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Subject: Transmittal, Final Work Plan,
Phase I RE108 Area Hotspot Treatment System, Former NWIRP Bethpage
Our Ref: Environmental Remedial Action Contract (RAC VII)
Contract N62470-16-D-9004, Task Order F5347
Date: November 20, 2018

Dear Mr. Murray,

Enclosed is the Final Work Plan for the Phase I RE108 Area Hotspot Treatment System Former NWIRP Bethpage located in Bethpage, New York. This submittal includes the Work Plan, Stormwater Pollution Prevention Plan, Project Schedule, Project Quality Control Plan, and Construction Design Drawings and Specifications. Should you have any questions or comments, please do not hesitate to contact me at your convenience.

Kind Regards,
APTIM

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FINAL
WORK PLAN
Phase I RE108 Area Hotspot Treatment System
Former NWIRP Bethpage
Bethpage, New York

Contract Number: N62470-16-D-9004
Contract Task Order: N4008517F5347

Document Control Number: APT-9004-F5347-0001

November 2018

Submitted to:

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FINAL
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Contract Number: N62470-16-D-9004
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November 2018

Prepared by: _____ Date: November 20, 2018
Bill Squire, P.G.

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Acronyms and Abbreviations

%	percent
°F	degrees Fahrenheit
µg/L	micrograms per liter
APP	Accident Prevention Plan
APTIM	APTIM Federal Services, LLC
ASTM	American Society for Testing and Materials
bgs	below ground surface
BOD	30 Percent Basis of Design Report, Phase I RE-108 Area Hotspot Treatment System (Tetra Tech, 2017)
CCR	Construction Completion Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
COC	Chemical of Concern
COR	Contracting Officer Representative
E&S	Erosion and Sediment
EPP	Environmental Protection Plan
ER	Environmental Restoration
GM38 GWTS	GM38 Area Hotspot Groundwater Extraction and Treatment System
HDPE	High Density Polyethylene
IDW	Investigative Derived Waste
KO	Contracting Officer
LIRR	Long Island Railroad
MCL	Maximum Contaminant Levels
msl	mean sea level
NAVFAC	Naval Facilities Engineering Command
Navy	U.S. Department of the Navy
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NIRIS	Naval Installation Restoration Information Solution
NWIRP	Naval Weapons Industrial Reserve Plant
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
OU	Operable Unit
PCE	Tetrachloroethene
PLCs	Programmable logic controls
PPE	Personal protective equipment
PQCP	Project Quality Control Plan
QC	Quality Control
RAB	Restoration Advisory Board

ROD	*Record of Decision NWIRP Bethpage NY Operable Unit 2 - Groundwater (NAVFAC, 2003)*
RPM	Remedial Project Manager
RW	Recovery Well
SARA	Superfund Amendments and Reauthorization Act
SDR	Standard Dimension Ratio
SOW	*Scope of Work, Phase I RE108 Area Hotspot Treatment System* (NAVFAC, 2017)
SSHO	Site Safety and Health Officer
TCE	Trichloroethene
TCP	Traffic Control Plan
TOB	Town of Oyster Bay
UFGS	Unified Facilities Guide Specifications
USACE	U.S. Army Corps of Engineers
VOC	volatile organic compound
WMP	Waste Management Plan

1.0 Introduction

This Work Plan presents the specific tasks and procedures that will be implemented by APTIM Federal Services LLC (APTIM) during construction of the underground conveyance piping for the Phase I RE108 Area Hotspot Treatment System at the Naval Weapons Industrial Reserve Plant (NWIRP), located in Bethpage, New York (Figure 1). This remediation project is being performed for the U.S. Department of the Navy (Navy) Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic, under Contract No. N62470-16-D-9004, Contract Task Order F5347. This work is being performed under the Navy Environmental Restoration (ER) Program.

The underground conveyance piping work at the RE108 Area Hotspot shall be executed in accordance with the *Scope of Work, Phase I RE108 Area Hotspot Treatment System* ([SOW] NAVFAC, 2017) and the *30 Percent Basis of Design Report, Phase I RE-108 Area Hotspot Treatment System* ([BOD] Tetra Tech, 2017).

1.1 Scope of Work

The scope of the planned construction activities consists of the following elements:

- Pre-construction submittals including this Remedial Work Plan, Accident Prevention Plan (APP), Health and Safety Plan, schedule, and meetings
- Mobilization and Site Setup
- Completion of relevant permits
- Fieldwork including excavation, horizontal drilling, installation of the conveyance piping, and power and controls
- Site restoration
- Post construction deliverables including the Construction Completion Report (CCR)

This Work Plan outlines the tasks which will ultimately be used to achieve the requirements detailed in the *SOW* (NAVFAC, 2017). This Work Plan describes and addresses the project requirements, site work, and reporting requirements for the following major components of the effort:

- Excavation
- Horizontal Drilling
- Conveyance piping installation
- Site restoration
- Demobilization

Final approval of this Work Plan is required by NAVFAC Mid-Atlantic with concurrence from the New York State Department of Environmental Conservation (NYSDEC).

A CCR will be prepared upon completion of construction to document the site activities and provide the results as executed under this Work Plan. The CCR is further discussed in Section 8.0 of this Work Plan.

1.2 Work Plan Organization

This Work Plan consists of eleven sections and provides descriptions of the specific activities involved in the implementation of the remedial action. This Work Plan is organized as follows:

- **Section 1.0, Introduction—**Section 1.0 provides an introduction, project organization, Work Plan organization, and site safety.
- **Section 2.0, Site Conditions and Background—**Section 2.0 presents the site location, description, history, and Chemicals of Concern (COCs)
- **Section 3.0, Regulatory Framework—**Section 3.0 describes the regulatory process, remedial objectives, and anticipated waste streams.
- **Section 4.0, Project Requirements—**Section 4.0 describes the required supporting project documents.
- **Section 5.0, Pre-Construction Activities—**Section 5.0 describes the pre-construction activities, mobilization, site preparation, permitting, and site safety and security.
- **Section 6.0, Construction Remedial Activities—**Section 6.0 describes the associated construction activities for piping installation and site restoration.
- **Section 7.0, Project Management Plan—**Section 7.0 presents the project responsibilities, data management, document control, and meetings and reports.
- **Section 8.0, Reporting Requirements—**Section 8.0 describes the reporting requirements including the CCR.
- **Section 9.0, Environmental Protection Plan (EPP)—**Section 9.0 describes the procedures that will be implemented to protect the environment.
- **Section 10.0, Waste Management Plan (WMP)—**Section 10.0 describes the procedures that will be implemented to manage the waste generated throughout the project.
- **Section 11.0, References—**Section 11.0 includes a list of documents used to compile this Work Plan.

- **Appendix A, Project Schedule**
- **Appendix B, Project Quality Control (QC) Plan (PQCP)**
- **Appendix C, Construction Design Drawings and Specifications**
- **Appendix D, Response to Comments (Reserved)**

1.3 Site Safety

Occupational Safety and Health Administration excavation regulations and notification requirements will be followed, including 29 Code of Federal Regulations (CFR) 1910 and 29 CFR 1926. Excavations will be conducted in accordance with the U.S. Army Corps of Engineers (USACE) *Safety and Health Requirements Manual EM 385-1-1* (2014), and the *Unified Facilities Guide Specifications (UFGS) Section 01 35 26 Governmental Safety Requirements* (NAVFAC, 2012).

Field activities will be conducted in accordance with the *Accident Prevention Plan, Phase I RE108 Area Hotspot Treatment System, NWIRP Bethpage, New York*.

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2.0 Site Conditions and Background

This section presents a general description of the site, the history, topography and site features, climate, geology, hydrogeology, and COCs, as determined by the *Record of Decision NWIRP Bethpage NY Operable Unit 2 - Groundwater ([ROD] NAVFAC, 2003).*

2.1 Site Location

NWIRP Bethpage is located in east-central Nassau County, Long Island, New York, approximately 30 miles east of New York City. In the 1990s, the Navy's property totaled approximately 109.5 acres and was formerly a Government-Owned Contractor-Operated facility that was operated by the Northrop Grumman Corporation until September 1998. NWIRP Bethpage is bordered on the north, west, and south by property owned, or formerly owned, by Northrop Grumman that covered approximately 500 acres, and, on the east, by a residential neighborhood (Figure 1).

The RE108 Area Hotspot is estimated to extend from near the Northrop Grumman Operable Unit (OU) 2 Onsite Containment System south to approximately Hempstead Turnpike and is present at a depth of approximately 500 to 750 feet below ground surface (bgs) (Figure 2). In the planned area of the Phase I System (south of RE-103 well cluster), the plume is present at a depth of approximately 550 to 650 feet bgs (Figure 3).

2.2 Site Description and History

NWIRP Bethpage was established in 1943 and operated by Northrop Grumman until 1998 (Resolution, 2016). The plant's primary mission was prototyping, testing, design engineering, fabrication, and primary assembly of military aircraft. The facilities at NWIRP Bethpage included four plants used for assembly and prototype testing; quality control laboratories, two warehouse complexes (north and south), a salvage storage area, storm and non-contact cooling water recharge basins, the Industrial Wastewater Treatment Plant, and several smaller support buildings.

Until the late 1990s, the former NWIRP Bethpage was approximately 109.5-acres in size. In 2002, 4.5-acres of the property were transferred to Nassau County. On February 26, 2008, the Navy transferred an additional 96 acres of the remaining 105-acre main parcel to Nassau County, and retained the remaining nine-acres. The Navy is currently conducting remedial actions on the remaining property as well as offsite groundwater plumes, including the RE-108 Area Hotspot.

Two groundwater extraction and treatment systems and three public water supply systems are in operation in close proximity to the RE108 Area Hotspot. Northrop Grumman operates the OU2 Onsite Containment System that captures and remediates Volatile Organic Compound (VOC)-contaminated groundwater from the former NWIRP and Northrop Grumman properties. The Navy

operates the GM38 Area Hotspot Groundwater Extraction and Treatment System (GM38 GWTS) to address a hotspot east of the RE108 Area Hotspot (Figure 2). Bethpage Water District operates three public water supply well fields in the area (Tetra Tech 2017).

2.3 Topography and Site Features

The former NWIRP Bethpage is located on a relatively flat, featureless, glacial outwash plain (Resolution, 2016). The site and nearby vicinity are highly urbanized. Because of this, most of the natural physical features have been reshaped or destroyed. Elevations range from greater than 140 feet above mean sea level (msl) in the north to less than 110-feet above msl at the southwest corner.

2.4 Climate

The climate of NWIRP Bethpage is considered to be humid subtropical/continental, and is moderated by its proximity to the Atlantic Ocean, the Long Island Sound, and Great South Bay. There are generally warm to hot and humid summers, and warm to cold winters. In Bethpage (Farmingdale, NY), the warmest and coldest months of the year are August (mean temperature of 78 degrees Fahrenheit [°F]) and February (mean temperature of 29°F), respectively. Annual precipitation averages 43.74-inches (usclimatedata, 2016).

2.5 Geology

The Upper Glacial Formation (commonly referred to as glacial deposits) forms the surface deposits across the entire NWIRP. The glacial deposits beneath the site consist of coarse sands and gravels. These deposits are generally about 40- to 45-feet thick; local variations in thickness are more common due to the irregular and undulating contact of the glacial deposits with the underlying Magothy Formation. The contact between the two formations was defined as the horizon where gravel becomes rare to absent, and finer sands, silts, and clay predominate (Resolution, 2016).

2.6 Hydrogeology

The Upper Glacial Formation and the Magothy Formation comprise the aquifer of concern at the NWIRP. Regionally, these formations are generally considered to form a common, interconnected aquifer, as the coarse nature of each unit near their contact, and the lack of a confining clay unit, allows for the unrestricted flow of groundwater between formations.

The water table at the NWIRP occurs below the glacial deposits. The glacial deposits are highly permeable, allowing for rapid recharge of precipitation to the underlying Magothy Formation. In addition, large quantities of water withdrawn from the Magothy are recharged back to the Magothy aquifer from the Upper Glacial Formation via the recharge basins at the NWIRP (Resolution, 2016). The Magothy aquifer is a major source of public water for Nassau County.

2.7 Chemicals of Concern

Sampling events conducted between 2014 and 2016 identified groundwater with sustained concentrations of VOCs at more than 1,000-micrograms per liter (µg/L) that originated, at least in part, from the former NWIRP Bethpage facility. The primary VOC is trichloroethene (TCE) and represents approximately 98-percent (%) of the total VOCs in the RE108 Area Hotspot. Several other VOCs are present in portions of this groundwater, at concentrations greater than New York State Maximum Contaminant Levels (MCLs), including 1,1,2-trichloro- 1,2,2-trifluoroethane, 1,1-dichloroethene, cis-1,2dichloroethene, tetrachloroethene (PCE), and 1,1-dichloroethane. Other VOCs are also present in groundwater, but are either detected infrequently, or at concentrations less than the MCLs (Tetra Tech 2017).

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3.0 Regulatory Framework

Section 104 of Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and Superfund Amendments and Reauthorization Act (SARA) of 1986 allow an authorized agency to provide for remedial or removal actions and to remove, or arrange for removal of, hazardous substances, pollutants, or contaminants at any time, or to take any other response measures consistent with the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) as deemed necessary to protect public health or welfare and the environment. The NCP, Title 40 of the Code of Federal Regulations, Section 300, provides regulations for implementing CERCLA and SARA and regulations specific to removal actions. The NCP defines a removal action as:

> [The] cleanup or removal of released hazardous substances from the environment, such actions as may be necessary to monitor, assess, and evaluate the threat of release of hazardous substances; the disposal of removed material; or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release.

3.1 Regulatory Process

This work will be conducted in accordance with the *SOW* (NAVFAC, 2017) and the *BOD* (Tetra Tech, 2017). The Navy is the lead agency for the CERCLA cleanup. NYSDEC, with assistance from the New York State Department of Health, is the lead agency providing regulatory consultation to the Navy.

3.2 Remedial Objective

The Phase I RE108 Area Hotspot Treatment System (Phase I System) is being installed to intercept and treat the northern half of the RE108 Area Hotspot groundwater plume. The Phase I System will consist of one recovery well (RW), identified as RW4, that will be located in the center of the RE108 Area Hotspot and underground piping from RW4 to the existing GM38 GWTS using a utility corridor co-owned by the Town of Oyster Bay (TOB), Long Island Railroad (LIRR) and a private residence (Figure 4). Pending access agreements, the Phase I System could be operational by the end of 2018. It is anticipated that this system will operate for up to 50 years. During this time, it will remove significant VOC mass from the aquifer, reduce aquifer overall cleanup times, and reduce the plume migration to the south and southeast (Tetra Tech, 2017).

The Phase II RE108 Area Hotspot Treatment System is in the planning phase and will be located approximately one mile to the south of the Phase I recovery well to address the remainder of the

RE108 Area Hotspot. Startup of the Phase II system is anticipated to occur in 2021 or 2022 (Tetra Tech, 2017).

Groundwater remediation goals were established in the *OU-2 ROD (NAVFAC, 2003),* and are based on attainment of regulatory requirements, standards, and guidance; contaminated media; COC; potential receptors and exposure scenarios; and human health and ecological risks.

The primary goals for any remedial program, as stated in the NCP, is that the selected remedy is to be protective of human health and the environment and comply with Applicable and Relevant and Appropriate Requirements. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles (NAVFAC, 2003).

As stated in the OU-2 ROD, the remedial goals for groundwater are:

- Eliminate, to the extent practicable, site-related contaminants from the affected public water supplies and to prevent, to the extent practicable, the future contamination of public water supplies through the implementation of the offsite groundwater remediation.
- Eliminate, to the extent practicable, exposures to contaminated groundwater.
- Eliminate, to the extent practicable, off-site migration of contaminated groundwater and, where practicable, to restore the groundwater to pre-disposal conditions.
- Eliminate, to the extent practicable, exceedances of applicable environmental quality standards related to releases of contaminants to the waters of the state.
- Eliminate, to the extent practicable, detections of site-related VOC contamination for affected drinking water supplies using U.S. Environmental Protection Agency Method 502.2 to a detection limit of 0.5 micrograms per liter.

3.3 Anticipated Waste Streams

Several potential waste streams are anticipated to be generated during site activities, including, but are not limited to, the following:

- Construction debris
- Personal protective equipment (PPE)
- Soil cuttings from trenching and horizontal drilling

Waste disposal procedures implemented for the removal action will be in accordance with the state and federal laws that govern waste characterization for offsite disposal including 6 New York Codes, Rules and Regulations (NYCRR) 371.3, 372.2, and 373-1.1, 40 CFR 194.12, and NAVFAC contract requirements for documentation of waste transportation, in accordance with the *SOW* (NAVFAC, 2017).

4.0 Project Requirements

4.1 Accident Prevention Plan/Site Safety and Health Plan

An APP is provided independently of this Work Plan. The APP was prepared to support fieldwork for the remedial work in accordance with the *Safety and Health Requirements Manual EM 385-1-1* (USACE, 2014) and *UFGS Section 01 35 26 Governmental Safety Requirements* (NAVFAC, 2012).

4.2 Environmental Protection Plan

An EPP is provided in Section 9.0 of this Work Plan. The EPP was developed in accordance with all applicable local, state, and federal regulations.

4.3 Waste Management Plan

A Waste Management Plan (WMP) is included in Section 10.0 of this Work Plan. The WMP describes how waste streams will be identified and the transportation and disposal of selected wastes.

4.4 Schedule

The schedule is provided in Appendix A of this Work Plan. The schedule provides a detailed listing of project components and the projected time to completion.

4.5 Project Quality Control Plan

A PQCP was prepared and is included as Appendix B to this Work Plan. The PQCP details definable features of work, phases of control, and quality control procedures which will be implemented during construction activities.

4.6 Traffic Control Plan

A Traffic Control Plan (TCP) is described in Section 5.4.6 of this text. The TCP describes the procedures to conduct intrusive site activities during the remedial construction to limit the impact of site activities on local residents.

4.7 Post Construction Documents

A CCR will be generated after the remedial construction is complete. The CCR will document all construction activities, results of any testing performed, and "As Built" drawings.

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5.0 Pre-Construction Activities

Pre-construction activities are discussed in the following subsections.

5.1 Permitting and Notifications

The Navy will initiate property access agreements with the property owners of the well and the utility corridor along which the conveyance piping will be installed. The property owners are believed to consist of one private residence, LIRR, and TOB.

APTIM will coordinate with the Navy, New York 811 one-call center, the individual utilities, and a private utility locating service (if required) to determine the location of the utilities, special requirements, and any permit requirements prior to construction. APTIM will secure permits from the TOB, as required, prior to crossing Stewart Avenue.

5.2 Preparatory Activities and Meetings

Meetings will be held routinely leading up to and throughout the project to establish and review the work schedule, QC, health and safety performance, and project status, etc.

5.2.1 Pre-Construction and Mutual Understanding Meeting

A pre-construction and mutual understanding meeting will be held prior to mobilization of equipment and personnel. The purpose of the meeting will be to discuss project-specific topics, roles, and responsibilities of all project personnel, project schedule, health and safety concerns, and other topics that require discussion before field mobilization. The pre-construction meeting will be attended by representatives of the following:

- Navy Remedial Project Manager (RPM), other Navy personnel
- NYSDEC and New York State Department of Health
- APTIM [Project Manager, Site Construction Manager, Project QC Manager, and Site Safety and Health Officer (SSHO)]
- Subcontractors as appropriate

5.2.2 Construction Quality Control Meetings

A contractor QC meeting will be held on a bi-weekly basis throughout the course of fieldwork. At a minimum, the Navy RPM and the Project QC Manager will attend this meeting. APTIM site personnel, subcontractors and vendor representatives will also attend as appropriate.

5.2.3 Health and Safety Meetings

Daily tailgate safety meetings will be held before starting work. Construction staff, including subcontractors, will attend these meetings and sign a tailgate safety meeting form. The meetings

will be held by the SSHO, or qualified designee, and will cover various safety issues. Any subcontractor, inspector, agency, or Navy personnel that visit the site during the course of the day will be required to review and sign the tailgate form prior to entering the work site.

5.3 Mobilization

Mobilization activities will include site preparation, movement of equipment and materials to the site, and orientation and training of field personnel. At least two weeks prior to mobilization, the Navy RPM will be notified regarding the planned schedule for mobilization and construction activities. Upon receipt of the appropriate authorizations, field personnel, temporary facilities, and required construction materials will be mobilized to the jobsite.

5.4 Site Preparation

5.4.1 Temporary Construction Facilities

Temporary facilities to be mobilized to the site will include an office trailer and one or more secure storage (conex) boxes for materials and supplies. Portable restroom(s) and hand washing station(s) will also be provided. An equipment fueling area with a 500-gallon, double-walled fuel tank will be set up near the office trailer. All temporary facilities and staging areas for pipe and other construction materials will be located at the western end of the site, near Hicksville Road.

One or more exclusion zones, delineated by construction fencing or other similar barricade, will be established as necessary around work areas with appropriate warning signage posted to prevent unauthorized entry. Work performed in or near roadways, including a curb cut for installation of the construction entrance on Hicksville Road, will be coordinated with the Construction Manager, TOB, Nassau County, local residents, and other site users to implement appropriate traffic control and road closures as needed for site personnel and public safety.

5.4.2 Erosion and Sediment Control Measures

Erosion and sediment (E&S) control will be performed in accordance with the EPP in section 9.0. Any staging areas shall be constructed with adequate containment of possible runoff and erosion during the anticipated period of staging. Erosion control structures shall be adequate to sustain weather damage and degradation and shall be maintained until site restoration has been completed. E&S control measures will be inspected and maintained to ensure that they are functioning as designed. Monitoring and maintenance activities associated with the E&S control are described in the EPP.

5.4.3 Photographic Documentation

Photographs of the site will be collected during the performance of the construction activities. Photographs will be taken during each feature of work in order to provide a detailed photographic

history. Photographs may be included with daily QC reports, or at the conclusion of the construction activities with the CCR.

5.4.4 Utility Survey

As discussed in the BOD (Tetra Tech, 2017), utilities and other obstructions that have been identified along the utility corridor include:

- High voltage overhead (two) and underground (one or two) electrical lines (138 and 69 kilovolts) running the entire length of the utility corridor. Underground structures associated with power transmission infrastructure also exist within the utility corridor. Public Services Electric Group review for the use of the utility corridor will be needed.
- A natural gas line appears to run along the northern edge of the corridor along the entire length. Two underground electric line appear to run along the corridor, generally underneath the towers for the overhead electric lines. Except along Stewart Avenue, other underground utilities including water, storm and sanitary sewer lines were not identified in preliminary site surveys.
- The pipeline will have to cross Stewart Avenue, which likely has underground utilities (gas, electric, potable water, and sewer).
- County recharge basin #495 is installed within the LIRR and TOB corridor. The pipeline should pass along the top edge of the basin.

