CERCLA LETTER WORK PLAN
INITIAL PRE-DESIGN INVESTIGATION FOR THE
PHASE III SOUTHERN PLUME INTERCEPT SYSTEM
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK
AUGUST 2020

1.0 INTRODUCTION

The Department of Navy (Navy) is conducting an initial pre-design investigation to support the Phase III Southern Plume Intercept System (hereafter Phase III) at Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage (Figure 1). Initial pre-design investigation activities will consist of drilling vertical profile borings (VPBs) to support design of recovery wells planned for the area. This area is downgradient from the leading edge of the Operable Unit (OU) 2 offsite groundwater volatile organic compound (VOC) plume (hereafter OU2 VOC plume) (Figure 2). The OU2 VOC plume consists of a deeper western plume and a shallow eastern plume. The leading edge of the deeper western plume is identified by monitoring well RE117D1 (screened at 730 to 755 feet below ground surface [bgs]) (Figure 2). Groundwater samples collected from monitoring well RE117D1 in December 2019 contained concentrations of trichloroethene (TCE) at 57.2 micrograms per liter (µg/L). The leading edge of the shallow eastern plume is identified by groundwater data collected from VPB-153 (Figure 2) in 2014; TCE was detected at 53 µg/L and 51 µg/L in groundwater grab samples collected at 198-200 feet bgs and 238-240 feet bgs, respectively (Resolution Consultants, 2015).

In addition to the installation of VPBs, groundwater monitoring wells may be installed at each boring location to support collection of data used for recovery well design and future aquifer pumping tests. Information collected from the VPBs and monitoring wells will also be incorporated into the Navy's groundwater flow model.

This work plan addresses the drilling of VPB-RW08, -RW09, -RW10, and -RW11 and installation of potential groundwater monitoring wells (Figure 2). Drilling of the VPBs and installation of the monitoring wells described in this work plan will follow the general procedures described in the *Final December 2018 On-Property Letter Work Plan, Vertical Profile Boring and Monitoring Well Installation Program* (Tetra Tech, 2018a).

The Navy undertakes and documents its environmental remedial activities with respect to releases/suspected releases from the former NWIRP through Navy Work Plans. These documents outline technical requirements for conducting these activities and include provisions to protect health and safety and to minimize impact to the local community. These provisions include restricting impacts to noise, dust, work hours, and site maintenance (e.g., cleanliness).

This work plan is being prepared by Tetra Tech under the Naval Facilities Engineering Command Mid-Atlantic Comprehensive Long-Term Environmental Action Navy Contract (Number N6247016D9008; Task Order WE13).

This document is provided for review and comment in accordance with CERLCA requirements for notice of environmental restoration activities. The Department of Navy will address reviewer's comments prior to finalization of the document.

2.0 SCOPE AND OBJECTIVE

The purpose of this VPB and monitoring well installation program is to investigate the geology and hydrogeology south of the Southern State Parkway to support the design of recovery wells in the area. The OU2 VOC plume is upgradient of this area and continues to migrate to the south-southeast; however, contamination is not expected to be encountered at these locations at this time.

The drilling of VPBs will be conducted using mud rotary drilling techniques. The VPBs will provide in situ data through visual logging of lithology, down hole geophysical logging, and VOC data via collection and laboratory analysis of groundwater grab samples.

Pending evaluation of VPB data, monitoring wells may be installed near each VPB location. The wells will be used to measure water levels to assess groundwater flow, collect groundwater samples to assess aquifer chemistry and presence of contaminants of concern (COCs), and to support the future design of Phase III recovery wells, such as monitoring locations during aquifer pump tests. In addition, data from the VPBs and monitoring wells will be incorporated into the Navy's groundwater model to improve understanding of groundwater flow and plume migration.

The potential monitoring wells will be installed using mud rotary drilling techniques. The well screen interval(s) will be selected by the Navy upon evaluation of the VPB-specific data, such as the presence of COCs and their concentrations and information from nearby wells.

3.0 PROTECTION OF THE COMMUNITY

Each drilling location will be maintained in a manner to protect the health and safety of the surrounding community. This protection will be achieved through implementation of best operational practices and controls applicable to drilling activities in residential areas. This section provides a summary of these practices and controls.

3.1 Notification of Drilling Activities

Prior to mobilization of equipment, drilling notifications will be distributed to residents located near the drilling sites to inform the residents of the Navy's intent and plans. Notifications will be hand-delivered a minimum of one week prior to mobilization to

residents in the vicinity of a drill site. An example notification letter is provided in Attachment 1. Tailored letters are to be provided to residents at those addresses where the drill rig will be located. The New York State Department of Environmental Conservation (NYSDEC) will be notified at least 48-hours prior to the distribution of residential drilling notifications.

3.2 Drilling Controls

The drilling of VPBs will be conducted using mud rotary drilling technique. General work hours for active operation of the drill rig will typically be weekdays from 8:00 am – 4:30 pm. The work site will be maintained to ensure cleanliness both inside and outside of the drill site. Trash will be maintained in an acceptable receptacle and be removed on a regular basis from the site as to not allow for excessive accumulation. The Navy's contractor will provide a field operations manager to visit the site and inspect for cleanliness and safety.

The drilling of VPBs and installation of monitoring wells typically occurs in the narrow grass strip between the sidewalk and roadway to minimize impacts to residents and traffic. In the event monitoring wells are installed, the final construction results in a non-obtrusive metal cover (secured) placed flush with ground surface, thus minimizing potential trip hazard.

Although work is not routinely conducted on weekends or holidays, there may be instances where work will be required outside of the general work hours. For example, over a weekend or holiday, an active borehole may require inspection or the addition of drilling mud to ensure the integrity of the hole. Site workers will minimize their time at the drill site during non-routine work hour visits.

