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DRAFT WORK PLAN FOR PETROLEUM MONITORING AND SUPPLEMENTAL SITE ASSESSMENT AT TRUMBO POINT TANK FARM NAS KEY WEST FL

02/25/2014

AGVIQ ENVIRONMENTAL SERVICES

Work Plan
Petroleum Monitoring and Assessment at Trumbo Point Tank Farm
Naval Air Station Key West
Key West, Florida

Revision No. 00

Contract No. N62470-12-D-7004
Task Order No. JM14

Submitted to:

U.S. Naval Facilities Engineering Command Southeast

Prepared by:

4610 Westgrove Court
Virginia Beach, VA 23455

February 2014

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Prepared/Approved By:

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Client Acceptance:

U.S. Navy Responsible Authority — Date

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Acronyms and Abbreviations

ABB-ES	ABB Environmental Services, Inc.
AFVR	aggressive fluid vapor recovery
AGVIQ	AGVIQ LLC
AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
BEQ	benzo(a)pyrene equivalent
bls	below land surface
BPSS	Bureau of Petroleum Storage Systems
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAR	Contamination Assessment Report
CFR	Code of Federal Regulations
CH2M HILL	CH2M HILL Constructors, Inc.
COC	chemical of concern
CTL	Cleanup Target Level
DBCP	dibromochloropropane
DFOW	definable feature of work
DO	dissolved oxygen
DOT	Department of Transportation
DPT	direct-push technology
DTW	depth to water
EDB	ethylene dibromide
EPA	U.S. Environmental Protection Agency
EPH	extractable petroleum hydrocarbon
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	flame ionization detector
FL-PRO	Florida Petroleum Residual Organic
GCTL	groundwater cleanup target level
GPR	ground penetrating radar
GLYPQC	Groundwater Low Yield/Poor Quality Criteria
HAZCOM	hazard communications
HLA	Harding Lawson Associates
ID	identification
IDW	investigation-derived debris
IRCDQM	Installation Restoration Chemical Data Quality Manual
LDR	Land Disposal Restriction
LIF	laser induced fluorescence
LNAPL	light non-aqueous phase liquid
LY/PQ	Low Yield/Poor Quality

MADEP	Massachusetts Department of Environmental Protection
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
ml	milliliters
MNA	monitored natural attenuation
MS/MSD	matrix spike/matrix spike duplicate
MSDS	Material Safety Data Sheet
MSWC	municipal solid waste compost
MTBE	methyl tert-butyl ether
NADC	Natural Attenuation Default Concentration
NAS	Naval Air Station
NADV 88	North American Vertical Datum of 1988
NAVFAC SE	Naval Facilities Engineering Command, Southeast
NTR	Navy Technical Representative
ORP	oxidation-reduction potential
PAH	polynuclear aromatic hydrocarbon
PM	Project Manager
PMO	Project Management Office
POTW	publicly-owned treatment works
PPE	personal protective equipment
PPRP	Petroleum Product Recovery Program
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
RAP	Remedial Action Plan
RAPA	Remedial Action Plan Addendum
RCRA	Resource Conservation and Recovery Act
RF	radio frequency
RPM	Remedial Project Manager
SAR	Site Assessment Report
SCTLs	Soil Cleanup Target Levels
SOP	Standard Operating Procedure
SOW	Statement of Work
SVOC	semivolatile organic compound
TAT	turnaround time
T&D	transportation and disposal
TarGOST®	Tar-specific Green Optical Screening Tool
TPTF	Trumbo Point Tank Farm
TDS	total dissolved solids
TIC	total inorganic carbon
TPH	total petroleum hydrocarbons
TRPH	Total Recoverable Petroleum Hydrocarbon
UCL95	95 Percent Upper Confidence Limit
UFP-SAP	Uniform Federal Policy-Sampling and Analysis Plan
USACE	U.S. Army Corps of Engineers

USCG	U.S. Coast Guard
UST	underground storage tank
UVOST®	Ultraviolet Optical Screening Tool
VOC	volatile organic compound
VPH	volatile petroleum hydrocarbons

1.0 Introduction

AGVIQ, LLC (AGVIQ) has been requested by the U.S. Naval Facilities Engineering Command Southeast (NAVFAC SE), to perform petroleum monitoring and assessment support at the Trumbo Point Tank Farm (TPTF) at Naval Air Station (NAS) Key West in Key West, Florida. This Work Plan has been prepared in response to NAVFAC SE Statement of Work (SOW) SABS1305 dated July 29, 2013 (received August 1, 2013), and the Small Business Remedial Action Contract No. N62470-12-D-7004. The Task Order (TO) for this project is No. JM14.

This Work Plan for TO No. JM14 includes semiannual petroleum monitoring in groundwater and an additional soil assessment. A background study for arsenic and polycyclic aromatic hydrocarbons (PAHs) in soil will be conducted prior to any further delineation sampling for these chemicals of concern (COCs). Total petroleum hydrocarbons (TPH) speciation will also be conducted in select soil samples where total recoverable petroleum hydrocarbon (TRPH) exceedances were detected in 2011. The initial soil sampling will provide information regarding the need for delineation of the horizontal and vertical extent of COCs. The analytical results of the groundwater and soil sampling will provide data needed to develop the Remedial Action Plan Addendum (RAPA). Soil and groundwater sampling activities conducted as part of this Work Plan will be in accordance with the Uniform Federal Policy-Sampling and Analysis Plan (UFP-SAP) (AGVIQ, 2014).

AGVIQ will procure all labor, materials, equipment necessary to accomplish coordination, reporting, and fieldwork required in this Work Plan.

Specific definable features of work addressed in this Work Plan include:

- Site mobilization and demobilization, including utility locate of all areas where intrusive activities will be performed
- Completion of soil borings and possible installation of monitoring wells
- Soil and groundwater sampling, analysis, free product gauging, and reporting
- Waste management and disposal

Chapter 62-780, Florida Administrative Code (FAC) will be the governing regulations for the performance of the scope of work detailed in this Work Plan.

This Petroleum Monitoring and Assessment Work Plan is organized as follows:

Section 1.0, Introduction, includes the site history, the project objectives, and a basis for the petroleum monitoring and assessment.

Section 2.0, Project Execution Plan, presents the required scope of work (project requirements), including the regulatory framework, the project schedule, detailed descriptions of pre-construction activities, well installations, and reporting requirements.

Section 3.0, Sampling and Analysis Plan (SAP), details sampling procedures that will be followed during execution of the work scope described in Section 2.0. Details of the sampling methodology, sample collection frequency, laboratory analytical methods, and quality assurance/quality control (QA/QC) sampling are discussed. In addition to this work plan, AGVIQ has developed a UFP-SAP (AGVIQ, 2014) which will also be followed. The sampling and analytical test methodology presented in Section 3.0 conforms to the standards promulgated by the Florida Department of Environmental Protection (FDEP) and U.S. Environmental Protection Agency (EPA).

Section 4.0, Quality Control Plan, this section outlines the quality control procedures to complete the definable features of work.

Section 5.0, Waste Management Plan, presents waste management practices that will be maintained during assessment and disposal of purge/decontamination water, and soil cuttings collected during well installation activities. Monitoring well/piezometer groundwater sampling and installation activities are also described.

Section 6.0, Environmental Protection Plan, provides site-specific environmental provisions and procedures that will be implemented to prevent pollution and protect natural resources and the environment during completion of project activities.

Section 7.0, References, lists all works cited in this Work Plan.

The following support documents are presented as appendices to this Work Plan.

- **Appendix A,** Project Schedule
- **Appendix B,** Accident Prevention Plan
- **Appendix C,** Field Forms: Well Boring Log, Well Development Log, Well Construction Diagram, Groundwater Sampling Form, QC Manager Appointment Letter
- **Appendix D,** Project QC Documentation

1.1 Site Description and History

NAS Key West is located approximately 150 miles southwest of Miami, in Monroe County, Florida. NAS Key West, a complex located in several areas of the Lower Florida Keys, encompasses approximately 5,000 acres. The majority of the facility's operations and activities are concentrated on Boca Chica Key and Key West.

During the September 2007 NAS Key West Partnering Meeting in Key West, Florida, the Partnering Team agreed that TPTF would be divided into the United States Coast Guard (USCG) area (West portion) and the area currently owned by the Navy (East portion). The TPTF-Navy area was further divided into the southern portion (planned for unrestricted/residential use), referred to as TPTF-Navy (South), and the northern portion (industrial use), referred to as TPTF-Navy (North), to help support the different uses on the Navy property. The purpose of this Work Plan is to outline the procedures to be used to delineate free product areas, and assess soil and groundwater contamination at TPTF-Navy (South) and TPTF-Navy (North). Figure 1-1 is a site location map and Figure 1-2 shows TPTF-USCG, TPTF-Navy (South), and TPTF-Navy (North).

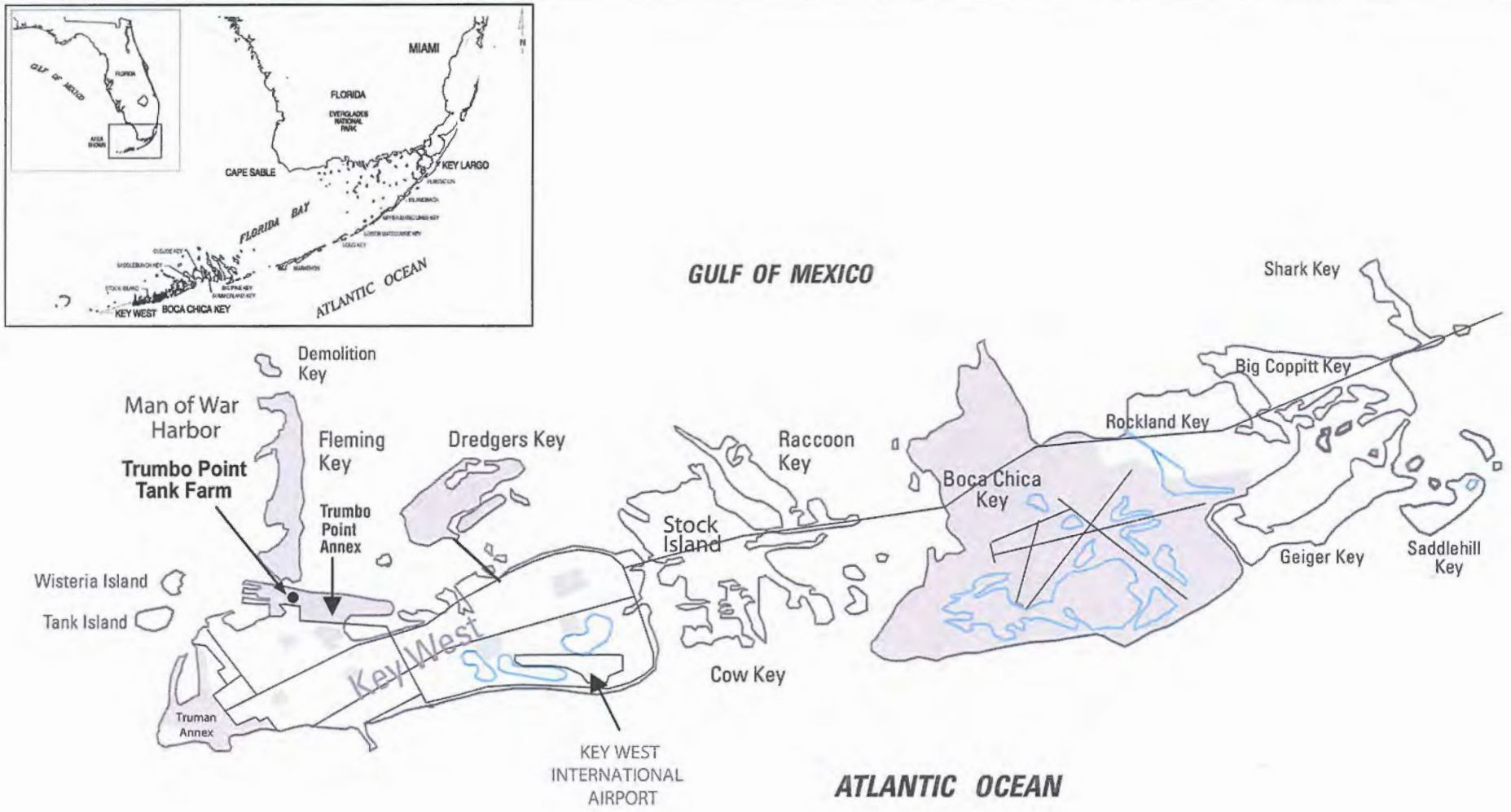

FIGURE 1-1
Site Location Map
Trumbo Point Tank Farm
NAS Key West
Key West, Florida

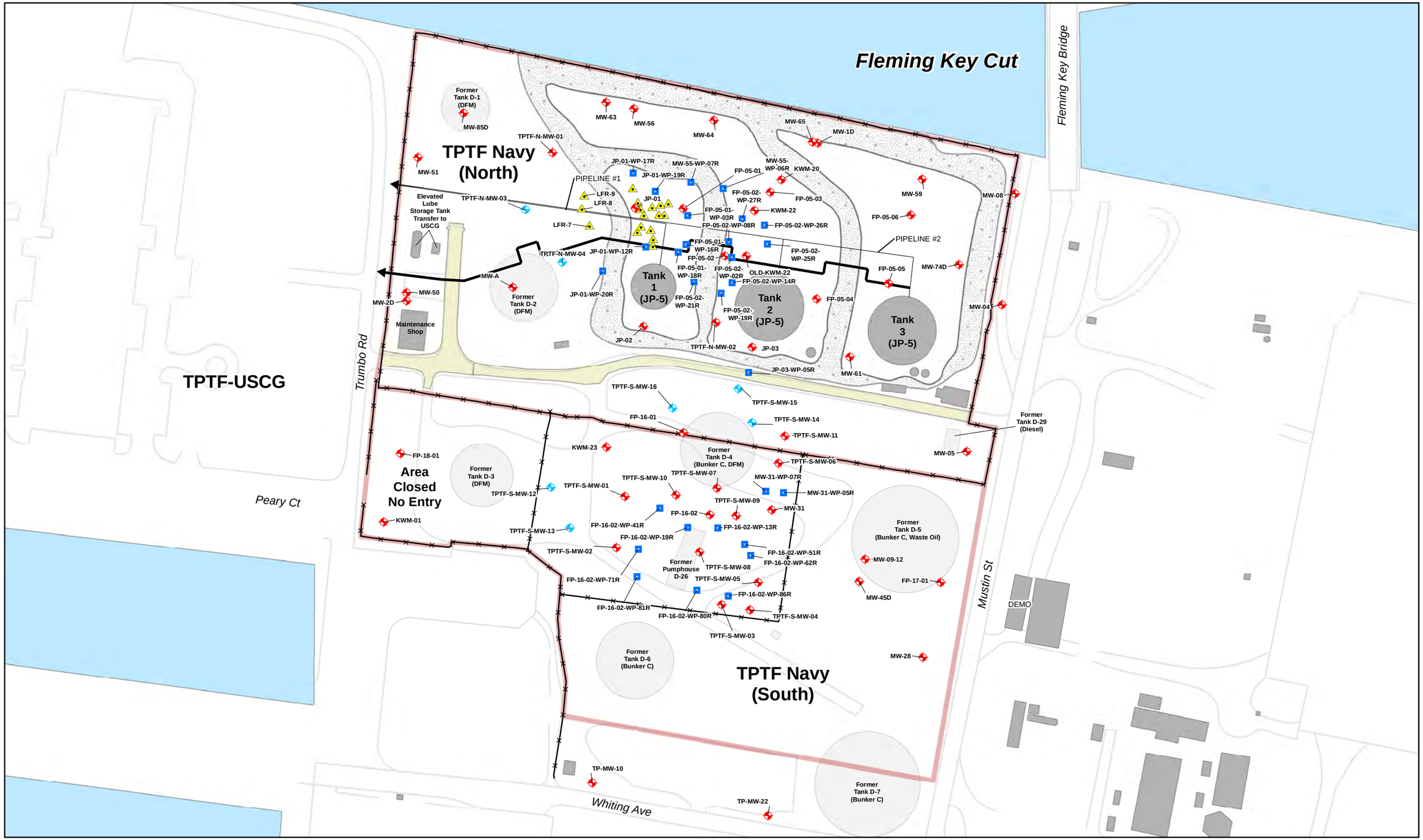

FIGURE 1-2
TPTF-Navy Site Map
Trumbo Point Tank Farm
NAS Key West
Key West, Florida

AGVIQ

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1.1.1 Site Description

TPTF has been used as a fuel storage and distribution point by the Navy since 1942. A concrete seawall, approximately 2 feet thick and 15 to 20 feet below land surface (bls), extends along the north perimeter of the site. Several aboveground storage tanks (ASTs), as well as associated piping and various pump houses used to transport fuel from the ASTs, are located at the TPTF-Navy (North) site. The area within the tank farm has been leased by the Navy to several contractors for the supply and transportation of fuel; the northeastern portion of the tank farm contains three ASTs (Tanks 1, 2, and 3 as shown on Figure 1-2) in a bermed area that is leased by the Key West Pipeline Company. The TPTF-Navy (South) site currently consists of an open, grassy area. Most of the storage systems were demolished (above-grade structures only) by the mid-1990s and the large concrete cut and fill tanks were backfilled and graded, with the sub-grade structures abandoned in-place.

1.1.2 Site History

Based on soil and groundwater contamination identified during several preliminary investigations conducted at TPTF, a Contamination Assessment Report (CAR) was completed in 1996 by ABB Environmental Services, Inc. (ABB-ES). The CAR identified areas of free product across TPTF and recommended continued free product recovery as an interim remedial action and development of a Remedial Action Plan (RAP) for the site. The RAP was completed in 1999 by Harding Lawson Associates (HLA).

The RAP recommended monitored natural attenuation (MNA) for the contamination in groundwater, and identified several areas at TPTF as impacted with petroleum free product that required active remediation. These areas were designated as free product areas. The areas were delineated based on one or more of the following:

- Historical flame ionization detector (FID) readings taken during advancement of soil borings and installation of monitoring wells
- Direct observation of soil samples taken during advancement of soil borings and installation of monitoring wells
- Product measurements by bailer or product-water interface probe in completed monitoring wells

The RAP (HLS, 1999) recommended reducing petroleum contaminant source(s) using multi-phase extraction, passive product removal, and source area excavation. CH2M HILL Constructors, Inc. (CH2M HILL) has been implementing the RAP by (1) performing active free product recovery via aggressive fluid vapor recovery (AFVR) using a vacuum truck attached to impacted wells, (2) conducting passive free product recovery via the installation of petroleum oil traps (i.e., skimmer trap systems) inside impacted wells, (3) using a portable non-aqueous extraction technique free product recovery system, and (4) removing product from wells using disposable bailers.