APTIM will contact the New York 811 one-call center and contract a private utility locator to perform a utility markout along the utility corridor prior to beginning construction activities. The findings of the utility markout will be submitted to the RPM by APTIM. A field inspection to verify the locations of the utilities, if present, will be conducted prior to remedial activities. Any underground utilities that are impacted by remedial activities will be protected.

5.4.5 Material Handling and Storage Areas

Materials staging areas and storage areas will be located within the boundaries of the utility corridor near the office trailer. Stockpiled materials (eg. sand) will be placed on plastic sheeting and covered. These areas will be determined during the Preconstruction Meeting.

5.4.6 Traffic Control Plan

During construction activities, trafficked areas shall be maintained in accordance with EM 385-1-1 Sections 8B and 8C (both inside and outside the designated work areas, storage areas, and access routes). Precautions are taken to minimize the impact of work in trafficked areas:

- Notice of public road or lane closures will be provided to the TOB Highway Department, with permits completed as required.

- Barricades, signs, and cones, as appropriate, will be erected before any work commences in the work activity areas or public roads.
- All personnel will wear high visibility Class II apparel.
- APTIM and subcontractors will provide track-cleanout strips as needed to remove mud and debris from the tires of equipment and vehicles.
- APTIM will be responsible for providing, erecting, maintaining, and removing all traffic signs, barricades, and other traffic control devices necessary for maintenance of traffic in and around the working area.
- APTIM and subcontractors will make every effort to minimize the effect of construction activities on local residents.

5.5 Site Safety and Security

Tools and small equipment will be secured daily. Incidents will be reported to the APTIM Project Manager, who will also inform the Navy promptly.

6.0 Construction Activities

This section describes the specific construction activities and procedures to implement the remedial objective requirements.

6.1 Excavation

Excavation of the trench for conveyance pipeline installation will begin on the western side of the site at the newly installed RW4. The path of the excavation will generally run to the east for approximately 3,800-feet along the northern side of the corridor as shown on BOD Sheets T-1 and C-1 through C-7 (Tetra Tech, 2017) included in Appendix C. The corridor is generally flat and the surface consists primarily of lightly vegetated soil, a gravel road, and woodlands. The pipeline will pass along the top edge of County Recharge Basin #495, which is located within the LIRR and TOB corridor. The fence surrounding the basin will be removed as needed for construction.

The trench will be excavated using a Caterpillar Model 330 excavator (or equivalent) in general accordance with the profile shown in Detail C on BOD Sheet C-9 (Appendix C). As shown in Detail C, the trench will be approximately 4.5-feet deep, and approximately 28-inches wide on the bottom sloping upward to three-feet wide at the ground surface. The slope of the sidewalls may be adjusted in the field based on site conditions; alternatively, terracing or shoring may be used during excavation to keep the trench open. Underground utilities encountered during trenching will be hand-dug to expose the line and supported to prevent collapse. The total volume of disturbed soil is approximately 51,300-cubic feet. With a density of 115-pounds per cubic foot, and a conversion of 2,000-pounds per ton, the approximate mass of soil is 2,950-tons.

Excavated material will be placed on the side of the trench for re-use as backfill after pipe installation. The trench will be backfilled daily as pipe installation progresses; any remaining open trench will be secured with construction barricade fencing (or other adequate means) at the end of the day to prevent access to the open trench. Dust suppression measures, including air monitoring and soil wetting, will be implemented as needed during trenching operations.

It is estimated that approximately 60% of the excavated soil will be re-used to backfill the trench. Excess soil remaining after backfilling will be loaded into a dump truck and stockpiled on site for later disposal or beneficial use. The stockpile will be sampled for New York State disposal characteristics as discussed in Section 10.0.

6.2 Horizontal Drilling

The path of the conveyance piping crosses Stewart Avenue, as shown on BOD Sheet C-5 (Appendix C). Stewart Avenue is a major four-lane artery providing local residents' access to the Hempstead Turnpike to the south. As noted above in Section 5.4.4, there are likely several

underground utilities along Stewart Avenue. Therefore, in order to avoid interrupting traffic on Stewart Avenue and exposing utilities, a horizontal boring will be drilled under the road.

The horizontal boring under Stewart Avenue will be approximately 150-feet in length. Drilling will start approximately 40-feet to the west of Stewart Avenue and surface approximately 40-feet to the east of the road. The boring will be installed at a depth of approximately eight to 10-feet below the roadway. The borehole entrance/exit angles and diameter will be sufficient to allow installation of the 12-inch High Density Polyethylene (HDPE) conveyance pipe. Drilling and pipe installation will follow standard industry practice. Soil cuttings generated by the borehole drilling will be stockpiled and disposed with other soil from trenching activities.

6.3 Conveyance Piping

The trench will be inspected following excavation to ensure a sound bottom and remove large debris (i.e. rocks) which may have fallen into the trench. After inspection, Class 3 sand bedding material will be placed in the trench and compacted to provide a six-inch base layer for the piping installation.

The conveyance piping will be constructed using a nominal eight-inch diameter, Standard Dimension Ratio (SDR) 13.5 (schedule 80) HDPE carrier pipe rated for 160-pounds of pressure centered inside a nominal 12-inch diameter, SDR 13.5 (schedule 80) HDPE secondary containment pipe, also rated for 160-pounds of pressure.

6.3.1 Pipe Installation

The conveyance piping installation will begin at the western end of the corridor near Hicksville Road. The pipe will be laid on the compacted bedding sand. Additional Class 3 sand will be backfilled around the containment pipe and knifed into the haunch under the pipe such that the pipe is buried approximately half-way. Backfilling will continue until a minimum six-inches of Class 3 sand (compacted) covers the crown of the containment pipe. The backfilling to grade will be completed using soil previously excavated from the trench. While the trench is being backfilled, tracer tape will be placed along the centerline of the trench at a depth of no more than 12-inches below final grade to enable location of the conveyance pipe in the future.

Pipe joints will be made using butt fusion welding in accordance with American Society for Testing and Materials (ASTM) F2620. The welding process uses heat to join two pieces of pipe together to form a strong, permanent bond. Butt fusion welding is performed as follows:

1. Two pieces of pipe are clamped into the welding jig;
2. The ends of the pipes are planed smooth;
3. Fit and alignment of the pipe sections is checked;
4. The pipe ends are cleaned of any dirt or burs;

5. A heating plate is inserted between the pipe sections and the pipe ends are pressed against the plate; and
6. After the pipe ends are melted, the heating plate is removed and the pipe ends are brought together under controlled pressure for a specific cooling time, forming the joint.

6.3.2 Butt Fusion Qualifying Procedure

Prior to the start of pipe installation, a sample joint will be prepared to test and verify the procedure and equipment settings for the actual site conditions. Pipes on either side of the joint should be at least six-inches or 15-times the wall thickness in length. The joint will be visually inspected and compared against the Outside Diameter Butt Fusion Bead Guideline as per ASTM F2620. The v-groove between the beads should not be deeper than half the bead height above the pipe surface. The sample will be allowed to cool completely – for not less than one-hour.

Once cooled, the sample joint will be cut lengthwise along the pipe into at least three straps that are at least one-inch wide. The cut surface at the joint will be visually inspected and compare to a sample or picture of an acceptable joint. There should be no gaps, voids, misalignment, or unbonded areas. The straps will be bent until the ends of the strap touch. If flaws are observed in the joint, the appearance will be compared with pictures of unacceptable joints. A new sample joint will be prepared using correct joining procedure, and the qualifying procedure will be repeated.

6.3.3 Recovery Well Vault Connections

The eight-inch carrier pipe will be connected to the six-inch check valve in the vault at RW4 (installed by others) using a reducer and flange as shown in Section A on BOD Sheet C-8 (Appendix C). The secondary containment pipe will be sealed and secured at the RW4 vault wall. On the eastern end, the conveyance piping installation will be completed at existing well RW3, located between County Recharge Basin #495 and Broadway Avenue. The existing conveyance piping for RW3 consists of a nominal six-inch diameter HDPE carrier pipe centered inside a nominal 10-inch diameter HDPE secondary containment pipe, which will be cut and capped. The tie-in with the existing RW3 conveyance piping will be outside and adjacent to the vault box. The conveyance piping from RW4 will be connected to the existing conveyance piping for inactive well RW3 with a reducer, in general accordance with Detail E on BOD Sheet C-9 (Appendix C).

RW3 will be 'mothballed' because the treatment system is not designed for simultaneous operation of both RW3 and RW4. The pump and piping will remain in place and available for future use. If and when RW3 is needed in the future, the piping connections to the GM38 treatment system would need to be restored.

6.3.4 Hydrostatic Testing

Following the completion of pipe installation, hydrostatic testing will be conducted on the carrier piping by a qualified subcontractor in accordance with ASTM F2164 *Standard Practice for Field*

Leak Testing of Polyethylene (PE) and Crosslinked Polyethylene (PEX) Pressure Piping Systems Using Hydrostatic Pressure. Time will be allowed for the test fluid (clean water) and the test section to equalize to a common temperature. The maximum permissible test pressure will be 1.5-times the system design operating pressure provided that all components in the test section are rated for the test pressure. Test pressure must be reduced when the test section is at elevated temperature either from service conditions or from environmental conditions such as being warmed by the sun.

Before applying pressure, all piping and all components in the test section must be restrained. The test section will be gradually pressurized to the test pressure, and maintain test pressure for two-hours. During this initial expansion phase, the HDPE pipe will expand slightly. Additional test liquid will be required to maintain pressure. It is not necessary to monitor the amount of water added during the initial expansion phase. Immediately following the initial expansion phase, the test pressure will be reduced by ten percent. If the pressure remains constant (within five percent of the test pressure) for one hour, no leakage is indicated and the test is complete. Water used for the test will be processed through the GM38 treatment system.

If the test is not completed due to leakage, equipment failure, or for any other reason, the test section will be depressurized completely, and allowed to relax for at least eight-hours before pressurizing the test section again.

6.3.5 Leak Detection

A minimum of nine leak detection access ports will be installed along the conveyance piping. The access ports will be preferentially placed at low points along the pipeline; however, the maximum spacing between ports will not exceed 500-linear feet. As shown in Detail B on BOD Sheet C-9 (Appendix C), the ports will be made using nominal two-inch HDPE pipe connected to the bottom of the 12-inch containment pipe and accessible from the ground surface through a 12-inch steel manhole mounted in a two-foot by two-foot concrete pad. The access port will be capped with a threaded plug.

Additional leak detection will be provided by automated pressure sensors installed at each end of the conveyance piping, with communication established back to the GM38 treatment plant. The air in the annular space between the containment pipe and the carrier pipe will be pressurized to approximately 90 percent of the operating pressure of the carrier pipe. Should a leak occur, the sensors will detect the resulting change in the air pressure due to water filling the annular space and transmit an alarm condition back to the GM38 treatment plant.

6.4 Power and Controls

RW4 will be located approximately one-mile from the GM38 GWTS, therefore direct power and control of RW4 from GM38 is not feasible. As a result, the power for the RW4 well pump (25 HP, 3-phase, and 460 volts) will be by a local power drop from one of the power lines located along

Hicksville Road (Route 107). The local utility company (Public Service Electric Group) will need to install a meter and local service for RW4. The variable frequency drive and electrical and control components for the RW4 will be located in a small above-ground enclosure located approximately 15-feet south of the RW4 on the utility corridor.

Control features associated with RW4 are anticipated to be nearly identical to RW1 and RW3. Programmable logic controls (PLCs) will be located at RW4 and GM38 GWTS and linked via radio transmission. The PLC at GM38 GWTS will output signals to mimic the current information from RW3. The existing GM38 GWTS control system will be reprogrammed to reflect the operation of RW4, instead of RW3. The existing operation and maintenance contractor will work with the construction constructor to coordinate this communication.

RW4 will also have a high level alarm in the RW4 vault. This alarm will shut down the RW4 pump and signal a local alarm within the RW4 electrical panel. The existing controls at GM38 GWTS will be modified. In well controls will consist of a level probe (in a piezometer within the boring) to ensure the water level in the well does not drop below the pump.

6.5 Site Restoration

All areas impacted by construction activities will be restored to their original condition. Site restoration includes regrading and shall match the surrounding grades. Topsoil will be spread and dressed to finished grade leaving no irregularities or depressions and promote positive drainage. Following placement of topsoil, disturbed areas will be re-vegetated with permanent vegetation in accordance with state and local seeding requirements. Seeded areas will be protected from damage due to pedestrian and vehicle traffic. Erosion and sediment control measures shall be maintained as necessary until vegetation is sufficiently established to prevent erosion. Materials used for backfilling will include the material stockpiled for reuse and material obtained from offsite sources. All disturbed pavement areas will be restored to match pre-existing conditions and grade. Fencing around County Recharge Basin #495 removed for construction will be replaced.

6.6 Demobilization

Demobilization will consist of decontaminating and removing all construction equipment and materials, cleaning the project site, inspecting the site, and issuing a certification of completion. Any transportation and disposal activities associated with demobilization will be performed in accordance with local, state, and federal regulations, as well as Navy contract requirements.

Prior to demobilization, a final closeout inspection with the Navy RPM will be performed to inspect any repairs of erosion or runoff related damage; removal of all materials such as excess construction material, wood, debris, and other foreign material; and removal of all construction equipment and storage boxes.

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7.0 Project Management Plan

The project management team will be responsible for all technical and administrative aspects of the site activities. Included among the team's responsibilities are the project schedule, staffing, data management, document control, project meetings, and reporting.

7.1 Key Project Personnel

Table 1 includes a list of the key project and regulatory contacts.

7.2 Document Control

APTIM's internal document control procedures will be followed for the duration of the project. Management of internal and external correspondence will be administered at the home office in Norfolk, Virginia. Document control will include assigning alphanumeric codes to each submittal. Project files will be maintained in a secure, dry area at the field office.

7.3 Meetings and Reports

A pre-construction meeting will be conducted, and bi-weekly QC meetings will be conducted throughout the duration of remedial system construction and operation and maintenance activities.

Daily reports will be prepared by the Construction Manager and the Project QC Manager and submitted to the Navy RPM by 1000 hours the following workday. All QC related documents and discussion are provided in the PQCP (Appendix B).

7.4 Project Schedule

Project plans and field mobilization is scheduled to be completed in April 2019. Pipeline construction will be completed from April 2019 to August 2019. Site restoration and demobilization are scheduled for August 2019. The project schedule is provided in Appendix A.

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8.0 Reporting Requirements

Upon completion of construction activities, APTIM will prepare a CCR in accordance with NYSDEC DER-10 requirements. The CCR will include the site conditions and background, description of field methods and procedures, approved fieldwork variances, a summary of remedial construction activities, soil sampling results, disposal activities, conclusions and recommendations, and references.

This report will specifically include the following:

- A statement that the work was conducted in accordance with the Work Plan, with any exceptions noted
- Geographical Information Systems and appropriate data management requirements to load information into Naval Installation Restoration Information Solution (NIRIS) database, as applicable
- A summary of volumes of material shipped and disposed
- Copies of analytical reports from various types of sampling
- Copies of Manifests/Bills of Lading, and certified weight slips
- Copies of Certificates of Treatment/Disposal
- "As Built" drawings

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9.0 Environmental Protection Plan

This plan presents the environmental protection and pollution measures to be employed during site activities. APTIM will implement procedures and supply materials necessary for environmental protection for activities associated with the remedial activities during conveyance piping installation. Principal concerns include small spills (e.g. fuel spills) and E&S control. Additional information may be found in the APP.

9.1 Project Personnel

All on-site personnel will be briefed by the Site Superintendent/Environmental Manager or designated personnel on the details of the EPP prior to commencing construction activities. APTIM and subcontractors will attend initial training for all site personnel in the operation and maintenance of equipment to prevent the discharge or spill of fuels, oils, lubricants, or other hazardous materials. Additionally, control measures for the management of excavated and treated soil will be addressed. The following personnel are responsible for providing EPP training:

- Environmental Manager
- QC Manager

In the event that either the Environmental or QC Managers cannot provide EPP training, either manager can designate an approved alternate trainer.

9.2 Site Corrective Action

Should any of the preceding provisions not satisfy contractual standards (established in the SOW); prompt action will be taken to correct the situation upon receipt of notification from the Contracting Officer (KO), RPM, or from the APTIM Site Superintendent. Corrective measures will be proposed in writing to the KO and RPM for review and approval prior to being implemented.

Situations requiring immediate corrective action will be discussed with the RPM and implemented as soon as possible. Written documentation of the action will be submitted to the KO within 24 hours of implementing the action.

9.3 Erosion Control

All project work is anticipated to be performed along the LIRR and TOB utility corridor. With the exception of the County Recharge Basin #495 and an unidentified storm water detention basin located on the north side of the corridor midway between Hicksville Rd. and Stewart Ave., work areas do not immediately border any creeks or waterways. Construction runoff shall be controlled

in such a manner to prevent significant migration from the site. Storm drain drop inlets on local roads will be identified and protected as necessary as work progresses through the corridor. Except for designated work areas, the sites will be preserved in their original condition. Temporary equipment and material storage areas will be identified and approved by the KO Representative. The trenching activities will be conducted in a manner that minimizes environmental impact and protects the surrounding areas from being disturbed. Precautions to be taken to minimize impact will include, but are not limited to, the following:

- All heavy equipment and vehicle operations will be limited to designated roadways and predetermined routes.
- Debris from work activities will be collected daily.
- Proper guidance will be provided to heavy equipment operators to minimize impact to designated work areas. Equipment will be maintained such that dirt and debris will not be excessively spread onto roadways.

During trenching activities:

- Trenching soils will be placed adjacent to the work area and immediately used as backfill as soon as piping has been placed.
- Trenches will be covered daily to prevent erosion of the trench or safety concerns as outlined in the APP.

9.4 Air Monitoring

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. Readings will be compared to the levels specified below.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.
2. If, after implementation of dust suppression techniques, downwind PM-10 particulate

levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

9.5 Emergency and Decontamination Equipment

The following section describes the emergency and decontamination equipment to be used throughout the project.

9.5.1 Small-Scale Emergency Equipment

Small scale emergency equipment used on site will include dry chemical, Class ABC-rated fire extinguishers, spill control equipment, absorbent materials, decontamination equipment, and hand tools. This equipment will be identified to, and available to, all onsite workers.

9.5.2 Large-Scale Emergency Equipment

Large-scale emergency equipment will be utilized only if such size and/or power are necessary.

9.5.3 Decontamination of Equipment

Equipment necessary for decontamination activities will be provided, installed, and verified in working order prior to site operations. Equipment in the decontamination area includes items such as brushes and waste containers, or equipment suitable for dry decontamination procedures. The water table is not expected to be encountered during trenching activities, so it is expected that dry decontamination procedures will be sufficient.

9.6 Equipment Maintenance

Construction equipment will be properly maintained to ensure safe operation. All equipment will be regularly inspected and maintained (and documented in the inspection/maintenance log) in such manner as to minimize spillage or leakage which may occur during on site use or transportation.

9.7 Housekeeping

APTIM employs housekeeping policies which include neat and orderly storage of materials, proper truck and tank placards, prompt removal of spillage, refuse pickup and disposal, maintenance of roads and surfaces, and provisions for the storage of material. A daily departure inspection will be performed by the Site Superintendent.

Small spills may include solid or liquid materials being mishandled, dumped, leaked, knocked over, etc. Any material spillage, except for excavation material within the limits of excavation or storage, will immediately be contained and collected for disposal. Spills will be reported to the NYSDEC (as required) and Navy RPM as necessary. Any spilled liquids will be contained and collected by absorbent materials. Spilled fuel and impacted soil will be collected and staged for disposal.

9.8 Protection of Natural Resources

The work site will be restored to satisfactory condition upon project completion. APTIM will remove traces of construction following site restoration. The LIRR /TOB utility corridor is located in a densely-built residential area and is not suitable as permanent habitat for significant populations of wildlife, therefore natural resources will not be impacted during this remedial action.

9.9 Petroleum Wastes

APTIM will implement all reasonable precautions to prevent oily or hazardous substances from entering the ground, drainage areas, or open water. Equipment and storage vessels containing oil and/or fuel will be visually inspected prior to site entry and daily thereafter for leakage, drips, or other preventable releases. Any equipment or vessel damage will be immediately repaired, contained, and removed from the site. Petroleum releases will be acted-on immediately once observed, and impacted materials addressed. APTIM will notify NYSDEC Spills and the Navy RPM of any oil spills. A spill kit will be made available on site, sufficient to clean up on-site quantities of petroleum products.

9.10 Waste Handling

Any transportation and disposal activities will be performed in accordance with local, state, and federal regulations as well as Navy contract requirements, and as describe further in Section 10.0.

9.11 Utility Protection

The conveyance piping system will be installed in an area where a significant number of utilities are present. A geophysical utility locate will be performed prior to commencing intrusive work. Additionally, during trenching activities, identified utilities areas will be dug by hand to prevent damage.

10.0 Waste Management Plan

This Waste Management Plan outlines the requirements for the generation, storage, sampling and analysis, waste typing, transportation, treatment, and ultimate disposal of all waste for the remedial actions.

10.1 Waste Types

Waste types expected to be generated on site include soil cuttings from trenching and horizontal drilling operations, construction debris, and PPE.

10.2 Minimization Techniques for Investigative Derived Waste

APTIM will use best practices during construction to reduce production of Investigative Derived Waste (IDW). The water table is not expected to be encountered during construction; therefore, liquid IDW is not expected to be generated.

10.3 Investigative Derived Waste Management

APTIM will comply with applicable state and federal criteria associated with IDW management. Any staged soil or liquids will be maintained and secured appropriately on site prior to transportation and disposal. Staged soils and liquids generated during construction activities will be characterized in accordance with 6 NYCRR 371.3, 372.2, and 373.1-1 prior to offsite disposal. Soils may also be considered for a potential Beneficial Use Determination in accordance with 6 NYCRR 360.12.

10.4 Waste Characterization

All wastes will be maintained on site to comply with applicable regulations. Wastes will be characterized for ignitability, corrosivity, reactivity, and toxicity prior to disposal off site in accordance with appropriate state and federal regulations.