3.3 Site Controls

A security fence equipped with a lockable gate will be erected around each drill site to control access. The drill rig, equipment and materials, and waste receptacle will be contained within the fenced area. The gate will be secured with a lock at the end of each workday. As necessary on a site-specific basis, a sound barrier may be deployed to mitigate excessive noise from the drill site. Where applicable, pedestrians are alerted to closed sidewalks and crossing using signage as shown in the traffic control figures (Attachment 2).

3.4 Traffic Control

The drill rig and fenced work area occupy a portion of a street and sidewalk for the duration of VPB drilling and monitoring well installation. Traffic is alerted to the obstruction using signs placed in the roadway at a distance in both directions from the work site. The beginning and end of each work area is identified with signage.

Each traffic control design is tailored to each drill site to manage traffic flow. Figures presenting the traffic management and control for each drilling location addressed in this work plan are provided in Attachment 2.

3.5 Monitoring for Airborne Matter

Excessive airborne matter and VOCs are not expected to be generated during drilling of VPBs and construction of groundwater monitoring wells; however, to ensure safety to workers and the surrounding community, air monitoring will be conducted during these operations. The Navy's plan closely follows procedures outlined in NYSDEC's guidance for community air monitoring during restoration activities.

The constituents of concern in the OU2 plume area are VOCs. VOCs will be monitored during drilling activities using a photo-ionization detector (PID) equipped with a 10.2 eV or 10.6 eV lamp. Drilling activities will not likely result in the generation of particulate matter which would trigger particulate monitoring; however, to ensure the safety of the workers and community, particulate monitoring will be conducted during drilling. Particulates will be monitored using a particulate air monitor equipped with a micro-processor to perform real-time measurement of airborne concentrations in microgram per cubic meter ($\mu g/m^3$).

Both the PID and particulate monitoring equipment will be calibrated on a daily basis when they are used. The PID will be calibrated using a 100 parts per million (ppm) isobutylene air standard. The particulate air monitoring equipment will be calibrated using the appropriate air standard as specified in the equipment manufacturer's instructions. Calibration records will be maintained in the field log/notes.

Both VOCs and particulate monitoring will be conducted at the upwind and downwind perimeter of the drill site. The location of the monitoring equipment may be adjusted as necessary based on wind shifts. Real-time air monitoring field logs/data will be maintained to allow for interpretation of the data when necessary and will be available for review. Site conditions, weather conditions, work activities, and, implemented engineer controls will be documented in field logs/notes.

VOC and particulate monitoring recordings will be maintained in project files. These records will be made available for NYSDEC and New York State Department of Health (NYSDOH) personnel to review upon request. Any exceedances of the action levels will be reported to NYSDEC and NYSDOH personnel.

In additional to real time air monitoring, during drilling activities, two air samples per boring will be collected and analyzed for VOCs using EPA Method TO-15. Air samples will be collected using SUMMA canisters over an approximate 8-hour period. One air sample will be collected near/downwind of the drill rig and one air sample will be collected upwind of the drill rig.

4.0 VPB AND WELL INSTALLATION

4.1 Drilling Locations for VPBs and Monitoring Wells

Figure 2 provides the regional location of the proposed VPBs discussed in this work plan relative to the OU2 VOC plume. The VPBs and monitoring wells will be installed south and north of the Southern State Parkway which is located approximately three miles south of the NWIRP Bethpage property.

4.2 Vertical Profile Borings

Vertical profile borings VPB-RW08, -RW09, -RW10, and -RW11 will be drilled to the Raritan Clay layer which is anticipated to be encountered at approximately 1,000 feet bgs. During VPB drilling, groundwater grab samples will be collected via a hydropunch-type sampler. The VPB sampling program is summarized in Table 1 and is discussed below. In addition to VOCs, the groundwater samples will be analyzed for pH, temperature, specific conductivity, oxidation reduction potential, dissolved oxygen, and turbidity as volume permits. Soil and groundwater samples will be collected from each VPB at the following depths:

- Discrete groundwater samples will be collected from the VPBs at depths spaced at 50-foot intervals from 50 to 200 feet bgs: (four samples per boring).
- Discrete groundwater samples will be collected from the VPBs at depths spaced at 20-foot intervals from 220 feet bgs to the bottom of the boring (approximately 1,000 feet bgs).
- The groundwater samples will be analyzed for VOCs via method SW846-8260B.
- Split spoon soil samples will be collected during the drilling to observe and record subsurface lithologies and to confirm the presence of the Raritan Clay layer. Verification of the Raritan Clay formation will be confirmed when three consecutive 5-foot split spoon samples are collected of a significant clay unit at a depth at which the Raritan Clay would be expected.
- Once the boring completion depth is reached, a natural gamma geophysical log will be performed from the ground surface to the bottom of the boring. This log will be used in combination with the split spoon samples and drilling mud observations to determine subsurface lithology. The boring will then be abandoned using a cement/bentonite grout.

Additional down-hole geophysical surveys may be conducted in the VPB to evaluate the effectiveness of alternative techniques in helping describe lithology and contaminant flow. The subsurface lithology and analytical data collected will support groundwater flow modeling, monitoring well construction, recovery well locations and target screen intervals.

4.3 MONITORING WELL INSTALLATION

To fulfill the Phase III scope and objective, groundwater monitoring wells may be installed at VPB locations during this investigation. It is anticipated that up to three monitoring wells may be installed at each VPB location. The number of monitoring wells installed and well screen depths will be selected based on VPB data, recognized data gaps, and the depth of the upgradient OU2 VOC plume and downgradient public supply wells. Evaluation of the aforementioned data will be reviewed immediately after VPB drilling is complete so monitoring wells can be installed during the same mobilization if practical. Monitoring wells will be installed using mud rotary drilling techniques. A typical well construction diagram is presented in Attachment 3.