One of the remedial components in the RAP (HLS, 1999) included the excavation of arsenic in surface soil above the action level of 6.9 milligrams per kilogram (mg/kg). The action level was calculated as two times the mean of five background sample concentrations collected at the site. However, approval of the RAP by FDEP was never confirmed; thus, the action level of 6.9 mg/kg was never officially approved. In 2001 and 2002, a total of

3,130 tons of non-hazardous arsenic contaminated soil and debris was disposed of offsite. The majority of the excavation was from the TPTF-Navy (South), with lesser amounts excavated from the TPTF-Navy (North). The residential soil cleanup target level (SCTL) for arsenic is 2.1 mg/kg (TPTF-Navy [South]) while the current industrial SCTL is 12 mg/kg (TPTF-Navy [South]). Soil remains at the site above the residential cleanup target level at the TPTF-Navy (South) but is below industrial criteria in the TPTF-Navy (North).

The suspected sources of free product at the TPTF-Navy (North) site are former Tanks 1, 2, and 3, and Pipelines 1 and 2. Tank 1 (1,050,000-gallon capacity) and Tank 2 (2,310,000-gallon capacity) contain JP-5 jet fuel, and Tank 3 (2,310,000-gallon capacity) historically contained JP-5, but is not currently in use. Former Tank D-2 historically contained "diesel fuel marine." The tank locations are shown on Figure 1-2.

The suspected source of free product at the TPTF-Navy (South) site is former Tank D-4. Tank D-4 was a 1,134,000-gallon cut-and-fill underground storage tank (UST) that was constructed partially below-grade and partially above-grade, and covered with soil overburden by Eco-Care, Inc. Reportedly, the tank historically had contained "diesel fuel marine and water," "diesel fuel marine and Navy Special," and Bunker C fuel. The tank was demolished in 1996 to 1997. Prior to demolition, the tank was emptied and pressure cleaned/triple rinsed, and the soil overburden and concrete tank were removed to grade. The below-grade portion of the tank was left in place and filled with the concrete fragments from the above-grade tank demolition. The location of former Tank D-4 is shown on Figure 1-2.

A Petroleum Product Recovery Program (PPRP) was implemented at the site in 2003. Following AFVR events conducted as part of the PPRP, product recharge was noted in some monitoring points in the area near the abandoned tank bottom that was left in place during the 1996 to 1997 Tank D-4 demolition. The suspected source of the recharge was product that had pooled under the former Tank D-4 bottom.

In 2008, discussions with the Navy and FDEP resulted in the decision to perform hot spot removal in select areas where free product thickness greater than 2 feet was observed. CH2M HILL developed the Project Execution Plan in April 2009 to outline procedures to be used to perform source area hot spot removal at the TPTF-Navy (South) site (CH2M HILL, 2009). Remedial activities conducted in April 2009 included temporary well abandonment, soil sampling (waste characterization and backfill), soil excavation, free product and contaminated groundwater removal, liquid and solid waste transportation and disposal (T&D), backfill of excavations, removal and disposal of an inactive approximately 1,000-gallon AST, site restoration, and post-interim remedial action product thickness gauging.

Twenty-five 1-inch diameter temporary monitoring points located within the footprint of the proposed excavations were abandoned at the TPTF-Navy (South) site, while a total of four excavations were completed at the former Tank D-4 site. From April 23 through April 29, 2009, CH2M HILL removed 858 tons of petroleum-impacted non-hazardous soil. As part of the source removal activities, free product was recovered from each of the four open excavations. Once the excavation was completed at each location, free product seeped into the excavation, making it available for removal. A total of approximately 1,703 gallons of free product and contaminated groundwater was pumped out of the four open excavations

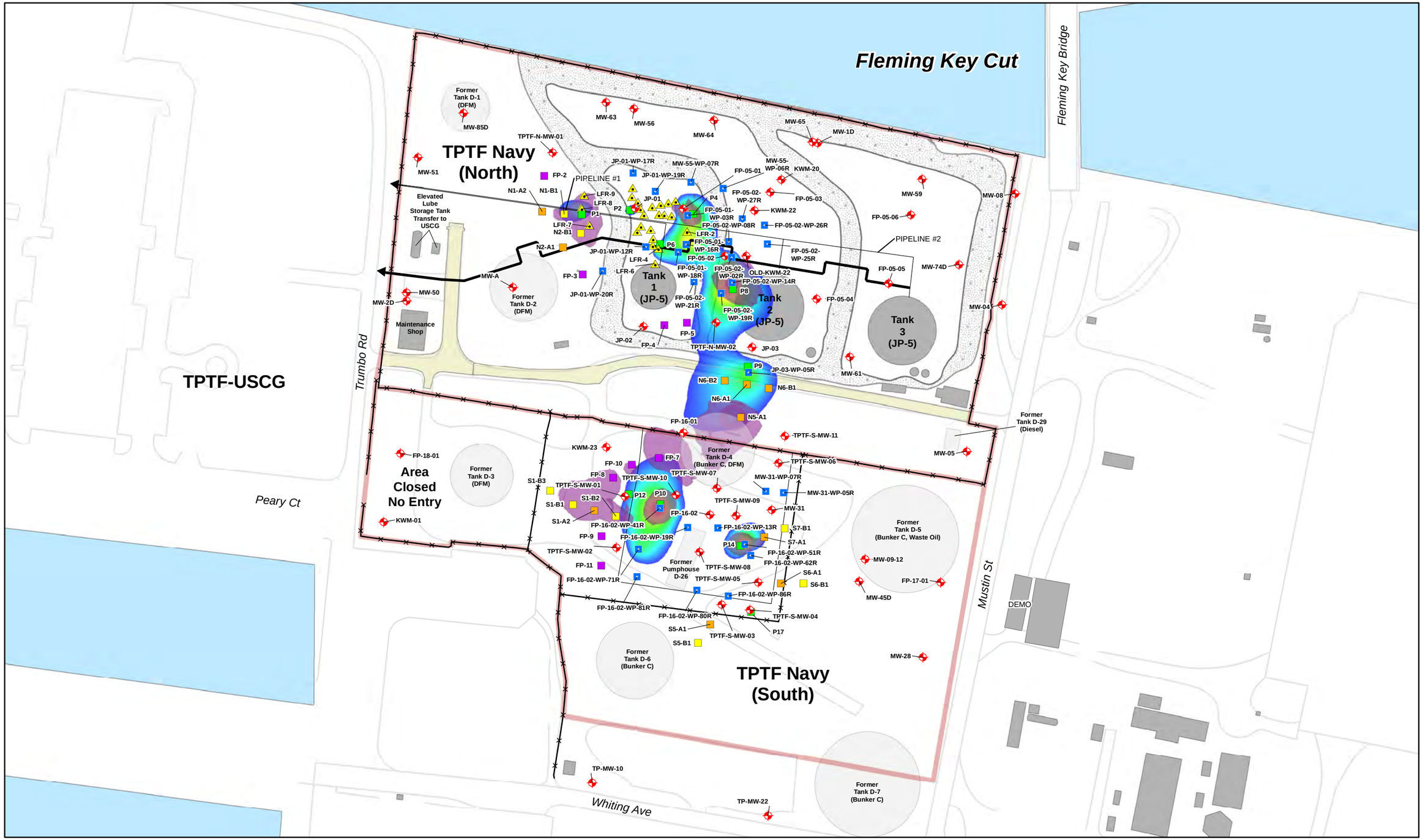
by vacuum trucks. It is estimated that the removed liquid contained approximately 5 to 10 percent free product. After excavation activities were complete, the site was restored to its original condition.

In November 2009, over 100 temporary wells were abandoned and several were converted to permanent monitoring points to measure free product levels. In July 2010, CH2M HILL conducted a laser induced fluorescence (LIF) investigation to assess the in place (in situ) distribution of light non-aqueous phase liquid (LNAPL) in the TPTF-Navy (North and South) areas at TPTF as one part of a data gap assessment. The approach called for the measurement of in situ LNAPL thickness by attaching an appropriate LIF instrument (Tar-specific Green Optical Screening Tool [TarGOST®] and Ultraviolet Optical Screening Tool [UVOST®]) to direct push technology (DPT) rods and advancing the instrument to refusal depth at 36 locations in the TPTF-Navy (North) and TPTF-Navy (South) sites. This approach was presented in the Work Plan Assessment of In-Situ LNAPL Distribution (CH2M HILL, 2010).

The extent of the non-aqueous phase fuel product plume was delineated using LIF technology and LNAPL thickness measurements at existing monitoring wells in July 2010 (Figures 1-3 and 1-4). However, the LNAPL delineation indicated that the extents of floating product at the TPTF-Navy (North) and TPTF-Navy (South) sites were not completely bounded by the existing well networks. It was therefore recommended that additional shallow monitoring wells be drilled to detect the presence and thickness of LNAPL at locations where the LNAPL plumes identified using LIF were not previously defined.

A supplemental site assessment was conducted at TPTF to obtain data for development of an effective approach for MNA of the dissolved phase plumes as well as LNAPL at TPTF-Navy (North) and TPTF-Navy (South). In August 2011 and November 2011, data were gathered by installation of monitoring wells to confirm the LNAPL plume areas identified using LIF technology in July 2010; sampling of LNAPL, soil, and groundwater to assess contamination and evaluate the effectiveness of NA; and LNAPL level gauging to identify the existing LNAPL thickness in monitoring wells across the site. The results of the 2011 supplemental site assessment are summarized below.

- In August 2011, two new monitoring wells (TPTF-N-MW-03 and -04) were installed within the boundary of TPTF-Navy (North) and five new monitoring wells (TPTF-S-MW-12, -13, -14, -15, and -16) were installed within the boundary of TPTF-Navy (South). The newly installed monitoring wells were inspected for LNAPL after well installation, and LNAPL was observed in monitoring wells TPTF-S-MW-14 and -15.
- In November 2011, depth to groundwater and LNAPL levels were measured in monitoring wells across the site. The resulting potentiometric surface map indicated that groundwater flow at the site is somewhat radial. Main flow components are to the northeast and to the south, with some localized depressions. Based on historical measurements, a substantial tidal influence has been observed in the area just north of Tank 1 at TPTF-Navy (North). Changes in water levels have varied by nearly 2 feet from morning to evening in this area.



Initial LIF Extent Point
B Alternative Points
LNAPL Thickness Comparison Point
Final Points between LIF Lines
Piezometer
Monitoring Well
Temporary Monitoring Point
Fence
Former Underground Pipeline
New Aboveground Pipeline
Former Structures
Existing Structures

Notes:
1. Free Product extent gauged in July 2010
2. Purple areas represent laser induced flourescence (LIF) reflectance above 75%

FP Thickness
3 ft | 1 ft | 0.3 ft | 0.1 ft | 0.03 ft | 0.01 ft

N
W E
S
0 50 100 200 Feet

FIGURE 1-3
Product Extent and LIF Reflectance (0 to 10 ft bgs) – July 2010
Trumbo Point Tank Farm
NAS Key West
Key West, Florida

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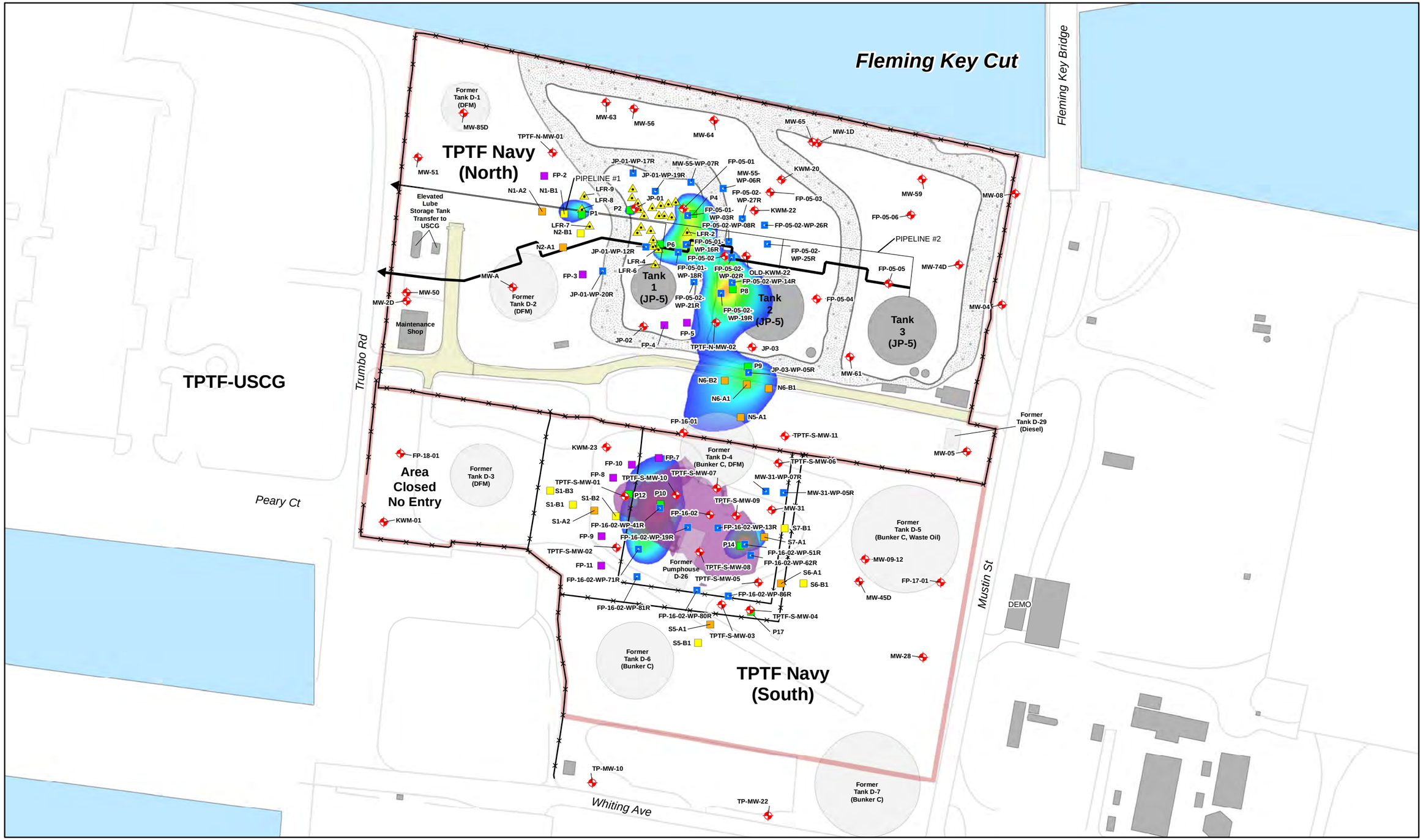


- Initial LIF Extent Point
- B Alternative Points
- LNAPL Thickness Comparison Point
- Final Points between LIF Lines
- Piezometer
- Monitoring Well
- Temporary Monitoring Point
- Fence
- Former Underground Pipeline
- New Aboveground Pipeline
- Former Structures
- Existing Structures

Notes:
1. Free Product extent gauged in July 2010
2. Purple areas represent laser induced flourescence (LIF) reflectance above 75%

FP Thickness

3 ft | 1 ft | 0.3 ft | 0.1 ft | 0.03 ft | 0.01 ft

N W E S

0 50 100 200 Feet

FIGURE 4
Product Extent and LIF Reflectance (10 to 20 ft bgs) – July 2010
Trumbo Point Tank Farm
NAS Key West
Key West, Florida

AGVIQ

\\GALILEO\PROJ\KEY_WEST\MAPFILES\2010\PRODUCTEXTENTANDLIFREFLECTANCE_BELOW.MXD JCARR3 1/27/2014

- In August 2011, groundwater samples were collected from 15 monitoring wells and analyzed for fuel components in accordance with Chapter 62-770, FAC. Groundwater samples from selected monitoring wells were also analyzed for geochemical and MNA parameters. Chloride and total dissolved solids (TDS) data, along with field parameter readings for salinity and conductivity, support the classification of the aquifer as low yield/poor quality (LY/PQ); groundwater at the site is brackish in nature and not suitable for potable use.
- Analytical results from the August 2011 groundwater sampling event indicated that the extent of dissolved phase contamination at TPTF-Navy (North) and TPTF-Navy (South) is limited and restricted to the site. Although several results exceeded the corresponding groundwater cleanup target levels (GCTLs), only four results (isopropylbenzene at monitoring wells KWM-22 and MW-65, dibenz(a,h)anthracene at monitoring wells MW-04 and FP-05-02-WP-21R) exceeded the corresponding Groundwater Low Yield/Poor Quality Criteria (GLYPQC) values. Of these four results, only the two isopropylbenzene detections also exceeded the corresponding Natural Attenuation Default Concentrations (NADCs). Although groundwater samples from three (MW-1D, MW-63, and MW-65) of the four monitoring wells located along the seawall yielded results for total PAHs that exceeded the corresponding municipal solid waste compost (MSWC) value of 0.031 micrograms per liter (µg/L), results for all other parameters were below the corresponding MSWC values at the four monitoring wells along the seawall, hence it is unlikely that the dissolved plume is impacting surface water.
- Based on data from the August 2011 groundwater sampling event, an evaluation of natural attenuation processes at TPTF-Navy (North) and TPTF-Navy (South) indicated that the sites are in a reducing environment (low dissolved oxygen [DO] values and highly negative oxidation-reduction potential [ORP] values) and are showing signs of natural biodegradation. Sulfate appears to be depleted across the site and significant sulfide is present, providing evidence of sulfate reduction. Nitrate also appears to be depleted with no detections across the site, providing evidence of denitrification. The generation of methane is apparent with detections across the site, providing evidence of methanogenesis.
- In August 2011, 20 soil samples were collected from 10 locations, 5 locations within the boundary of TPTF-Navy (North) and 5 locations within the boundary of TPTF-Navy (South). Samples were collected from 0 to 0.5 feet bls and 0.5 to 2 feet bls at each boring location and analyzed for fuel components in accordance with Chapter 62-770, FAC.
- Analytical results from the August 2011 soil sampling event indicated that the extent of soil contamination at TPTF-Navy (North) and TPTF Navy (South) is limited to TRPH and PAHs. Only one result (TRPH in one boring) within the boundary of TPTF-Navy (North) exceeded the corresponding industrial direct exposure SCTL; results were compared to industrial SCTLs since the land use classification for TPTF-Navy (North) is industrial. Various results (TRPH and benzo(a)pyrene equivalent [BEQs] in multiple borings) within the boundary of TPTF-Navy (South) exceeded the corresponding residential direct exposure SCTLs; results were compared to residential SCTLs since the land use classification for TPTF-Navy (South) is residential. Three results (TRPH in two borings and 1-methylnaphthalene in one boring) across the TPTF-Navy property exceeded the corresponding leachability values based on groundwater of LY/PQ. Since

the contaminated area of the TPTF-Navy (South) has recently been enclosed with protective fencing, the land use within the fenced in area could be reclassified as industrial use and the soil results compared to industrial standards.