10.5 On-Site Waste Management

Staged soils and liquids are expected to be limited, as will be generated only during construction. The majority of analysis will consist of sampling of the soil stockpile for waste characterization prior to disposal. IDW will be maintained as described above. Transportation of wastes will be in accordance with all applicable state regulations along the disposal route (e.g. New York State Department of Transportation), in addition to federal regulations.

10.6 Liquid Wastes

Liquid wastes are not anticipated.

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11.0 References

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Figures

Figure 1
Site Location Map

Figure 2
RE-108 Area Hotspot Plume and Conveyance Piping

Figure 3
RE-108 Area Hotspot Plume Location

Figure 4
Utility Corridor

Image : A5 – Fig 2 Plumes.jpg
A5 – Fig 3 2015 Conditions.jpg
APTIM Logo Standard Color.jpg
NAVFAC Logo.jpg
Site Location Map.jpg
Site Map.jpg

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Plotted By: bernadette.oconnor

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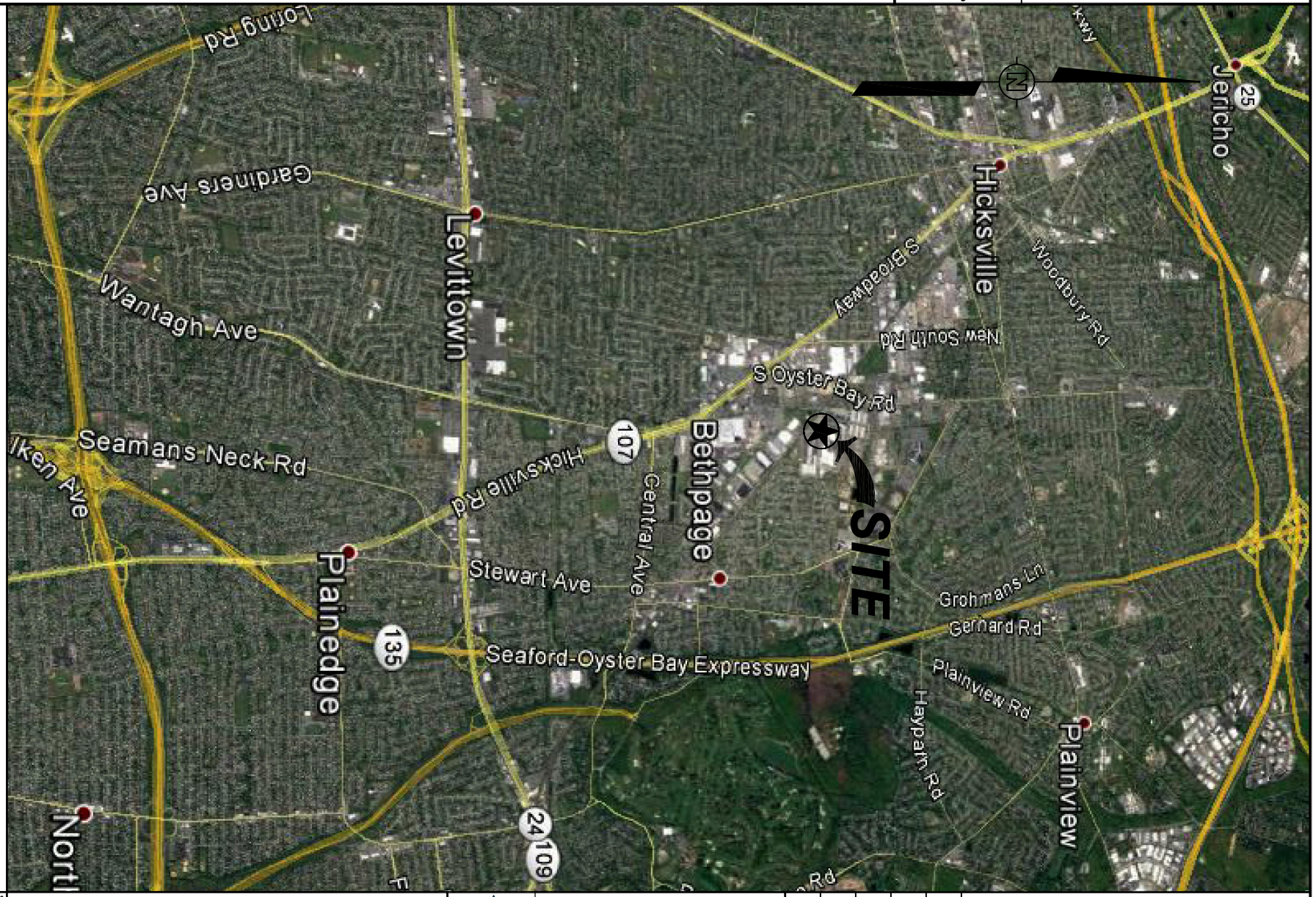

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DATED: 5/11/16

NAVFAC Naval Facilities Engineering Command MID-ATLANTIC

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK
PHASE I RE108 AREA HOT SPOT
NWIRP BETHPAGE SITE LOCATION MAP

APTIM
APTIM Federal Services LLC
150 Boush Street, Suite 701
Norfolk, Virginia 23510

DESIGNED BY	DATE	CHECKED BY	DATE
W. SQUIRE	2/1/18		
DRAWN BY	DATE	APPROVED BY	DATE
B. O'Connor	2/1/18		

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

REVISIONS

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CONSTR. CONTRACT NO. N62470-16-D-9004
NAVFAC DRAWING NO. --
SHEET I.D.
FIGURE 1

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Plotted By: bernadette.oconnor

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Site Map.jpg

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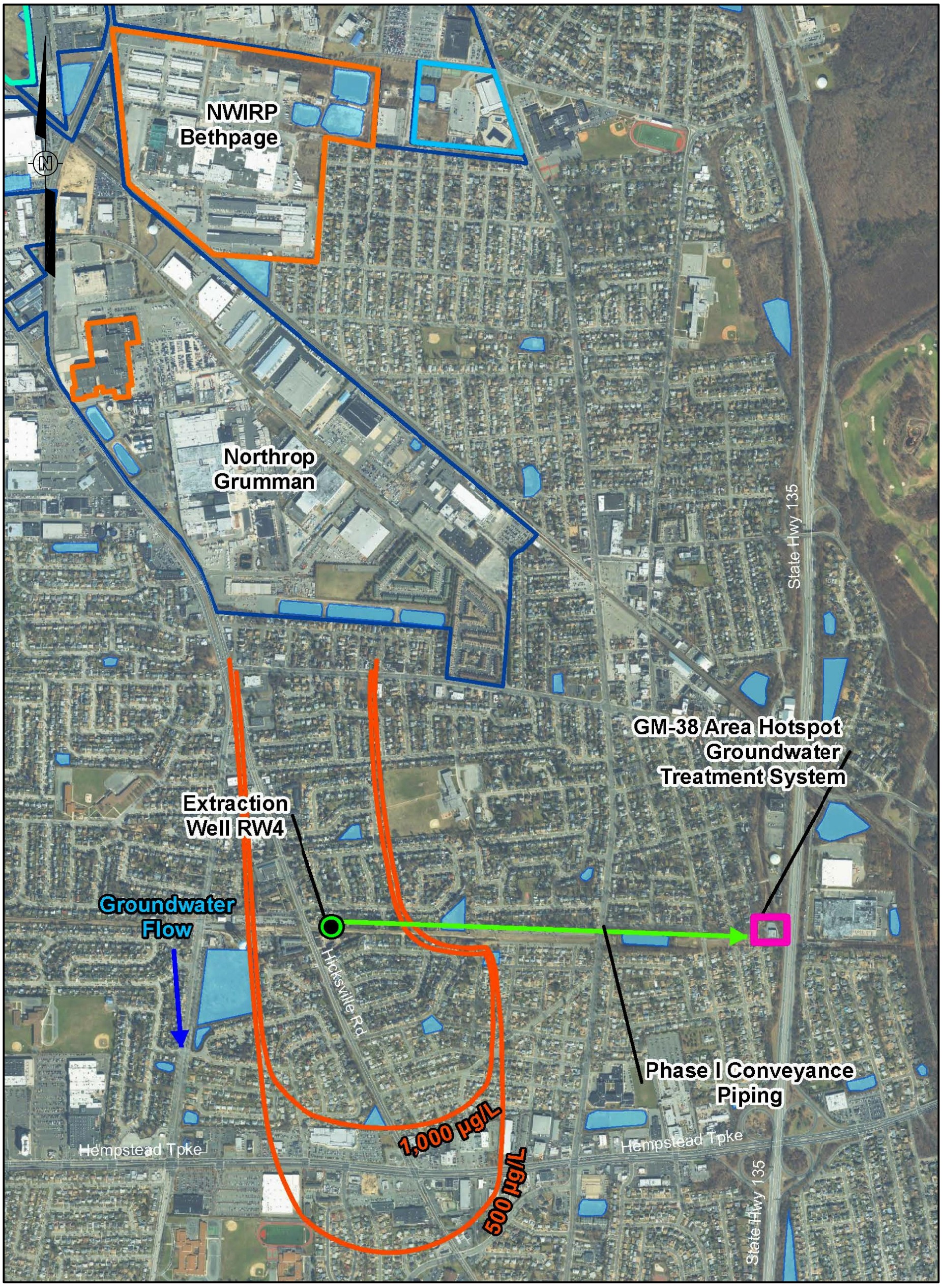

LEGEND:

- Extraction Well
- Phase I Conveyance Piping
- Groundwater Flow Direction
- TCE Isoconcentration Contour micrograms per liter (µg/L)
- GM-38 Area Hotspot Groundwater Treatment System
- Recharge Basins
- 1997 NWIRP Bethpage Property
- 1997 Northrop Grumman Property
- 1962 Northrop Grumman Property
- Hooker Ruco Superfund Site

SCALE
0 1000 2000 FEET

REFERENCE: THIS FIGURE CREATED UTILIZING FILE FROM TETRA TECH, FILE: BP HOTSPOT 080817.MXD FIGURE 1-2, DATED: 8/8/2017, SCALE 1"=1000'

FIGURE 2

SHEET I.D. --
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CONSTR. CONTRACT NO. N62470-16-D-9004
DELIVERY ORDER NO. 5347
SCALE: AS SHOWN
SIZE: B

NAVFAC Naval Facilities Engineering Command MID-ATLANTIC

NAVAL AIR STATION PATUXENT RIVER, MARYLAND
PHASE I RE108 AREA HOTSPOT
RE-108 AREA HOTSPOT PLUME AND CONVEYANCE PIPING

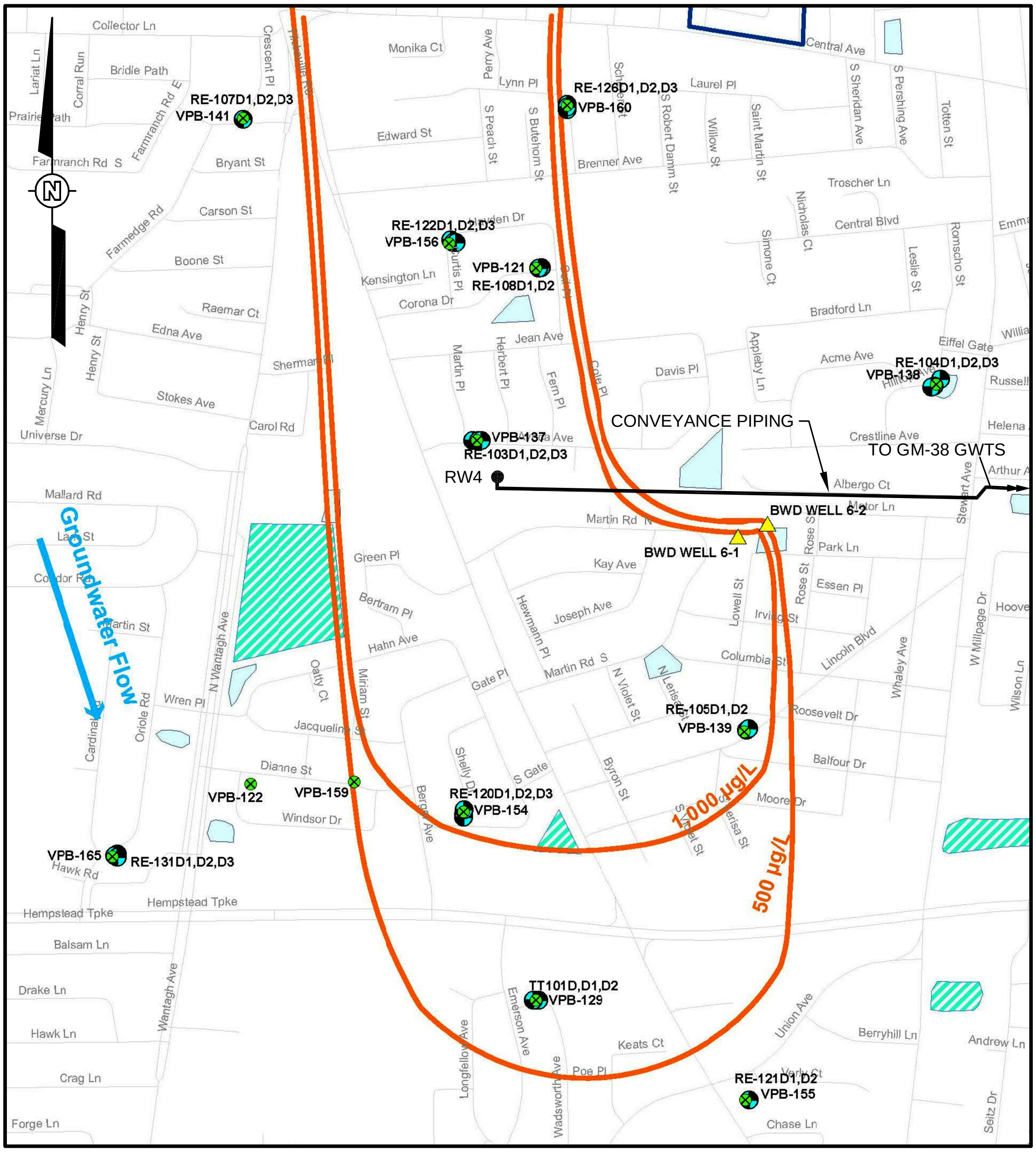
APTIM

APTIM Federal Services LLC
150 Boush Street, Suite 701
Norfolk, Virginia 23510

DESIGNED BY	DATE	CHECKED BY	DATE
W. Squire	*2/1/18*		
DRAWN BY	DATE	APPROVED BY	DATE
B. O'Connor	*2/1/18*		

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

REVISIONS



LEGEND:

- MONITORING WELL
- VERTICAL PROFILE BORING
- WATER SUPPLY WELL
- TEC ISOCONCENTRATION CONTOUR ug/L
- RECHARGE BASIN
- POSSIBLE DISCHARGE BASIN
- RW4 RECOVERY WELL
- CONVEYANCE PIPING

REFERENCE:

THIS FIGURE CREATED UTILIZING FILE FROM TETRA TECH, FILE: BP HOTSPOT CAPTUREZONE.MXD FIGURE 1-3, DATED: 9/22/2016, SCALE 1"=600'

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OFFICE Pittsburgh, PA

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A5 - Fig 3 2015 Conditions.jpg
APTIM Logo Standard Color.jpg
Figure 4 Utility Corridor Image.jpg
NAVFAC Logo.jpg
Site Location Map.jpg
Site Map.jpg

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Plotted By: bernadette.oconnor

REVISIONS

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APTIM Federal Services LLC
150 Boush Street, Suite 701
Norfolk, Virginia 23510

DESIGNED BY W. SQUIRE DATE 2/2/18
CHECKED BY DATE
DRAWN BY B. O'Connor DATE 2/2/18
APPROVED BY DATE

NAVFAC Naval Facilities Engineering Command MID-ATLANTIC

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK
PHASE I RE108 AREA HOT SPOT
RE108 AREA HOTSPOT PLUME LOCATION

SCALE: AS SHOWN
SIZE: A
DELIVERY ORDER NO. 5347
CONSTR. CONTRACT NO. N62470-16-D-9004
NAVFAC DRAWING NO. --
SHEET I.D. FIGURE 3

File: O:\Project\LANTDIV\Bethpage NY\501012\501012-A1.dwg
Plot Date/Time: Feb 05, 2018 - 9:32am
Plotted By: bernadette.oconnor

APTIM Logo Standard Color.jpg
Figure 4 Utiliy Corridor Image.jpg
NAVFAC Logo.jpg
Site Location Map.jpg
Site Map.jpg

OFFICE	DRAWING NUMBER
Pittsburgh, PA	501012-A1

0 1000 2000 FEET
SCALE

REFERENCE:
DRAWING PREPARED USING GOOGLE EARTH
DATED: 2018

SHEET I.D.	FIGURE 4
NAVFAC DRAWING NO.	--
CONSTR. CONTRACT NO.	N62470-16-D-9004
DELIVERY ORDER NO.	5347
SCALE:	AS SHOWN
SIZE:	A

NAVFAC Naval Facilities Engineering Command MID-ATLANTIC

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK
PHASE I RE108 AREA HOT SPOT
UTILITY CORRIDOR

APTIM

DESIGNED BY W. SQUIRE	DATE 2/2/18	CHECKED BY	DATE
DRAWN BY B. O'Connor	DATE 2/2/18	APPROVED BY	DATE

APTIM Federal Services LLC
150 Boush Street, Suite 701
Norfolk, Virginia 23510

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

REVISIONS

Tables

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Table 1
Key Project Personnel

Agency	Contact	Project Title
NAVFAC MIDLANT, North	Mr. Brian Murray (office) 757.341.0491 brian.s.murray@navy.mil	Navy Remedial Project Manager/ COR
NAVFAC MIDLANT	TBN	Contract Specialist
NAVFAC MIDLANT, Naval Submarine Base New London Public Works Department	Mr. Christopher Shukis 860.694.4556 (office)	NTR/Alternate COR
APTIM 150 Boush Street, Suite 701 Norfolk, Virginia 23510	William L. Deane. Jr., P.E. 757.640.6956 (office) 973.615.6635 (mobile) william.deane@aptim.com	PM
APTIM 150 Boush Street, Suite 701 Norfolk, Virginia 23510	James Kinley 570-660-0747 (mobile) james.kinley@aptim.com	Construction Manager
APTIM 150 Boush Street, Suite 701 Norfolk, Virginia 23510	Natasha Sullivan 410.529.7598 (office) 410.804.5642 (mobile) natasha.sullivan@aptim.com	Program Chemist
APTIM 500 Penn Center Blvd, Ste. 900 Pittsburgh, Pennsylvania 15235	William Squire 412.858.1638 william.squire@aptim.com	Program QC Manager
APTIM 150 Boush Street, Suite 701 Norfolk, Virginia 23510	TBN	Project QC Manager
APTIM 16380 U.S. Route 224 East, Suite 100 Findlay, OH 45840	David Mummert 419.429.5509 (office) 419.348.1544 (mobile) david.mummert@aptim.com	CIH
APTIM 150 Boush Street, Suite 701 Norfolk, Virginia 23510	TBN	SSHO

Notes:

CIH	*Certified Industrial Hygienist*
NAVFAC	*Naval Facilities Engineering Command*
NTR	*Navy Technical Representative*
PM	*Project Manager*
RPM	*Remedial Project Manager*
SSHO	*Site Safety and Health Officer*
TBN	*To be named*
QC	*Quality Control*

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Appendix A
Project Schedule

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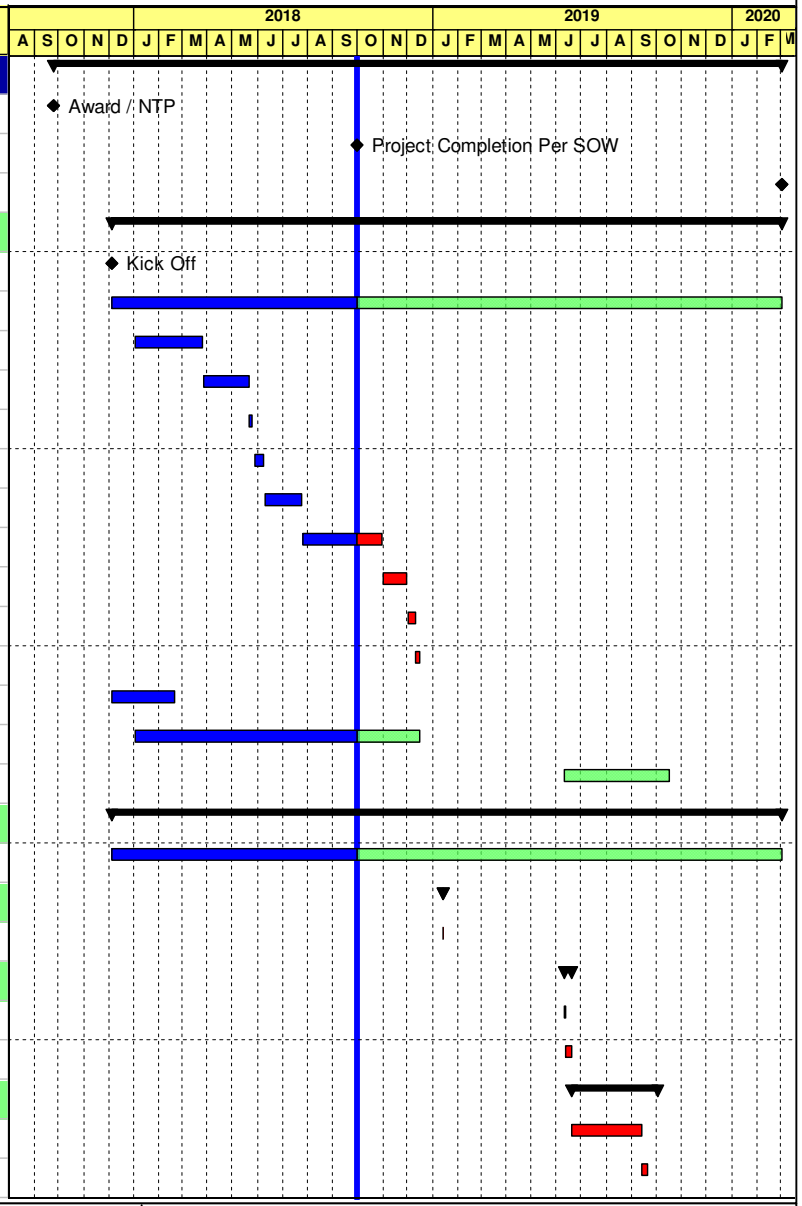
TO F5347 - Phase I RE 108 - NWIRP Bethpage, NY