The construction details for these monitoring wells are as follows:

- Split spoon samples will be collected at 5-foot intervals in the screened interval of each well for lithology.
- The wells will be 4-inch diameter, Schedule 80 National Sanitation Foundation (NSF)-grade polyvinyl chloride (PVC) well casing and screen.
- Screens will be 10 to 20 feet in length with a 10 slot (0.010 inches) screen.
- After setting the well screen and casing, a gravel pack (#1 quartz sand) will be placed within the boring annulus to a minimum of 10 feet above top of screen (150 to 365 feet bgs), 20 feet above the top of screen (365 to 530 feet bgs), or 25 feet above the top of screen (greater than 530 feet bgs).
- A 5-foot thick (150 to 365 feet bgs), 10-foot thick (365 to 530 feet bgs), or 15-foot thick (greater than 530 feet bgs) fine sand layer (#0 quartz sand) will be placed in the annulus on top of the gravel pack.
- A 4-foot thick (minimum) bentonite seal will be installed above the fine sand layer.
- A bentonite/cement grout will be installed within the annular space above the bentonite seal.
- Wells will be completed at grade using a 12-inch diameter, locking curb box in place over the wells.
- A 0.5-foot thick concrete apron measuring 2 feet by 2 feet square will be installed around each well.
- The wells will be covered with a clean well cap. Well locks will be used to secure the wells. Final well construction details will be documented on well construction log sheets.

4.4 Groundwater Monitoring Well Development

Following the installation, wells will be developed no sooner than 5 days after installation to evacuate drilling mud, silts, and other fine-grained sediments which may have accumulated within the well during installation. Wells will be developed using a combination of air lifting and mechanical surging. Field parameters (pH, temperature, specific conductivity, oxidation reduction potential, dissolved oxygen, and turbidity) will be monitored and recorded throughout well development. Development will continue until drilling mud is not observed and the well produces clear, sediment-free water, to the extent practicable. In compliance with NYSDEC policy, wells will be developed until turbidity is less than 50 NTUs.

Well development will also include purging stagnant water from the well above the screen interval and rinsing the interior well casing above the water table using only water from that well.

4.5 Surveys

The location of each vertical profile boring and all newly installed monitoring wells will be surveyed by a New York State licensed surveyor. Survey information will be added to each VPB log sheet and well construction diagram.

5.0 INVESTIGATION DERIVED WASTE

Investigation derived waste (IDW) generated from drilling activities will be managed in a manner that is protective to the community. IDW created during this program will include soil cuttings, drilling fluids, groundwater, and decontamination fluids. All IDW will be containerized and properly labeled, characterized, and temporarily stored at a central staging area located at NWIRP Bethpage. It is anticipated all IDW generated from drilling activities will be non-hazardous. IDW drilling fluids will also include wash fluids generated from decontamination of down-hole drilling equipment (e.g., augers and rods).

IDW will be disposed of properly based on waste characterization results. The management of IDW generated during this investigation will follow procedures outlined in Tetra Tech Standard Operating Procedure (SOP) SA-7.1 *Decontamination of Field Equipment and Management of Investigation Derived Waste* (Tetra Tech, 2016) and United States Environmental Protection Agency (USEPA) *Guide to Management of Investigation-Derived Wastes* (OSWER, 1992).

6.0 DECONTAMINATION

A centrally-located decontamination pad at NWIRP Bethpage will be used to decontaminate drilling equipment and tooling. However, a decontamination pad may also be constructed at the drill site if an initial cleaning of drilling equipment and tools is necessary prior to transporting back to the centrally-located decontamination pad. All decontamination fluids will be collected from the pad and managed as IDW.

Decontamination activities conducted during this investigation will follow procedures outlined in Tetra Tech SOP SA-7.1 Decontamination of Field Equipment and Management of Investigation Derived Waste.

7.0 MONITORING WELL SAMPLING

Monitoring wells installed during this program will be sampled utilizing the following procedures. Wells will be sampled after completion of well development. Each well will be allowed to stabilize for a minimum of 14-days prior to sampling. Wells will be sampled in accordance with similar procedures outlined in the Final Letter Work Plan, 2018 On-Property VOC and 1,4-Dioxane Groundwater Investigation, Facility Wide, NWIRP Bethpage, NY (Tetra Tech, 2018b). Groundwater samples will be analyzed for VOCs via Method 8260B and 1,4-dioxane via Method 8270D SIM.

The Phase III wells will be incorporated into the Navy's ongoing groundwater sampling program. The frequency of routine sampling of the wells will be evaluated following one year of quarterly sampling.

8.0 REPORTING OF RESULTS

8.1 Field Documentation

Field documentation required to support this project will consist of the following items:

- Field notebook.
- Boring log for each boring.
- Groundwater and soil sample log sheets.
- Chain of custody forms documenting shipment of sample to a fixed based analytical laboratory.
- Well completion form for each well.
- Well development record.

8.2 Data Validation

Groundwater analytical data collected from the VPBs and monitoring wells will undergo full data validation in accordance with EPA data validation guidelines (EPA, 2017).

8.3 Reporting

A data summary report will be developed summarizing field activities and containing validated analytical results for each VPB addressed in this work plan. Figures and tables will be used to present analytical and lithology data. The report will include log sheets documenting VPB and monitoring well drilling, gamma log, well construction and development, and groundwater sampling. The data validation reports and a summary of air monitoring data will also be included in the report.

The Navy will provide reports to the NYSDEC for review and concurrence. These reports may be provided to the local municipalities as requested concurrent with issuance of the final document to the NYSDEC.