- Based on UCL 95 calculations, three sample locations/depth intervals at TPTF-Navy (South) and one sample location/depth interval at TPTF-Navy (North) would require soil removal to satisfy the residential and industrial land use classifications, respectively.
- Based on groundwater and product gauging measurements collected in July 2010, August 2011, and November 2011, the LNAPL plumes have been better defined and are confined within the site boundary. Product generally has been limited to the same areas over the past year.
- In August 2011, samples of LNAPL and groundwater were collected from six wells at TPTF-Navy (North) and three wells at TPTF-Navy (South) and evaluated for LNAPL physical properties and fingerprinting. The samples collected at TPTF-Navy (North) appear to be more similar to the JP-5 standard than the Bunker C standard, although there are noticeable chromatographic differences between these samples and the JP-5 standard, indicating weathering has occurred. However, the samples collected at TPTF-Navy (South), appear to be more similar to the Bunker C standard than the JP-5 standard, although there are noticeable chromatographic differences between these samples and the Bunker C standard, indicating that weathering has occurred.
- Extraction and recovery operations at TPTF have removed the most easily accessible LNAPL and, by design, have decreased the LNAPL pore saturation. Ultimately, the remaining LNAPL will be distributed as immobile, non-recoverable isolated blobs and ganglia. As the LNAPL pore saturation decreases, the mobility of the remaining LNAPL will also decrease. Furthermore, natural weathering processes leading to eventual immobilization of the remaining LNAPL at TPTF-Navy (North) and TPTF-Navy (South) are proceeding. The extent of dissolved phase contamination in groundwater above comparison criteria is limited and anaerobic biodegradation processes are apparent. Therefore, the efficiency and feasibility of active extraction and recovery operations would be expected to decline as LNAPL saturation levels decrease, the remaining LNAPL becomes increasingly viscous, and the LNAPL becomes distributed only as immobile isolated blobs and ganglia.

Based on these findings, additional assessment and/or remedial actions were warranted.

1.2 Project Objectives

The purpose of this Work Plan is to outline the procedures to be used to delineate free product areas, and assess soil and groundwater contamination at TPTF-Navy (South) and TPTF-Navy (North).

The primary objective of the petroleum monitoring and assessment project at TPTF is to obtain data for development of an effective approach for MNA of the subsurface contamination that is in the form of free product and dissolved phase plumes at TPTF-Navy (North) and TPTF-Navy (South). This will be accomplished with the installation of up to two additional monitoring wells (if needed), and soil and groundwater sampling to assess contamination and evaluate the effectiveness of natural attenuation.

The following activities will be performed to complete the scope of work for the petroleum monitoring and assessment:

- Site mobilization and demobilization including utility locator survey of all areas where intrusive activities will be performed
- Soil and groundwater sampling, analysis, and reporting
- Free product gauging
- Installation of monitoring wells (if needed)
- Waste management and disposal

2.0 Project Execution Plan

This section describes the scope of work, project schedule, regulatory framework, pre-construction activities, and reporting requirements. A detailed project schedule is provided in Appendix A of this Work Plan. All work shall be performed in accordance with Chapter 62-780 FAC and FDEP standard operating procedures (SOPs). Applicable SOPs are included the UFP-SAP (AGVIQ, 2014). Any exceptions to the SOPs are included herein.

2.1 Scope of Work

The following sections describe the various work elements associated with the petroleum monitoring and assessment.

2.1.1 Site Mobilization and Preparation

AGVIQ will mobilize all resources necessary to perform the petroleum monitoring and assessment. These resources included personnel, equipment, materials, supplies, lower tier subcontractors, and support facilities. AGVIQ will stage its equipment and temporary facilities within the site. AGVIQ will also obtain and coordinate all necessary Base access requirements, dig permits, site clearing, and siting coordination.

Because the fenced portion of the TPTF-Navy (South) is overgrown with high vegetation, AGVIQ will clear the area prior to groundwater sampling in order to access the monitoring wells.

2.1.2 Well Gauging

LNAPL presence and thickness (if present) will be established to confirm the extent and distribution of LNAPL at TPTF, and to demonstrate that LNAPL is limited to the areas of the former and existing ASTs and is not migrating from the former source area. LNAPL levels will be compared to historical data to establish trends. A total of 31 wells (18 wells at TPTF-Navy [North] and 13 wells at TPTF-Navy [South]) will be gauged. Well gauging will be performed using an electronic oil/water interface probe marked in increments of 0.01 foot to test for the presence of product in the TPTF-Navy (North and South) area. Existing well and piezometer locations, including the 31 wells to be gauged for the presence of LNAPL, are shown on Figure 2-1 and the subset of wells that are proposed for monitoring are listed in Table 2-1. All measurements will be collected within a 24-hour period and recorded in the field logbook.

Product thickness and groundwater levels will be measured using the following procedure:

1. Decontaminate the oil/water interface probe.
2. Unlock and uncap the well/piezometer and locate the reference mark on the top of the well casing. Record the well number, date and time in the logbook.
3. Allow the product/water level in the well/piezometer to stabilize prior to collecting measurements.

4. Lower the probe into the well/piezometer until contact is made with product or water.
5. If free product is present in the wells, then the free product will be bailed down using a disposable Teflon bailer. Bailing will continue until the product thickness is reduced significantly.
6. If only water is detected, record the depth to water to the nearest 0.01 foot in the logbook.
7. Field methods and equipment have been selected to minimize decontamination requirements and reduce/eliminate the possibility of cross-contamination.

TABLE 2-1
Well Gauging and Sampling Program

Monitoring Well ID	Gauging (Water Level and LNAPL)	Chemical of Concern Sampling	MNA Sampling
TPTF-Navy (North)			
TPTF-N-MW-01	X	X	X
TPTF-N-MW-02	X		
TPTF-N-MW-03	X		
TPTF-N-MW-04	X		
MW-63	X	X	
MW-64	X	X	
MW-65	X	X	
MW-1D	X	X	
FP-05-06	X		
MW-04	X	X	X
KWM-22	X	X	X
FP-05-01-WP-03R	X		
FP-05-02-WP-21R	X	X	X
FP-05-02-WP-14R	X		
FP-16-01	X	X	X
JP-02	X	X	X
JP-03	X	X	X
MW-09-12	X		
TPTF-Navy (South)			
FP-16-02-WP-51R	X		
FP-16-02-WP-71R	X		
FP-16-02-WP-41R	X		
KWM-23	X	X	X
TPTF-S-MW-04	X	X	X
TPTF-S-MW-09	X	X	X
TPTF-S-MW-10	X		
TPTF-S-MW-11	X	X	X
TPTF-S-MW-12	X	X	X
TPTF-S-MW-13	X		
TPTF-S-MW-14	X		
TPTF-S-MW-15	X		
TPTF-S-MW-16	X	X	X

Fleming Key Cut

Fleming Key Bridge

TPTF-USCG

TPTF Navy (North)

TPTF Navy (South)

Trumbo Rd

Peary Ct

Whiting Ave

Mustin St

Area Closed No Entry

Elevated Lube Storage Tank Transfer to USCG

Maintenance Shop

Former Tank D-1 (DFM)

Former Tank D-2 (DFM)

Former Tank D-3 (DFM)

Former Tank D-4 (Bunker C, DFM)

Former Tank D-5 (Bunker C, Waste Oil)

Former Tank D-6 (Bunker C)

Former Tank D-7 (Bunker C)

Former Tank D-29 (Diesel)

Former Pumphouse D-26

Tank 1 (JP-5)

Tank 2 (JP-5)

Tank 3 (JP-5)

PIPELINE #2

DEMO

MW-85D MW-63 MW-56 PIT-8W MW-64 MW-65 MW-1D

TPTF-N-MW-01 PIT-4 PIT-7C PIT-8NW PIT-8EC

MW-51 PIT-2 JP-01-WP-17R MW-55-WP-07R PIT-8E

PIT-7N LINE #1 JP-01-WP-19R FP-05-01 MW-55-WP-06R KWM-20

LFR-9 LFR-9 JP-01 FP-05-02-WP-27R FP-05-03 MW-59 MW-08

TPTF-N-MW-03 LFR-8 LFR-8 PIT-7S FP-05-01-WP-03R KWM-22 FP-05-06

LFR-7 FP-05-02-WP-08R FP-05-02-WP-26R

PIT-6E FP-05-01-WP-16R

LFR-7 PIT-5NW JP-01-WP-12R FP-05-02-WP-25R PIPELINE #2

PIT-3 PIT-5NWC FP-05-02 FP-05-01-WP-18R FP-05-02-WP-02R OLD-KWM-22 FP-05-05 MW-74D

MW-A LFR-1 FP-05-02-WP-14R

PIT-5SEC JP-01-WP-20R FP-05-02-WP-21R PIT-6W FP-05-02-WP-19R FP-05-04 MW-04

MW-50 MW-2D PIT-5SE

JP-02 TPTF-N-MW-02 JP-03 JP-03-WP-05R MW-61

TPTF-S-MW-16 TPTF-S-MW-15

FP-16-01 TPTF-S-MW-14 TPTF-S-MW-11

KWM-23 TPTF-S-MW-06 MW-05

FP-18-01 TPTF-S-MW-07 MW-31-WP-07R

TPTF-S-MW-10 MW-31-WP-05R

TPTF-S-MW-12 TPTF-S-MW-01 TPTF-S-MW-09 MW-31

KWM-01 FP-16-02 FP-16-02-WP-13R

FP-16-02-WP-41R FP-16-02-WP-51R

TPTF-S-MW-13 FP-16-02-WP-19R FP-16-02-WP-62R

TPTF-S-MW-02 TPTF-S-MW-08 MW-09-12

FP-16-02-WP-71R TPTF-S-MW-05 FP-17-01

FP-16-02-WP-86R MW-45D

FP-16-02-WP-81R FP-16-02-WP-80R TPTF-S-MW-04

TPTF-S-MW-03 MW-28

TP-MW-10 TP-MW-22

Groundwater Sampling Plan Location
Monitoring Well
Piezometer
Temporary Monitoring Point
Fence
Former Underground Pipeline
New Aboveground Pipeline
Former Structures
Existing Structures

N W E S

0 50 100 200 Feet

FIGURE 2-1
Groundwater Sampling Plan Map
Trumbo Point Tank Farm
NAS Key West
Key West, Florida

AGVIQ

GNV \\CYPRESS\PROJ\DRAWINGS\NASKEYWEST\MXD\TRUMBO POINT TANK FARM\FIGURE2-1 MONITORING WELL SAMPLING MAP.MXD DHERR 1/22/2014 10:01:05 AM

2.1.3 Semiannual Groundwater Sampling

Seventeen groundwater samples will be collected at locations selected to provide a spatial distribution suitable to provide indications of the nature and extent of the dissolved phase contaminants across TPTF-Navy (North) and TPTF-Navy (South). Groundwater wells to be sampled will be representative of the site as a whole, including upgradient, downgradient, and crossgradient, as well as source area locations. Groundwater from these wells will be analyzed for fuel components in accordance with Chapter 62-780 FAC (Tables B and C) including benzene, toluene, ethylbenzene, and xylenes (BTEX) and Priority Pollutant volatile organic compounds (VOCs) including 1,2-dichloroethane (SW 846 8260B); 18 PAHs from Table B including 1- and 2-methylnaphthalenes (SW 846 8270D low-level); ethylene dibromide (EDB) (SW 846 8011), total recoverable petroleum hydrocarbon (TRPH) (Florida Petroleum Residual Organic [FL-PRO]), and lead (SW 846 6010B). The groundwater sampling program is summarized in Table 2-2. Well locations are shown on Figure 2-1.

Groundwater from 13 of the 17 wells (see Table 2-2) will also be analyzed for geochemistry and MNA parameters, including manganese and iron (EPA Method 6010B), dissolved manganese and iron (SW 846 6010B), chloride, sulfate, nitrate (EPA Method 300.0), sulfide (SM 4500-S2 F), methane (RSK-175), TDS (SM 2540C), and total inorganic carbon (TIC) (SM 5310B).

Data will be used toward preparation of a RAPA.

Groundwater samples will be collected in accordance with EPA Region 4 Field Branches Quality System and Technical Procedures (EPA, 2009) and FDEP-SOP-001/01 FS 2200 (FDEP, 2008) and as detailed in the UFP-SAP. Waste water generated following the installation of monitoring wells will be contained and managed in accordance with Section 3.0 Waste Management Plan.

Groundwater sampling activities will assist in:

- Determining horizontal extent of groundwater contamination
- Assessing factors contributing to LNAPL attenuation (e.g., electron acceptors in groundwater)
- Evaluating the effectiveness of natural attenuation at reducing contaminants and retarding their migration
- Delineating LNAPL presence

Groundwater analytical data for each COC will be reviewed and compared to FDEP Cleanup Target Levels (CTLs) for groundwater per Table I Chapter 62-777 FAC and natural attenuation default criteria per Table V Chapter 62-777 FAC (FDEP, 2005a). Data from monitoring wells located along the seawall (MW-1D, MW-63, MW-64, and MW-65) will also be compared to FDEP CTLs for Marine Surface Water per Table I Chapter 62-777 FAC, to evaluate the potential COC migration to surface water. Groundwater analytical data for geochemical parameters, including dissolved iron, nitrite, nitrate, sulfate, sulfide, TIC, and methane will be evaluated to characterize natural attenuation processes and assess plume stability. Groundwater data will be compared to historical data to determine if analyte concentrations are increasing or decreasing and if the nature and extent of the groundwater plume(s) are changing.

TABLE 2-2
Groundwater Sampling and Analytical Summary

Monitoring Well ID	VOCs	PAHs	TRPH	EDB	Lead	Total and Dissolved Manganese, Iron	Chloride, Nitrate, Sulfate	Sulfide	TIC	TDS	Methane
	8260B	8270D	FL-PRO	8011	6010B	SM 3500-Fe D	300	SM 4500-S2CF	SM 5310C	SM 2540C	RSK-175
TPTF-N-MW-01	X	X	X	X	X	X	X	X	X	X	X
MW-04	X	X	X	X	X	X	X	X	X	X	X
KWM-22	X	X	X	X	X	X	X	X	X	X	X
FP-05-02-WP-21R	X	X	X	X	X	X	X	X	X	X	X
FP-16-01	X	X	X	X	X	X	X	X	X	X	X
KWM-23	X	X	X	X	X	X	X	X	X	X	X
MW-63	X	X	X	X	X						
MW-64	X	X	X	X	X						
MW-65	X	X	X	X	X						
MW-1D	X	X	X	X	X						
JP-02	X	X	X	X	X	X	X	X	X	X	X
JP-03	X	X	X	X	X	X	X	X	X	X	X
TPTF-S-MW-04	X	X	X	X	X	X	X	X	X	X	X
TPTF-S-MW-09	X	X	X	X	X	X	X	X	X	X	X
TPTF-S-MW-11	X	X	X	X	X	X	X	X	X	X	X
TPTF-S-MW-12	X	X	X	X	X	X	X	X	X	X	X
TPTF-S-MW-16	X	X	X	X	X	X	X	X	X	X	X

Notes:
VOCs – volatile organic compounds
PAHs – polycyclic aromatic hydrocarbons
TRPH – total recoverable petroleum hydrocarbons
EDB – ethylene dibromide
TIC – total inorganic carbon
TDS – total dissolved solids

2.1.4 Third Party Utility Locates

Prior to soil sampling or well installation activities, AGVIQ will procure an independent utility locating subcontractor to identify both documented and potentially undocumented subsurface utilities at the site. The subcontractor will use ground penetrating radar (GPR), along with other appropriate geophysical techniques or combinations of techniques, to identify the buried utilities on the project, based on the survey contractor's experience and expertise, types of utilities anticipated to be present, and specific site conditions. Examples of technologies include, but are not limited to electromagnetic transmission and receivers, GPR, radio frequency (RF), dual RF, and ferromagnetic detectors.