Activity ID	Activity Name	OD	Rem Dur	%	Start	Finish
TO F5347 - Phase I RE 108 - NWIRP Bethpage, NY		854	520		25-Sep-17 A	02-Mar-20
0100	Award / NTP	0	0	100%	25-Sep-17 A	
0110	Project Completion Per SOW	0	0	0%		30-Sep-18
0120	Project completion Per Schedule	0	0	0%		02-Mar-20
Task 1: Project Planning		656	520		06-Dec-17 A	02-Mar-20
01000000	Kick Off	0	0	100%	06-Dec-17 A	
01001000	Project Management	489	520	0%	06-Dec-17 A	02-Mar-20
01002000	Prepare & Submit Draft Work Plan	30	0	100%	02-Jan-18 A	26-Mar-18 A
01002010	NAVFAC Review Draft Work Plan	60	0	100%	27-Mar-18 A	21-May-18 A
01002020	Response to Comments	10	0	100%	22-May-18 A	25-May-18 A
01002030	Prepare & Submit Draft Final Work Plan	5	0	100%	29-May-18 A	08-Jun-18 A
01002040	NYSDEC Review Draft Final Work Plan	60	0	100%	11-Jun-18 A	25-Jul-18 A
01002050	Response to Comments	10	32	0%	26-Jul-18 A	31-Oct-18
01002051	OTHER Review	30	30	0%	01-Nov-18	30-Nov-18
01002052	Reponse to Comments OTHER Review	10	10	0%	01-Dec-18	10-Dec-18
01002060	Submit Final Work Plan	5	5	0%	11-Dec-18	15-Dec-18
01003000	Design Evaluation / Completion	45	0	100%	06-Dec-17 A	20-Feb-18 A
01004000	Permitting	180	77	0%	02-Jan-18 A	15-Dec-18
01005000	Field Supervision & Management	89	89	0%	11-Jun-19	17-Oct-19
Task 2: Meetings		489	520		06-Dec-17 A	02-Mar-20
02001000	Project Meetings	489	520	0%	06-Dec-17 A	02-Mar-20
Task 3: Preconstruction		1	1		13-Jan-19	13-Jan-19
03001000	Preconstruction Procurement & Meeting	1	1	0%	13-Jan-19	13-Jan-19
Task 4: Mobilization and Site Setup		6	6		11-Jun-19	19-Jun-19
04001000	Mobilization	1	1	0%	11-Jun-19	12-Jun-19
04002000	Site Setup	5	5	0%	12-Jun-19	19-Jun-19
Task 5: Construction		105	105		19-Jun-19	02-Oct-19
05002000	Pipeline Installation	60	60	0%	19-Jun-19	13-Sep-19
05002100	Leak Detection Points	5	5	0%	13-Sep-19	20-Sep-19

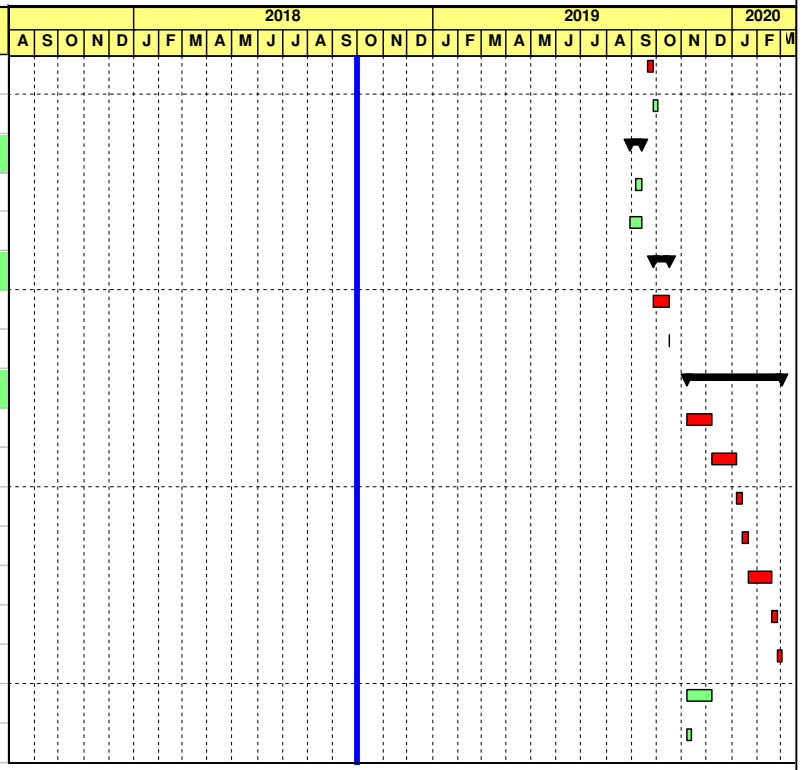


Remaining Level of Effort
Actual Level of Effort
WBS Summary
Actual Work
Remaining Wo...
Critical Remai...

Data Date: 30-Sep-18

TO F5347 - Phase I RE 108 - NWIRP Bethpage, NY

Activity ID	Activity Name	OD	Rem Dur	%	Start	Finish
05003000	Roadway Crossing	5	5	0%	20-Sep-19	27-Sep-19
05004000	RW-03 / RW-04 Tie In	5	5	0%	27-Sep-19	02-Oct-19
Task 6: Power and Controls		10	10		29-Aug-19	13-Sep-19
06001000	RW-04 Electrical Installation	5	5	0%	06-Sep-19	13-Sep-19
06002000	RW-04 System Controls	10	10	0%	29-Aug-19	13-Sep-19
Task 7: Site Work and Restoration		13	13		27-Sep-19	17-Oct-19
07001000	Site Restoration	12	12	0%	27-Sep-19	16-Oct-19
07002000	Demobilization	1	1	0%	16-Oct-19	17-Oct-19
Task 8: Post Construction Documents (Construction Completion Rep		116	116		07-Nov-19	02-Mar-20
08001000	Prepare & Submit Draft CCR	30	30	0%	07-Nov-19	07-Dec-19
08001010	NAVFAC Review Draft CCR	30	30	0%	07-Dec-19	06-Jan-20
08001020	Response to Comments	7	7	0%	06-Jan-20	13-Jan-20
08001030	Prepare & Submit Draft Final CCR	7	7	0%	13-Jan-20	20-Jan-20
08001040	NAVFAC & NYSDEC Review Draft Final CCR	30	30	0%	20-Jan-20	19-Feb-20
08001050	Response to Comments	7	7	0%	19-Feb-20	26-Feb-20
08001060	Submit Final CCR	5	5	0%	26-Feb-20	02-Mar-20
08002000	O & M Manuals	30	30	0%	07-Nov-19	07-Dec-19
08003000	Data Management / NIRIS Update	5	5	0%	07-Nov-19	12-Nov-19



Remaining Level of Effort
Actual Level of Effort
WBS Summary
Actual Work
Remaining Wo...
Critical Remai...

Data Date: 30-Sep-18

Appendix B
Project Quality Control Plan

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Project Quality Control Plan
Non-Time Critical Removal Action,
Site 21 – Sludge Drying Beds
Phase I RE108 Area Hotspot Treatment System
Former NWIRP Bethpage
Bethpage, New York

Contract Number: N62470-16-D-9004
Contract Task Order: N4008517F5347

Document Control Number: APT-9004-F5347-0001

Submitted to:

NAVFAC Mid-Atlantic
9324 Virginia Avenue, Building Z144
Norfolk, VA 23511

Submitted by:
APTIM Federal Services LLC
150 Boush Street, Suite 701
Norfolk, Virginia 23510

PROJECT QUALITY PLAN

1.0 APTIM QUALITY POLICY AND STATEMENT

APTIM Federal Services LLC (APTIM) implements a Quality Management System (QMS) supported by the APTIM Management System (AMS) to consistently provide services that meet the requirements of clients and regulatory requirements applicable to projects and corporate activities. APTIM is dedicated to effective application of the QMS, AMS, and process implementation to achieve continuous improvement of systems with the objective of enhancing the satisfaction of clients.

The QMS is supported by procedures, guidelines, work instructions, and forms for planning, implementation, measuring, monitoring, checking, reviewing, and improving the performance of APTIM.

This plan and the referenced AMS documents will be implemented by all APTIM personnel for work activities that affect quality. AMS procedures will be implemented by APTIM projects when determined applicable for the particular scope of work activities.

2.0 SCOPE OF WORK COVERED BY THE QUALITY PLAN

APTIM has been selected by the Department of the Navy, Naval Facilities Engineering Command (NAVFAC) Atlantic, under Contract No. N62470-16-D-9004, Contract Task Order (CTO) F5347 to perform a remedial action at Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage, New York.

This Project Quality Control Plan (PQCP) identifies the following definable features of work (DFOW) for the CTO F5347 remedial action to be performed at NWIRP:

- Mobilization
- Site Preparation
- Excavation and Drilling
- Conveyance Piping Installation
- Site Restoration
- Demobilization

3.0 PROJECT QUALITY OBJECTIVES AND METRICS USED TO MONITOR PERFORMANCE

In accordance with this PQCP and parent Quality Control Program Plan (QCPP), the Project Quality Control (QC) Manager will implement a three-phase control system to manage each DFOW.

The procedure is described below:

Preparatory Phase: Prior to the start of a new DFOW, a preparatory meeting will be held with the construction manager, project engineer, and associated subcontractors to review the work scope,

quality requirements, conditions of installation, preparation and installation or application procedures, and work coordination. A preparatory meeting agenda and document package will be generated. Documents, or sections of, may include:

- Work plan
- Design drawings and specifications
- Any applicable requests for information (RFI)
- Approved equipment and material submittals
- Inspection and test plans (ITPs)
- Statements of qualification and/or certifications
- Task Specific AHAs and other applicable safety information

The meeting will be guided by the Preparatory Phase Checklist, provided as Exhibit IX-2. Before the meeting, the Project QC Manager will verify that the 1) the required submittals have been transmitted and approved as required; 2) the necessary prerequisite work has been completed; and 3) that the materials of construction and equipment for the DFOW are on hand. An agreement will be reached on any open items that must be addressed as well as a plan for completing the action(s). Preparatory meeting agenda and subsequent meeting minutes will be issued to all participants prior to starting the feature of work. Meeting minutes are documented using the Preparatory Phase Checklist.

Initial Phase: During the initial phase, the Project QC Manager will observe and inspect the initial portion of the work performed under a DFOW to establish the quality of the workmanship, to resolve conflicts in construction, and to ensure that testing, when required, is being done and certified by the approved laboratories. This Phase may also have a meeting held with the same attendees as those in the preparatory meeting. The initial phase inspection is guided by the Initial Phase Checklist, provided as Exhibit IX-3, and will be used to document the meeting minutes.

Work procedures will be checked to ascertain that the work conforms to safety requirements. All nonconforming work requiring correction or rework will be documented and reported. All Initial Phase items, along with initial phase checklist and including date, will be provided in a daily report.

Follow-Up Phase: Follow-up inspections will continue to be performed until all work on a DFOW is complete. They ensure work complies with the above-stated requirements, that the quality of workmanship for all work is maintained, and all work being performed meets safety requirements. As part of the follow-up inspection, the inspectors will review the field documentation for accuracy completeness and legibility. If required, field documentation will be returned to the originator for correction or completion. Follow up inspections are documented on the Contractor Quality Control Report (CQCR), provided as Exhibit VIII-2.

Daily QC Reporting: The Project QC Manager will submit daily, a Contractor QC Report, which contains a summary of the daily QC activities performed by the Project QC Manager. All checklists and inspection documentation should be included with the CQCR on the day which the checklist or inspection was completed. The report will be submitted to the Contracting Officer's (KO) designated representative by 1000 hours the following day.

Daily QC reports may include, but not be limited to the following three-phase control system QC information.

- Details of Preparatory Phase activities including:
  - Review of plans and specifications
  - Verification of approved submittals.
  - Verification of construction material compliance with plans and specifications.
  - Verification of proper material storage.
  - Verification of preliminary work.
  - Review of ITP.
  - Discussion of work method and schedule to complete.
  - Review of Health, Safety and Environment (HSE) requirements and Job safety/hazard analysis.
- Details of Initial Phase activities including:
  - Verification of preliminary work.
  - Confirmation of satisfactory workmanship.
  - Review and acceptance of test results.
  - Verification of compliance with the project plans and specifications.
  - Verification of compliance with HSE requirements.
  - Verification of any outstanding or unresolved issues from the Preparatory Phase Meeting
- Details of Follow-up Phase activities including:
  - Verification of compliance of the work with plans and specifications and the level of satisfactory workmanship established in the Initial Phase.
  - Verification of compliance with HSE requirements.

Biweekly QC Meetings: The Project QC Manager will conduct biweekly QC meetings as determined by the COR. Meetings will be documented in the CQCR. Meetings will be held at a designated

site and will be attended by the Project QC Manager, Project Superintendent, Project Manager, and the KO's designated representatives. A phone conference bridge will be provided for attendees to participate when not present. The following should be accomplished at each meeting:

- Review the minutes of the previous meeting.
- Review the Variance Request/Request for Information/Concurrence Letter status.
- Review schedule and status of work.
  - Work accomplished since last meeting providing the status within the three-phase control system.
  - Work to be accomplished before the next scheduled meeting.
  - Meeting and inspection schedule for three-phase control system.
- Review Rework Status.
  - Rework items identified and pending completion
  - Rework items completed since last meeting
- Review status of submittals.
  - Submittals reviewed and approved since last meeting
  - Submittals pending approval
  - Submittals required in the near future
- Provide testing to include both on-site and off-site testing.
  - Testing performed since last meeting
  - Testing scheduled prior to the next meeting
  - Test results pending/ received since last meeting
- Review documentation required prior to next meeting.
- Review status of as-builts.
- Review QC and production issues discussed and resolutions accomplished.
- Review other items discussed (i.e. items that may require changes to the PQCP).
- Review action items.
- Review date of next scheduled QC meeting.

Minutes of the meeting will be prepared by the Project QC Manager and distributed to the attendees within 2 working days of the meeting. Meeting minutes will be documented on the QC Meeting Agenda/Minutes form provided as Exhibit XI-1.

4.0 ORGANIZATION AND RESPONSIBILITIES FOR THE EXECUTION OF THE SCOPE

4.1 Project Quality Control Manager

The Project QC Manager will have the authority to implement and manage the Project QC Plan, the three-phase control system and the authority to stop work which is not in compliance with the contract. The Project QC Manager for this task order will be named prior to the start of work. Approval of this person will be sought prior to appointment by APTIM. The Project QC Manager will be responsible for the Project QC Plan implementation and quality reporting for this task

order. He will work closely with the site personnel and the Project Manager, William Deane, but will report directly to Mr. Kenneth Martinez, QC Program Manager regarding QC related issues on the site.

The Project QC Manager's responsibilities for CTO F5347 are examined further in Table 4-1.

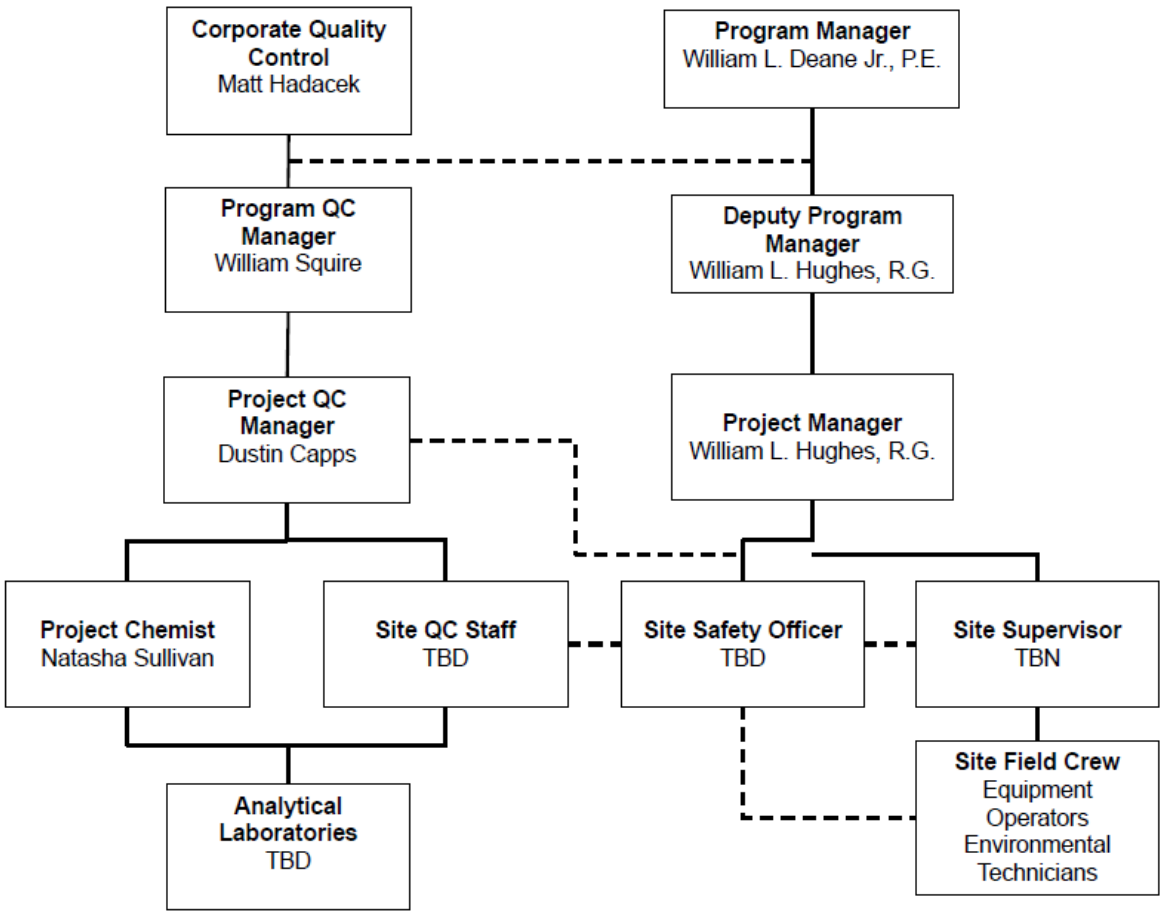
Name	Title	Organizational Affiliation	Responsibilities
To Be Named	Project QC Manager	APTIM	• Manage the site specific QC requirements in accordance with the Project QC Plan. • Attend the coordination and mutual understanding meeting. • Conduct QC Meetings. • Perform the three phases of control. • Perform submittal review. • Perform submittal approval except for submittals designated for Contracting Officer or designated representative approval. • Ensure testing is performed as required. • Prepare QC certifications and documentation required. • Verify that objective evidence has been provided to document satisfactory performance of the work (i.e. daily reporting and photo documentation). • Exercise authority to stop work or direct removal and replacement of non-conforming work. • Review results of on-site verification testing and inspection reports. • Maintain the latest drawings and specifications with amendments and/or approved modifications at the site and ensure they are used for shop drawings, fabrication, construction, inspections, and testing. • Maintain as-built drawings at the site, available for review by the Navy at all times. • Establish and maintain a Rework Item List of work that does not conform to specifications. Track and monitor these items to assure that the rework inspection and testing activities and frequencies are in accordance with contract requirements. • Attend and assist the government at the pre-final inspection and the final acceptance inspection. • Confirm the quality and quantity of materials delivered to the site as referenced by project specifications and/or design drawings. • Submit the QC reports to the COs representative and Project Manager on a daily basis.

4.2 Program Quality Control Manager

Mr. Martinez, Program QC Manager will serve to resolve any QC related issues, which need his involvement. The Project QC Manager will have a direct line of communication to the Program QC Manager on QC issues.

4.3 Alternate Quality Control Specialist

An Alternate QC Specialist will be assigned to assist the Project QC Manager during site construction. The resume of this person and appointment letter will be submitted for approval.



4.4 Organizational Chart

The relationship between the QC Organization, and Production Personnel of the Task Order, is presented in the Organizational Chart, Figure 4.4.

4.5 Identification of Personnel Assigned to the QC Organization

The resume of the Project QC Manager will be submitted as Exhibit I-1 for approval prior to the commencement of work.

4.6 Appointment Letters

The Project QC Manager Appointment letter will be submitted as Exhibit II-1 for approval prior to the commencement of work.

5.0 QUALITY PROCEDURES

The quality procedures for the Project QC Plan are guided by the quality procedures set forth in the QCPP.

6.0 RELATED QUALITY CHECKLIST / OTHER FORMS

6.1 Outside Organizations

A list of outside organizations such as subcontractors employed by APTIM for work under this CTO is provided in Exhibit III-1. This list provides each firm's name and address and a description of the services each firm will provide. This list will be maintained current and will be available for review.

6.2 Submittal Register & Reviewer

6.2.1 Submittal Register

The Submittal Register is provided as Exhibit IV-1. The status of each submittal will be recorded as changes occur.

6.2.2 Personnel Authorized to Review and Certify Submittals

Personnel authorized to review and certify submittals are identified on Exhibit IV-2. Any additional personnel assigned to perform submittal review and certification must be approved by the KO representative prior to performance.

6.3 Testing Laboratory Accreditation

The testing laboratory accreditation will be provided with the submittal of the Uniform Federal Policy (UFP) - Quality Assurance Project Plan (QAPP). The approval of the UFP-QAPP will serve as the approval of the laboratory for use in the project execution. The UFP-QAPP will be updated annually to include any updated accreditation or certifications.

6.4 Testing Plan and Log Preparation

A Testing Plan and Log has been prepared for this CTO and is provided as Exhibit V-1.

6.5 Requests for Information

When a project condition changes, a RFI will be submitted with a course of action for continuation. This RFI will be submitted to the COR for approval or direction. The RFI form is provided in Exhibit VI-1.

6.6 Rework Items

Rework Items will be documented on the Daily CQCR and on the Rework Items List. This list will be used to report and track Rework Items. The Rework Items List is provided as Exhibit VII-1.

6.7 Documentation Procedures

The Daily Contractor Production Report form and the Daily CQCR form will be used to document daily activities at the site. These forms are provided as Exhibits VIII-1 and VIII-2, respectively.

6.8 Quality Control Inspection Plan

The QC Inspection Plan, Exhibit IX-1, lists the Task Order Remedial Action Work Plan section and definable feature of work with provisions for recording the corresponding checklist/report for each phase of the three-phase control system. As each control phase is satisfactorily performed, the Project QC Manager will record the corresponding report number and date.

This list has been prepared to correspond to the scheduled remedial action activities. Each preparatory, initial and follow-up phase checklist/report will reflect the construction activity number derived from the construction schedule. As a part of the QC inspection plan, the Preparatory Phase and Initial Phase Checklists are provided as Exhibits IX-2 and IX-3 respectively.