Validated analytical data from the VPBs and groundwater monitoring wells will be provided to NYSDEC as it become available. In addition, validated groundwater data collected from monitoring wells will be submitted to NYSDEC as an EQuIS data deliverable.

9.0 RECOVERY WELL INSTALLATION

The recovery wells are intended to intercept and prevent to the extent practicable the OU2 VOC plume migration. Four to six recovery wells are planned for the Phase III Southern Plume Intercept System at this time; however, as information is gained and additional groundwater flow modeling is completed, the number and location of recovery wells may be adjusted. Based on current groundwater flow modeling and the current understanding of the OU2 VOC plume configuration, recovery well pairs are planned for VPB-RW08 and VPB-RW09 locations and single recovery wells at RW10 and RW11 locations. The data collected during this investigation will be used to develop future work plans for the installation of recovery wells. A separate work plan will be generated for each recovery well location. These documents will provide specific details and requirements for installation of the recovery wells, including screen depths.

10.0 SCHEDULE

The access to property for the drilling of the Phase III PDI VPBs will require legal agreements with property owners. The VPBs to be placed to the immediate north and south of Southern State Parkway are anticipated to be located on property owned by the New York State Department of Transportation (DOT). The Navy intends to seek access from the DOT to allow drilling of one or more VPBs during 2020.

11.0 REFERENCES

EPA, 2017. USEPA National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002, January.

Office of Solid Waste and Emergency Response (OSWER), 1992. Guide to Management of Investigation-Derived Wastes, April.

Resolution Consultants, 2015. 2014 OU2 Groundwater Investigation VPB153 Bethpage, NY, April.

Tetra Tech, 2016. Standard Operating Procedure SA-7.1 Decontamination of Field Equipment and Management of Investigation Derived Waste, July.

Tetra Tech, 2018a. December 2018 On-Property Letter Work Plan, Vertical Profile Boring and Monitoring Well Installation Program, December.

Tetra Tech, 2018b. Final Letter Work Plan, 2018 On-Property VOC and 1,4-Dioxane Groundwater Investigation, Facility Wide, April.

TABLE

TABLE 1
VERTICAL PROFILE BORING AND MONITORING WELL SAMPLING PROGRAM
VPB-RW8, -RW9, -RW10, AND -RW11
NWIRP BETHPAGE

Matrix	Station Identification	Sample Identification	Depth/ Sampling Interval
Groundwater	VPB-RW8	BP-VPB-RW8-GW-XXX-XXX	50-foot intervals from 50 to 200 feet bgs; 20-foot interval greater than 200 feet bgs.
Air		BP-VPB-RW8-AIR-DW-YYYYMMDD	Breathing zone
Air		BP-VPB-RW8-AIR-UW-YYYYMMDD	Breathing zone
Soil		BP-RW8-SO-XXX-XXX	Fine-grained material identified based on VPB results.
Groundwater	VPB-RW9	BP-VPB-RW9-GW-XXX-XXX	50-foot intervals from 50 to 200 feet bgs; 20-foot interval greater than 200 feet bgs.
Air		BP-VPB-RW9-AIR-DW-YYYYMMDD	Breathing zone
Air		BP-VPB-RW9-AIR-UW-YYYYMMDD	Breathing zone
Soil		BP-RW9-SO-XXX-XXX	Fine-grained material identified based on VPB results.
Groundwater	VPB-RW10	BP-VPB-RW10-GW-XXX-XXX	50-foot intervals from 50 to 200 feet bgs; 20-foot interval greater than 200 feet bgs.
Air		BP-VPB-RW10-AIR-DW-YYYYMMDD	Breathing zone
Air		BP-VPB-RW10-AIR-UW-YYYYMMDD	Breathing zone
Soil		BP-RW10-SO-XXX-XXX	Fine-grained material identified based on VPB results.
Groundwater	VPB-RW11	BP-VPB-RW11-GW-XXX-XXX	50-foot intervals from 50 to 200 feet bgs; 20-foot interval greater than 200 feet bgs.
Air		BP-VPB-RW11-AIR-DW-YYYYMMDD	Breathing zone
Air		BP-VPB-RW11-AIR-UW-YYYYMMDD	Breathing zone
Soil		BP-RW11-SO-XXX-XXX	Fine-grained material identified based on VPB results.

Groundwater duplicates of 1 in 10 samples. Matrix spike/matrix spike duplicates of 1 in 20 samples.
Trip blank of one per cooler. Equipment blank of one per piece of decontaminated equipment per week.
VPB - vertical profile boring. MW - monitoring wells. SO - soil. GW - groundwater. DW - down wind. UP - up wind.
YYYYMMDD - year, month, day XXX - XXX top and bottom of sample interval in feet bgs.
bgs - below ground surface.
Groundwater samples are to be analyzed via SW846-8260B.
Soil samples are to be analyzed via SW846-5035/8260B.
Air samples are to be analyzed via TO-15.

FIGURES

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GENERAL LOCATION MAP
NWIRP BETHPAGE, NEW YORK

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NWIRP
Bethpage

Northrop
Grumman

State Hwy 135

N

Hicksville Rd

Hempstead Tpke

Hempstead Tpke

State Hwy 135

Hicksville Rd

Groundwater
Flow

VPB-153

RE117D1

Southern State Pkwy

VPB-RW11

VPB-RW10

Southern State Pkwy

VPB-RW08

VPB-RW09

1,500 0 1,500 Feet

Legend

- Groundwater Monitoring Well
- Vertical Profile Boring
- Groundwater Flow Direction
- 1997 NWIRP Bethpage Property
- 1997 Northrop Grumman Property
- 5 to 100 µg/L TCE
- >100 to 1,000 µg/L TCE
- >1,000 µg/L TCE