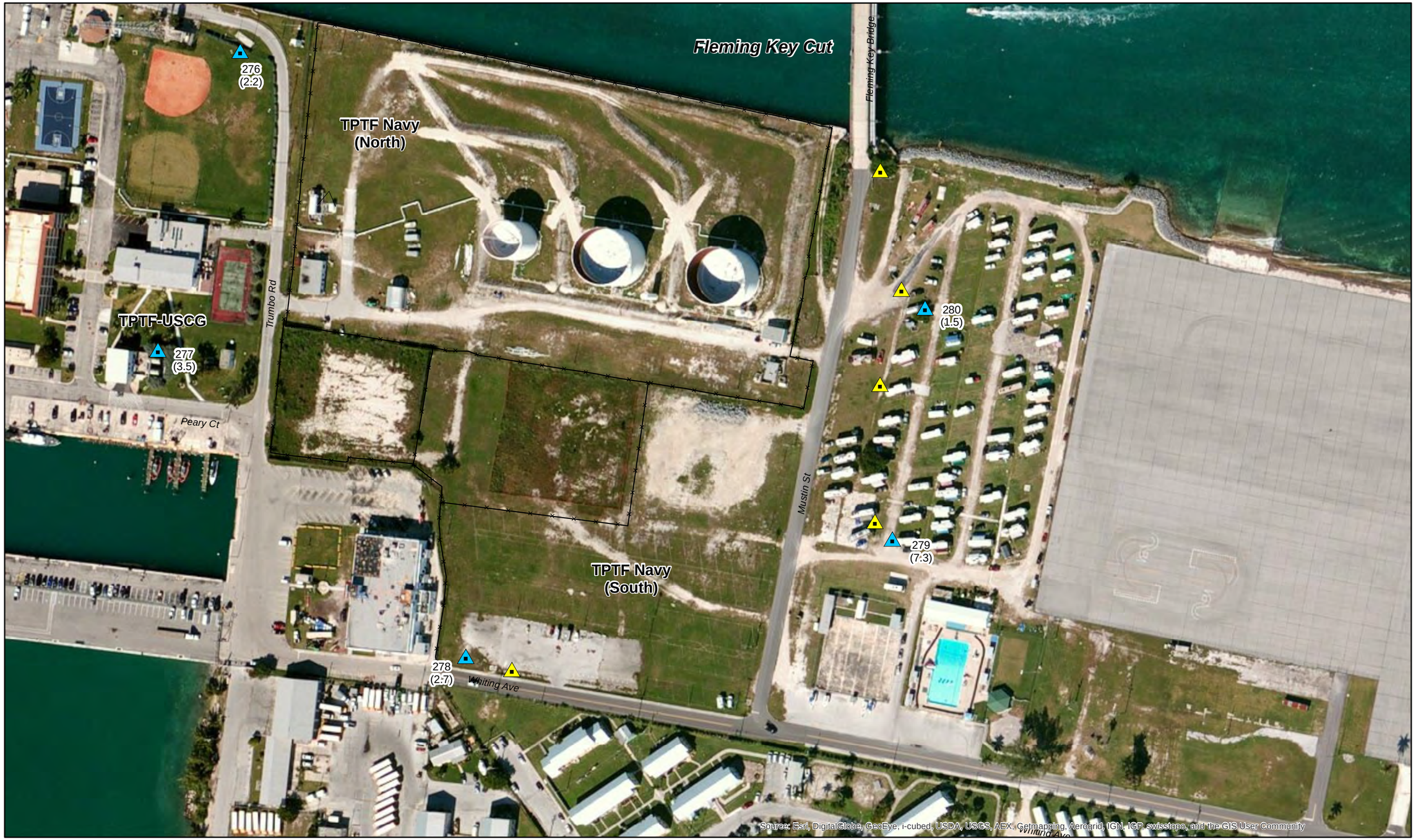
2.1.5 Soil Sampling

Arsenic

The arsenic concentrations need to be reevaluated to characterize the current contamination conditions at the site. As previously discussed, a background study was conducted in 1999 with a limited number of background samples and a soil removal was conducted to remove hot spots greater than 2 times the mean of the background concentrations. However, only five background samples were collected to determine the mean of concentrations. Based on FDEP's *Guidance for Comparing Background and Site Chemical Concentrations in Soil* (FDEP, 2012), a minimum of seven background samples per soil horizon is needed for direct comparison and 10 samples are needed in order to compare estimated 95 Percent Upper Confidence Limit (UCL95) value from the site. Therefore, an additional five samples, plus the associated QA/QC samples, will be collected from 0 to 2 feet bls (the same soil horizon as the 1999 background samples). These background soil samples will be analyzed for arsenic using EPA Method 6010C (the same analysis as the 1999 background samples). The locations of the existing and newly proposed background samples are shown on Figure 2-2. The soil borings will be drilled by a Florida-licensed driller using DPT. The results will be used to assess the need for further sampling and/or future soil removal actions.

TRPH

During the 2011 Supplemental Site Assessment, surface soil contamination at TPTF-Navy (North) and TPTF-Navy (South) was identified to be limited to TRPH and PAHs. Only one result from soil boring TPTF-SS-03 (0.5 to 2 feet bls) within the boundary of TPTF-Navy (North) exceeded the corresponding industrial direct exposure SCTL for TRPH of 2,700 mg/kg. Various TRPH concentrations in soil borings TPTF-SS-07, -08, and -10 (0.5 to 2 feet bls) within the boundary of TPTF-Navy (South) exceeded the corresponding residential direct exposure SCTLs; results were compared to residential SCTLs since the land use classification for TPTF-Navy (South) is residential. At these four locations, soil samples will be collected from 0.5 to 2 feet bls to speciate the TRPH. Samples will be analyzed for TRPH speciation by the Massachusetts Department of Environmental Protection (MADEP) method for volatile petroleum hydrocarbons (VPHs) and extractable petroleum hydrocarbons (EPHs). Figure 2-3 shows the TRPH soil exceedances from the 2011 sampling event.



Legend

- Proposed Arsenic Background Sample
- Original Arsenic Background Sample (Arsenic Concentration in mg/kg)

Note:

Orginal background samples collected in April 1999.

N

0 75 150 300 Feet

FIGURE 2-2
Proposed Arsenic Background Samples
Trumbo Point Tank Farm
NAS Key West
Key West, Florida

AGVIQ

GNV \\CYPRESS\PROJ\ENVIRONMENTAL\DRAWINGS\KEY_WEST\MXD\FIGURE2-2_ARSENIC.MXD DHERR 1/17/2014 2:54:46 PM

Legend

▲ Proposed TPH Speciation Sample

Notes:

1. Results in mg/kg
2. Black font exceeds residential, Red font exceeds industrial
3. NE = no exceedances
4. J = estimated value

	SCTL (Residential)	SCTL (Industrial)	Leachability (LY/PQ)
TRPH	460	2,700	3,400

N

0 75 150 300 Feet

FIGURE 2-3
TRPH Exceedances (2011) and Proposed TPH Speciation Samples
Trumbo Point Tank Farm
NAS Key West
Key West, Florida

AGVIQ

GNV \\CYPRESS\PROJ\ENVIRONMENTAL\DRAWINGS\KEY_WEST\MXD\FIGURE2-3_TPH SPECIATION SAMPLES.MXD DHERR 1/29/2014 9:44:03 AM

PAHs

Analytical results from the August 2011 soil sampling event also indicated that BEQ results in at least four locations within the boundary of TPTF-Navy (South) exceeded the corresponding residential direct exposure SCTLs. At one location (TPTF-SS-09), the industrial direct exposure SCTL was also exceeded. At TPTF-Navy (North), the corresponding leachability values based on groundwater of LY/PQ was exceeded for 1-methylnapthalene from 0.5 to 2 feet bls in one location (TPTF-SS-03) (see Figure 2-4). Many of the soil exceedances for BEQs were close to the cleanup criteria and may be indicative of background, anthropogenic soil conditions. Therefore, prior to collecting additional samples for soil delineation, AGVIQ will collect a background dataset. Figure 2-4 includes the previously detected PAHs results and also the proposed background samples for PAHs analysis in surface soil from 0 to 0.5 foot and 0.5 to to2 feet bls.

The purpose of the background sampling is to assess whether the PAH concentrations detected in site samples are within or greater than the anthropogenic background concentrations (manmade but not site related, such as from asphalt roadways, etc.). Based on FDEP's *Guidance for Comparing Background and Site Chemical Concentrations in Soil* (FDEP, 2012), a minimum of seven background samples per soil horizon is needed for direct comparison. However, in order to compare estimated UCL95 value from the site, a background UCL95 value is needed to be calculated. For this comparison, a minimum of 10 background samples per soil horizon are needed. Therefore, up to 20 soil samples will be collected from 10 soil borings from 0 to 0.5 and 0.5 to 2 feet bls. These background soil samples will be analyzed for PAHs using EPA Method 8270D SIM. Figure 2-4 shows the proposed background sample locations for PAHs.

After comparing site sample results to the background data set, further sampling may be necessary at locations where the background arsenic or PAH levels are exceeded. At those locations, AGVIQ will sample soil from 10-foot step-outs in four directions from the original samples for PAH/BEQ lateral extent delineation. Additionally, samples may be collected from 2 to 4 feet bls for vertical delineation.

A global positioning system (GPS) unit will be used to document each soil sample location in the field. Soil samples will be collected in accordance with EPA Region 4 Field Branches Quality System and Technical Procedures (2009) and FDEP-SOP-001/01 FS 2200 (FDEP, 2008) and as detailed in the UFP-SAP (AGVIQ, 2014).

Data collected from this sampling event will be used to determine if the surface soil meets background or FDEP Residential, Industrial and Leachability (based on poor quality groundwater) SCTLs, Chapter 62-777 FAC (FDEP, 2005b).

2.1.6 Monitoring Well Installation

If it is determined that additional wells are needed, monitoring wells will be installed in accordance with State of Florida South Water Management District requirements and comply with FDEP SOP PCS-006 (FDEP, 2005c) and Chapter 62-528 FAC, EPA Field Branches Quality and Technical Procedures (EPA, 2009), and American Society for Testing and Materials (ASTM) Standard ASTM D5092-04e1: Standard Practice for Design and Installation of Ground Water Monitoring Wells (ASTM, 2010).

Legend

- Soil Boring Location
- Proposed PAH Background Sample

Notes:

1. Results in mg/kg
2. Black font exceeds residential, Red font exceeds industrial, and Blue font exceeds leachability
3. NE = no exceedances

	SCTL (Residential)	SCTL (Industrial)	Leachability (LY/PQ)
1-Methylnaphthalene	200	1,800	31
BEQ	0.1	0.7	---

N

0 75 150 300 Feet

FIGURE 2-4
PAH Exceedances (2011) and Proposed PAH Background Samples
Trumbo Point Tank Farm
NAS Key West
Key West, Florida

AGVIQ

GNV \\CYPRESS\PROJ\ENVIRONMENTAL\DRAWINGS\KEY_WEST\MXD\FIGURE2-4_PAH BACKGROUND SAMPLES.MXD DHERR 2/13/2014 5:44:14 PM

Up to two 2-inch diameter wells will be installed using a drill rig that is equipped with a 4.25-inch inner diameter hollow stem auger. All wells will be drilled to approximately 13 feet bls. The location of the wells, if needed, will be based on the results of the first semiannual sampling event.

A post-hole digger or hand auger will be used to advance the first 4 to 5 feet of each soil boring. If no obstacles are encountered, the soil boring will be advanced by drilling to the required total bore depth (13 feet bls). If a soil boring must be abandoned as a result of encountering utilities, the material removed by the post-hole digger or hand auger will be returned to the borehole.

Monitoring wells will be constructed using 10 feet of 2-inch inner diameter Schedule 40, polyvinyl chloride (PVC), 0.020-inch, continuous slot well screen threaded to approximately 3 feet of 2-inch inner diameter Schedule 40, PVC well casing. The well will be secured with an expandable, locking well cap. All wells will be screened from 3 feet to 13 feet bls, or straddling the water table so that LNAPL, if present, will enter the well. No glues or solvents will be used to construct the well.

A filter pack consisting of 10/20 sieve sand will be placed within the annular space between the borehole and the screen and will be brought to a height of 1 foot above the top of the screen. A 1-foot, fine sand filter pack seal will be placed above the sand pack, followed by grout to ground surface. Each well will be finished with a flush completion set in a 2-foot-square concrete pad, and the well identification will be affixed to the completed well (e.g., using a steel tag or etched into the concrete).

2.1.7 Monitoring Well Development

Well development activities will be conducted no sooner than 24 hours after the well has been installed. The newly installed monitoring wells will be inspected for LNAPL on the day following installation. A bailer will be lowered slowly into the saturated zone and a sample retrieved. The bailer will be visually inspected for sheen or accumulation of product. Each new monitoring well that does not contain LNAPL at the water table will be properly developed within the appropriate time frame after completion.

During development, wells will be pumped using a submersible pump at the maximum flow rate achievable while maintaining a constant water level (assumed to be approximately 1 gallon per minute). Surging of the wells will be required periodically based on water quality stability and turbidity reduction. Surging is the process of displacing water back and forth through the screen and sandpack of a well by moving the pump or surge-block rapidly and repeatedly up and down to remove fine-grained sediments and expand and clean the effective sand pack of the well. Additionally, sediments will be removed from the well sumps by slowly dropping the pump to the bottom of the well, thus removing and cleaning any accumulated fine-grained material.

All wells will be developed until the water is clear of any visible suspended particulate matter. If all of the particulate matter in the development water cannot be removed after a sufficient amount of time, then the development can be stopped at the discretion of AGVIQ. The justification to stop well development prior to producing particulate–free water will be documented in the comment section of the Well Development Log.

The decision to consider well development complete will be based on several factors, including stability of the measured water quality parameters, water level, and turbidity. Water quality measurements will be recorded prior to and at 10- to 20-minute intervals during development. Development records will be maintained for submission when development activities are completed.

A well development log will be completed at the time of development in accordance with FDEP SOP PSC-006 Design, Installation, and Placement of Monitoring Wells (FDEP, 2005c).

2.1.8 Surveying

A global positioning system unit will be used to document each soil sample location in the field. A Florida-licensed surveyor will be subcontracted to determine location and elevation data for newly installed monitoring wells. Coordinates for all survey work will be in North American Datum 1983. Locations will be reported to the nearest 0.1 foot. Ground elevations will be reported to the nearest 0.1 foot relative to mean sea level; elevations of wellhead top of casing will be measured from the north side of the well and reported to the nearest 0.01 foot. Elevations for all survey work will be in North American Vertical Datum of 1988.

2.1.9 Site Cleanup and Restoration

Disturbed areas will be repaired or rebuilt to return to conditions that existed prior to the initiation of work. All debris resulting from site cleanup activities will be managed as described in Section 5.0 Waste Management Plan.

2.1.10 Decontamination and Demobilization

A final cleanup of all areas impacted by the petroleum monitoring and assessment activities will be completed prior to demobilization from the site. Decontamination of personnel and equipment in accordance with the Accident Prevention Plan (APP) (Appendix B**)** will be completed prior to leaving the site, in accordance with the applicable provisions of 29 Code of Federal Regulations (CFR) 1910.120. All debris and rinsate generated by the investigation activities will be properly containerized, and disposed offsite as specified in Section 5.0 Waste Management Plan. During demobilization, temporary facilities, utilities, and equipment will be removed from the site.

2.1.11 Containerization and T&D of Contaminated Soil

All liquid and solid waste derived from the petroleum monitoring and assessment will be containerized for subsequent removal. Wastes include soil cuttings from soil sampling and monitoring well installation and fluids from well development, purging, and decontamination of equipment used during the investigation. Waste streams will be transported to a facility permitted to accept the petroleum-impacted material.

2.2 Project Submittals

The following sections describe the major submittal documents. These include two semiannual monitoring reports and a RAPA.

2.2.1 Semiannual Groundwater Monitoring Reports

Within 60 days of each groundwater sampling event, a semiannual groundwater monitoring report will be prepared and submitted to the Navy for review. Each report will include the results of the groundwater sampling as well as any well gauging or soil sampling conducted during the previous monitoring event. Details of field implementation of activities such as surveyor submittal, utility locator survey submittal, well construction diagrams, well boring logs, sampling and analysis reports, data validation reports, and copies of waste disposal information will be included as appendices to the semiannual groundwater monitoring reports, which will be submitted both in draft and final versions with revisions per the Navy reviews.

2.2.2 Remedial Action Plan Addendum

Upon completion of both semiannual groundwater sampling events and soil sampling, AGVIQ will prepare a RAPA to the 1999 HLA RAP. The RAPA will likely expand on the previous MNA plan for groundwater and will include any necessary soil remedial actions.

2.3 Project Schedule

Estimated dates for key project activities are outlined as follows:

- May 2014
  - Clearing of the TPTF-Navy (South)
  - Third-party utility locate
  - Semiannual groundwater sampling and analysis
  - Background soil sampling
  - Liquid waste sampling

- November 2014
  - Third-party utility locate
  - Installation of monitoring wells (if needed) and soil borings
  - Semiannual groundwater sampling and analysis
  - Soil sampling and analysis
  - Waste sampling and analysis
- June 2014 and January 2015 Waste Management

A complete project schedule is included in Appendix A.

2.4 Communications Plan

Table 2-3 is a communications matrix with the lines of communications for the Navy and AGVIQ. Table 2-4 provides a project personnel directory.

TABLE 2-3
Communications Matrix

AGVIQ Position	Navy Direct Report
Program Manager – Sidney Allison	Donna Ruzicka, Contracting Officer
Project Manager –Amy Twitty	Brian Syme, Remedial Project Manager
Site Supervisor/QC – TBD	Ed Barham, Environmental Director (NAS Key West)

TABLE 2-4
Project Personnel Directory

Contact	Company and Address
Donna Ruzicka, Contracting Officer donna.ruzicka@navy.mil	Naval Facilities Engineering Command Southeast (NAVFAC SE) Building 135, Box 30 Jacksonville, FL 32212-0030 904-542-6926
Brian Syme, Remedial Project Manager brian.syme1@navy.mil	Naval Facilities Engineering Command Southeast (NAVFAC SE) BLDG 135 PO BOX 30 NAS Jacksonville, FL 32212 904-542-6151
Amy Twitty, Project Manager Amy.Twitty@ch2m.com	CH2M HILL 1766 Sea Lark Lane Navarre, FL 32566 850-232-0320
Sidney Allison, Senior Program Manager sidney.allison@tikigaq.com sidney.allison@ch2m.com	AGVIQ, LLC 4610 Westgrove Court Virginia Beach, VA 23455 757-213-8581
Larry Westphal, Contracts Manager lwestphal@tikigaq.com	AGVIQ, LLC 4610 Westgrove Court Virginia Beach, VA 23455 757-318-9427
Rachel Francis, H&S Manager rfrancis@tikigaq.com	AGVIQ, LLC 4610 Westgrove Court Virginia Beach, VA 23455 757-213-8592
Taylor Sword, Program QA/QC Manager tsword@tikigaq.com	AGVIQ, LLC 4610 Westgrove Court Virginia Beach, VA 23455 757-213-8599

3.0 Sampling and Analysis Plan

This SAP describes the tasks and responsibilities of AGVIQ with respect to the sampling and analysis associated with the work described in this Work Plan. AGVIQ intends this document to be a site-specific guide for use by the field team while performing the project-required sampling and analysis. Any changes to the activities described in this SAP must be documented as a revision to this SAP and approved by the TO Project Manager, Project Chemist, and NAVFAC SE.

Samples will be collected in accordance with the FDEP SOPs for Field Activities, DEP-SOP-001/01 (FDEP, 2008) Applicable SOPs are cited below, including applicable exceptions to the SOPs.

If additional tasks not included herein are required, then the project team will evaluate applicable SOPs, particularly if a required SOP is not available in DEP-SOP-001/01 (FDEP, 2008), particularly FS-2200 and Bureau of Petroleum Storage Systems (BPSS) PCS-005.

The sampling team will be familiar with SOPs FS-2200 and BPSS PCS-005, included in the UFP-SAP (AGVIQ, 2014), and will be qualified under the Navy Installation Restoration Chemical Data Quality Manual (IRCDQM), 1999 sampling requirements.

3.1 Data Quality Levels for Measurement Data

A Department of Defense Environmental Laboratory Accreditation Program-approved and FDEP-approved laboratory will be used for all sample analyses and approved by AGVIQ's Project Chemist prior to any analytical testing. The data quality levels are listed in Table 3-1. A Navy Level C QC and AGVIQ Level C data package will be required along with appropriate QC samples for the required analyses. A Level B package will be required for waste disposal samples. All analytical data will be submitted by both hard copy and electronic files. Data for the analyses will be reviewed for adherence to the specified analytical protocols in accordance with this SAP. The sampling events, sampling and analytical requirements, and required level of quality and data packages are listed in Table 3-2. All analytical results will be validated according to general guidance provided in the Department of Defense Quality Systems Manual – Version 4.2 Final (based on National Environmental Laboratory Accreditation Conference Version 5, June 2003.