6.9 Personnel Matrix

The personnel matrix, Exhibit X-1, shows each section of the Task Order Remedial Action Work Plan sections with identification of who will review and certify submittals, who will perform and document the three phases of control, and who will perform and document testing.

7.0 LIST OF EXHIBITS

Exhibit I-1	Project QC Manager Resume
Exhibit II-1	Project QC Appointment Letter
Exhibit III-1	Outside Organization/Subcontractor List
Exhibit IV-1	Submittal Register
Exhibit IV-2	List of Personnel Authorized to Review and Certify Submittals
Exhibit V-1	Testing Plan and Log
Exhibit VI-1	Request for Information Form
Exhibit VII-1	Rework Items List
Exhibit VIII-1	Contractor Production Report
Exhibit VIII-2	Contractor QC Report
Exhibit IX-1	QC Inspection Plan
Exhibit IX-2	Preparatory Phase Checklist
Exhibit IX-3	Initial Phase Checklist
Exhibit X-1	Personnel Matrix
Exhibit XI-1	QC Meeting Template

8.0 DEFINITIONS

Below is a list of acronyms and abbreviations, and their definitions, used in this document:

APTIM	APTIM Federal Services LLC
AMS	APTIM Management System
CQCR	Contractor Quality Control Report
CTO	Contract Task Order
DFOW	Definable Feature of Work
HSE	Health, Safety, and Environment
ITP	Inspection and Test Plans
KO	Contracting Officer
NAVFAC	Naval Facilities Engineering Command
NWIRP	Naval Weapons Industrial Reserve Plant
PQCP	Project Quality Control Plan
QC	Quality Control
QCPP	Quality Control Program Plan
QMS	Quality Management System
RFI	Request for Information
UFP-QAPP	Uniform Federal Policy for Quality Assurance Project Plan

Last Updated: 12 Nov 2018

Dustin K. Capps

Professional Qualifications

Mr. Capps has seven years of engineering experience to include regulatory and permit compliance as well as environmental restoration and remediation. Specific compliance includes industrial stormwater management and compliance, EPCRA, construction SWPPP compliance, and NPDES compliance. Mr. Capps also has experience with asbestos surveys and sampling methods. Most recently, Mr. Capps has been served as a project engineer providing home office support in the form of consulting services to the client. Field support includes construction quality control management.

Education

Master of Science, Environmental Engineering, University of South Florida, Tampa, Florida, 2011
Bachelor of Science, Marine Science and Biology, Coastal Carolina University, Conway, South Carolina, 2006

Registrations/Certifications/Licenses

Construction Quality Management (CQM), 2017, Active, Nationwide, 10/2022
OSHA 40-hr Hazardous Waste Operations, 2011, Active, Nationwide, 10/2019
Engineer in Training, 2012, #EIT 145942, Active, Nationwide

Experience and Background

10/2017 - Present
Engineer II, Aptim Federal Services, Engineering & Decomissioning, Norfolk, Virginia

Oversees environmental remediation projects to ensure work is of high quality and completed in accordance with the project specifications and in accordance with applicable engineering codes and environmental regulations.
Monitors and controls costs within projects.
Applies engineering knowledge and expertise to a diverse range of standard and nonstandard situations to provide the best solution to meet client and project objectives.
Collaborates with senior project management to solve complex engineering problems and provides new perspective to existing solutions.
Collects and interprets engineering data to monitor remediation project progression to ensure all project remediation goals are met to client satisfaction.
Authors technical documents to ensure projects conform with applicable state engineering codes and all applicable federal and state environmental regulations.
Manages time to meet agreed upon targets and develops plans for short-term work activities.
Explains difficult issues and works to establish consensus to achieve project goals while promoting teamwork and providing guidance to less experienced colleagues.

09/2015 - 09/2017
Staff Environmental Engineer, KMEA, National City, California

Collaborated on the development of asbestos sampling and management plans for buildings located on

facilities managed by Navy Facilities Command by reviewing building plans and historical data and collects bulk samples for analysis to determine the presence of asbestos within these buildings.
Evaluated and inspected best management practices as specified by the Stormwater Pollution Prevention Plan for a variety of industrial facilities to ensure compliance with state and federal industrial storm water discharge permit requirements and to protect the environmental liability of military industrial facilities.
Recommended corrective actions to military industrial facility mangers in order to ensure that deficiencies discovered during inspections are both corrected and prevented from recurring in the future.
Collected and processed industrial stormwater samples at a variety of military industrial facilities to include air fields and landing strips, recycling facilities, landfills, government liquidation lots, and vehicle fleet maintenance facilities in accordance with the facilities? specific permit requirements.
Authored and implemented the Site Safety and Health Plan and Accident Prevention Plan as the site manager for the industrial storm water program at NALF San Clemente Island to ensure and maintain safe field working practices.
Conducted Quarterly Industrial Facility Visual Inspections of industrial facilities at NAS North Island in accordance with NPDES Permit No. CA0109185, reporting any and all compliance deficiencies and recommending appropriate corrective actions.
Authored and implemented Stormwater Prevention Pollution Plan updates for Marine Corps Base Camp Pendleton industrial stormwater program in accordance with NPDES Permit No. CAS000001.
Evaluated discharge flow data and performs engineering calculations to determine stormwater drainage basin discharges in order to improve sampling efficiency and to evaluate the quality of receiving waters for Areas of Special Biological Significance permit requirements for NALF San Clemente Island.
Designed and recommended engineering solutions to improve stormwater sampling efficiency and success at military industrial facilities.
Processed industrial storm water sample chains of custody to ensure the integrity of samples in maintained and that the sample results are valid.
Authored site-specific annual reports as part of a wide range of contractual obligations for government clients.
Collect data and information and authors reports as part of the EPA Emergency Planning and Community Right-To-Know Act, Section 313.

06/2014 - 09/2015
Environmental Engineering Associate, Havasu Consulting, Carlsbad, California

Evaluated and implemented dust and soil sampling protocols for 200 acre land development project.
Developed monitoring program based on analysis of Phase I Environmental Site Assessment.
Collected and processed dust and soil samples in accordance with required protocols.
Collaborated with grading and geotechnical teams to implement dust mitigation plan as needed.
Processed chains of custody for soil samples to ensure sample integrity.

07/2012 - 06/2014
Environmental Engineer, Abeinsa EPC, Hinkley, California

Assisted with and oversaw the compliance and proper execution of SWPPP and SPCC plans.
Cross-trained activity managers on the environmental management system to insure project compliance with state and federal environmental regulations.
Assisted with the site compliance of environmental permit requirements via routine field inspections, implementation of appropriate environmental due diligence measures, and BMP recommendation and design.
Authored site procedures and briefed subcontractors as necessary on requirements of SWPPP, SPCC, and environmental compliance requirements.
Collaborated with safety team on the proper storage of site hazardous materials and wastes associated

with various operations to insure compliance with both SPCC and site safety requirements.
Authored reports to identify deficiencies in compliance with wide range environmental permit requirements to include storm water, air quality, and biological.
Reported deficiencies to appropriate parties and followed up to ensure they were addressed.
Collaborated with project compliance team to repair and address regulatory deficiencies when identified.
Collaborated with construction team and various regulatory agencies to preemptively identify areas of concern and potential noncompliance with SWPPP, SPCC, and environmental guidelines during construction activities.
Assisted with the implementation and continuous improvement of the environmental management system in accordance with ISO 14001 guidelines.

08/2008 - 08/2011
Graduate Research Student, University of South Florida, Tampa, Florida

Collected and analyzed field samples of wastewater effluent to measure dissolved carbon dioxide levels, conductivity, temperature, and pH as part of a thesis research project.
Conducted a comprehensive environmental discharge plume analysis to determine plume delineation and characteristics using discharge plume modeling software in concert with field samples.
Conducted a design feasibility study for a hypothetical contaminated groundwater remediation by comparing advanced oxidation, activated carbon filtration, and air-stripping treatment methods for the treatment of chlorinated organic compounds.

APTIM
150 Boush Street, Suite 701
Norfolk, Virginia 23510
Tel: +1 757 640 6200
Fax: +1 225 952 3058

November 20, 2018

Dustin Capps
150 Boush Street
Suite 701
Norfolk, VA 23510

Ref: N62470-16-D-9004 CTO JU01

Subj: Project QC Appointment Letter
Non-Time Critical Removal Action, Site 21 – Sludge Drying Beds
Naval Air Station Patuxent River
St. Mary's County, Maryland

Dear Mr. Capps,

This letter will serve as your appointment as the Project Quality Control Manager on the referenced project and will also clarify your duties and authority in this position. In this position, you will be authorized to use available resources to satisfy all applicable requirements of the Program and task order Quality Control Plans.

This authorization specifically gives you the authority to direct removal and replacement or correction of nonconforming materials or work and stop work authority when continuation would be unsafe to personnel, harmful to the environment, or result in a significant degradation of quality.

You will be expected to work closely with the Project Manager and other project personnel, but you will not be directly responsible to anyone but me for resolution of quality issues when working in the capacity of Project Quality Control Manager.

If you have any questions, please contact me at 757.640.6956 or William.deane@aptim.com.
Sincerely,

William L. Deane, Jr., P.E.
Deputy Program Manger
NAVFAC RAC Program

APTIM Federal Services, LLC
Please Reply To: William L. Deane, Jr., P.E.
Phone: 757 640 6956 office
E-Mail Address: william.deane@aptim.com
WLD/SG

EXHIBIT III-1

OUTSIDE ORGANIZATION/SUBCONTRACTOR LIST
APTIM Federal Services LLC
Phase I RE108 Area Hotspot Treatment System
Bethpage, New York
Contract Task Order No. 5347

COMPANY NAME AND ADDRESS	DESCRIPTION OF SERVICES PROVIDED
TBD	Heavy Equipment Rental
TBD	Utility Survey and Markout
Microbac Laboratories, Inc. - Marietta, Ohio	Analytical Laboratory
TBD	Horizontal Drilling
TBD	Pipeline Testing

EXHIBIT IV-1 - Submittal Register

Contract Task Order No. 5347	**APTIM Project No. 500689**	**Revision No. 00**
Contract No. N62470-16-D-9004	**Project Title: Phase I RE108 Area Hotspot Treatment System**	**APTIM Federal Services LLC**

							Contractor Action			Approving Authority					
Spec. Sect.	SD Number and Submittal Description	Spec Paragraph Number	Approving Authority	Other Reviewers	Transmittal Control No.	Planned Submittal Date	Action Code	Date of Action	Date Forwarded to App. Auth/ from Contr	Date Forward to Other Reviewer	Date Rcvd from Other Reviewer	Action Code	Date of Action	Date Rcvd from App Auth	Remarks
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
	SD-01 Preconstruction		G												
	Work Plan		G												
	Accident Prevention Plan		G												
	Project Quality Control Plan		G												
	Waste Management Plan		G												
	Traffic Control Plan		G												
	HDPE Pipe		G												
	Class 3 Sand Bedding		G												
	Fill Material		G												
	SD-04 Samples														
	Disposal Samples		G												
	SD-06 Test Reports														
	Daily logs and checklists														
	Test Reports														
	SD-07 Certificates														
	Surveyor License														
	Lab Accreditation														
	Well Driller License and Certification														
	SD-11 Closeout Submittals														
	Contractor's Closure Report														
	QC Meeting Minutes														
	Test Results Summary Report														
	Daily Contractor Production Reports														
	Daily QC Reports														
	Rework Items List														
	Documentation Photos														
	Boring/Abandonment Logs														
	Analytical Reports														
	Utility Use Reports														

Notes:

Approved By:

G: Government

Blank: QC Manager

Reference; QMP-16.2 Submittal Management Process

ACTION CODES

A: Approved

AN: Approved as Noted

NR: Not Reviewed

RR: Disapproved; Revise and Resubmit

EXHIBIT IV-2

LIST OF PERSONNEL AUTHORIZED TO REVIEW AND CERTIFY SUBMITTALS APTIM Federal Services LLC Phase I RE108 Area Hotspot Treatment System Bethpage, New York Contract Task Order No. 5347		
	SUBMITTAL TYPE:	AUTHORIZED PERSONNEL:
Work Plan Submittals	Preconstruction	Project Manager
Work Plan or Construction	All Types	Project QC Manager, QC Program Manager, and Project Manager

(1) Note: Submittals requiring Government approval - QC Manager shall perform the final review and certification.
Submittals requiring Contractor approval - QC Manager shall perform the final review and approval.

EXHIBIT V-1

TESTING PLAN AND LOG
APTIM Federal Services LLC
Phase I RE108 Area Hotspot Treatment System
Bethpage, New York
Contract Task Order No. 5347

CONTRACT NUMBER	PROJECT TITLE: Phase I RE108 Area Hotspot Treatment System	
N62470-16-D-9004	LOCATION: Bethpage, New York	

WORK PLAN SECTION AND PARAGRAPH NUMBER	ITEM OF WORK	TEST REQUIRED	ACCREDITED/ APPROVED LAB		SAMPLED BY	TESTED BY	LOCATION OF TEST		DATE COMPLETED	DATE FORWARDED TO CONTR. OFF.	REMARKS
			YES	NO			ON SITE	OFF SITE			
WP 6.2	Conveyance Piping Installation	VOCs (EPA 8260C), SVOCs (EPA 8270C), Metals									A representative sample of Class 3 bedding sand will be collected from the supplier to confirm clean fill is placed in the trench
WP 6.2	Conveyance Piping Installation	Leak Testing									Hydrostatic testing will be conducted on the carrier piping in accordance with ASTM F2164
WP 10.4	Waste Characterization	Ignitability, corrosivity, reactivity, toxicity and others as required.									APTIM will comply with applicable state and federal criteria associated with IDW management and disposal.

EXHIBIT VII-1

REWORK ITEMS LIST
APTIM Federal Services LLC
Phase I RE108 Area Hotspot Treatment System
Bethpage, New York
Contract Task Order No. 5347

Contract No. N62470-16-D-9004

Phase I RE108 Area Hotspot Treatment System

Location: Beth Page, NY

NUMBER	DATE IDENTIFIED	DESCRIPTION	CONTRACT REQUIREMENT (Spec. Section and Par. No., Drawing No. and Detail No., etc.)	ACTION TAKEN BY QC MANAGER	RESOLUTION	DATE COMPLETED

EXHIBIT IX-1

QUALITY CONTROL INSPECTION PLAN
APTIM Federal Services LLC
Phase I RE108 Area Hotspot Treatment System
Bethpage, New York
Contract Task Order No. 5347

Specification/ Work Plan Section	Definable Feature of Work	Subtasks	Quality Objectives to be Verified	Control Check Verification					
				Date	Preparatory Phase Checklist/Report No.	Date	Initial Phase Checklist/Report No.		Follow-up Phase Checklist/Report No.
WP 5.3	**Mobilization**	Mobilization	*Verify that access agreements are in place with all property owners, including local resident, TOB, and LIRR, prior to mobilization.						
			*Verify movement of equipment, materials, and field personnel to the project site.						
			*Orientation and training of field personnel.						
WP 5.4	**Site Preparation**	Temporary Construction Facilities, Material Handling and Storage Areas	*Verify temporary facilities, material handling, and storage areas located as agreed upon at pre-construction meeting.						
			*Ensure staged Class 3 bedding sand and other construction materials are covered.						
			*Ensure equipment fueling area is supplied with secondary containment and spill kit.						
		Erosion and Sediment Control Measures	*Verify E&S controls installed in accordance with the environmental protection plan						
		Clearing Activities	*Verify trees and vegetation have been removed to an adequate distance to allow for safe equipment movement within and around the excavation area.						
		Photographic Documentation	*Ensure photographs are taken during each feature of work.						
			*Sort electronic photographs and maintain project photo log.						
		Utility Survey	*Verify completion of utility survey and markout.						
			*Submit utility survey to FEAD representative.						
			*Verify locations of the utilities; ensure underground utilities that will be impacted by soil removal are protected.						
		Permits	*Verify hot work permit obtained prior to performing any hot work.						
WP 6.1	**Horizontal Drilling**	Horizontal Drilling	*Verify proper horizontal boring installation IAW the Final Remedial Design.						

EXHIBIT IX-1

QUALITY CONTROL INSPECTION PLAN
APTIM Federal Services LLC
Phase I RE108 Area Hotspot Treatment System
Bethpage, New York
Contract Task Order No. 5347

	Trench Excavation	Trenching	*Ensure trenching activities are scheduled and performed to minimize impact to existing utilities and local residents.						
			*Verify use of E&S controls around excavated material, prior to use as backfill in the trenches.						
			*Ensure trenches are covered daily to prevent erosion of the sidewalls, as well as any potential safety hazards.						
WP 6.2	**Conveyance Piping Installation**	Conveyance Piping Installation	*Verify use of proper bedding material and compaction prior to and during pipe installation.						
			*Ensure proper piping connections in trenches and vaults before backfilling with excavated material.						
		Leak Testing	*Verify piping is tested IAW Final Remedial Design.						
	Sampling	Sample Collection	*Collect samples IAW Exhibit V-1.						
WP 6.3	**Backfilling and Site Restoration**	Common Fill	*Verify excavation is backfilled to within 6 inches of final grade.						
		Topsoil	*Ensure placement of 6-inch top soil layer to support vegetative growth.						
		Seeding	*Ensure all disturbed areas will be revegetated with permanent vegetation, in accordance with state and local seeding requirements.						
		Asphalt Paving	*Restore to match pre-existing conditions and grade.						
		Site Restoration	*Verify approval to remove E&S controls.						
			*Ensure removal of all E&S controls.						
WP 6.4	**Demobilization**	Demobilize Personnel and Equipment	*Verify proper equipment decontamination.						
			*Verify completion of site cleanup, removal of temporary facilities, materials, debris, and equipment off site.						
			*Final Inspection and acceptance of final site conditions.						

EXHIBIT X-1

PERSONNEL MATRIX CB&I Federal Services LLC Phase I RE108 Area Hotspot Treatment System Bethpage, New York Contract Task Order No. 5347			
SPECIFICATION SECTION	SUBMITTALS TO BE REVIEWED BY:	THREE PHASE TO BE PERFORMED BY:	TESTING TO BE VERIFIED BY:
All Sections	Project QC Manager (1), QC Program Manager, or Project Manager	Project QC Manager	Project QC Manager

(1) Note: Submittals requiring Government approval - Site QC Manager shall perform the final review and certification.
Submittals requiring Contractor approval - Site QC Manager shall perform the final review and approval.

Appendix C
Construction Design Drawings and Specifications

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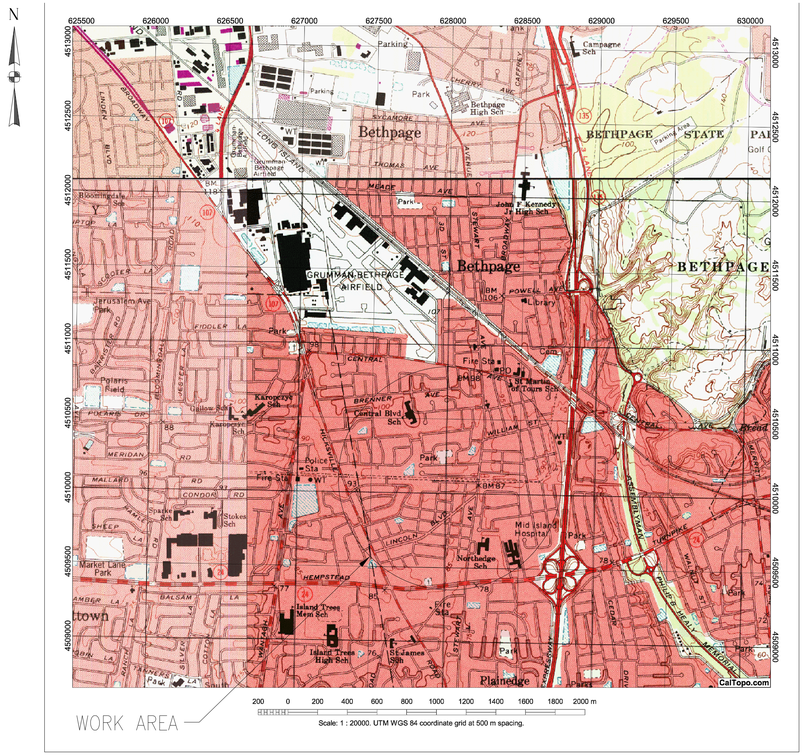

NWIRP BETHPAGE VICINITY MAP

0 1,600 3,200

SCALE IN FEET

30% DESIGN DRAWINGS

PHASE 1 – RE108 AREA HOTSPOT TREATMENT SYSTEM INTERIM CONVEYANCE SYSTEM

BETHPAGE, NEW YORK

CONTRACT N62472-16-D-9008
CONTRACT TASK ORDER WE24

DRAWING INDEX

T-1	TITLE SHEET
C-1	RW4 GENERAL PIPING LAYOUT
C-2	RW4 AREA LAYOUT
C-3	MARTIN ROAD AREA LAYOUT
C-4	ALBERGO COURT AREA LAYOUT
C-5	MOTOR LANE AREA LAYOUT
C-6	RECHARGE BASIN #495 AREA LAYOUT
C-7	GWTS AREA LAYOUT
C-8	RW4 VAULT AND CONNECTION DETAILS
C-9	TRENCHING DESIGN DETAILS
E-1	ELECTRICAL DESIGN DETAILS
E-2	RW4 CONTROL ARCHITECTURE
P-1	GWTS PROCESS FLOW DIAGRAM
P-2	PROCESS & INSTRUMENTATION DIAGRAM FOR RW4

REV	DESCRIPTION	PREP BY	DATE	APPRVD
0	30% DESIGN 1ST DRAFT	BD	08/14/17	DB

ORIG: DR: CH: INC:
SUBMITTED BY: (TERM MEMBER) (TITLE) (DATE)
NORTHDIV DM: HD: PD: PPE: DR:
OFFICER IN CHARGE DATE
APPROVED

NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NWIRP WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK
PHASE 1 – RE108 AREA HOTSPOT TREATMENT SYSTEM
INTERIM CONVEYANCE SYSTEM
TITLE SHEET
APPROVED DATE
FOR COMMANDER, NAVFAC MID-ATLANTIC

SEAL AREA

THIS DRAWING PRODUCED ON AUTOCAD
DO NOT REVISE MANUALLY

SAT TO DATE

CODE I.D. NO. 80091
SCALE : AS SHOWN
SPEC. NO.
CONSTRN. CONTR. NO. N62472-99-D-0032
NAVFAC DRAWING NO.
SHEET OF
SIZE: D
DIS. SH. NO. T-1

LEGEND:

(tax lot line symbol)	=	TAX LOT LINE
(fence symbol)	=	GW38 AREA GWTS CHAIN-LINK FENCE
(dashed line symbol)	=	EXISTING 8-INCH HDPE PIPE
(solid line symbol)	=	NEW 8-INCH HDPE PIPE
RW4	=	RECOVERY WELL
	=	MONITORING WELL

GRAPHIC SCALE

160 0 80 160 320 640

THIS DRAWING PRODUCED ON AUTOCAD
DO NOT REVISE MANUALLY

REV	DESCRIPTION	PREP BY	DATE	APPRVD
0	30% DESIGN 1ST DRAFT	BD	08/14/17	DB

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK

PHASE 1 – RE108 AREA HOTSPOT TREATMENT SYSTEM
INTERIM CONVEYANCE SYSTEM

RW4 PIPING LAYOUT

APPROVED DATE FOR COMMANDER, NAVFAC MID-ATLANTIC

SEAL AREA

SAT TO DATE

CODE I.D. NO. 80091
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SPEC. NO.
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NAVFAC DRAWING NO.
SHEET OF
SIZE: D
DIS. SH. NO. C-1

AVOCA AVE

AVOCA AVE

MACK PL

HICKSVILLE CT

ROUTE 107 HICKSVILLE ROAD

RW4

1.5-FOOT WIDE TRENCH FOR NEW ELECTRICAL SERVICE

ABOVEGROUND ELECTRICAL ENCLOSURE

LEAK DETECTION ACCESS POINT (TYP.)