2016 NYGIS Clearinghouse Aerial Imagery

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VPB-RW08, VPB-RW09, VPB-RW10, AND VPB-RW11 BORING LOCATIONS

NWIRP BETHPAGE, NEW YORK

CTO	112G08005-WE13
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FIGURE NUMBER	2

ATTACHMENT 1
COMMUNITY DRILLING NOTIFICATION

DRILLING NOTICE
Taylor Ave and Coleridge St, Levittown, NY
March 11, 2020

Please be advised that the U.S. Navy, in conjunction with the New York State Department of Environmental Conservation, will be conducting drilling activities in your area. This work is being conducted to test groundwater quality at depths of 50 to 1,000 feet below ground surface. Volatile organic compounds (VOCs), including the solvents trichloroethylene (TCE) and perchloroethylene (PCE), have been detected in groundwater in the general area as a result of historic operations at the Grumman plant to the north. The drilling is part of an on-going investigation to better understand where the groundwater contamination is located, and how it is moving and to develop cleanup options. ***Additional information on the Navy's environmental cleanup program and the groundwater investigation is available at http://go.usa.gov/DyXF.***

The work will involve installation and collection of groundwater samples from a vertical profile boring (VPB) that will be drilled to a depth of 1,000 feet. Following completion of the VPB, up to three groundwater wells will be drilled to depths of approximately 350 to 800 feet. Each monitoring well will require 2 to 4 weeks to install. Access to the VPBs and monitoring wells during the drilling operation will be secured with fencing surrounding the drilling equipment. Any soil and groundwater removed from the borings will be containerized in drums and transported to Navy property off South Oyster Bay Road. Groundwater samples will be collected from the VPBs and wells and submitted to a certified laboratory to test for the presence of VOCs.

Because of the depth of the drilling work, the drill rig and support vehicles will be present at this specific location for approximately 8 to 10 weeks to complete the VPB and additional time will be required based on the number of wells. Once the work is completed, the area will be returned to its current condition (soil and grass seed).

Work hours will be Monday through Friday, from 8:00 AM to 4:30 PM (no machinery will operate before 8:00 AM). However, periodically during drilling operations, extended work hours and weekend activities may be required. If it is necessary to visit the site during other hours or on the weekends, activities will be kept to a minimum. Drilling will start on or about the third week of March 2020.

Onsite contractors for the Navy will be Delta Drilling, who will be conducting the drilling operations, and Tetra Tech, who will provide oversight. Inquiries may be directed to Mr. Vincent Varricchio, the Onsite Field Manager, or other contacts as listed below.

If you require additional information, please contact:

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Tetra Tech
Onsite Field Manager
(631) 962-0812

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Project Manager
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Jim Sullivan
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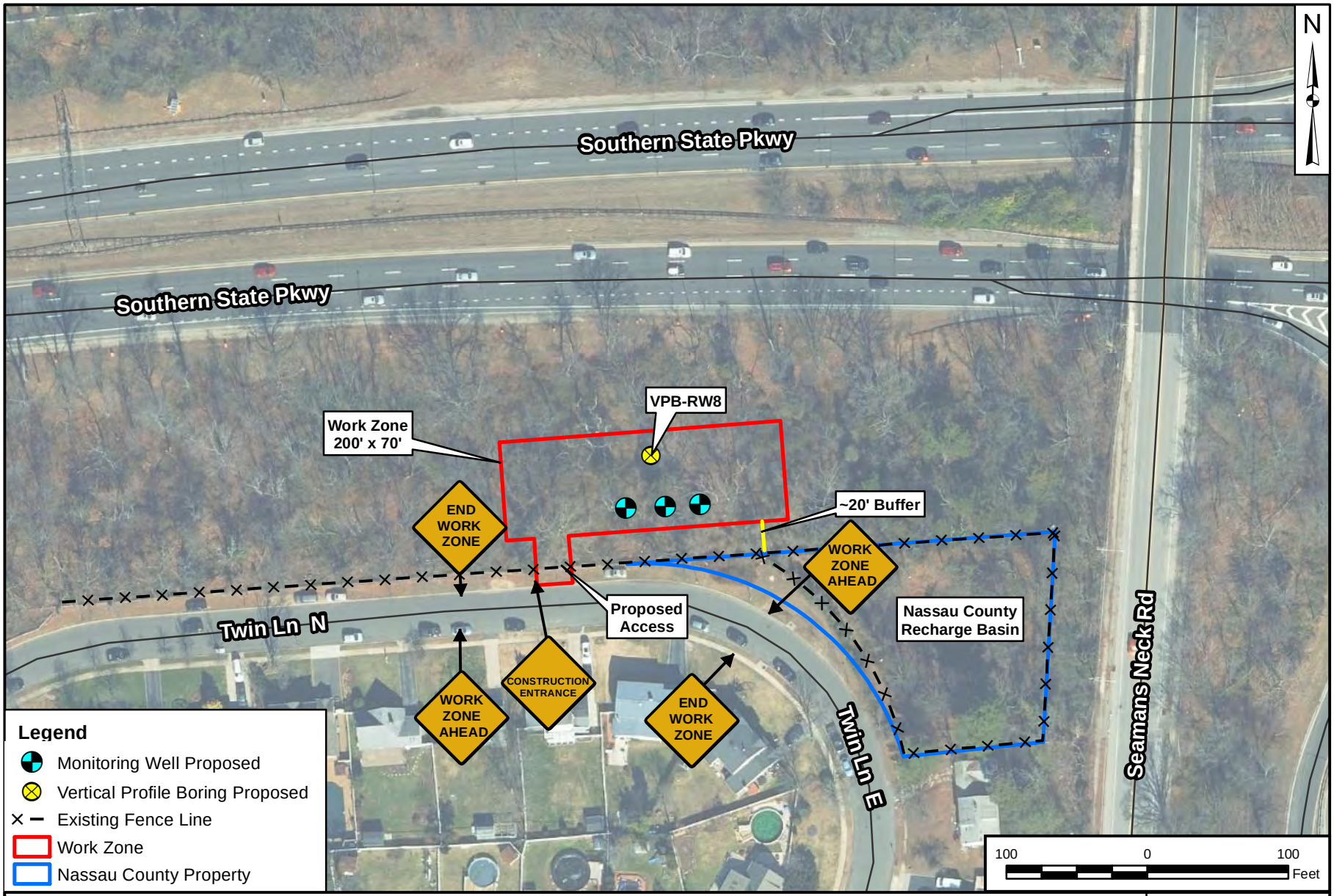
ATTACHMENT 2
TRAFFIC CONTROL PLAN FIGURES
VPB-RW8, VPB-RW9, VPB-RW10, AND VPB-RW11