TABLE 3-1
Data Quality Levels

Sampling Activity	Data Quality Level Category
Soil Sampling (offsite laboratory analyses)	Definitive
Groundwater Sampling (offsite laboratory analyses)	Definitive
Liquid Waste Characterization (offsite laboratory analyses)	Definitive
Solid Waste Characterization (offsite laboratory analyses)	Definitive

TABLE 3-2
Sampling and Analysis Summary

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method	Sampling Equipment	TAT	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservation	Containers
Aqueous Waste Characterization													
Disposal of Aqueous Waste	Drums/ tanks	Water/ UST contents	Once	1 (or as needed for disposal)	Grab	Peristaltic pump with Teflon tubing or Teflon Disposable Bailer	14 days	DQO Level III, AGVIQ Level B	RCRA Volatiles	8260B	14 days	HCl pH< 2; Cool to 4°C	(2) 40-ml vials
									RCRA Semi-volatiles	8270D	7 days extr; 40 days analysis	Cool to 4°C	(5) 1-L amber glass
									RCRA Pesticides	8081B	7 days extr; 40 days analysis		
									PCBs	8082A	7 days extr; 40 days analysis		
									RCRA Metals	6010C/7470A	180 days; Hg = 28 days	HNO3 pH< 2; Cool to 4°C	(1) 500-ml HDPE
									Ignitability	1010	ASAP	Cool to 4°C	(1) 250-ml glass
									Corrosivity	9040B	ASAP	Cool to 4°C	(1) 250-ml HDPE
Solids Waste Characterization													
Soil/Solid Characterization Sampling	Drums/ tanks	Soils/ Solids	As Necessary	1	Composite 5 random grabs into 1 sample (1 grab for VOC)	SS spoon, SS bowl	14 days	DQO Level III, AGVIQ Level B	TCLP Volatiles	1311/8260B	14 days TCLP extr; 14 day analysis	Cool to 4°C	(1) 4-oz glass
									TCLP Semi-volatiles	1311/8270D	14 days TCLP extr; 7 day extr, 40 days analysis	Cool to 4°C	(2) 8-oz glass
									TCLP Pesticides	1311/8081B	14 days TCLP extr; 7 day extr, 40 days analysis		
									PCBs	8082A	14 days extr; 40 days analysis		
									TCLP Metals	1311/6010C/7470A	6 month TCLP extr, 6 month analysis Hg: 28 day TCLP extr, 28 day analysis	Cool to 4°C	(1) 4-oz glass
									Ignitability	1030	ASAP		
									Corrosivity	9045D	ASAP		

TABLE 3-2
Sampling and Analysis Summary

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method	Sampling Equipment	TAT	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservation	Containers
Semiannual Groundwater Monitoring													
Groundwater Sampling	17 Existing wells listed in Table 2-1 Up to two new wells if necessary	Water	Twice; semi-annually	A minimum of 17 + 2 dup + 1 MS + 1 MSD + 2 Eq Blk Total = 23	Grab	Submersible Variable Speed pump, Teflon tubing; field water quality meters	14 days	DQO Level IV, AGVIQ Level C	VOCs including 1,2-DCA	8260B	14 days	HCl pH<2; Cool to 4°C; no headspace	(3) 40-ml vials
									PAHs including Methyl naphthalenes (both 1- and 2-)	8270D SIM	7 day extr; 40 day analysis	Cool to 4°C	(2) 1-L Amber Glass
									EDB	8011	14 days	HCl pH<2; Cool to 4°C; no headspace	(3) 40-ml vials
									TRPH	FL-PRO	7 day extr; 40 day analysis	HCl pH<2; Cool to 4°C	(2) 1-L Amber Glass
									Metals- Lead only	6010C	180 days	HNO3 pH< 2; Cool to 4°C	(1) 500-ml HDPE

TABLE 3-2
Sampling and Analysis Summary

									Required Analysis	Analytical Method	Holding Time	Sample Preservation	Containers
Semiannual Groundwater Monitoring													
Groundwater Sampling	13 Existing wells listed in Table 2-1	Water	Twice; semi-annually	13+ 2 dup + 1 MS + 1 MSD + 2 Eq Blk Total = 19	Grab	Submersible Variable Speed pump, Teflon tubing; field water quality meters	14 days	DQO Level IV, AGVIQ Level C	Total Manganese, Iron	6010C	180 days	Cool 4°C; pH <2 w/ HNO_3,	(1) 250-ml plastic
									Dissolved Manganese, Iron	6010C	180 days	Cool 4°C; pH <2 w/ HNO_3,	(1) 250-ml plastic
									Chloride, Nitrate, Sulfate	300	28 days; 48 hours for Nitrate	Cool to 4°C	(1) 250-ml plastic
									Sulfide	SM 4500-S2-F	7 days	Cool 4°C pH>9 w/NaOH & Zinc Acetate	1) 500-ml plastic
									TIC	SM 5310B	28 days	Cool 4°C, pH<2 w/HCl or H_2SO_4	(3) 40-ml glass
									TDS	SM 2540C	7 days	Cool to 4°C	1) 500-ml plastic
									Methane	RSK-175	14 days	Cool 4°C, pH <2 w/HCl, no headspace	(2) 40-ml glass
	Trip Blank	Water	1 per cooler containing volatile samples	1 per cooler	Prepared by Lab	N/A	14 days	DQO Level IV, AGVIQ Level C	VOCs including 1,2-DCA	8260B	14 days	HCl pH<2; Cool to 4°C; no headspace	(3) 40-ml vials

TABLE 3-2
Sampling and Analysis Summary

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method	Sampling Equipment	TAT	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservation	Containers
Soil Sampling													
Soil Sampling	SS-03 SS-07 SS-08 SS-10	Soil	Once	4 + 1 dup + 1 MS + 1 MSD Total = 7	Composite 5 random grabs into 1 sample (1 grab for MADEP-VPH)	DPT Rig, SS spoon, SS bowl	14 days	DQO Level IV, AGVIQ Level C	TRPH Speciation	MADEP-VPH	48 hours to freeze/ 14 days to analyze	Cool to 4ºC	Disposable syringes, (3) Prepared 40-ml vials; extra 2-oz jar
	BG-01 through BG-10 and step-out samples as needed		Two depths per boring	A minimum of 20 + 2 dup + 1 MS + 1 MSD Total = 24					PAHs including Methyl naphthalenes (both 1- and 2-)	8270D SIM	14 day extr; 40 day analysis	Cool to 4ºC	(1) 8-oz glass
	BG-01 through BG-05 and step-out samples as needed		Once	A minimum of 5 + 1 dup + 1 MS + 1 MSD Total = 8					Metals- Arsenic only	6010C	180 days		
	SS-03 SS-07 SS-08 SS-10		Once	4 + 1 dup + 1 MS + 1 MSD Total = 7					TRPH Speciation	MADEP-EPH	14 day extr; 40 day analysis		

TABLE 3-2
Sampling and Analysis Summary

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method	Sampling Equipment	TAT	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservation	Containers
Soil Sampling													
Soil Sampling	Equipment Rinsate Blank	Water	1 per 10% of sampling	1	Prepared in Field	Analyte-free water, SS funnel	14 days	DQO Level IV, AGVIQ Level C	TRPH Speciation	MADEP-VPH	14 days	HCl pH<2; Cool to 4ºC; no headspace	(3) 40-ml vials
									PAHs including Methyl naphthalenes (both 1- and 2-)	8270D SIM	7 day extr; 40 day analysis	Cool to 4ºC	(2) 1-L Amber Glass
									Metals- Arsenic only	6020A	180 days	HNO3 pH< 2; Cool to 4ºC	(1) 500-ml HDPE
									TRPH Speciation	MADEP-EPH	7 day extr; 40 day analysis	Cool to 4ºC	(2) 1-L Amber Glass
	Trip Blank	Water	1 per cooler containing volatile samples	1 per cooler	Prepared by Lab	N/A	14 days	DQO Level IV, AGVIQ Level C	TRPH Speciation	MADEP-VPH	14 days	HCl pH<2; Cool to 4ºC; no headspace	(3) 40-ml vials

SS – stainless steel
TAT – turnaround time
ASAP – as soon as possible
VOCs – volatile organic compounds
TRPH – total recoverable petroleum hydrocarbons
BTEX – benzene, toluene, ethylbenzene, total xylene
TIC – total inorganic carbon
N/A – not applicable
TCL – target compound list
TAL – target analyte list
CVOCs – chlorinated volatile organic compounds
VOH – volatile organic hydrocarbons
MTBE – methyl-tert-butyl-ether
TDS – total dissolved solids
P,G – polyethylene or glass
HDPE – high density polyethylene
PAHs – polycyclic aromatic hydrocarbons
1,2-DCA – 1,2-dichloroethane
EDB – ethylene dibromide

3.2 Sampling Objectives

The sampling objectives for this project will be to:

- Collect 5 background samples for arsenic from 0 to 2 feet bls from 5 borings for laboratory analysis to add to the existing background set to assess background conditions.
- Collect 20 background samples for PAHs (2 samples from 10 boring locations) for laboratory analysis to assess background conditions. Collect step out samples as necessary.
- Collect 2 samples from former TRPH exceedance areas for TPH speciation.
- Collect a minimum of 17 groundwater samples (plus quality control samples) per semiannual event. This includes 17 existing wells and may potentially include up to 2 newly installed monitoring wells, if needed. The samples will be analyzed for petroleum COCs.
- Collect 13 groundwater samples for MNA parameter analyses during each semiannual groundwater sampling event.
- Collect samples for solid waste characterization from soil removed during soil sampling and well installation.
- Collect sample(s) for liquid waste characterization from purge water generated during well development, decontamination, and groundwater sampling.

The samples will be collected and analyzed in accordance with Table 3-2 and the UFP-SAP (AGIVQ, 2014).

3.3 Soil Sampling

Background soil samples will be collected and analyzed for arsenic and PAHs as described in Section 2.1.5. TPH speciation samples will also be collected from areas previously exceeding TRPH criteria. Soil borings will be completed using DPT or similar drilling techniques. Samples will be submitted to an offsite laboratory for chemical analysis in accordance with Table 3-2.

Soil samples will be described by the AGVIQ field team for grain size, mineralogy, color, moisture content, odor, and structure. Boring locations and general information will be recorded in the field logbook.

3.4 Groundwater Sampling

Groundwater Sampling will be conducted in accordance with DEP-SOP-001/01 FS 2200 (FDEP, 2008) for low flow/low stress procedure (FDEP, 2008) with citations from the BPSS variances listed in PCS-005 (FDEP, 2005c). Groundwater samples will be collected from a minimum of 16 wells existing wells as indicated in Table 3-2.

- A modified version of the Groundwater Sampling Log FD-9000-24 is included in Appendix C. This form will be used when conducting the groundwater sampling outlined in this document.

- If equipment volumes are being used to determine purging completion and the stabilization parameters are not within the acceptable limits, then sampling will be performed after purging a maximum of five well screen volumes (equipment volume purging) or five water well volumes. When using equipment volume purging, stabilization of the water level must be achieved before the first set of stabilization parameters are measured and the water level must be stable during the entire time that the five well screen volumes are being removed. The pump or tubing should be placed in the middle of the screened interval, and stabilization parameters must be measured no sooner than 2 to 3 minutes apart or every volume of the well screen interval (whichever is less).
- The use of purge and trap is not required for submersible pump use; samples will be collected from the pump tubing discharge.
- For water table (shallow) wells, the pump or tubing intake must be placed in the top 2 feet of the water column and not at the middle of the saturated portion of the screened interval as described in the SOP. The pump or tubing intake shall be placed within the screen interval for wells that previously and consistently have purged dry. Approval of this variance is commensurate with FDEP Remedial Project Manager (RPM) approval of this document.
- Equipment used for sampling activities is typically rental equipment that is maintained by the vendor and field calibrations will be conducted per manufacturer instructions. Equipment calibration and bump check records will be maintained in the project field logbook, not on Form FD 9000-8.
- If the water table in existing wells is less than 2 feet, and attempts to purge with the submersible pump have failed because of excessive drawdown at sustainable flow rates (varies by pump, depth to water, and manufacturer), then disposable Teflon bailers will be used to purge and sample the wells. As a courtesy, once site wells are gauged, the well locations where bailers may be required will be reported to FDEP and Navy RPMs assigned to this project via telephone or electronic mail. Approval of this variance is commensurate with FDEP RPM approval of this Work Plan.
- Total depth for monitoring wells that do not contain LNAPL will be measured at least 24 hours prior to the groundwater sampling event. In the event that gauging cannot be conducted 24 hours prior to the sampling event due to weather impacts, site access issues, or other unforeseen delays, total depth will be measured immediately after purging and sampling activities are completed. Total well depths will not be measured in monitoring wells containing LNAPL.
- If free product is present in the wells, then the free product will be bailed down using a disposable Teflon bailer, as indicated in Section 2.1.2, and will not be sampled. An alternate well may be recommended for sampling near the well location.

3.4.1 Water Level Measurements

Groundwater levels will be measured with an electronic interface probe to determine depth to product (if present) and depth to water at each well. Total well depths will be measured at wells where product is not detected. The tape or sounding wire for the interface probe or

water level indicator will be marked in increments of 0.01 foot. All measurements will be collected within a 24-hour period (per well) and recorded in the field logbook.

Groundwater levels will be measured using the following procedure:

1. Decontaminate the oil/water interface probe.
2. Unlock and uncap the recovery/monitoring well and locate the reference mark on the top of the well casing. Record the well number, date, and time in the logbook. If a mark is not present on the well riser, then measure from the northernmost point on the well casing.
3. Allow the product/water level in the well to stabilize prior to collecting measurements.
4. Lower the probe into the well until contact is made with product or water.
5. If product is detected, record the depth to product to the nearest 0.01 foot in the logbook and continue to lower the probe until the water tone sounds. Slowly pull the tape up until the product tone sounds again to confirm the product/water interface and record the depth to water in the field logbook. Note to field team - **'Do Not Gauge Total Depth in Wells Containing Free Product.'**
6. If no product is detected, record the depth to water to the nearest 0.01 foot in the logbook. Continue to lower the probe to the bottom of the well and record the total well depth to the nearest 0.01 foot in the logbook. Subtract the depth to water from the total well depth to determine the height of the water column. Only conduct total well depths if a minimum of 24 hours will elapse prior to purging/sampling the wells. If this does not occur, gauge total depths after purging and sampling activities are completed.

3.4.2 Free Product Recovery

During the groundwater sampling event, free product measurement will also be conducted. The depth to product and depth to water will be measured to the nearest 0.01 foot using an electronic oil/water interface probe. If free product is present, free product recovery will be conducted in each well where product is measured by using a disposable Teflon bailer. The wells will be continuously bailed and product thickness will be measured (depth to product/depth to water) after each bail until the thickness is immeasurable, or a maximum of 30 minutes per well.

The volumes of free product will be recorded with each bail attempt along with the volume of water recovered using a graduated vessel or via direct measurements on the quantities in the bailer. The thickness of product in each bail attempt may be measured and recorded along with the manufacturer specification for bailer inside diameter, in order to calculate a volume.

The recovered free product and groundwater will be containerized onsite in 55-gallon drums until the waste can be properly characterized for subsequent disposal at an approved facility.

3.4.3 Well Purging

The purging of monitoring wells is performed to evacuate water that has been stagnant in the well and may not be representative of the aquifer. Purging will be accomplished using a

submersible pump. Water quality indicator parameters will be monitored and recorded during low flow sampling, preferably using an in-line flow-through cell.

The water quality stabilization parameters temperature, pH, specific conductance, turbidity, ORP, and DO will be measured and recorded in the field logbook or groundwater sampling log after removing each well volume during purging. Salinity will also be recorded on the sampling log. Water will be pumped through an in-line flow-through cell containing measurement sensors for these field parameters. Turbidity will be measured using a Hach 2100P or equivalent turbidimeter. Once parameters have stabilized in accordance with FDEP SOP FS-2200, purging activities will be complete, and the recommended groundwater sample containers will be filled.

Water removed from the well during purging will be containerized for subsequent characterization and proper disposal.

3.4.4 Groundwater Sampling

The samples may be collected after stabilization criteria stated in FS-2200 have been met. If these parameters do not stabilize, the sample will be collected after five standard well volumes or well screen values have been removed (BPSS PCS-005), and the anomalous parameters will be immediately brought to the field team leader's attention. Field equipment will be calibrated in accordance with manufacturer's instructions and calibration documentation will be maintained in the site logbook.

Groundwater samples will be collected after well purging is completed using the following sampling procedure, and analyzed in accordance with Table 3-2:

1. Water samples for laboratory analyses must be collected before water has passed through the flow-through-cell (use a by-pass assembly or disconnect cell to obtain sample).
2. If a submersible pump is used, VOC samples should be collected first and directly into pre-preserved sample containers. Fill all sample containers by allowing the pump discharge to flow gently down the inside of the container with minimal turbulence.
3. During purging and sampling, the tubing should remain filled with water so as to minimize possible changes in water chemistry upon contact with the atmosphere. It is recommended that 1/4 inch or 3/8 inch (inner diameter) tubing be used to help ensure that the sample tubing remains water filled.
4. Label each sample as collected. Samples requiring cooling will be placed into a cooler with ice or refrigerant for delivery to the laboratory.
5. Before securing the well, measure and record the well depth (to 0.1 foot), if not measured 24 hours before purging began. Note: measurement of total well depth is optional after the initial low stress sampling event. However, it is recommended if the well has a "silting" problem or if confirmation of well identity is needed.
6. Secure the well.
7. Place the samples in a cooler packed on ice with the chain-of-custody. Seal the cooler with custody seals and ship by overnight delivery to the laboratory.

Other notes for sampling include:

- Decontaminate reusable sampling equipment prior to collecting the initial sample and between samples.
- Sample containers will have Teflon®-lined screw caps.
- The sample label, chain-of-custody and logbook will contain the sample identification, sample date, sample preservative, required analyses, name/initials of the sampler, and NAS Key West reference.

3.5 Waste Characterization and Disposal Sampling

3.5.1 Waste Soil Sampling

Solid waste from the site will be in the form of soil removed during well installation. Material removed will be contained in one or more 55-gallon drums. It is estimated that one sample will be needed to perform characterization of this waste. The sample will be collected in the following manner and analyzed in accordance with Table 3-2.

