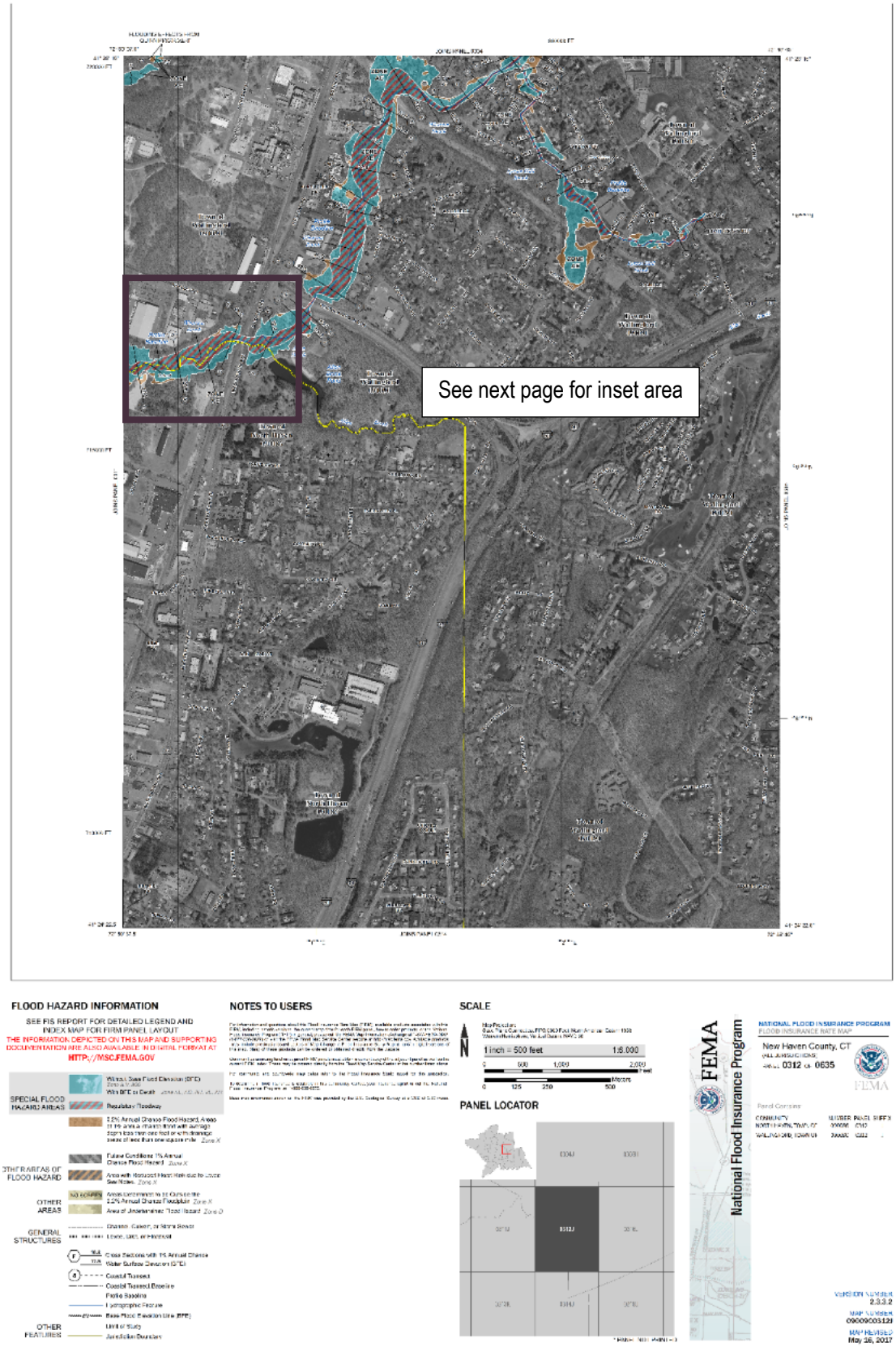
Portadam, Inc.