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VPB-RW8 & MONITORING WELLS
SITE LAYOUT/TRAFFIC CONTROL PLAN
NWIRP BETHPAGE, NEW YORK

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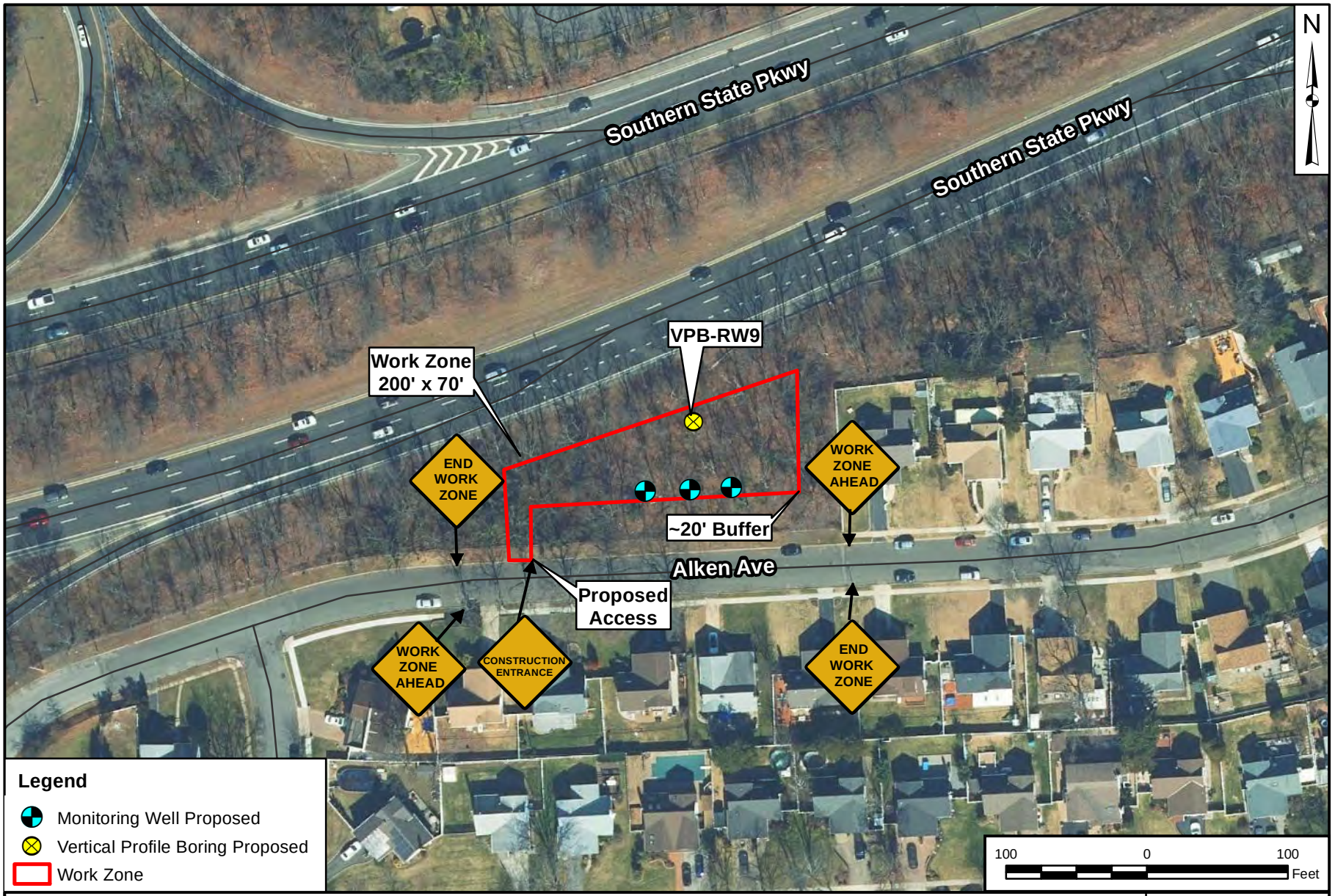

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VPB-RW9 & MONITORING WELLS
SITE LAYOUT/TRAFFIC CONTROL PLAN
NWIRP BETHPAGE, NEW YORK