Procedure for Collecting Volatile Fractions

1. At the selected sample location, using an auger, split spoon, or other similar device retrieve a core.
2. Fill the appropriate sample jars completely full with the sample from the core.
3. Close the jar, label, and package the sample for shipment to the laboratory.

Procedure for Collecting Non-Volatile Samples

1. From four randomly selected sample locations, collect several spoonfuls of the soil into a stainless steel bowl.
2. Homogenize the four samples by the quartering technique using the stainless steel spoon.
3. Fill the appropriate sample jars completely full with the homogenized sample.
4. Close the jar, label, and package the sample for shipment to the laboratory.

3.5.2 Waste Water Sampling

Aqueous waste will be generated from well development, well sampling, and decontamination. Waste characterization samples will be collected to evaluate the handling, transportation, and disposal requirements of generated water at the site. It is anticipated that the aqueous waste will be contained in drums or a poly tank. Water samples will be collected as follows and analyzed for the parameters listed in Table 3-2.

A sample will be collected from the drum or poly tank using a dip jar, peristaltic pump, or disposable bailer. The sample containers for volatiles analyses will be filled first. The 40-milliliter (ml) vials will be filled so that there is no headspace in each vial. The sample containers for the remaining analyses will then be filled.

Equipment Decontamination

Sampling methods and equipment have been selected to minimize decontamination requirements and the possibility of cross-contamination. The following procedures will be used for all sampling equipment used to collect routine samples undergoing trace organic or inorganic analyses.

Reusable sampling equipment will be decontaminated before the initial sample is collected and between sampling locations using the following procedure:

1. Clean with potable water and Alconox® or equivalent laboratory-grade detergent using a brush, if necessary, to remove particulate matter and surface films.
2. Rinse thoroughly with potable water.
3. Rinse thoroughly with analyte-free water.
4. Rinse thoroughly with isopropanol (pesticide-grade). Do not rinse PVC or plastic items with isopropanol.
5. Rinse thoroughly with laboratory-provided analyte-free water.
6. Allow equipment to air dry completely.

The tape and probe for the water interface probe or water level indicator will be decontaminated before the initial sample is collected and between sampling locations using the following procedure:

1. Wash with potable water and Alconox® or equivalent laboratory-grade detergent.
2. Rinse with potable water
3. Rinse with isopropanol (pesticide-grade). Do not rinse PVC or plastic items with isopropanol.
4. Rinse thoroughly with laboratory-provided analyte-free water.
5. Allow equipment to air dry completely.

3.6 Sample Documentation

Sampling documentation will include the following:

- Numbered Chain-of-Custody Forms
- Sample Field Log Book which includes the following information:
  - Name of laboratories and contacts to which the samples were sent, turnaround time (TAT) requested, and data results, when possible
  - Termination of a sample point or parameter and reasons
  - Unusual appearance or odor of a sample
  - Measurements, volume of flow, temperature, and weather conditions
  - Additional samples and reasons for obtaining them

- Levels of protection used (with justification)
- Meetings and telephone conversations held with the NAVFAC SE, Navy Technical Representatives (NTRs), regulatory agencies, project manager, or supervisor
- Details of QC samples obtained
- Sample collection equipment and containers, including their serial or lot numbers
- Identification of field analytical equipment, and equipment utilized to make physical measurements
- Calculations, results, and calibration data for field sampling, field analytical, and field physical measurement equipment
- Property numbers of any sampling equipment used, if available
- Sampling station identification
- Date and time of sample collection
- Description of the sample location
- Description of the sample
- Sampler(s)' name(s) and company
- How the sample was collected
- Diagrams of processes
- Maps/sketches of sampling locations
- Weather conditions that may affect the sample (rain, extreme heat, wind, etc.)
- Sample Labels
- Custody Seals (minimum of two on each shipping container)

3.7 Field Quality Control

Field duplicate samples and equipment blank samples will be collected at a minimum frequency of 10 percent times the total number of samples collected for an analysis and rounded to the nearest whole number. One trip blank sample will be provided at a frequency of one per sample cooler containing volatile samples. Matrix spike/matrix spike duplicates (MS/MSD) will be required at a frequency of one per sample event or a minimum of 5 percent of the total number of samples collected for an analysis and rounded to the nearest whole number. Quantity and frequency are detailed in Table 3-2.

3.8 Analytical Methods

Samples will be collected for analytical methods summarized in Table 3-2. All analytical results will be internally validated by an AGVIQ Project Chemist.

Preliminary analytical results will be emailed to Bethany Garvey (with a copy to Camden Robinson) per the TAT listed in Table 3-2 from day of sample receipt. Note that 4contact information is provided below. The final hard copy data and electronic file will be delivered to AGVIQ within 14 days of sample receipt.

Bethany Garvey
Laboratory Coordinator
CH2M HILL
1000 Abernathy Road, Suite 1600
Atlanta, GA 30328
770-604-9182 ext 54124
Fax: 678-579-8176
bethany.garvey@ch2m.com

Camden Robinson
Project Chemist
CH2M HILL
1000 Abernathy Road, Suite 1600
Atlanta, GA 30328
770-604-9182 ext 54292
Fax: 678-579-8148
camden.robinson@ch2m.com

4.0 Quality Control Plan

This QC plan provides construction QC procedures, presents the approach to performing construction inspections, and discusses overall approach for implementing the site quality system at NAS Key West.

4.1 QC Organization

The overall responsibility for implementation and enforcement of the QC Plan is assigned to the Project Manager and Project QC Manager. Designated qualified individuals will assume execution responsibility for this plan. These individuals may include the Site Superintendent, Site Health and Safety Specialist, and Project QC Manager. The AGVIQ Program QC Manager has responsibility for verification of the effectiveness of the project's QC system. Once the Project QC Manager is identified, AGVIQ will forward information pertaining to their relevant qualifications.

The project organizational chart (see Figure 4-1) depicts the chain-of-command for this TO and the individuals responsible for executing the work as indicated. Individual roles and responsibilities of project personnel are summarized in Table 4-1.

4.2 Outside Organizations and Subcontractors

AGVIQ assumes overall responsibility for conformance of subcontracted materials and services to quality requirements. However, it is the responsibility of the subcontractor to plan, manage, and accomplish the activities in accordance with the plans, specifications, and local, state, and federal regulations.

Subcontractors report directly to the Site Superintendent and are responsible for completion of the project-specific activities assigned to them. Subcontractors are also responsible for reporting to the Site Superintendent, who consults with the Project QC Manager about quality issues. Subcontractors verify that their construction activities and materials comply with the requirements of the project-specific plans and specifications. Subcontractors include those organizations providing materials or services to the project. The subcontractors anticipated for this project are as follows:

- Licensed Surveyor
- Third-party Utility Locator
- Licensed Drilling Contractor
- Analytical Laboratory
- Licensed Waste Transporter
- Licensed Waste Disposal Facility

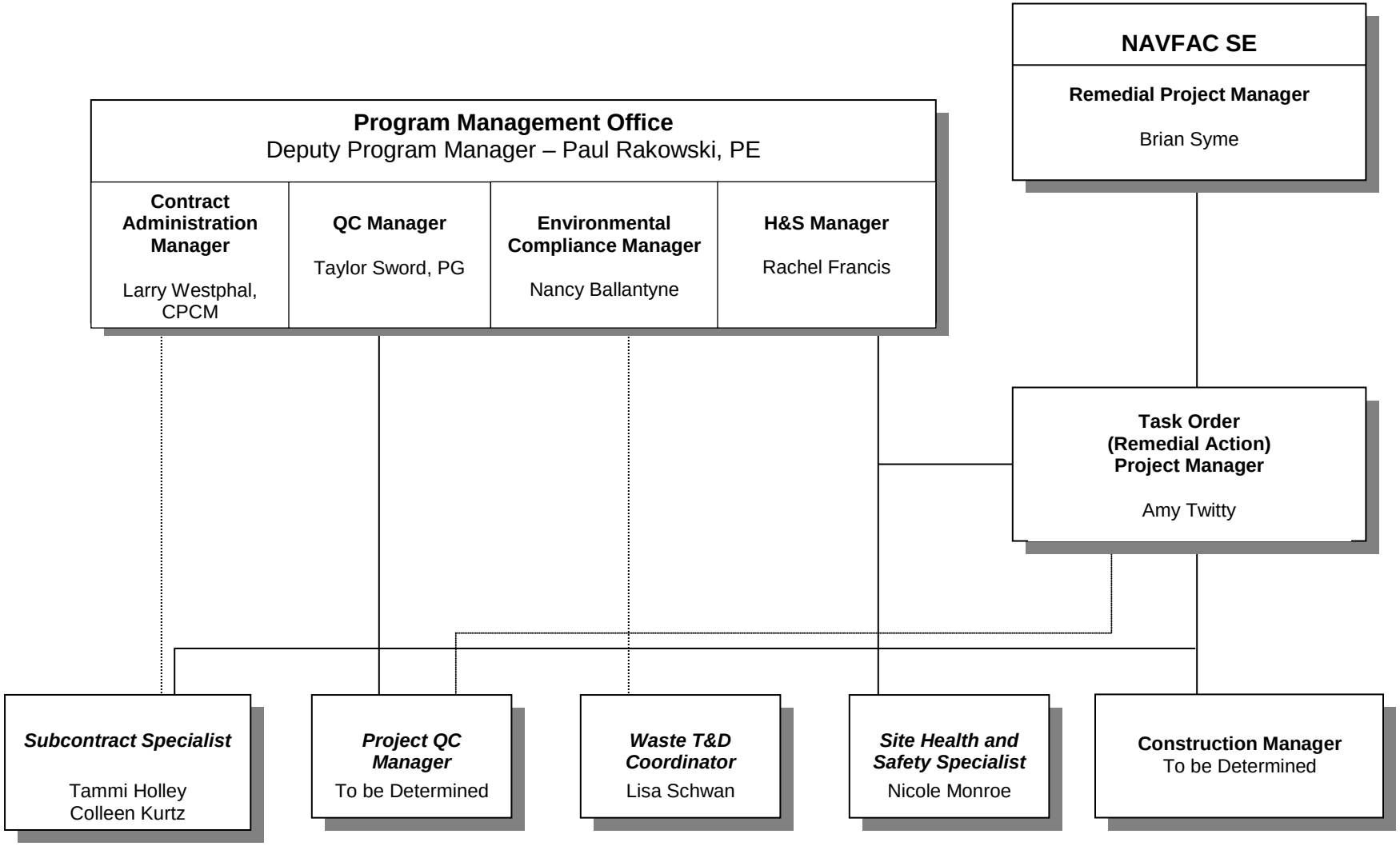


Figure 4-1
Project Organization Chart

TABLE 4-1
Roles, Responsibilities, and Authorities of Key Project Personnel

Role	Responsibility	Authority
Project Manager	– Management and technical direction of work – Communication with NAVFAC SE RPM and NTR – Overview subcontract TO performance – Select TO staff – Develop TO work plan and supporting plans – Meet TO performance objectives – Prepare status reports – Prepare field change requests	– Approve subcontract TO selection – Approve invoices to NAVFAC SE – Approve TO baseline schedule – Stop work at the site for any reason – Approve payment to vendors and suppliers – Approve payment to subcontractor – Review technical qualifications of subcontractor – Respond to design change notices
Site Superintendent	– Responsible for all site activities – Provide direction to subcontractor – Act for Project Manager – Provide daily status reports – Prepare TO work plan – Conduct daily safety meetings – Review subcontractor qualifications – Stop work for unsafe conditions or practices	– Stop work for subcontractor – Approve corrective action for site work-arounds – Approve materials and labor costs for site operations – Resolve subcontractor interface issues – Approve daily and weekly status reports
Project QC Manager	– Monitor and oversee TO compliance with scope of work – Review requests for changes in scope of work – Recommend improvements in work techniques or metrics – Recommend work-around to Site Superintendent – Monitor and report on subcontractor quality and quantities – Audit subcontractors offsite fabrication – Maintain Submittal Register – Participate in Incident-Free Operations conference call	– Complete daily compliance report – Monitor and report on subcontractor quality and quantities – Audit subcontractor offsite fabrication – Maintain Submittal Register – Stop work for non-compliant operations – Maintain rework items list – Stop work for non-compliant operations
Site H&S Specialist	– Monitor and report on subcontractor H&S performance – Record and report safety statistics – Conduct needed site H&S orientation – Maintain Environmental Log – Stop work for unsafe practices or conditions	– Stop work for unsafe practices or conditions – Approve subcontractor site-specific H&S plan – Set weekly safety objectives – Approve resumption of work for resolved safety issues

TABLE 4-1
Roles, Responsibilities, and Authorities of Key Project Personnel

Role	Responsibility	Authority
Subcontract Specialist	– Prepare bid packages – Purchase disposable materials – Maintain subcontract log – Approve payables for disposable items – Maintain government property records	– Provide project scheduling coordination – Responsible for site cost tracking and reporting – Maintain record of site purchases

4.3 Submittal Procedures and Initial Submittal Register

AGVIQ will implement a process for submittals to the Navy. Each submittal will include a transmittal form that proper identifies each submittal. The Project QC Manager is responsible for the completeness and accuracy of the submittals and will be assisted in this task by the Project Manager.

The Project QC Manager will review submittal packages in detail for completeness and compliance with contract requirements for documentation. Exceptions will be noted and expressly stated. This procedure will ensure that field data are adequate for their intended use and meet the contract requirements. Each member of the project QC team in the chain of command is responsible for preparation and review of pertinent QC material and field documents.

For deliverables, the Project QC Manager will complete his/her review and submit the information to the Project Manager. Following a final review by the Project Manager, applicable data and information relating to the submittals will be forwarded to the Navy. The Project Manager has the authority to sign submittals and present them to the Navy or reject the documents and have them returned to the project team or Subcontractor for revision.

The Submittal Register, provided in Appendix D of this Work Plan, documents submittals in accordance with the AGVIQ contract. AGVIQ, the Navy, or others will approve submittals as identified in the submittal register. All approved submittals will be distributed by AGVIQ to the appropriate Navy and NAS Key West personnel (Base RPM and NAVFAC SE RPM in duplicate, etc.), the project site, and to the project file.

4.4 Testing Plan and Log

The general testing requirements are shown in Table 4-2. Additional details of the testing are provided in the design drawings and specifications and manufacturer's literature for integral equipment. The Testing Plan and Log (see Appendix D) will be used to track the results of field-testing. Detailed records of testing will be included in the daily contractor QC report.

TABLE 4-2
Testing Requirements

Test/Inspection	Requirement/Reference	Frequency
Soil Sampling	Analyses for arsenic, PAHs, and TPH Speciation	At select boring locations per Work Plan. See Table 3-2.
	FID and LEL equipment calibration	Daily, or as directed by equipment manufacturer
Groundwater Sampling	17 MWs for VOCs, SVOCs, TRPH, and lead. 13 wells for MNA parameters.	Twice at specified locations. See Table 3-2.
	Water quality meter calibration	Daily, or as directed by equipment manufacturer

4.5 Procedures to Complete Rework Items

The rework items list is intended to identify and record the status of those items of work within the TO that have been identified as not satisfying contract requirements. The list will be developed and maintained at the site by the Project QC Manager. The Daily QC Report makes provisions for reporting rework items identified during initial and follow-up phases of control construction inspections. Rework items identified as a consequence of testing will be discussed during meetings, at which time resolution of the nonconformity will be planned and agreed upon.

4.6 Documentation Procedures

This Work Plan provides the details of the documentation procedures. Over the course of executing the work described in this Work Plan, AGVIQ will deliver the following documentation:

- Contractor QC Report
- Contractor Production Report
- Preparatory Phase Checklist
- Initial Phase Checklist
- Field Test Reports
- Monthly Summary Report of Field Tests
- Testing Plan and Log
- Rework Items List
- QC Certifications
- Waste Tracking Log

The documentation will typically be submitted as attachments to the Contractor QC Report. During the coordination and mutual understanding meeting, the exact details of reporting will be discussed.

4.7 List of Definable Features of Work

The Project QC Manager will perform inspections of the materials, equipment, and overall work activities. The inspections are performed to ensure that safe, efficient, high quality work is performed, while meeting the objectives and requirements of the plans and specifications.

The project tasks for this TO are grouped into definable features of work, which are work activities with individual plans and specifications. The definable features of work for this project are as follows:

- Mobilization and site preparation
- Well Gauging
- Well installation/soil borings
- Sampling (soil, groundwater, and waste)
- Waste management
- Decontamination and demobilization

4.8 Procedures for Performing the Three Phases of Control

The definable features will be inspected in accordance with the three phases of control. The three phases include preparatory, initial, and follow-up. This Work Plan provides discussions of how the three phases of control will be implemented. An overview of the inspection provisions is outlined in the subsections that follow.

The construction controls include review of project drawings, work plans, associated specifications and other project-related documents. Prior to commencing any definable feature of work, a preparatory meeting will be conducted to review the testing requirements, work scope details, procurement, schedule and related safety topics of interest.

The Project QC Manager will verify the following items:

- Facilities and testing equipment are available and comply with testing standards.
- Recording forms, including all of the testing documentation requirements, have been prepared.
- Required material certificates are received and acceptable.

4.8.1 Mobilization and Site Preparation

Mobilization will take place in phases consistent with the activities shown on the project schedule. Personnel, subcontractors, equipment, and materials will be mobilized based on the scope of the activity. As part of the mobilization activity, a pre-construction meeting will be held to review project preparedness, the overall project scope, schedule, communications, and reporting. The preparedness check will verify that site preparation requisites such as permitting, approvals, utility clearances, demarcating the work zones, and staging of equipment and material, as necessary, are in place to begin the work activities.

Site mobilization and preparation includes utility locator survey of all areas where intrusive activities will be performed.

Preparatory Phase

The preparatory phase will include a review of the activity hazard analysis (AHA) process and the daily tailgate safety meeting, the project work plan, communications matrix, project schedule, submittal status, and confirmation of appropriate materials and equipment.

Initial Phase

Inspections will be made as necessary to ensure construction limits are defined, utilities marked, and material staged in the designated areas.

Follow-up Phase

The Site QC Manager will provide continuous oversight of the site preparation activities to verify that the work is completed in accordance with the requirements provided in this Work Plan. Inspections required by the Environmental Protection Plan (see Section 5.0) will be performed. Deficiencies will be noted and corrected.