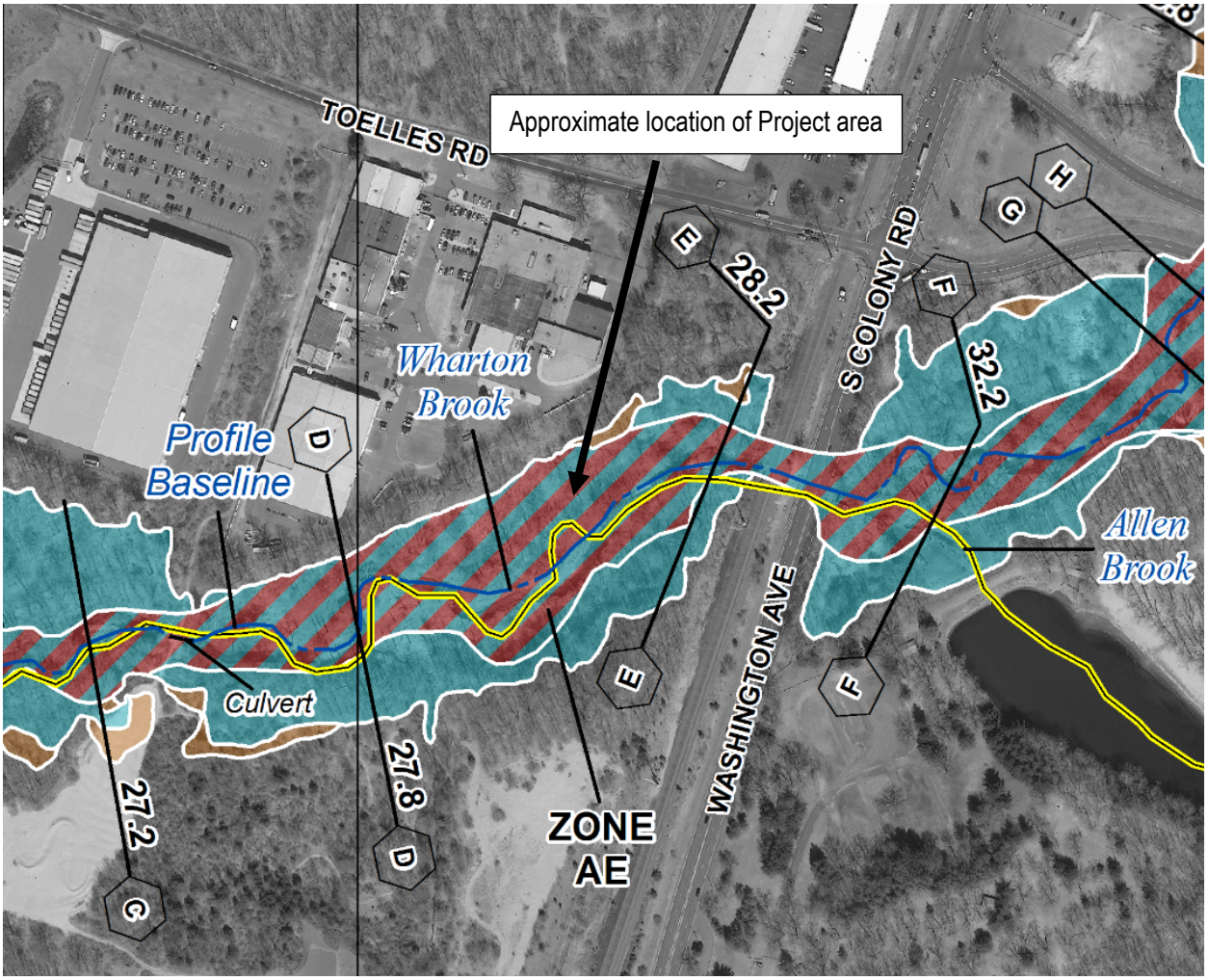
(800) 346-4793

sales@portadam.com

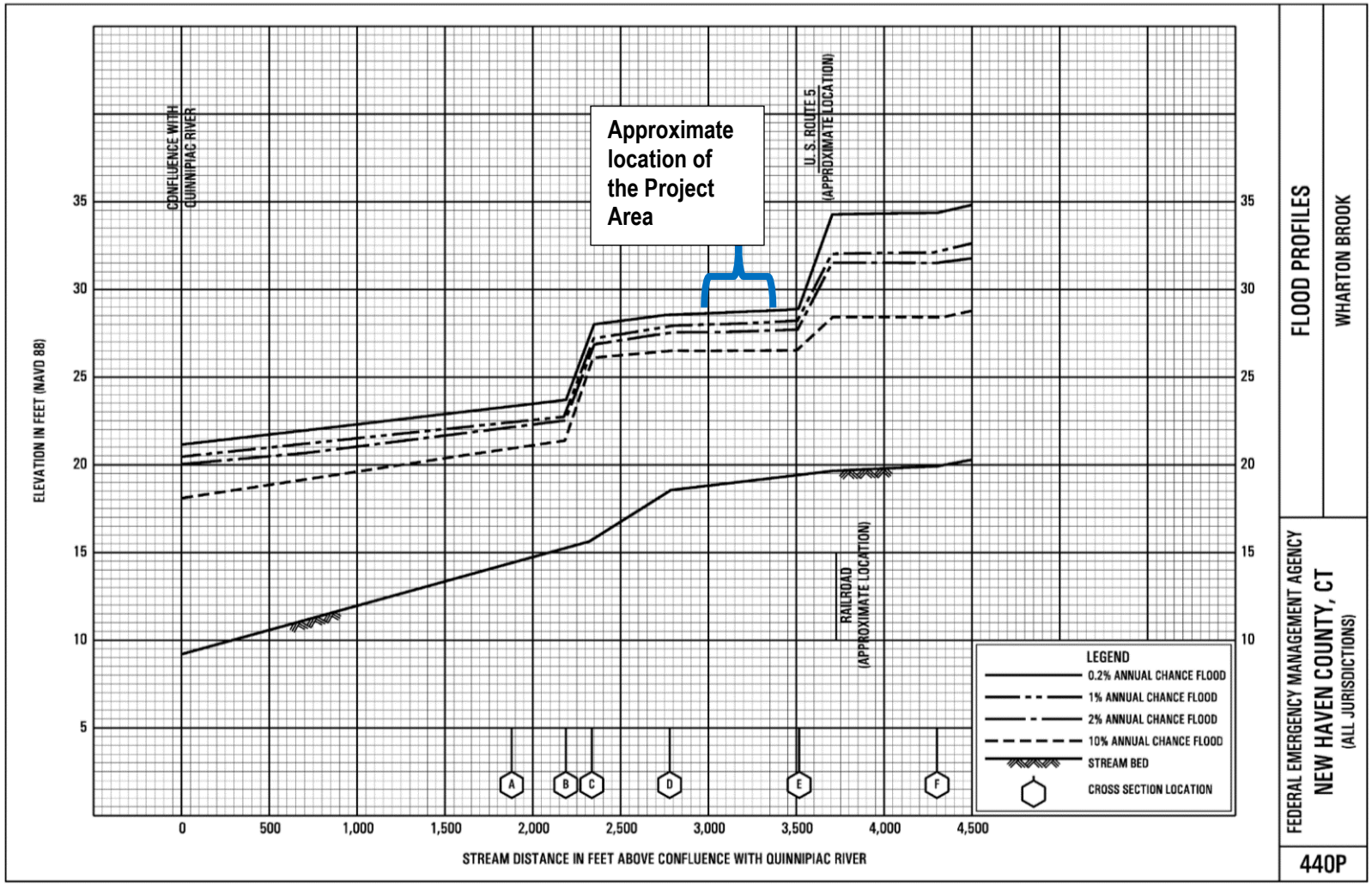
www.portadam.com

ATTACHMENT B: FLOOD INSURANCE RATE MAP (MAY 2017)


See next page for inset area
FLOOD HAZARD INFORMATION
SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV
SPECIAL FLOOD HAZARD AREAS
Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD
OTHER AREAS
GENERAL STRUCTURES
OTHER FEATURES
NOTES TO USERS
SCALE
1 inch = 500 feet
1:6,000
PANEL LOCATOR
FEMA
National Flood Insurance Program
NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP
New Haven County, CT
0312
0635
FEMA
2.3.3.2
09009C0312G
May 16, 2017


TOELLES RD
Approximate location of Project area
S COLONY RD
WASHINGTON AVE
Wharton Brook
Allen Brook
Profile Baseline
Culvert
ZONE AE
28.2
32.2
27.8
27.2
C
D
E
F
G
H

ATTACHMENT C: FLOOD INSURANCE STUDY PANEL



Data source: FEMA's Flood Insurance Study for New Haven County, Connecticut report, revised October 16, 2013, (09009CV006C)

ATTACHMENT D: RAINFALL FREQUENCY DATA

Wallingford, CT Estimated Rainfall Amounts (inches)

Storm Duration (Hours)	Return Period (Years)						
	1	2	5	10	25	50	100
0.5	0.9	1	1.4	1.6	1.8	2	2.25
1	1.1	1.3	1.7	2	2.3	2.6	2.9
2	1.4	1.6	2.25	2.5	2.9	3.25	3.6
3	1.5	1.8	2.4	2.7	3.25	3.5	4
6	1.8	2.25	3	3.5	4	4.5	5
12	2.25	2.75	3.5	4	4.8	5.5	6