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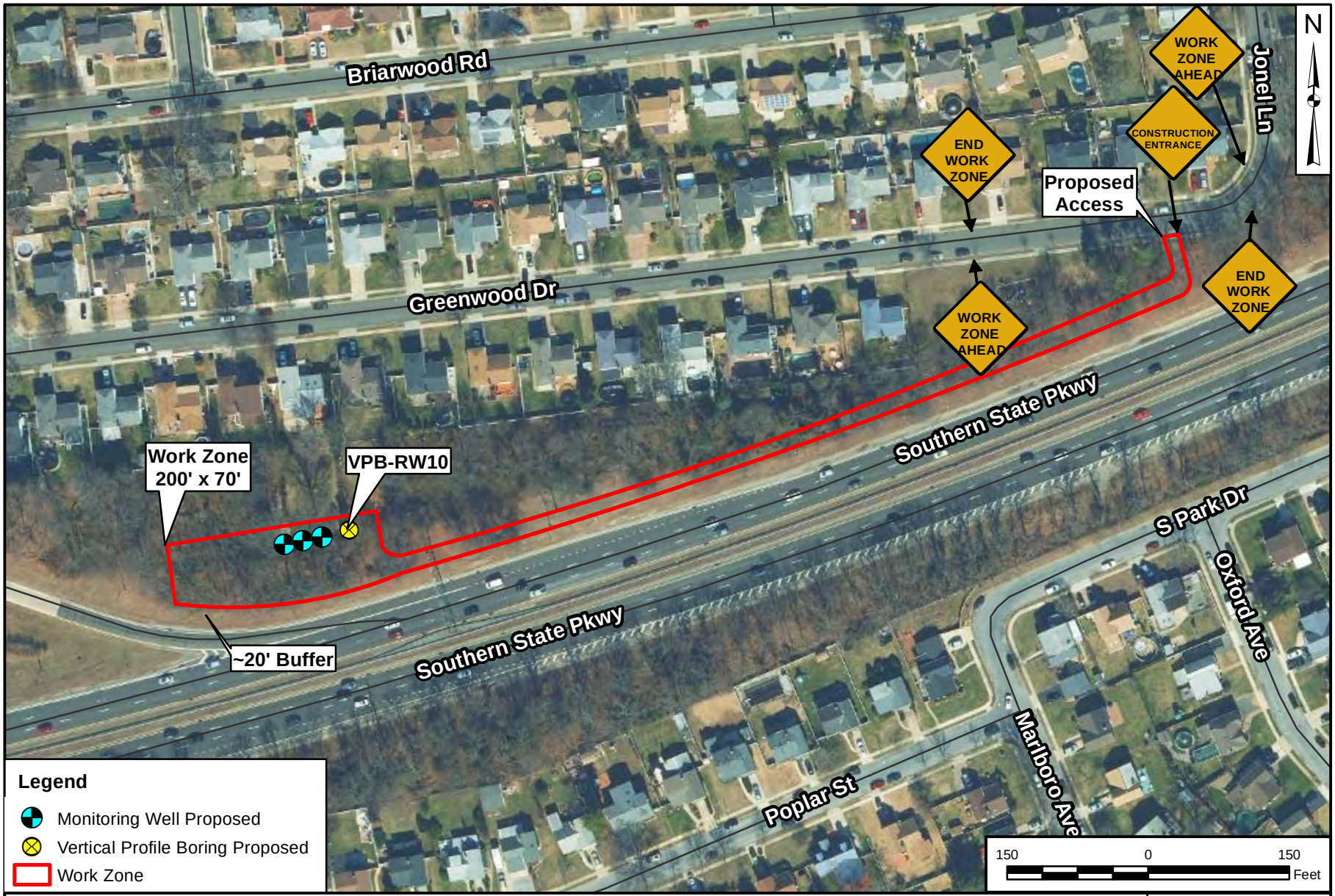

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VPB-RW10 & MONITORING WELLS
SITE LAYOUT/TRAFFIC CONTROL PLAN
NWIRP BETHPAGE, NEW YORK

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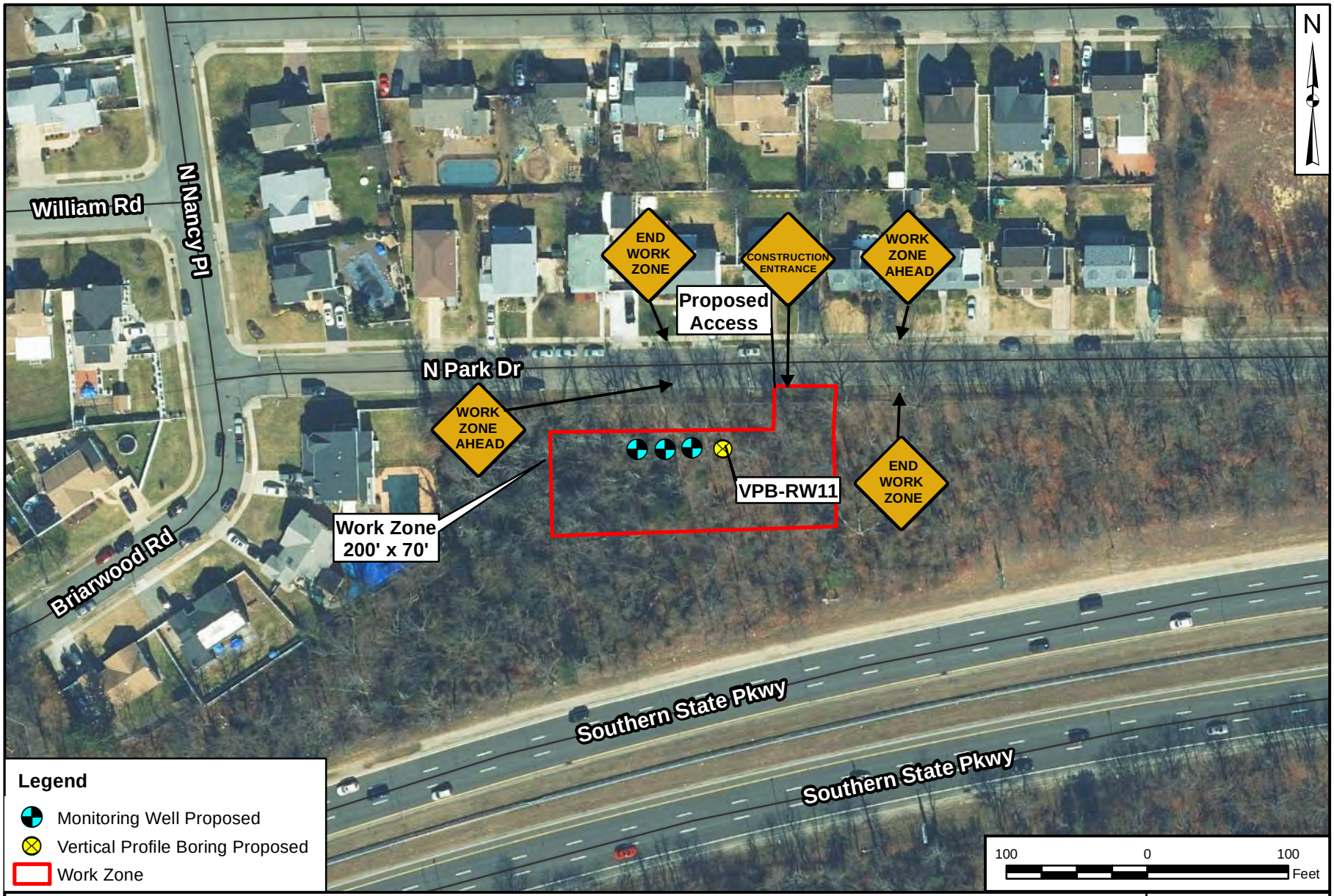