3-FOOT WIDE TRENCH WITH 8-INCH HDPE PIPE

EXISTING LATTICE TOWER FOR 138 KV OVERHEAD TRANSMISSION LINES (TYP.)

EXISTING POLE FOR 138 KV OVERHEAD TRANSMISSION LINES (TYP.

ELECTRICAL POLE LBD 6470 (EXISTING)

OVERHEAD ELECTRICAL LINE

ELECTRICAL POLE WITH METER AND TRANSFORMER

TOWN OF HEMPSTEAD
TOWN OF OYSTER BAY

MATCH LINE - SEE DRAWING C-3

LEGEND:

	=	ROADS
	=	POTENTIAL LIMIT OF PIPING ROUTING
	=	TOWN LINE
	=	TAX LOT LINE
	=	EXISTING 8-INCH HDPE PIPE
	=	8-INCH HDPE PIPE WITHIN 12-INCH HDPE SECONDARY CONTAINMENT
	=	EXTENT OF TRENCH
	=	UNDERGROUND ELECTRICAL CONDUIT
DH DH	=	EXISTING ELECTRICAL OVERHEAD (APPROXIMATE LOCATION)
E E	=	EXISTING HIGH VOLTAGE ELECTRICAL UNDERGROUND (SUSPECTED LOCATION)
G G	=	EXISTING GAS UNDERGROUND (APPROXIMATE LOCATION)
S S	=	EXISTING SANITARY SEWER (APPROXIMATE LOCATION)
	=	EXISTING FENCE/CHAIN-LINK FENCE (APPROXIMATE LOCATION)
	=	EXISTING ELECTRICAL MANHOLE (APPROXIMATE LOCATION)
	=	EXISTING SANITARY SEWER MANHOLE (APPROXIMATE LOCATION)
RW-4	=	RECOVERY WELL

NOTE
ROADS, TOWN LINES, UTILITY CORRIDORS, RIGHT OF WAYS, TAX LOT LINES, AND VARIOUS UTILITIES SHOWN ON THIS DRAWING ARE APPROXIMATE AND BASED ON AVAILABLE AERIAL IMAGING SUCH AS GOOGLE EARTH AND GOOGLE MAPS. FINAL CONSTRUCTION DRAWINGS WILL BE BASED ON SURVEY INFORMATION AND RECORD DEEDS.

GRAPHIC SCALE
30 0 15 30 60 120

REV	DESCRIPTION	PREP BY	DATE	APPRVD
0	30% DESIGN 1ST DRAFT	BD	08/14/17	DB
	FINAL RECORD DRAWING			

DSGN: DR: CHK:
SUPV: CH ENG:
SUBMITTED BY: (TITLE) (DATE)
(FIRM NAMES)
NORTHDIV HD:
DIM: HD:
FPC: DR:
OFFICER IN CHARGE DATE
APPROVED

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK
PHASE 1 - RE108 AREA HOTSPOT TREATMENT SYSTEM
INTERIM CONVEYANCE SYSTEM
RW4 AREA LAYOUT
DATE
APPROVED
FOR COMMANDER, NAVFAC MID-ATLANTIC

NAVAL FACILITIES ENGINEERING COMMAND
MID-ATLANTIC

SEAL AREA

SAT TO DATE

CODE I.D. NO. 80091
SCALE : AS SHOWN
SPEC. NO.
CONSTRN. CONTR. NO. N62472-99-D-0032
NAVFAC DRAWING NO.
SHEET OF
SIZE: D
DIS. SH. NO. C-2

LEGEND:

- ROADS
- POTENTIAL LIMIT OF PIPING ROUTING
- TOWN LINE
- TAX LOT LINE
- EXISTING 8-INCH HDPE PIPE
- 8-INCH HDPE PIPE WITHIN 12-INCH HDPE SECONDARY CONTAINMENT
- EXTENT OF TRENCH
- UNDERGROUND ELECTRICAL CONDUIT
- EXISTING ELECTRICAL OVERHEAD (APPROXIMATE LOCATION)
- EXISTING HIGH VOLTAGE ELECTRICAL UNDERGROUND (SUSPECTED LOCATION)
- EXISTING GAS UNDERGROUND (APPROXIMATE LOCATION)
- EXISTING SANITARY SEWER (APPROXIMATE LOCATION)
- EXISTING FENCE/CHAIN-LINK FENCE (APPROXIMATE LOCATION)
- EXISTING ELECTRICAL MANHOLE (APPROXIMATE LOCATION)
- EXISTING SANITARY SEWER MANHOLE (APPROXIMATE LOCATION)
- RW-4 = RECOVERY WELL

NOTE

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GRAPHIC SCALE

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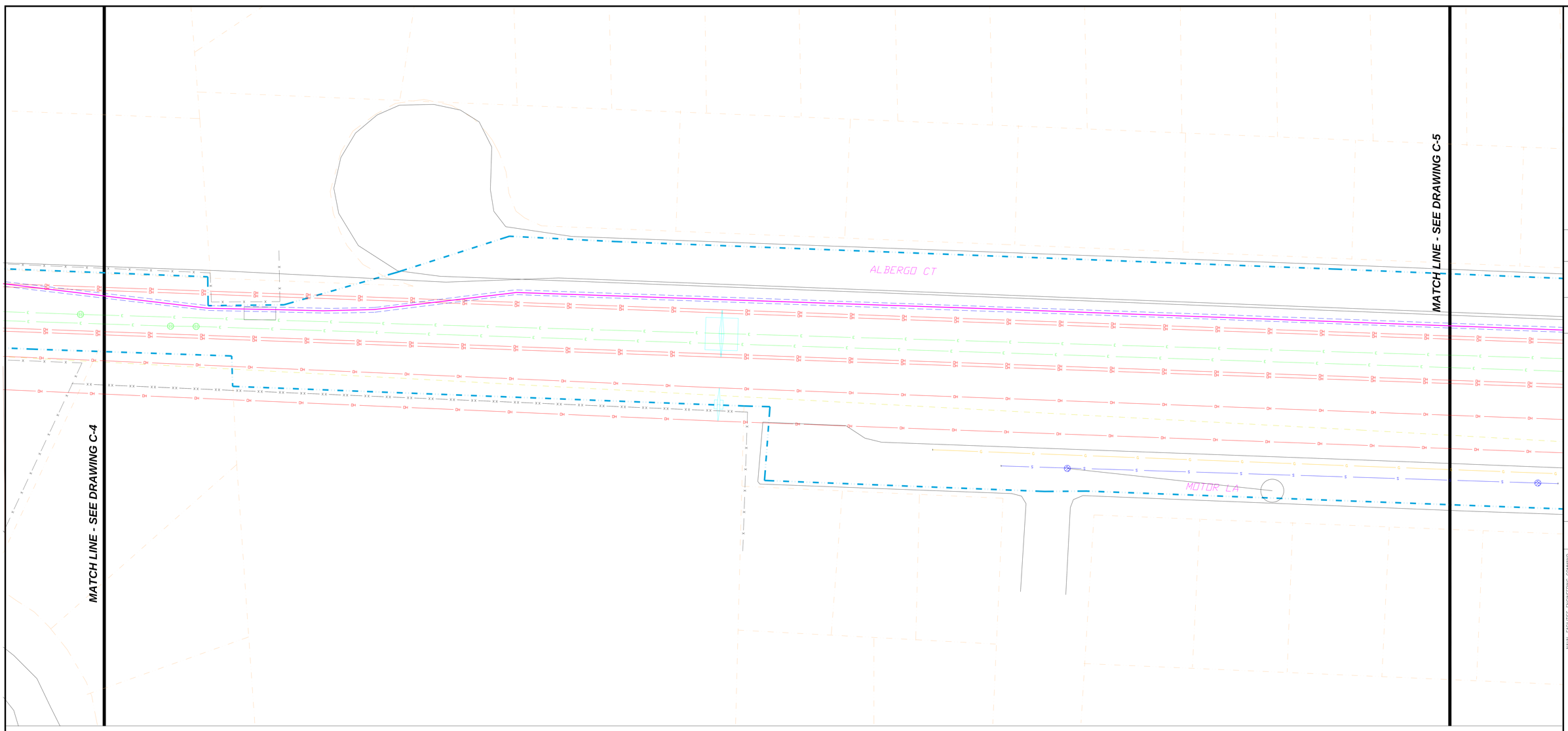
DSGN: DR: CHK:
SUPV: CH ENG:
SUBMITTED BY: (FIRM MEMBER) (TITLE) (DATE)
NORTHDIV DM: FPE: HD: HD: DIR:
OFFICER IN CHARGE
APPROVED DATE

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK
PHASE 1 - RE108 AREA HOTSPOT TREATMENT SYSTEM
INTERIM CONVEYANCE SYSTEM
MARTIN ROAD AREA LAYOUT
APPROVED DATE FOR COMMANDER, NAVFAC MID-ATLANTIC

SEAL AREA

SAT TO DATE
CODE I.D. NO. 80091
SCALE : AS SHOWN
SPEC. NO.
CONSTRN. CONTR. NO. N62472-99-D-0032
NAVFAC DRAWING NO.
SHEET OF
SIZE: D DIS. SH. NO. C-3



LEGEND:

- = ROADS
- = POTENTIAL LIMIT OF PIPING ROUTING
- = TOWN LINE
- = TAX LOT LINE
- = EXISTING 8-INCH HDPE PIPE
- = 8-INCH HDPE PIPE WITHIN 12-INCH HDPE SECONDARY CONTAINMENT
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- DH DH = EXISTING ELECTRICAL OVERHEAD (APPROXIMATE LOCATION)
- E E = EXISTING HIGH VOLTAGE ELECTRICAL UNDERGROUND (SUSPECTED LOCATION)
- G G = EXISTING GAS UNDERGROUND (APPROXIMATE LOCATION)
- S S = EXISTING SANITARY SEWER (APPROXIMATE LOCATION)
- = EXISTING FENCE/CHAIN-LINK FENCE (APPROXIMATE LOCATION)
- = EXISTING ELECTRICAL MANHOLE (APPROXIMATE LOCATION)
- = EXISTING SANITARY SEWER MANHOLE (APPROXIMATE LOCATION)
- RW-4 = RECOVERY WELL

NOTE
ROADS, TOWN LINES, UTILITY CORRIDORS, RIGHT OF WAYS, TAX LOT LINES, AND VARIOUS UTILITIES SHOWN ON THIS DRAWING ARE APPROXIMATE AND BASED ON AVAILABLE AERIAL IMAGING SUCH AS GOOGLE EARTH AND GOOGLE MAPS. FINAL CONSTRUCTION DRAWINGS WILL BE BASED ON SURVEY INFORMATION AND RECORD DEEDS.

GRAPHIC SCALE
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REV	DESCRIPTION	PREP BY	DATE	APPRVD
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DSGN: DR: CHK:
SUPV: CH ENG:
SUBMITTED BY: (TITLE) (DATE)
(TITLE NUMBER)
NORTHDIV
DIR:
FPC:
OFFICER IN CHARGE
APPROVED DATE

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK
PHASE 1 - RE108 AREA HOTSPOT TREATMENT SYSTEM
INTERIM CONVEYANCE SYSTEM
ALBERGO COURT AREA LAYOUT
APPROVED DATE
FOR COMMANDER, NAVFAC MID-ATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND

SEAL AREA

SAT TO DATE

CODE I.D. NO. 80091
SCALE : AS SHOWN
SPEC. NO.
CONSTRN. CONTR. NO. N62472-99-D-0032
NAVFAC DRAWING NO.
SHEET OF
SIZE: D
DIS. SH. NO. C-4

MATCH LINE - SEE DRAWING C-5

MATCH LINE - SEE DRAWING C-6

ALBERGO CT

MOTOR LA

STEWART

ARTHUR AVE

STEWART AVE

HORIZONTAL BORING TO CROSS STEWART AVENUE

APPROXIMATELY 150'

NOTE
MULTIPLE UNDERGROUND UTILITIES EXIST WITHIN STEWART AVENUE CORRIDOR

COUNTY RECHARGE BASIN #495 CHAIN-LINK FENCE

LEGEND:

- = ROADS
- = POTENTIAL LIMIT OF PIPING ROUTING
- = TOWN LINE
- = TAX LOT LINE
- = EXISTING 8-INCH HDPE PIPE
- = 8-INCH HDPE PIPE WITHIN 12-INCH HDPE SECONDARY CONTAINMENT
- = EXTENT OF TRENCH
- = UNDERGROUND ELECTRICAL CONDUIT
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- = EXISTING HIGH VOLTAGE ELECTRICAL UNDERGROUND (SUSPECTED LOCATION)
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- RW-4 = RECOVERY WELL

NOTE
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GRAPHIC SCALE
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DSGN: DR: CHK:
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SUBMITTED BY: (TITLE) (DATE)
(FIRM NUMBER)
NORTHDIV HD:
DIM: HD:
FPC: DR:
OFFICER IN CHARGE DATE
APPROVED

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK
PHASE 1 - RE108 AREA HOTSPOT TREATMENT SYSTEM
INTERIM CONVEYANCE SYSTEM
MOTOR LANE AREA LAYOUT
FOR COMMANDER, NAVFAC MID-ATLANTIC
DATE
APPROVED

SEAL AREA

SAT TO DATE

CODE I.D. NO. 80091
SCALE : AS SHOWN
SPEC. NO.
CONSTRN. CONTR. NO. N62472-99-D-0032
NAVFAC DRAWING NO.

SHEET OF
SIZE: D
DIS. SH. NO. C-5

LEGEND:

- = ROADS
- = POTENTIAL LIMIT OF PIPING ROUTING
- = TOWN LINE
- = TAX LOT LINE
- = EXISTING 8-INCH HDPE PIPE
- = 8-INCH HDPE PIPE WITHIN 12-INCH HDPE SECONDARY CONTAINMENT
- = EXTENT OF TRENCH
- = UNDERGROUND ELECTRICAL CONDUIT
- = EXISTING ELECTRICAL OVERHEAD (APPROXIMATE LOCATION)
- = EXISTING HIGH VOLTAGE ELECTRICAL UNDERGROUND (SUSPECTED LOCATION)
- = EXISTING GAS UNDERGROUND (APPROXIMATE LOCATION)
- = EXISTING SANITARY SEWER (APPROXIMATE LOCATION)
- = EXISTING FENCE/CHAIN-LINK FENCE (APPROXIMATE LOCATION)
- = EXISTING ELECTRICAL MANHOLE (APPROXIMATE LOCATION)
- = EXISTING SANITARY SEWER MANHOLE (APPROXIMATE LOCATION)
- RW-4 = RECOVERY WELL

NOTE

ROADS, TOWN LINES, UTILITY CORRIDORS, RIGHT OF WAYS, TAX LOT LINES, AND VARIOUS UTILITIES SHOWN ON THIS DRAWING ARE APPROXIMATE AND BASED ON AVAILABLE AERIAL IMAGING SUCH AS GOOGLE EARTH AND GOOGLE MAPS. FINAL CONSTRUCTION DRAWINGS WILL BE BASED ON SURVEY INFORMATION AND RECORD DEEDS.

GRAPHIC SCALE

30 0 15 30 60 120

REV	DESCRIPTION	PREP BY	DATE	APPRVD
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DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING COMMAND

NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK

PHASE 1 - RE108 AREA HOTSPOT TREATMENT SYSTEM
INTERIM CONVEYANCE SYSTEM

RECHARGE BASIN #495 AREA LAYOUT

SEAL AREA

SAT TO DATE

CODE I.D. NO. 80091

SCALE : AS SHOWN

SPEC. NO.

CONSTRN. CONTR. NO. N62472-99-D-0032

NAVFAC DRAWING NO.

SHEET OF

SIZE: D DIS. SH. NO. C-6

MATCH LINE - SEE DRAWING C-7

RW3

E
C-9

BROADWAY

SEAFORD OYSTER BAY EXPY

GM-38 GWTS

LEGEND:

- = ROADS
- = POTENTIAL LIMIT OF PIPING ROUTING
- = TOWN LINE
- = TAX LOT LINE
- = EXISTING 8-INCH HDPE PIPE
- = 8-INCH HDPE PIPE WITHIN 12-INCH HDPE SECONDARY CONTAINMENT
- = EXTENT OF TRENCH
- = UNDERGROUND ELECTRICAL CONDUIT
- = EXISTING ELECTRICAL OVERHEAD (APPROXIMATE LOCATION)
- = EXISTING HIGH VOLTAGE ELECTRICAL UNDERGROUND (SUSPECTED LOCATION)
- = EXISTING GAS UNDERGROUND (APPROXIMATE LOCATION)
- = EXISTING SANITARY SEWER (APPROXIMATE LOCATION)
- = EXISTING FENCE/CHAIN-LINK FENCE (APPROXIMATE LOCATION)
- = EXISTING ELECTRICAL MANHOLE (APPROXIMATE LOCATION)
- = EXISTING SANITARY SEWER MANHOLE (APPROXIMATE LOCATION)
- RW-4 = RECOVERY WELL

NOTE
ROADS, TOWN LINES, UTILITY CORRIDORS, RIGHT OF WAYS, TAX LOT LINES, AND VARIOUS UTILITIES SHOWN ON THIS DRAWING ARE APPROXIMATE AND BASED ON AVAILABLE AERIAL IMAGING SUCH AS GOOGLE EARTH AND GOOGLE MAPS. FINAL CONSTRUCTION DRAWINGS WILL BE BASED ON SURVEY INFORMATION AND RECORD DEEDS.

GRAPHIC SCALE
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REV	DESCRIPTION	PREP BY	DATE	APPRVD
0	30% DESIGN 1ST DRAFT	BD	08/14/17	DB

DR: CHK:
SUPV: CH ENG:
SUBMITTED BY: (TITLE) (DATE)
(FIRM MEMBER)
NORTHDIV HQ:
DM: HQ:
FPC: DIR:
OFFICER IN CHARGE DATE
APPROVED

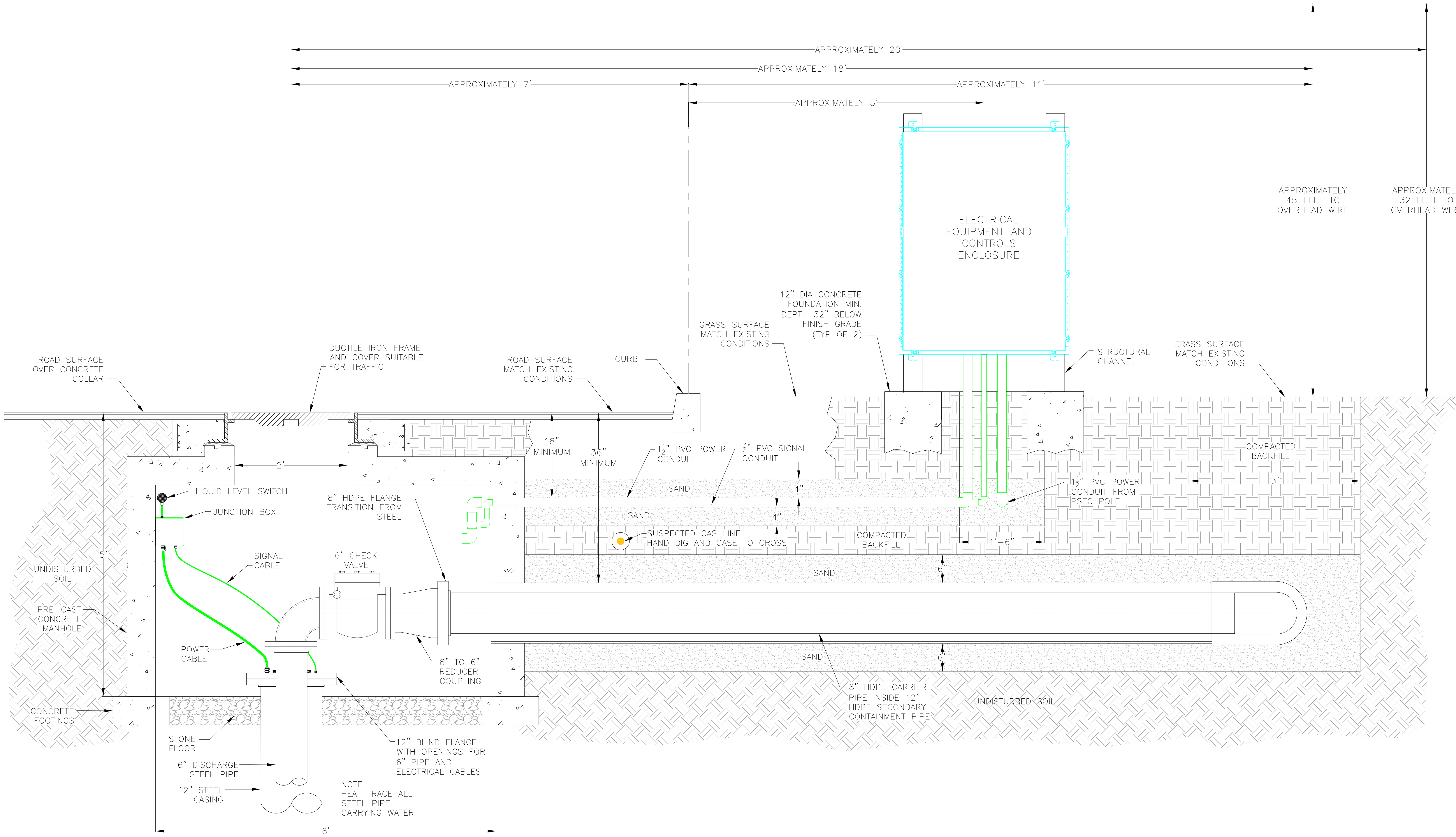
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK
PHASE 1 - RE108 AREA HOTSPOT TREATMENT SYSTEM
INTERIM CONVEYANCE SYSTEM
GWTS AREA LAYOUT
SEAL AREA
DATE
APPROVED
FOR COMMANDER, NAVFAC MID-ATLANTIC

NAVAL FACILITIES ENGINEERING COMMAND
NAVFAC MID-ATLANTIC

SAT TO DATE

CODE I.D. NO. 80091
SCALE : AS SHOWN
SPEC. NO.
CONSTRN. CONTR. NO. N62472-99-D-0032
NAVFAC DRAWING NO.