24	2.75	3.25	4.25	5	5.5	6.5	7

Note:

Rainfall amounts estimated from: Hershfield, D.M. May 1961. Technical Paper No. 40, Rainfall Frequency Atlas of the United States, US Department of Commerce.

Meriden Markham Municipal Airport Rainfall Amounts (January 1, 2000 – October 20, 2020)

Number of Events Per Given Rainfall Amount Range

Daily Rainfall Amount (inches)	Number of Events	% of Total Days in Dataset	Average Number of Days Per Year
1 to 1.5	155	2.05%	7.5
1.5 to 2	45	0.59%	2.2
2 to 2.5	23	0.30%	1.1
2.5 to 3	12	0.16%	0.6
3 to 3.5	9	0.12%	0.4
3.5 to 4	2	0.03%	0.1
4 to 4.5	2	0.03%	0.1

Flood Classification for Top 30 Rainfall Events (2.2 to 4.48 inches of rain)

Return Period (Years)	Number of Events
1	4
2	11
5	10
10	2
25	3

Notes:
Data source: National Oceanic and Atmospheric Administration (Downloaded on October 24, 2020)
The total number of days during this time period was 7,566
The maximum daily rainfall for this station was 4.48 inches.
Flood classification for the top 30 rainfall events was performed by evaluating the duration of the rainfall event using historic data provided at https://www.wunderground.com. Tweed New Haven, CT Airport and Bradley Windsor Locks, CT Airport stations were evaluated to assess the storm duration.

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