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VPB-RW11 & MONITORING WELLS
SITE LAYOUT/TRAFFIC CONTROL PLAN
NWIRP BETHPAGE, NEW YORK

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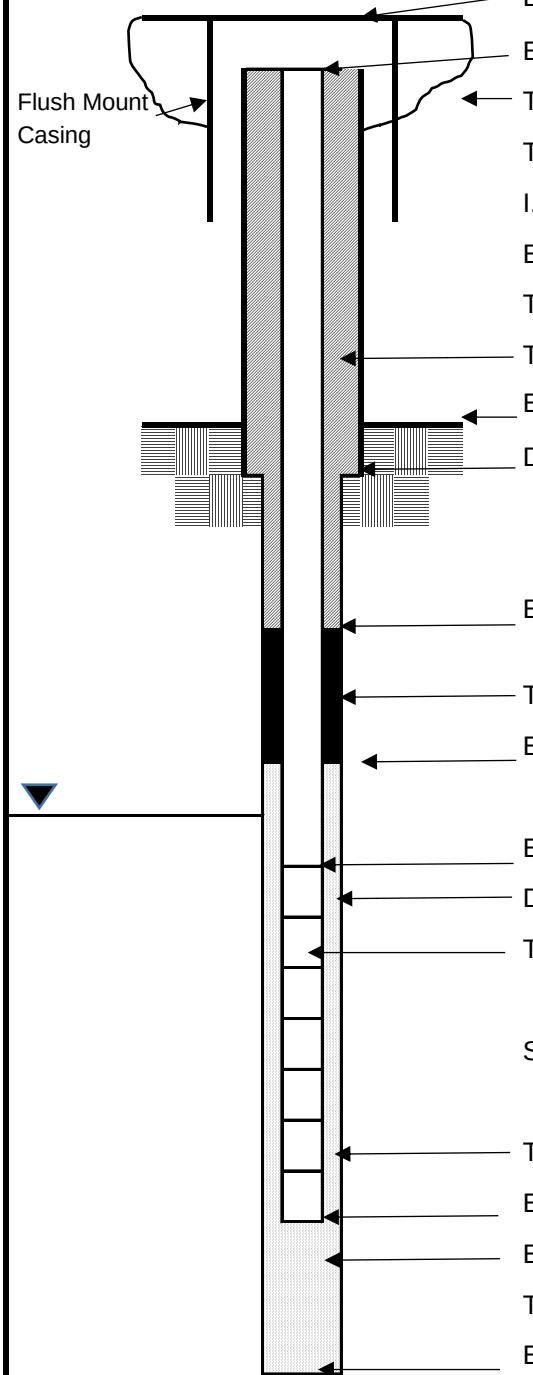
ATTACHMENT 3
MONITORING WELL CONSTRUCTION DETAIL

TETRA TECH

Well No. _____

MONITORING WELL CONSTRUCTION SHEET
OVERBURDEN / BEDROCK - FLUSH MOUNT

Project Name:	Drilling Co.:	Boring No.:
Project No:	Driller:	Date Completed:
Site Name:	Drilling Method:	Northing:
Geologist:	Dev. Method:	Easting:



Elevation / Height Top of Flush Mount Casing: _____ / _____

Elevation / Depth Top of Riser: _____ / _____

Type of Surface Seal: _____

Type of Protective Casing: _____

I.D. of Protective Casing: _____

Borehole Diameter: _____

Type of Riser and I.D.: _____

Type of Backfill: _____

Elevation / Depth Top of Rock: _____ / _____

Depth and Diameter of Surface Casing: _____

Elevation / Depth of Seal: _____ / _____

Type of Seal: _____

Elevation / Depth Top of Filter Pack: _____ / _____

Elevation / Depth Top of Screen: _____ / _____

Diameter of Hole in Bedrock: _____

Type of Screen and I.D.: _____

Slot Size and Length: _____

Type of Filter Pack: _____

Elevation / Depth Bottom of Screen: _____ / _____

Elevation / Depth Bottom of Filter Pack: _____ / _____

Type of Backfill Below Filter Pack: _____

Elevation / Depth Bottom of Hole: _____ / _____

Not To Scale