Inspection activities include, but are not limited to, the following:

Task	Inspection Details
Pre-Construction Meeting	• Verify training and medical clearance • Verify Dig Permit in place • Verify designated locations of equipment layout and material staging • Discuss maintaining mark-up drawings and recording field data
Site Preparation	• Review pre-construction and construction quality control submittals to ensure they are approved • Review personnel certifications and licenses for performing particular work • Confirm that field equipment is properly setup and calibrated and in operational condition • Confirm that the materials and equipment are stored properly in accordance with the Work Plan • Review site security measures. • Discuss construction schedule • Review the APP and personal protective equipment (PPE) requirements • Ensure Material Safety Data Sheets (MSDSs) are onsite

4.8.2 Well Installation/Soil Borings

Preparatory Phase

Preparatory phase will include reviewing the site drawings; preparing this Work Plan, technical specifications and submittal status; verifying the submittal approval; confirming qualifications and schedule of well driller; verifying that appropriate materials are present; and confirming that the appropriate equipment and personnel are available to complete the work.

Initial Phase

Ongoing inspections will be performed during the installation of the monitoring wells and soil borings. The initial inspection will begin as the boring is advanced for the well installed.

The Project QC Manager will perform the inspections to verify compliance with this Work Plan and note any deficiencies in equipment, materials, or work practices.

Follow-up Phase

The Project QC Manager will provide continuous oversight of the installation to verify that the work is completed in accordance with this Work Plan. Compliance will be verified through daily observations, and deficiencies will be noted. Oversight activities will include verification that the work is being completed according to the technical specifications and the well details provided on the construction drawings. Attention will be placed on total well and screen depths, well materials, and filter pack materials and depths.

Well installation and soil boring inspections include the following:

Task	Inspection/Control
Well Drilling	• Confirm that necessary permits, applications, and other required documents have been obtained • Confirm the well installation location • Confirm that drilling conforms to state and local regulations • Confirm that oversight is provided by a Florida registered geologist or engineer • Confirm that proper decontamination procedures are used • Confirm that the boring is the correct size and depth • Confirm that the well has been developed in accordance with this Work Plan • Confirm that appropriate drilling activity records are kept
Well Construction	• Confirm that no glue, solvents, or pipe dope is used in the well casing construction • Confirm that new, unused PVC is used for the well casing and an appropriate slot size is used for the screen • Confirm that well screen is placed in correct interval • Confirm that the appropriate filter pack and seal is used • Confirm that the appropriate flush-to-ground/stick up well head completion is installed • Confirm that appropriate well construction records are kept
Decontamination and Investigation Derived Waste Disposal	• Confirm that soil cuttings and sampling equipment investigation derived materials are properly containerized disposed according to this Work Plan • Confirm that sampling equipment is decontaminated or disposed of properly

4.8.3 Well Gauging

Preparatory Phase

Preparatory phase will include reviewing the site drawings; preparing this Work Plan, technical specifications and submittal status; verifying the submittal approval; verifying that appropriate materials are present; and confirming that the appropriate equipment and personnel are available to complete the work.

Initial Phase

Ongoing inspections will be performed during the well gauging. The initial inspection will begin as the wells are located. The Project QC Manager will perform the inspections to verify compliance with this Work Plan and note any deficiencies in equipment, materials, or work practices.

Follow-up Phase

The Project QC Manager will provide continuous oversight of well gauging activities to verify that the work is completed in accordance with this Work Plan. Compliance will be verified through daily observations, and deficiencies will be noted. Oversight activities will include verification that the work is being completed according to the technical specifications. Attention will be placed on well conditions including condition of well caps and manhole covers, presence of locks, rust, etc.

Well gauging inspections include the following:

Task	Inspection/Control
Well Gauging	• Confirm the well gauging locations • Confirm that proper decontamination procedures are used • Confirm that the boring is the correct size and depth • Confirm that the well has been developed in accordance with this Work Plan • Confirm that appropriate drilling activity records are kept
Well Bailing	• Confirm that the proper bailing materials and equipment are used • Confirm that all bailing equipment is new and unused or properly decontaminated prior to use • Confirm that appropriate well purging/bailing records are kept
Decontamination and Investigation Derived Waste Disposal	• Confirm that sampling equipment investigation derived materials are properly containerized disposed according to this Work Plan • Confirm that sampling equipment is decontaminated or disposed of properly

4.8.4 Sampling (Soil, Groundwater, and Waste)

Samples of soil borings, groundwater, representative samples of drill cuttings, and well development wastewater will be collected. Environmental samples will be collected in accordance with EPA and FDEP methods and procedures. Other controls will include, but are not limited to, maintaining a chain-of-custody; proper handling, packing, and shipping; sampling performed by qualified persons, and use of certified laboratory.

Preparatory Phase

The Preparatory Phase for sample collection activities includes reviewing the relevant AHAs, reviewing the sampling procedures provided in Section 3.0 Sampling and Analysis Plan, verifying acceptance of the selected laboratory, and confirming that the appropriate equipment and materials are available to perform the sampling activities.

Initial Phase

Depending on the definable features of work in progress, samples will be collected and subsequently analyzed at an approved laboratory in accordance with requirements outlined in Section 3.0 Sampling and Analysis Plan. Sample collection activities, including proper chain-of-custody documentation, will follow the protocols outlined in Section 3.0 Sampling and Analysis Plan. Samples of drill cuttings and aqueous wastes (well development and decontamination wastewater) will be collected.

Follow-up Phase

The Project QC Manager will observe sample collection activities and the associated documentation records throughout each sampling event. Analytical reports from the approved laboratory will be reviewed for accuracy and quality. If required, data validation information from the laboratory will be reviewed to resolve discrepancies in the analytical data. AGVIQ quality assurance personnel will validate laboratory data and field sampling results.

Sampling inspections include the following:

Task	Inspection Details
Sampling	• Review sampling personnel qualifications • Confirm that field equipment is properly setup and calibrated and in operational condition • Confirm sampling and analyses per work plan • Boring equipment decontamination • Document pertinent sampling location information • Verify the field instruments are calibrated in accordance with manufacturers' recommendations • Verify recording forms, including all of the test documentation requirements, have been prepared and are accurate and complete • Review the APP and PPE requirements • Ensure MSDSs are onsite • Coordinate bottle kit requests with laboratory and ship to address • Coordinate sample shipping address and receipt with laboratory

4.8.5 Waste Management

Preparatory Phase

The preparatory phase for the management of liquid and solid wastes includes reviewing the waste management plan (see Section 5.0), the disposal, recycling or treatment facility qualifications, and the transportation schedule for hauling material offsite and confirming that the appropriate mechanisms are in place to commence the work activity. Review and acceptance of the solid waste disposal package by the AGVIG waste coordinator is required prior to submitting the package to the Navy for approval. Prior to any work, the relevant AHAs will be reviewed and discussed. All temporary storage containers and transport vehicles will be inspected prior to acceptance onto the project and labeled as appropriate.

Initial Phase

This phase includes inspecting the waste transport vehicles prior to accepting on the job. Containers used for transporting liquids will be free of liquids or other foreign materials prior to filling. Information provided on the waste manifest must be verified as complete and accurate including, but not limited to, generator name, address and signature; date; type of material being hauled; designated treatment facility; and volume and/or weight of material. Any discrepancies on waste manifest documents will be corrected.

Follow-up Phase

This phase includes verifying that the treatment facility has accepted and disposed of the waste material at their facility and has sent the required completed manifest to the generator or the generator's technical representative. Receipt of the certificate of disposal from the designated facility must be verified, and the invoice verified to be complete and accurate. A field logbook and an electronic log of all transportation and disposal shipments will be maintained. Containers will be routinely inspected for integrity and inventoried. Waste storage areas will be visually inspected on a daily basis for releases or signs of corrosion, deterioration or other conditions that could result in a release. The results of all inspections will be documented.

Waste management inspections include the following:

Task	Inspections/Details
Waste Management	• Verify qualifications of transporters and disposal facilities • Check manifests • Maintain T&D log • Inspect waste transport vehicles routinely • Inspect waste containers and storage areas on a daily basis

4.8.6 Decontamination and Demobilization

Equipment used to perform site activities will be decontaminated in accordance with the provisions of the site-specific APP (Appendix B). The Site Superintendent and Site Safety and Health Specialist will perform pre-final inspection of cleanliness of equipment. Final equipment inspections will be performed and documented by the Project QC Manager or his/her designee.

Equipment and personnel will be demobilized from the site following the completion of the work activities identified in this Work Plan. The Project QC Manager will verify that the objectives of associated remedial activities have been met. A final inspection will be conducted to verify completion of all project activities. Findings, should any be identified, will be tracked, resolved, and documented during a final-final site walk through inspection.

Preparatory Phase

The preparatory phase will include a review of decontamination procedures, the APP (Appendix B), Section 5.0 Waste Management Plan, and relevant AHAs.

Initial Phase

The Site Superintendent will perform oversight to confirm that the objectives of the decontamination activities have been met and that the rework items, if any, have been completed to the satisfaction of AGVIQ and the Navy. The Project QC Manager will perform inspections to verify and document work efforts.

Follow-up Phase

The Project QC Manager will provide continuous oversight of the decontamination and demobilization to verify that the work is completed in accordance with the requirements provided in this Work Plan. Deficiencies will be noted and corrected.

Inspections will include, but are not limited to the following:

Task	Procedures/Construction Details
Demobilization	• Pre-final site inspection and develop punch-list items • Inspect work areas to ensure all temporary facilities, equipment and resources are safely removed from the site • Completion inspection when work is substantially complete • Punch lists on outstanding items • Project housekeeping and final project cleaning • Final Site Inspections • Orderly Site Demobilization • Compilation of Site Records & Documents • Complete Resolution of Punch-list items

4.9 Procedures for Completion Inspection

Near the completion of definable features of work tasks or the completion of all tasks associated with the scope of work, the Project QC Manager will conduct a punch-out inspection of the work items to determine completion status and conformance. A punch list of items will be generated that also includes target dates for resolving any deficiencies. This punch list of items will be attached to the QC report on the day(s) of performing the inspections. The status of the items will be tracked via follow-up inspections.

The Project Manager will notify the Navy that the project is ready for a pre-final inspection. The Navy will perform this inspection to determine whether the project is complete and ready for acceptance. Should any items be identified, a punch list of items will be generated and tracked by the Project QC Manager. Upon satisfactory completion of the punch list, the Project Manager will notify the Navy that the project is ready for the final inspection.

The status of the punch list items from the pre-final inspection will be reported, and a statement that pending items will be completed prior to the date of the final inspection. The Project Manager, Project QC Manager, Site Superintendent, essential subcontractor representatives, Navy representative(s) and others as determined by the Navy will attend the final inspection.

The Final Acceptance Inspection will be considered closed when the work has been accepted by the NTR or designated representative and acknowledged by letter from the Government with declaration of the work being usably complete in accordance with FAR clause entitled Inspection of Construction.

5.0 Waste Management Plan

The scope of this waste management plan addresses the management and disposal requirements for wastes generated during soil sampling and the installation, development, and sampling of wells at TPTF-Navy (North) and TPTF-Navy (South) at NAS Key West, Key West, Florida. It is anticipated that the following wastes and materials will be generated during these activities:

- Soil waste generated during soil boring and well installation
- Liquid wastes generated during well development, groundwater sampling, and decontamination water
- Sampling-related waste including, but not limited to tubing, gloves, and protective clothing
- Clean and uncontaminated construction debris; debris includes discarded materials generally considered to be not water-soluble including, but not limited to, materials used in well pad installation such as unused concrete and framing materials as well as materials used in decontamination (e.g., plastic sheeting, sampling materials, and personal protective clothing)

5.1 Waste Characterization

It is assumed that the wastes generated at the site are non-hazardous. Typically, uncontaminated wastes such as general construction debris will be characterized using process knowledge and generally will be classified as municipal solid waste or recyclable material.

AGVIQ will be responsible to arrange for transportation and disposal of the waste generated from the well installation effort.

5.2 Waste Management

5.2.1 Waste Storage Time Limit

Hazardous wastes may only be accumulated for 90 days after the first date of generation. Other wastes will be removed from the site as soon as possible. The date of generation (or accumulation start date) is the day that a waste is first placed in a container. Based on site history and contaminant concentrations encountered at this site, no hazardous wastes are expected to be accumulated.

5.2.2 Labels

The labeling of waste containers will be in accordance with 49 CFR 172, 173 and 178. Labels will include the type of waste, location from which the waste was generated, and accumulation start date.

Waste labels will include the following information, as applicable for the type of waste:

- "Analysis Pending" or "Waste Material"—Temporary pre-printed or handwritten label will include the accumulation start date. Once analytical results are reviewed and the waste characterized, the label will be replaced with appropriate final label (that is, "Hazardous Waste" or "Non-Hazardous Waste").
- "Hazardous Waste"—Pre-printed hazardous waste labels with the following information:
  - Accumulation start date
  - Generator Name
  - EPA identification (ID) number
  - Waste codes
  - Manifest number (for containers of less than 110-gallon capacity)
- "Non-Hazardous Waste"—Preprinted labels with the following information:
  - Accumulation start date
  - Generator name
  - EPA ID number
  - Waste-specific information (for example, contaminated soil)

Materials that will be recycled (for example, scrap metal) or reclaimed (for example, recovered fuel that can be burned for energy recovery) and that are exempt from waste management requirements will be labeled accordingly. For example, containers or tanks of recovered petroleum that will be burned will have labels identifying the contents as "Recovered Petroleum" or equivalent.

Where applicable, the major hazards (for example, flammable, oxidizer, and carcinogen) will be included on the label.

5.2.3 General Waste Management Requirements

Hazardous wastes will be segregated from non-hazardous wastes. Additionally, incompatible wastes, such as flammable and corrosive wastes, will be segregated. Wastes of the same matrix, contamination, and the same source may be aggregated to facilitate storage and disposal.

Wastes will be accumulated in an area identified and approved by the Navy. If an accumulation area is not designated, AGVIQ will accumulate hazardous wastes in an area that is not accessible to the general public, away from storm or surface water features (e.g., storm sewer inlets, ditches, streams, etc.) and that can be secured.

All containers, drums, and tanks will be inspected for disrepair and any residual contamination or contents upon arrival at the site. If a container contains waste upon arrival or is in disrepair, it will be immediately rejected and documented.

All wastes will be contained in a manner that prevents the spread of contamination. Unless the Navy has designated a specific waste storage area, wastes will be accumulated (and stored) near the project site.

Security/Contingency Planning

It is not anticipated that any waste generated as a result of this work will be considered hazardous. However, if needed, a barrier, such as barricade tape or temporary fencing, will be provided for hazardous waste accumulation areas and for other waste storage areas that are accessible to the general public. For hazardous waste accumulation areas, the 24-hour emergency contacts and telephone numbers will be posted or otherwise made available. NAS Key West staff will provide coordination for designated hazardous waste accumulation areas.

Waste accumulation areas will contain appropriate emergency response equipment. The APP (Appendix B) identifies the specific emergency response procedures and equipment. Hazardous waste accumulation areas will include fire extinguishers (in areas where wastes are known or suspected to be flammable or ignitable), decontamination equipment, and an alarm system (if radio equipment is not available to all staff working in accumulation area). Spill control equipment applicable for the waste, such as sorbent pads for aqueous wastes, will be available in the waste accumulation areas and where liquids are transferred from one vessel to another.

Drums (or Other Small Containers)

The following procedures will be followed when using drums:

- All drums will be inspected and inventoried upon arrival onsite for signs of contamination and/or deterioration.
- Adequate aisle space (for example, 30 inches) between drums will be provided to allow the unobstructed movement of personnel and equipment. A row of drums should be no more than two drums wide.
- Each drum will be provided with its own label, with labels visible.
- Drums will remain covered except when removing or adding waste to the drum. Covers will be properly secured at the end of each workday.
- Drums will be disposed of with the contents. If the contents are removed from the drums for offsite transportation and treatment or disposal, the drums will be decontaminated prior to re-use or before leaving the site or crushed and disposed of appropriately.
- During onsite transport, drums of hazardous waste will be transported on wood pallets and secured together with non-metallic bonding.
- Drums containing liquids will be provided with secondary containment.

Storage Piles

Where appropriate, construction debris and waste or intact equipment may be accumulated in storage piles. All storage piles will be managed in such a manner as to maintain good housekeeping and to prevent the spread of contamination.

- For contaminated materials, the storage piles will be provided with secondary containment as indicated for soil stockpiles. Damaged or leaking electrical or hydraulic equipment may not be stored in storage piles.

- For uncontaminated or decontaminated debris and waste or intact equipment, the storage piles should be placed on a liner. These piles will be covered as necessary to prevent stormwater run-on and run-off.

5.2.4 Waste Storage Area Inspections

During implementation, waste accumulation areas will be inspected at least weekly for malfunctions, deterioration, discharges, and leaks that could result in a release. Weekly inspection of containers will include checking for leaks, signs of corrosion, or signs of general deterioration.

If operations will be suspended for more than 7 days, contact the regulatory compliance manager and alternate inspection arrangements will be made. Prior to final demobilization, all hazardous wastes will be removed from the site.

Inspections will be recorded in the Daily QC Report and include any deficiencies and how the issue was rectified. Copies of the daily report will be maintained onsite and available for review.

Any deficiencies observed or noted during inspection will be rectified immediately. Appropriate measures may include transfer of waste from a leaking container to new container, replacement of a liner or cover, or repair of containment berm.

5.3 Waste Transportation

Each transportation vehicle and load of waste will be inspected before leaving the site. The quantities of waste leaving the site will be recorded. A contractor licensed for commercial transportation will transport non-hazardous wastes. For hazardous waste, the transporter will have an EPA ID number and will comply with transportation requirements outlined in 49 CFR 171-179 (Department of Transportation [DOT]) and 40 CFR 263.11 and 263.31 (Hazardous Waste Transportation). A copy of the documentation indicating that the selected transporter has appropriate licenses will be received prior to transport of any waste material.

5.3.1 Shipping Documentation

Prior to offsite disposal of any waste, the AGVIQ Waste Coordinator will provide the Navy with a waste approval package for each waste stream. This package will include a waste profile naming the U.S. Navy as the generator of the waste, analytical summary table(s) applicable to the waste, letter of approval from the proposed waste disposal facility to accept the waste, land disposal restrictions (LDR) notification for any hazardous wastes, a completed waste manifest, and any other applicable information necessary for the Navy to complete its review of the disposal package and signature as the generator.

The signed profile will then be submitted to the disposal facility for approval. Once the approval letter is received from the disposal facility, transportation will be scheduled.