SHEET OF
SIZE: D
DIS. SH. NO. C-7



SECTION A / C-2 RW4 VAULT AND CONNECTION DETAILS

SCALE: 1" = 12'

GRAPHIC SCALE

12 0 6 12 24 48

REV	DESCRIPTION	PREP BY	DATE	APPRVD
0	30% DESIGN 1ST DRAFT	BD	08/14/17	DB

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NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK
PHASE 1 - RE108 AREA HOTSPOT TREATMENT SYSTEM
INTERIM CONVEYANCE SYSTEM
RW4 VAULT AND CONNECTION DETAILS

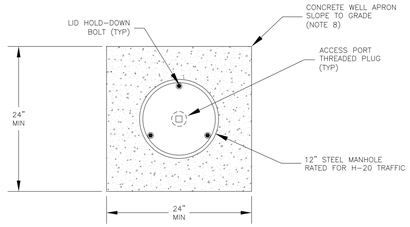
DSGN. DR. CHK. SUPV. CH. ENG. SUBMITTED BY: (FIRM MEMBER) (TITLE) (DATE) NORTHDIV OM MD FPE RD OFFICER IN CHARGE DIR. APPROVED DATE

FOR COMMANDER, NAVFAC MID-ATLANTIC
APPROVED DATE

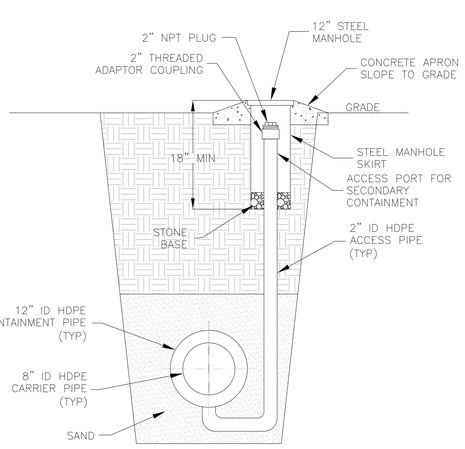
SEAL AREA

SAT TO DATE

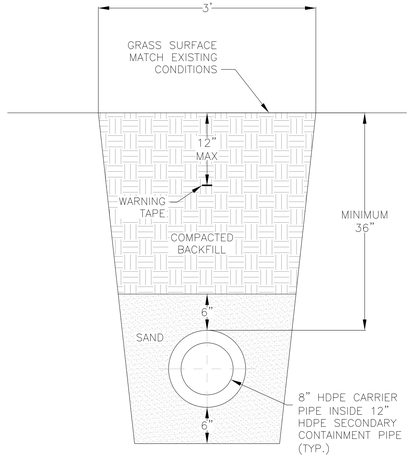
CODE I.D. NO. 80091
SCALE : AS SHOWN
SPEC. NO.
CONSTRN. CONTR. NO. N62472-99-D-0032
NAVFAC DRAWING NO.
SHEET OF
SIZE: D
DIS. SH. NO. C-8



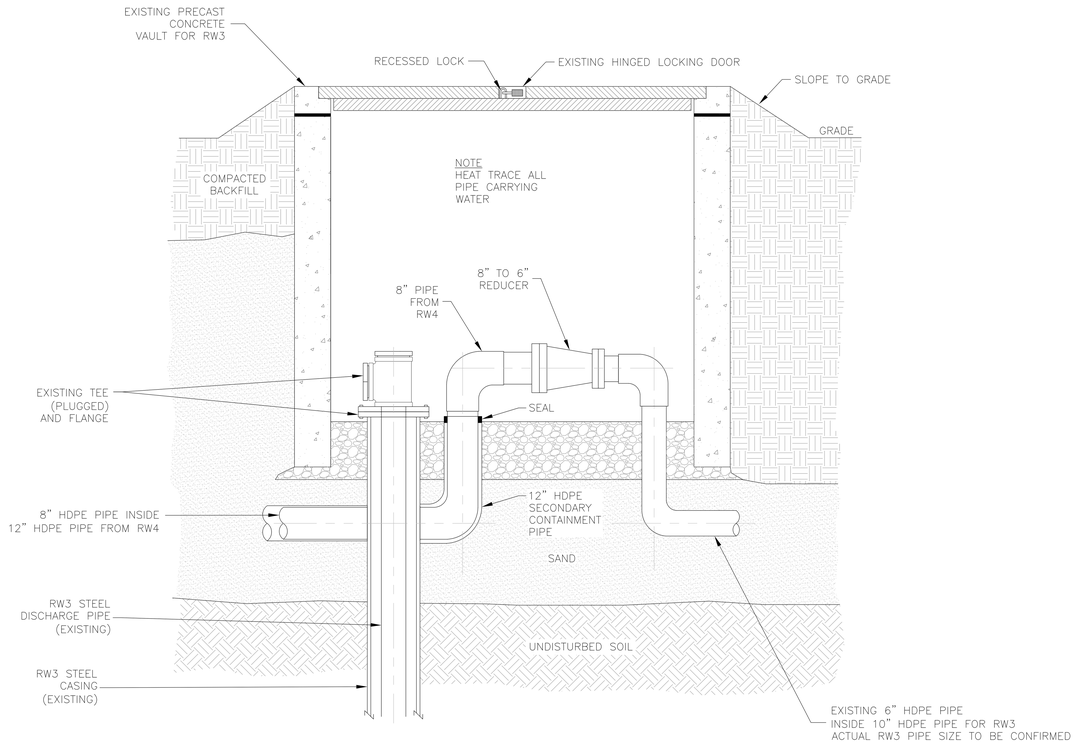
DETAIL D / 1" = 12" / C-4 — LEAK DETECTION ACCESS PORT PLAN VIEW (TYP)



DETAIL B / 1" = 12" / C-2 — LEAK DETECTION ACCESS PORT SECTION VIEW (TYP.)



DETAIL C / 1" = 12" / C-3 — LEAK DETECTION ACCESS PORT SECTION VIEW (TYP.)



DETAIL E / (N.T.S) / C-6 — RW3 CONNECTION SECTION VIEW

GRAPHIC SCALE

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REV	DESCRIPTION	PREP BY	DATE	APPRVD
0	30% DESIGN 1ST DRAFT	BD	08/14/17	DB

DESIGN: DR: CHK:
SUBMITTED BY: CH. ENG: (DATE)
(FIRM MEMBER) (TITLE)
NORTHDIV DM: HD: HD:
FPC: DIR:
OFFICER IN CHARGE DATE
APPROVED

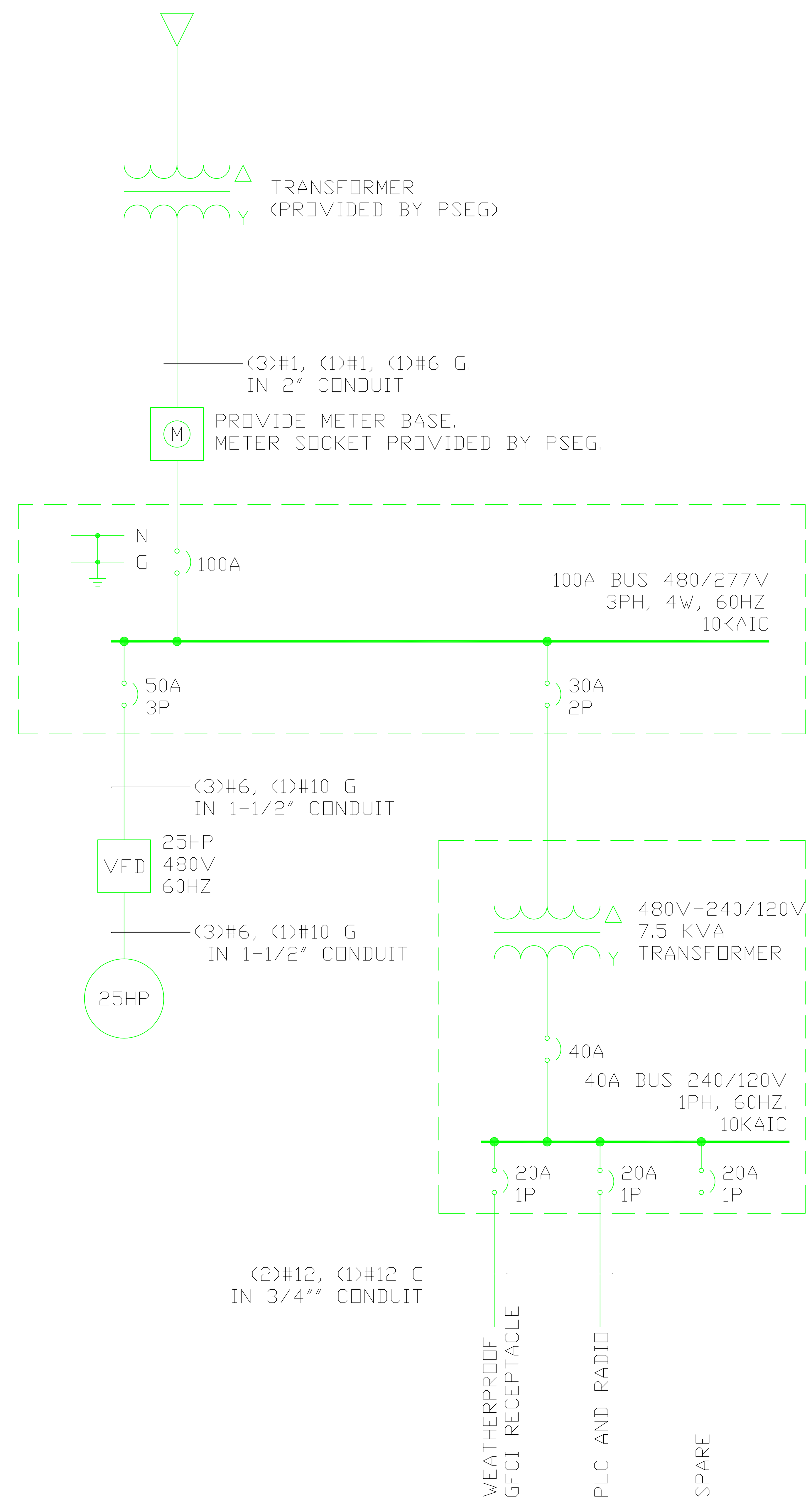
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK
RE108 AREA HOTSPOT TREATMENT SYSTEM
PHASE 1 – INTERIM CONVEYANCE SYSTEM
TRENCHING DESIGN DETAILS
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
FOR COMMANDER, NAVFAC MID-ATLANTIC
APPROVED DATE

SEAL AREA

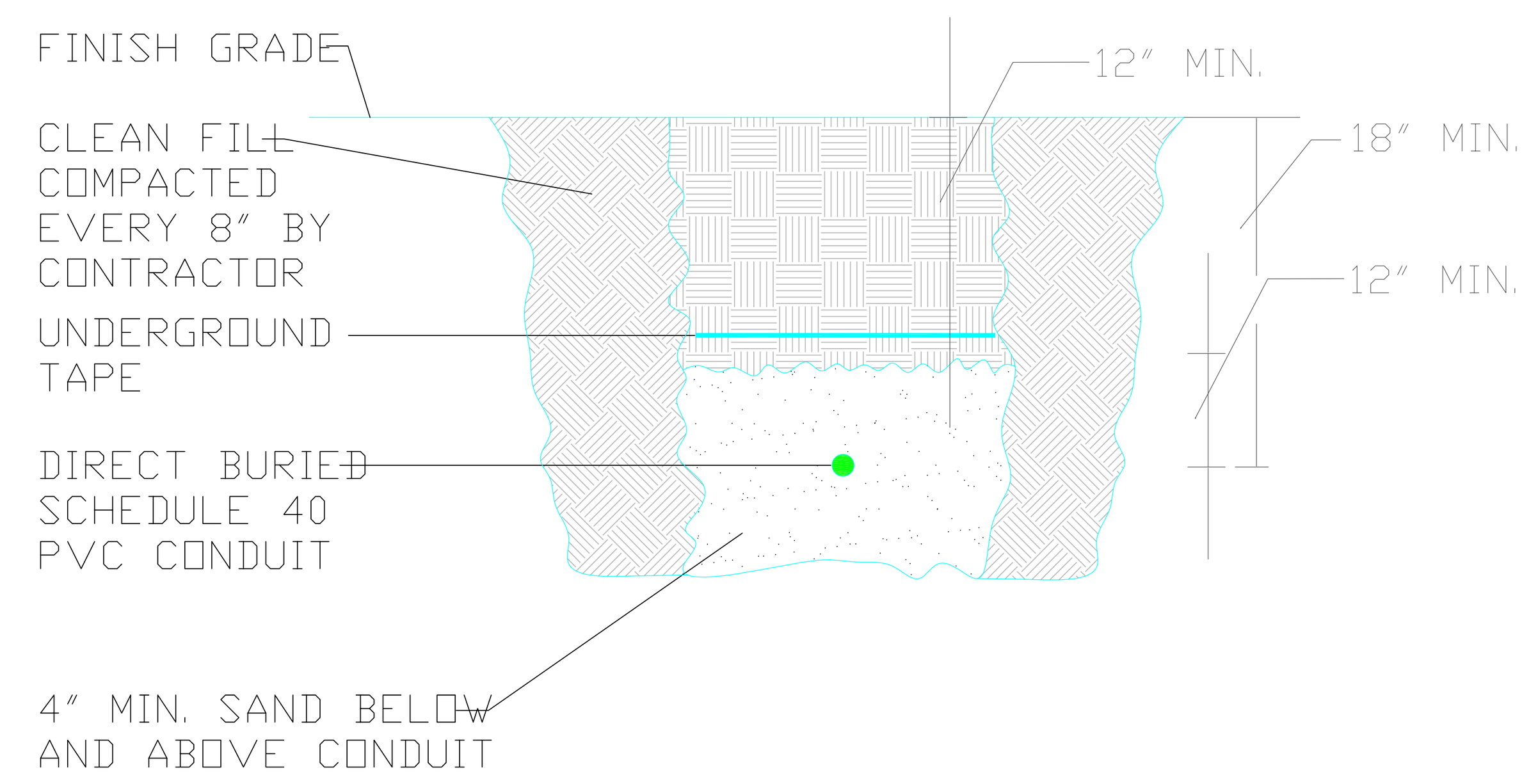
SAT TO DATE

CODE I.D. NO. 80091
SCALE : AS SHOWN
SPEC. NO.
CONSTRN. CONTR. NO. N62472-99-D-0032
NAVFAC DRAWING NO.

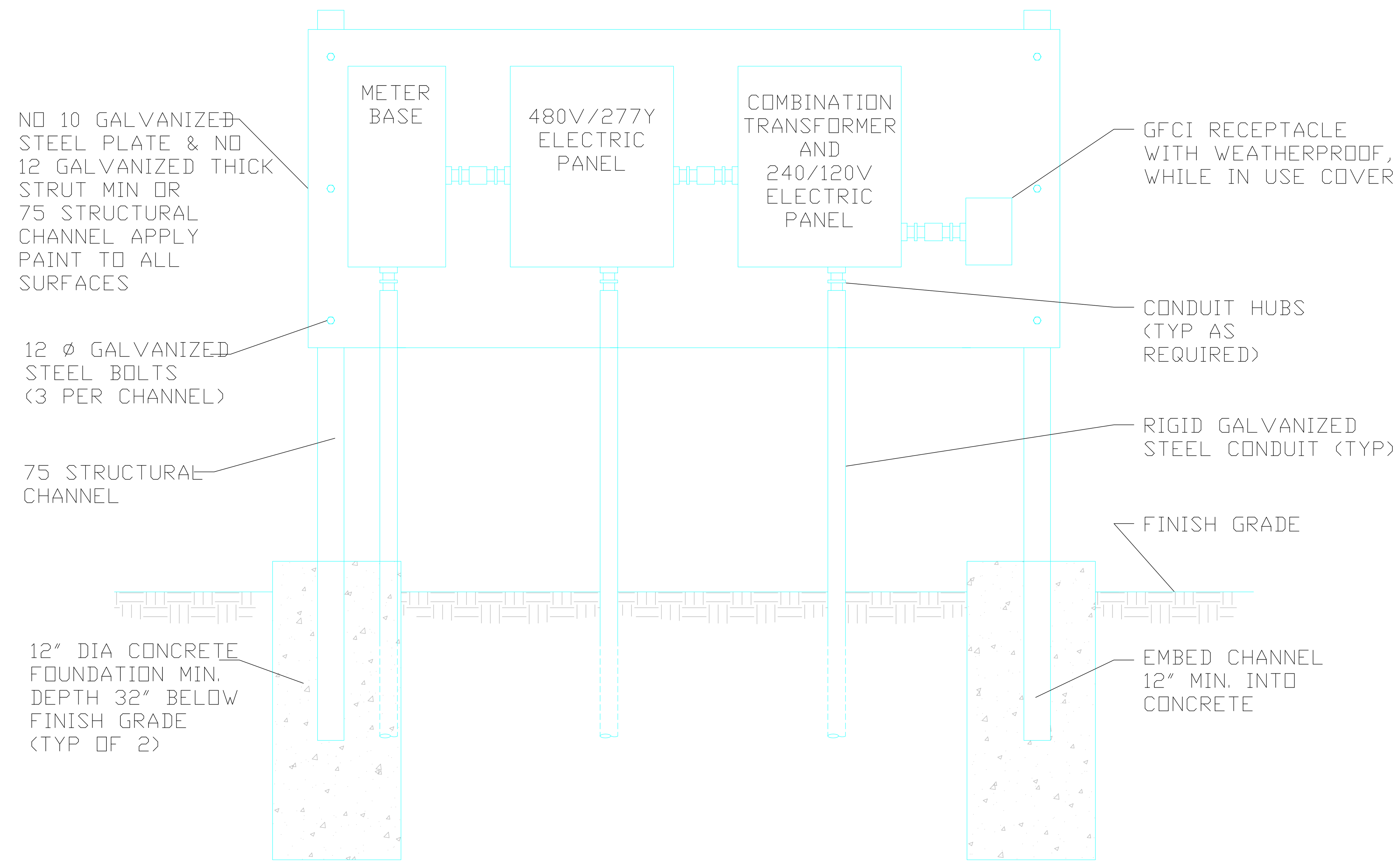
SHEET OF
SIZE: D
DIS. SH. NO. C-9



1 One-Line Diagram
N.T.S.



2 Low-Voltage Direct Bury Conduit
N.T.S.



3 Electrical Equipment Exterior Mounting
N.T.S.

REV	DESCRIPTION	PREP BY	DATE	APPRVD
0	30% DESIGN 1ST DRAFT	DS	08/14/17	GK

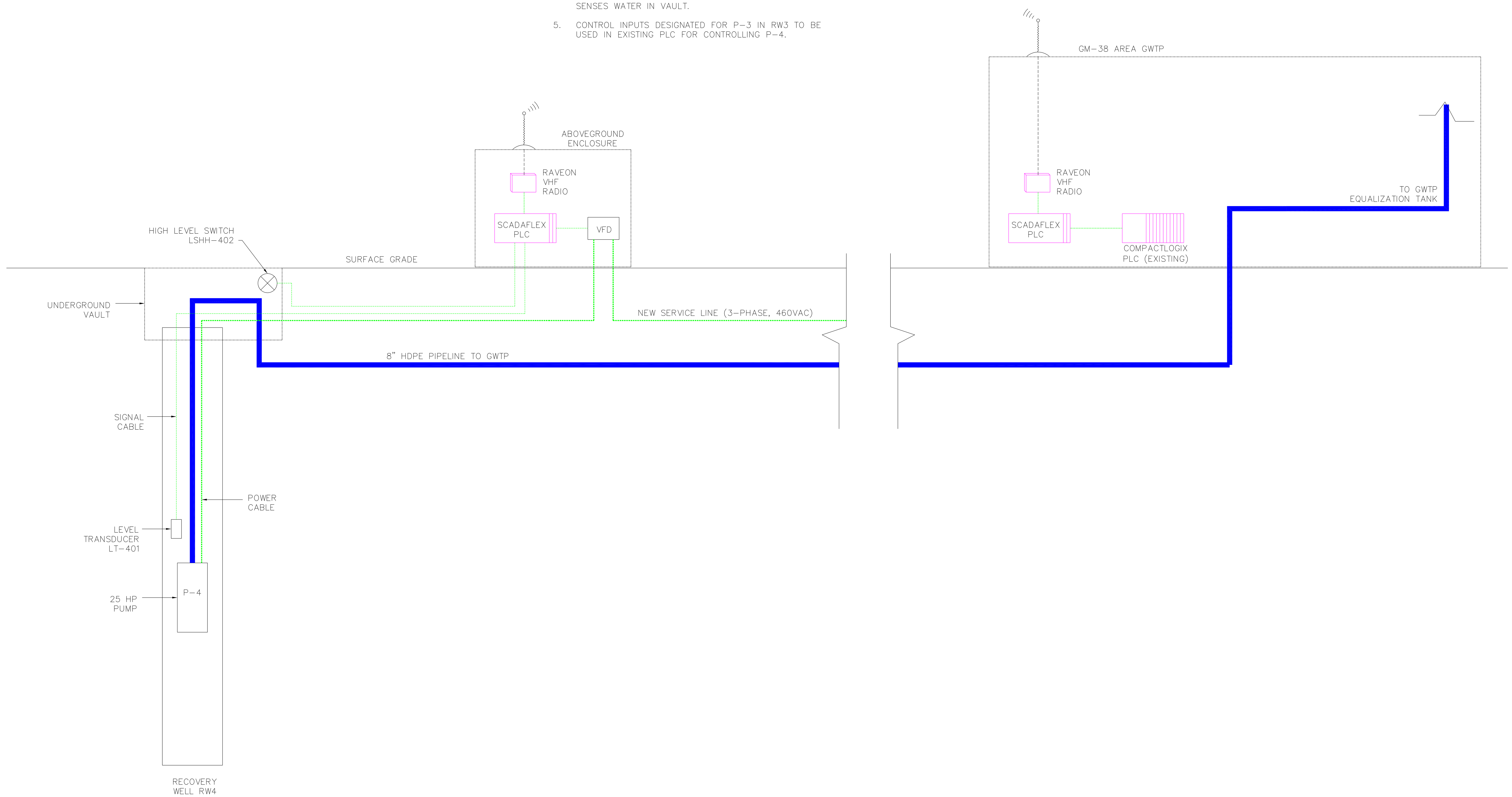
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK
PHASE 1 - RE108 AREA HOTSPOT TREATMENT SYSTEM
INTERIM CONVEYANCE SYSTEM
ELECTRICAL DESIGN DETAILS

SEAL AREA

CODE I.D. NO. 80091
SCALE : AS SHOWN
SPEC. NO.
CONSTRN. CONTR. NO. N62472-99-D-0032
NAVFAC DRAWING NO.
SHEET OF
SIZE: D
DIS. SH. NO. E-1

RW4 CONTROL SYSTEM FUNCTIONALITY

1. RW4 CONTROL LOGIC IS BASED ON EXISTING GWTS PLC INPUTS SIMILAR TO RECOVERY WELL RW1. THESE INCLUDE ALL SAFETY INTERLOCKS AND P-4 MOTOR SPEED ADJUSTMENT.
2. DISPLAY RW4 LIQUID LEVEL AND PUMP P-4 STATUS INFORMATION ON EXISTING GWTS PLC SIMILAR TO EXISTING PUMP RW1.
3. RW4 WILL BE SHUT DOWN IF COMMUNICATION IS LOST FOR MORE THAN CERTAIN PRE-SET TIME INTERVAL (FOR EXAMPLE 5 MINUTES).
4. RW4 WILL BE SHUT DOWN IF LEVEL SWITCH LSHH-401 SENSES WATER IN VAULT.
5. CONTROL INPUTS DESIGNATED FOR P-3 IN RW3 TO BE USED IN EXISTING PLC FOR CONTROLLING P-4.



LEGEND:

- POWER
- SIGNAL
- DATA
- GROUNDWATER

REV	DESCRIPTION	PREP BY	DATE	APPRVD
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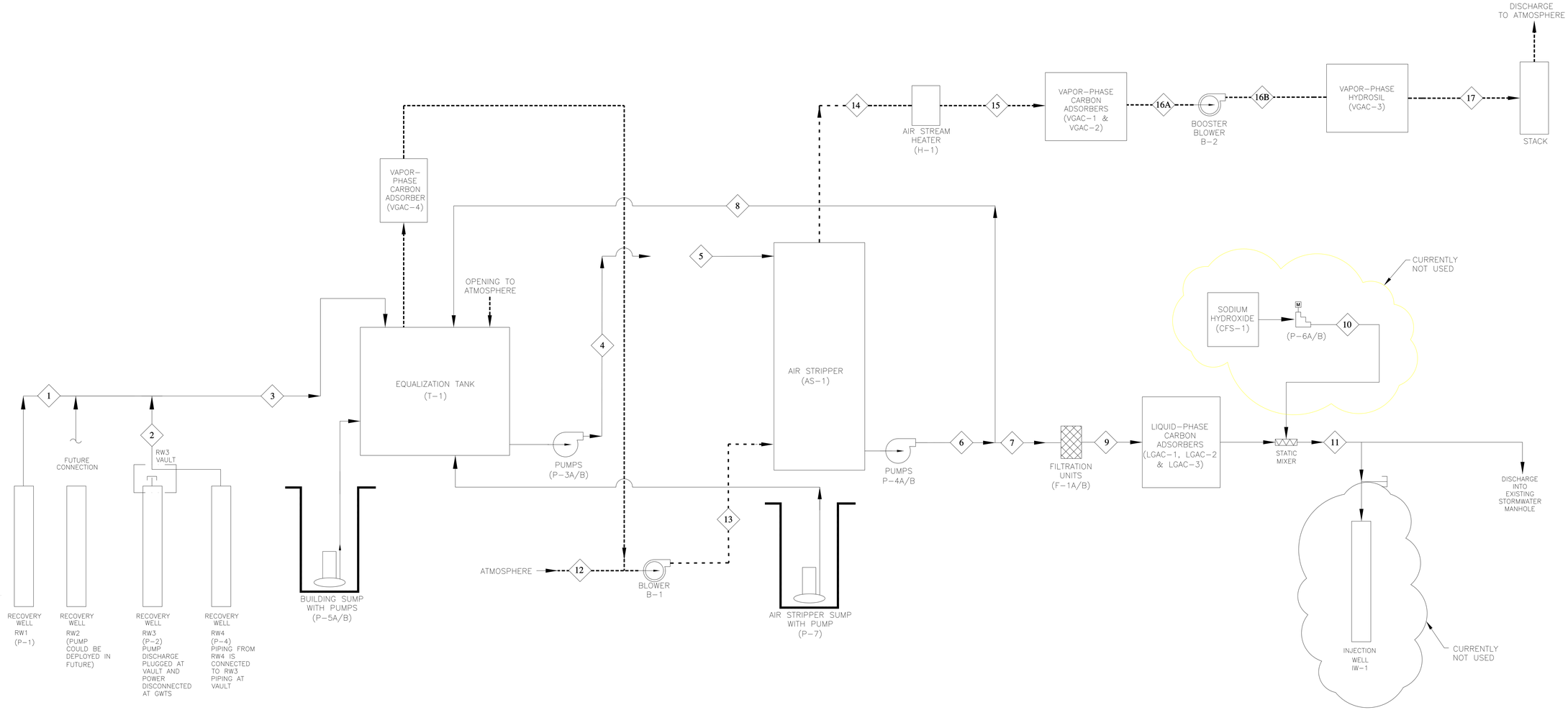
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT — BETHPAGE, NEW YORK
PHASE 1 - RE108 AREA HOTSPOT TREATMENT SYSTEM INTERIM CONVEYANCE SYSTEM
RW4 CONTROL ARCHITECTURE

FOR COMMANDER, NAVFAC MID-ATLANTIC
DATE
APPROVED

SEAL AREA

SAT TO — DATE
CODE I.D. NO. 80091
SCALE : AS SHOWN
SPEC. NO.
CONSTRN. CONTR. NO. N62472-99-D-0032
NAVFAC DRAWING NO.
SHEET — OF
SIZE: D
DIS. SH. NO. E-2



REV	DESCRIPTION	PREP BY	DATE	APPRVD
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DSGN: DR: CHK: CH. ENG: SUBMITTED BY: (TEAM MEMBER) (TITLE) (DATE) NORTHDIV DM: HD: HD: FPC: DIR: OFFICER IN CHARGE DATE APPROVED

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK
PHASE 1 - RE108 AREA HOTSPOT TREATMENT SYSTEM
INTERIM CONVEYANCE SYSTEM
GWTS PROCESS FLOW DIAGRAM
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
FOR COMMANDER, NAVFAC MID-ATLANTIC
APPROVED DATE

SEAL AREA

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SHEET OF
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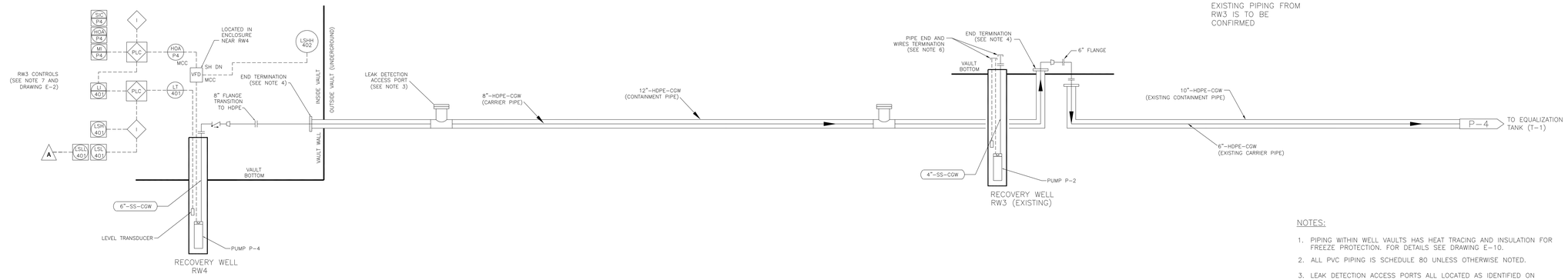
DIS. SH. NO. P-1



NOTE
ACTUAL SIZE OF EXISTING PIPING FROM RW3 IS TO BE CONFIRMED

NOTES:

1. PIPING WITHIN WELL VAULTS HAS HEAT TRACING AND INSULATION FOR FREEZE PROTECTION. FOR DETAILS SEE DRAWING E-10.
2. ALL PVC PIPING IS SCHEDULE 80 UNLESS OTHERWISE NOTED.
3. LEAK DETECTION ACCESS PORTS ALL LOCATED AS IDENTIFIED ON DRAWING C-4. FOR ACCESS PORT CONSTRUCTION DETAILS SEE DRAWING C-10.
4. END TERMINATIONS ARE USED TO SEAL SECONDARY CONTAINMENT PIPING AT THE ENDS OF THE PIPING RUNS.
5. ALL STAINLESS STEEL PIPING IS SCHEDULE 40, 304L.
6. EXISTING DISCHARGE PIPE FROM P-3 IN RW3 VAULT TO BE PLUGGED AT FLANGE AND EXISTING CHECK VALVE REMOVED. EXISTING WIRING TO BE DISCONNECTED AT JUNCTION BOX IN RW3 VAULT.
7. CONTROL INPUTS DESIGNATED FOR P-3 IN RW3 TO BE USED IN PLC FOR CONTROLLING P-4 IN RW4. COMMUNICATION BETWEEN P-4 AND PLC IS VIA RADIO LINK AS SHOWN ON DRAWING E-2.

GENERAL INSTRUMENT SYMBOLS

ONE VARIABLE	TWO VARIABLES	
○	○○	LOCALLY MOUNTED
⊖	⊖⊖	PANEL MOUNTED
⊖ (dashed)	⊖⊖ (dashed)	REAR-OF-PANEL MOUNTED
I		INTERLOCK (FOR LOGIC DESCRIPTION SEE SPEC. 13600)
P		PURGE
PLC		PROGRAMMABLE LOGIC CONTROLLER
LSL		PERSONAL COMPUTER SOFT SWITCH
▭		PERSONAL COMPUTER HUMAN MACHINE INTERFACE
○		PERSONAL COMPUTER
A		ALARM

LINE SYMBOLS

———	PROCESS PIPES OR CHANNELS
— — — HT — — — HT — — — HT —	HEAT TRACE
———	CONNECTION TO PROCESS, MECHANICAL LINK OR INSTRUMENT SUPPLY
// //	PNEUMATIC SIGNAL
- - - - - - - - - - - - - - -	ELECTRIC SIGNAL
X X X	CAPILLARY TUBING (FILLED SYSTEM)
L L L	HYDRAULIC SIGNAL
∿∿∿	ELECTROMAGNETIC OR SONIC SIGNAL NO WIRING OR TUBING
——— 0 ——— 0 ———	DATA HIGHWAY SIGNAL

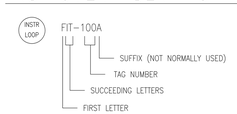
PROCESS LINE ABBREVIATIONS

AIR	AIR, ATMOSPERIC PRESSURE
BW	BACKWASH
CA	COMPRESSED AIR
CF	CHEMICAL FEED
CGW	CONTAMINATED GROUNDWATER
D	DRAIN
EFF	EFFLUENT
EXH	EXHAUST
GW	GROUNDWATER
PW	POTABLE WATER
S	SANITARY
SP	SAMPLE PORT
SS	STORM SEWER
TF	TOTAL FLUIDS
V	VENT
VAP	VAPOR

VALVE AND PIPING SYMBOLS

——⊣	REMOVABLE CAP	⊣⊢ BF	BLIND FLANGE
⋈	GATE VALVE		EXHAUST TO ATMOSPERE (INSIDE)
Z↑	CHECK VALVE		EXHAUST TO ATMOSPERE (OUTSIDE)
NO	NORMALLY OPEN	⊣▷	REDUCER
NC	NORMALLY CLOSED	⊣⊢	FLANGE
M	MOTOR, ELECTRIC		

INSTRUMENT IDENTIFICATION



FUNCTION ABBREVIATIONS

DO	DISSOLVED OXYGEN	OC	OPEN-CLOSE
FC	FAIL CLOSED	OO	ON-OFF (MAINTAINED)
FL	FAIL LOCKED	ORP	OXIDATION REDUCTION POTENTIAL
FO	FAIL OPEN	OSC	OPEN-STOP-CLOSE (MOMENTARY)
HOA	HAND-OFF-AUTOMATIC	SI	MOTOR SPEED INDICATION
I/I	CURRENT-TO-CURRENT	SS	START-STOP (MOMENTARY)
I/P	CURRENT-TO-PNEUMATIC	↑	HIGH SELECT
LCP	LOCAL CONTROL PANEL	↓	LOW SELECT
LEL	LOWER EXPLOSIVE LIMIT	√	SQUARE ROOT
LR	LOCAL-REMOTE	Σ	ADD OR TOTALIZE
MI	MOTOR RUN INDICATION		

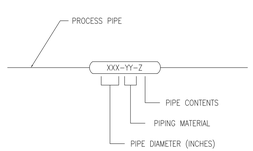
PIPING MATERIAL ABBREVIATIONS

AL	ALUMINUM
CPVC	CHLORINATED POLYVINYL CHLORIDE
CS	CARBON STEEL
COP	COPPER
CMP	CORRUGATED METAL PIPE
CIP	CAST IRON PIPE
DIP	DUCTILE IRON PIPE
FLEX	FLEXIBLE PIPE/DUCT/TUBING
GALV	GALVANIZED STEEL
HDPE	HIGH DENSITY POLYETHYLENE
NEO	NEOPRENE HOSE
PE	POLYETHYLENE
PP	POLYPROPYLENE
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
RUB	RUBBER HOSE
SS	STAINLESS STEEL PIPE/TUBING
TEF	TEFLON TUBING
VCP	VITRIFIED CLAY PIPE

EQUIPMENT SYMBOLS

	SUBMERSIBLE WELL PUMP
	PUMP
	BLOWER
M	METERING PUMP
VFD	VARIABLE FREQUENCY DRIVE
	STATIC MIXER

PROCESS PIPING IDENTIFICATION



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DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK
PHASE 1 – RE108 AREA HOTSPOT TREATMENT SYSTEM
INTERIM CONVEYANCE SYSTEM
RW4 PROCESS AND INSTRUMENTATION DIAGRAM
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
FOR COMMANDER
DATE
APPROVED

SEAL AREA

SAT TO DATE

CODE I.D. NO. 80091
SCALE : AS SHOWN
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CONSTRN. CONTR. NO. N62472-99-D-0032
NAVFAC DRAWING NO.

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SIZE: D
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Appendix D
Response to Comments

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Comment Resolution Form
Draft Work Plan
NWIRP Bethpage - Phase I RE108 Area Hotspot Treatment System

Document: Draft Work Plan, Phase I RE108 Area Hotspot Treatment System , Former NWIRP Bethpage, Bethpage, New York	**Version / Revision**: Draft	**Document Receipt Date**: 17 July 2018 **Review Comments Due By**:
Review Comments By: Jason Pelton PG, NYSDEC, Division of Environmental Remediation, Remedial Bureau D	**Phone**: 510.402.9478 **Email**: jason.pelton@dec.ny.gov	**Note:**

Comment #	Section	Page	Comment	Response to Comment
1	General		Please plan on a resident notification program using an approach that is similar to what is completed for the drilling of vertical profile borings prior to mobilizing equipment to the site.	Notification of residents will be performed prior to mobilization; notifications will be coordinated with the Navy and drilling contractor.
2	General		The Work Plan needs a section indicating that air monitoring for VOCs and particulates will be performed at designated work areas in accordance with a community air monitoring program (CAMP) per DER-10.	A discussion of air monitoring has been added to the Work Plan as Section 9.4. VOCs are not included as part of the air monitoring program in Section 9.4 because excavation of the trench will be in clean soils.
3	4.6	4-0	The text states **"**TCP describes the procedures to conduct intrusive site activities during the remedial construction to limit interference with site activities in surrounding buildings.". The text should be revised to clarify the meaning of "limit interference with site activities in surrounding buildings".	The sentence has been revised as follows: "The TCP describes the procedures to conduct intrusive site activities during the remedial construction to limit the impact of site activities on local residents." Additionally, the Traffic Control Plan will be revised to include provisions for Nassau County roadways. Note: New text has been added to Section 5.4.1 discussing installation of a curb cut/construction entrance on Hicksville Road.
4	5.2.1	5-1	In the 2nd bullet, please add "and NYSDOH" after NYSDEC.	The New York State Department of Health has been added to the second bullet.
5	6.3.3	6-3	Does this connection to the RW-3 conveyance piping eliminate possible continued use of RW-3?	RW3 will be 'mothballed' because the treatment system is not designed for simultaneous operation of both RW3 and RW4. The pump and piping will remain in place and available for future use but the piping will be capped. If and when RW3 is needed in the future, the piping connections to the GM38 treatment system would need to be restored. Note: The discussion of the pipe connection at RW3 in Section 6.3.3 has been revised based on updated information shown in the *30% Design Drawings – Revision 1*, prepared by Tetra Tech.
6	6.3.4	6-3	How often will hydrostatic tests be performed as the conveyance piping is being installed?	Section 6.3.4 has been revised to indicate that testing will be conducted at the completion of pipe installation.
7	6.3.4	6-3	How will water from the hydrostatic tests be managed?	Clean water will be used for testing. This water will be processed through the GM38 treatment system at the completion of the test.

Comment Resolution Form
Draft Work Plan
NWIRP Bethpage - Phase I RE108 Area Hotspot Treatment System

Document: Draft Work Plan, Phase I RE108 Area Hotspot Treatment System , Former NWIRP Bethpage, Bethpage, New York	**Version / Revision**: Draft	**Document Receipt Date**: 17 July 2018 **Review Comments Due By**:
Review Comments By: Jason Pelton PG, NYSDEC, Division of Environmental Remediation, Remedial Bureau D	**Phone**: 510.402.9478 **Email**: jason.pelton@dec.ny.gov	**Note:**

Comment #	Section	Page	Comment	Response to Comment
8	6.3.5	6-4	Has the use of automated leak detection (e.g, installing sensor probes placed in the leak detection access ports) been considered?	In addition to manual access ports, the proposed leak detection system includes automated pressure sensors installed at each end of the conveyance piping to monitor changes in the air pressure in the annular space between the containment and carrier pipes. Additional text regarding the automated pressure sensors has been added to Section 6.3.5.
9	6.3.5	6-4	Does leak detection occur within specific sections of the conveyance piping so that if a failure occurs, the section can be readily identified?	See response to Comment 8.
10	7.4	7-1	Is the July 2018 field mobilization along with the remainder of the schedule still accurate?	Section 7.4 has been revised with information from the latest schedule update.
11	8.0	8-1	Please also indicate that the CCR will be completed in accordance with NYSDEC DER-10 CCR requirements.	The first sentence of the first paragraph has been revised to indicate that the CCR will be completed in accordance with NYSDEC DER-10.
12	9.6	9-3	The first sentence in the first paragraph should be revised to state " …. housekeeping policies including neat and orderly…". The third sentence in the second paragraph should be revised to state "Spills will be reported to the NYSDEC (as required) and the Navy RPM as necessary.	The first sentence in the first paragraph has been revised to read: "…housekeeping policies which include neat and orderly…". The third sentence in the second paragraph has been revised as suggested.
13	9.8	9-3	The first sentence should be revised to state "APTIM will notify NYSDEC Spills and the Navy RPM of any oil spills."	The sentence has been revised as suggested.
14	10.2	10-1	The meaning of the second sentence ("Only minimal soil required for characterization will be used for analysis.") should be clarified.	The sentence has been deleted.
15	Appendix A		Site restoration would likely need to extend into spring following the winter months to establish vegetation on the private property and right-of-way areas.	Site restoration activities will include appropriate measures to promote and establish vegetative growth in disturbed areas.

Comment Resolution Form
Draft Work Plan
NWIRP Bethpage - Phase I RE108 Area Hotspot Treatment System

Document: Draft Work Plan, Phase I RE108 Area Hotspot Treatment System , Former NWIRP Bethpage, Bethpage, New York	**Version / Revision**: Draft	**Document Receipt Date**: 17 July 2018 **Review Comments Due By**:
Review Comments By: Jason Pelton PG, NYSDEC, Division of Environmental Remediation, Remedial Bureau D	**Phone**: 510.402.9478 **Email**: jason.pelton@dec.ny.gov	**Note:**

Comment #	Section	Page	Comment	Response to Comment
16	Appendix C		1) Will the revised drawings include profile views? 2) Should the detail (on Drawing C-9) with the C/C-3 reference be revised by deleting "Leak Detection Access Port"? This appears to illustrate typical pipe installation in the trench. 3) The drawings should be revised to clearly indicate that the leak detection access ports will be installed every 500 feet along the conveyance piping as stated in Section 6.3.5. 4) When will the Appendix Construction Drawings and Specifications be submitted for review?	1) The Design Drawings do not include profile views. As-Built final drawings will be provided in the Construction Completion Report which will show the profile of the conveyance piping system. 2) The description for Detail C/C-3 has been corrected to read: 'Trench Section View (Typ.)' 3) Leak detection access ports will be preferentially placed at low points along the pipeline. The discussion of spacing in Section 6.3.5 has been revised to read: "A minimum of nine leak detection access ports will be installed along the conveyance piping. The access ports will be preferentially placed at low points along the pipeline; however, the maximum spacing between ports will not exceed 500-linear feet." 4) *30% Design Drawings – Revision 1*, prepared by Tetra Tech, are included with this submittal.