Each load of waste material will be manifested prior to leaving the site. At a minimum, the manifest form will include the following information:

- Generator information, including name, address, contact, and phone number, EPA ID number

- Transporter information, including name, address, contact and phone number, EPA ID number
- Facility information, including name, address, phone number, EPA ID number
- Site name, including street/mailing address
- U.S. DOT Proper Shipping Name (for example, Hazardous Waste Solid, n.o.s. 9, UN 3077, PG III [D008])
- Type and number of container
- Quantity of waste (volumetric estimate)
- TO or job number
- Profile number
- 24-hour emergency phone number

Additionally, each shipment of waste will have a weight ticket. A LDR Notification/ Certification is also required for hazardous wastes. This form requires the generator's signature and submission to the disposal facility.

The generator (Navy) and the transporter must sign the manifest prior to the load of waste leaving the site. A copy of the manifest will be retained onsite and included with the Daily QC Report. The original signed manifest will be returned to the address of the generator. The facility will provide a copy of this signed manifest to the AGVIQ Waste Coordinator for the final report. The final report will include copies of the facility signed manifest, weight ticket, LDR (if applicable), and the Certificate of Disposal/Destruction/ Recycle.

If the signed hazardous waste manifest from the designated offsite facility is not received within 35 days, the AGVIQ Waste Coordinator will contact the transporter or the designated facility to determine the status of the waste. If the signed hazardous waste manifest has not been received within 45 days, AGVIQ, in coordination with the Navy, will issue an "Exception Report" to the state of Florida, as required under 40 CFR 262.42.

5.3.2 Transporter Responsibilities

The transporter will be responsible for weighing loads at a certified scale. For each load of material, weight measurements will be obtained for each full and empty container, dump truck, or tanker truck. Disposal quantities will be based on the difference of weight measurements between the full and empty container, dump truck, or tanker truck. Weights will be recorded on the waste manifest. The transporter will provide copies of weight tickets to the AGVIQ Waste Coordinator.

The transporter will observe the following practices when hauling and transporting wastes offsite:

- Minimize impacts to general public traffic.
- Repair road damage caused by construction and/or hauling traffic.

- Clean up waste spilled in transit.
- Line and cover trucks/trailers used for hauling contaminated waste to prevent releases and contamination.
- Decontaminate vehicles prior to re-use, other than hauling contaminated waste.
- Seal trucks transporting liquids.

No wastes from other project sites will be combined with wastes from this site.

All personnel involved in offsite disposal activities will follow safety and spill response procedures outlined in the APP (Appendix B).

5.3.3 Transportation and Disposal Log

The T&D Log (Appendix D) is used to track waste from generation to final disposition. Wastes will be logged into the T&D Log the day that the waste is generated and placed into containers. Transportation of wastes will be inventoried the day of transportation from the site using the T&D Log. Final disposal will be documented on the T&D Log using the Certificate of Disposal.

5.4 Waste Disposal

All investigation-derived waste (IDW) will be characterized to determine the appropriate disposal method. For soil IDW, this may include onsite spreading of cuttings in accordance with state rules, or disposal at an approved treatment/disposal facility. For liquid IDW, this may include, but is not limited to, conventional disposal via an authorized transporter/disposal facility, temporary discharge permit to a publicly-owned treatment works (POTW) sewer location designated by NAS Public Works Department staff, or possibly carbon filtration and onsite surface discharge in accordance with state rules (depending on generated quantities).

If waste must be removed from the site, the offsite treatment or disposal facilities will use the waste profile and supporting documentation (for example, analytical results) to determine if they can accept a waste. The treatment or disposal facility will be responsible for providing a copy of the final waste manifest and for a certificate of treatment or disposal for each load of waste received. Wastes generally will be disposed of as follows:

- Non-hazardous wastes will be disposed of in a facility permitted to accept the types and quantities of contamination (for example, Resource Conservation and Recovery Act [RCRA] Subtitle D landfills).
- Uncontaminated or decontaminated construction and demolition debris may be sent to municipal landfills or landfills designated for construction/demolition debris.
- Other miscellaneous uncontaminated solid waste will be disposed in approved trash receptacles on base. Waste will not be removed from the base without prior approval from AGVIQ and/or the Navy.

The treatment or disposal facility will be responsible for providing a copy of the final waste manifest and for a certificate of treatment or disposal for each load of waste received.

5.5 Records/Reporting

The following records and documents will be maintained:

- Transportation and offsite disposal records, including:
  - Profiles and associated characterization data
  - Manifests, LDR notifications/certifications, weight tickets, and other shipping records
  - Offsite facility waste receipts, certificates of disposal/destruction
- Inspection records

6.0 Environmental Protection Plan

The Environmental Protection Plan provided in this Work Plan provides general information on the appropriate requirements to be adhered to during the performance of the work at NAS Key West.

6.1 Regulatory Drivers

Remedial activities at the site are conducted under the provisions of Chapter 62-780 FAC. Wastes generated during the remedial activities will be managed consistent with State of Florida hazardous waste generator provisions for large quantity generators (Chapter 62-730 FAC).

6.2 Spill Prevention and Control

The provisions for spill prevention and control establish minimum site requirements. All spills will be reported to the AGVIQ Site Supervisor and/or Project Manager. Refer to the APP (Appendix B) for emergency response procedures and further reporting requirements.

All fuel, chemical, and waste storage areas will be properly protected from onsite and offsite vehicle traffic. Accumulated water will be inspected for signs of contamination (for example, product sheen, discoloration, and odor) before being discarded. Fire protection provisions outlined in the APP for TPTF-Navy (North) and TPTF-Navy (South) and in subcontractor plans will be followed. All spill and fire response will be conducted only by personnel with the appropriate training.

Chemical products will be properly stored, transferred, and used. Should chemical product use occur outside areas equipped with spill control materials, adequate spill control materials will be maintained at the local work areas.

6.3 Spill Containment and Control

Spill control materials will be maintained in the support zone, at fuel storage and dispensing locations, and at waste storage areas. Incidental spills will be contained with sorbent and disposed of properly. Spilled materials will be immediately contained and controlled. Spill response procedures include the following:

- Immediately warn any nearby workers and notify supervisor.
- Assess the spill area to ensure that it is safe to respond.
- Evacuate area if spill presents an emergency.
- Ensure any nearby ignition sources are immediately eliminated.
- Stop source of spill.
- Establish site control for spill area.

- Contain and control spilled material through use of sorbent booms, pads, or other material.
- Use proper personal protective equipment (PPE) in responding to spills.

Material staging areas will be properly barricaded for containment and to control run-off as needed.

6.4 Spill Cleanup and Removal

All spilled material, contaminated sorbent, and contaminated media will be cleaned up and removed as soon as possible. Contaminated spill material will be drummed, labeled, and properly stored until material is disposed of. Contaminated spill material will be managed as waste and disposed of according to applicable federal, state, and local requirements. In the event of a hazardous substance spill or release, the AGVIQ Site Supervisor will immediately notify NAS Key West personnel and follow NAS Key West Spill Response Procedures.

6.5 Hazardous Material Management

AGVIQ will maintain an inventory of chemicals and hazardous materials brought onsite.

The SSHO will request Material Safety Data Sheets (MSDSs) from the subcontractors and the vendors for chemicals delivered to the site by AGVIQ and its subcontractors.

The AGVIQ Site Supervisor will perform the following activities:

- Train employees on required site-specific hazard communication (HAZCOM).
- Confirm that the inventory of chemicals brought on site by subcontractors is available.
- Obtain an MSDS for each hazardous chemical before or as the chemicals arrive on the site.
- Label chemical containers with the identity of the chemical and with hazard warnings, if applicable.

The volume of chemicals and hazardous materials used will be tracked and documented in the daily quality or production reports.

A hazardous material is defined as any material that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may pose a substantial hazard to human health or the environment. The following is a list of hazardous materials or chemicals that may be brought onsite and incorporated as part of the final completion of the work, generated during the execution of the work for offsite disposal or recycling or otherwise used to facilitate site work, as defined in the APP (Appendix B). These hazardous materials or chemicals require spill prevention, spill control, and countermeasure processes to ensure sensitive environmental receptors are not adversely impacted in the event of a spill or release of these materials.

- Gasoline (small metal safety containers for fueling small engine equipment)
- Diesel fuel in heavy equipment or above ground storage tank

- Minor quantities of grease, motor oil and hydraulic oil for heavy equipment maintenance

The handling and storage of hazardous materials will be minimized to the extent possible to limit potential environmental and health impacts. Hazardous materials will be stored in the contractor staging area according to fire safety and environmental regulatory requirements. Incompatible materials will be segregated, and flammable materials will be kept in flammable materials storage lockers when not in use.

Personnel will be responsible for ensuring that these hazardous materials are properly maintained and not spilled. If a spill should occur, the spill procedures in the previous section and the APP must be adhered to, including notification requirements.

6.6 Protection of Natural Resources

AGVIQ will coordinate with NAS Public Works Department Natural Resources representatives prior to drilling implementation to evaluate potential natural resource impacts (i.e., gopher tortoise/ migratory bird habitat). If necessary, appropriate mitigation measures will be implemented. In any case, drilling and other field activities will be managed in such a manner as to minimize interference with wildlife and their habitat. If a gopher tortoise burrow is identified, then a minimum 25-foot radius buffer zone will be maintained around the burrow opening during work activities.

7.0 References

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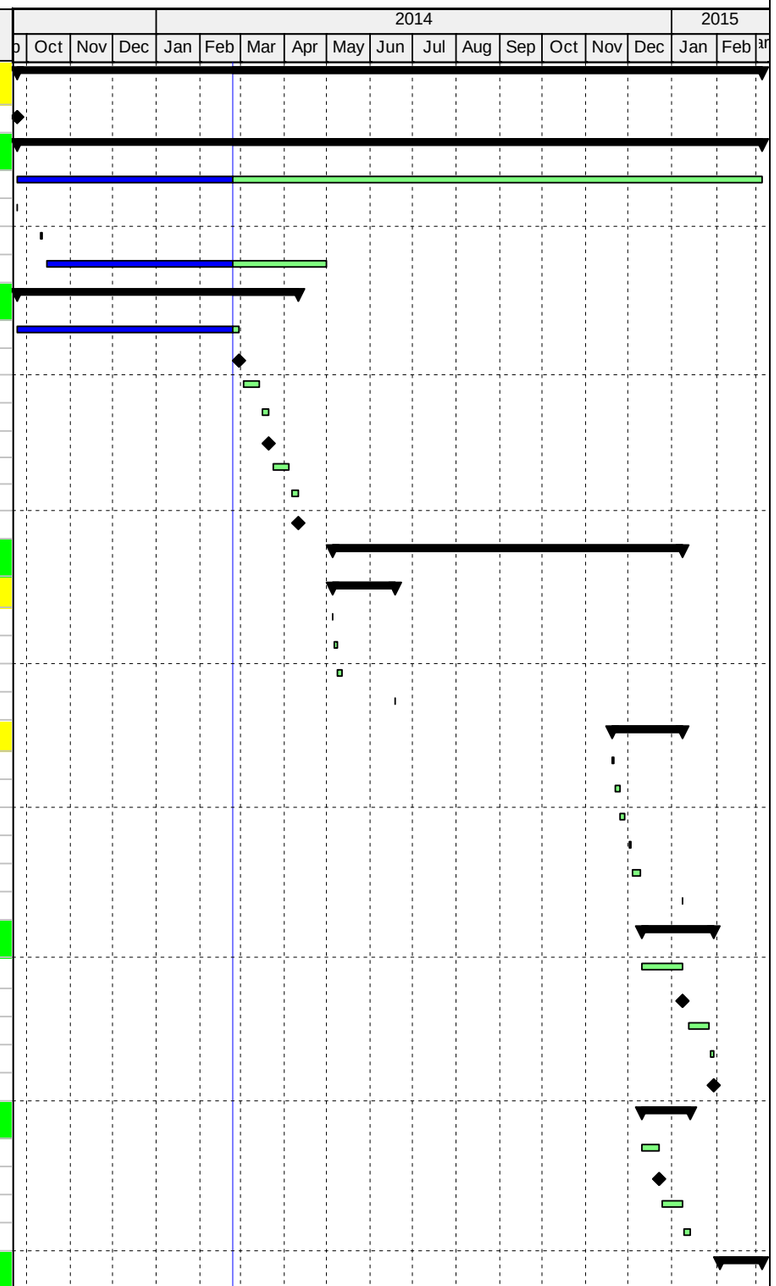
Appendix A
Project Schedule

JM14 - Petroleum Monitoring Assessment Support, Trumbo Pt Tank Farm, UST 003

Activity Name	Working Days	Start	Finish
JM14 WBS JM14 - Petroleum Monitoring & Assessment Support, Trumbo Pt Tank Farm, UST 003	269	24-Sep-13 A	05-Mar-15
Award	0	24-Sep-13 A	
JM14 WBS.04.02.01.01 Project Management, Administrative Support, And Meetings	259	24-Sep-13 A	05-Mar-15
Project Management	259	24-Sep-13 A	05-Mar-15
Initial Schedule	0	24-Sep-13 A	24-Sep-13 A
Kick-Off Meeting	0	11-Oct-13 A	11-Oct-13 A
Procurement	49	15-Oct-13 A	01-May-14
JM14 WBS.04.03.01.00 Work Plan, HASP, and UFP-SAP Updates	35	24-Sep-13 A	11-Apr-14
Prepare Draft Work Plan and APP	5	24-Sep-13 A	28-Feb-14
Submit to NAVFAC SE	0		28-Feb-14
NAVFAC SE review	10	03-Mar-14	14-Mar-14
Adjudicate NAVFAC SE Comments	5	17-Mar-14	21-Mar-14
Submit to FDEP	0		21-Mar-14
FDEP review	10	24-Mar-14	04-Apr-14
Adjudicate FDEP Comments	5	07-Apr-14	11-Apr-14
Submit Final Work Plan	0		11-Apr-14
JM14 WBS.04.05.00.00 Field Activities	179	05-May-14	08-Jan-15
JM14 WBS.04.05.00.00.-1 First Event (Incl Bush hog, S/A GW sampling, & Drum Removal)	32	05-May-14	18-Jun-14
Mobilization	1	05-May-14	05-May-14
Bush hog ~1.85 acres; Utility Markout for soil sampling	3	06-May-14	08-May-14
Semiannual GW sampling, background soil sampling, and liquid waste sampling	2	09-May-14	12-May-14
Drum Removal (T&D oversight)	1	18-Jun-14	18-Jun-14
JM14 WBS.04.05.00.00.-2 Second Event (Incl Well Installation & Soil Sample Collection)	37	19-Nov-14	08-Jan-15
Utility Markout of wells and boring locations and onsite permitting	2	19-Nov-14	20-Nov-14
Install up to 2 shallow MWs to 13 ft	2	21-Nov-14	24-Nov-14
Sample soil	3	25-Nov-14	28-Nov-14
Survey of new wells and boring locations	2	01-Dec-14	02-Dec-14
Semiannual GW sampling plus solid waste sampling (soil cuttings)	5	03-Dec-14	09-Dec-14
Drum Removal (T&D oversight)	1	08-Jan-15	08-Jan-15
JM14 WBS.04.03.99.01 Remedial Action Plan	35	10-Dec-14	30-Jan-15
Prepare Draft RAP	20	10-Dec-14	08-Jan-15
Submit to NAVFAC SE	0		08-Jan-15
NAVFAC SE review	10	12-Jan-15	26-Jan-15
Adjudicate NAVFAC SE Comments	3	28-Jan-15	30-Jan-15
Submit Final RAP to the Navy	0		30-Jan-15
JM14 WBS.04.04.19.01 Annual Report	23	10-Dec-14	13-Jan-15
Prepare Annual Report	9	10-Dec-14	22-Dec-14
Submit to NAVFAC SE	0		22-Dec-14
NAVFAC SE review	9	24-Dec-14	07-Jan-15
Adjudicate NAVFAC SE Comments	3	09-Jan-15	13-Jan-15
JM14 WBS.PCO Project Closeout	22	03-Feb-15	05-Mar-15



Actual Work
Remaining Work
Milestone
Summary

ORACLE Primavera P6

AGVIQ

SB RAC II

JM14 - Petroleum Monitoring Assessment Support, Trumbo Pt Tank Farm, UST 003

24-Feb-14

Date	Revision	Checked	Approved

Appendix B
Accident Prevention Plan

Accident Prevention Plan

Petroleum Monitoring and Assessment at Trumbo Point Tank Farm

Naval Air Station Key West
Key West, Florida

Revision No. 00

Contract No. N62470-12-D-7004
Contract Task Order No. JM14

Submitted to:

U.S. Naval Facilities Engineering Command
Southeast

Prepared by:

February **2014**

Contents

Attachments

Figures

Acronyms and Abbreviations

AFVR	aggressive fluid vapor recovery
AGVIQ	AGVIQ, LLC
AHA	Activity hazard analysis
APP	Accident Prevention Plan
AST	aboveground storage tank
BBLPP	Behavior Based Loss Prevention Program
bls	below land surface
CAR	Contamination Assessment Report
CBNR	Chemical, Biological, Nuclear, or Radioactive
CFR	Code of Federal Regulations
CH2M HILL	CH2M HILL Constructors, Inc.
CIH	Certified Industrial Hygienist
COC	chemical of concern
COI	certificate of insurance
COR	Conditions of Readiness
CSE	Confined Space Entry
CSIR	Contractor Significant Incident Report
DART	Days Away, Restricted or Transferred
dB	decibels
DEET	N, N-diethyl-meta-polyamide
DFWP	Drug Free Work Place
DoD	Department of Defense
DOT	Department of Transportation
DPT	direct push technology
FA-CFR	First Aid and Cardio-Pulmonary Resuscitation
FAC	Florida Administrative Code
FAR	Federal Acquisition Regulations
FDEP	Florida Department of Environmental Protection
FID	flame ionization detector
FTL	Field Team Leader

GCTL	Groundwater Cleanup Target Level
GFCI	ground fault circuit interrupter
GLYPQC	Groundwater Low Yield/Poor Quality Criteria
GPR	ground penetrating radar
HAZCOM	hazard communication
HAZWOPER	Hazardous Waste Operations and Emergency Response
HBV	Hepatitis B Virus
HEC	hazardous energy control
HIV	Human Immunodeficiency Virus
HS&E	Health, Safety, and Environment
HSP	Health and Safety Program
HSPA	H&S Program Administrator
IDLH	immediately dangerous to life and health
IR	Incident Rate
kV	kilovolts
L/NLI	Loss and Near Loss Investigations
lb	pounds
LIF	Laser induced fluorescence
LNAPL	light non-aqueous phase liquid
LPO	Loss Prevention Observation
LY/PQ	low yield/poor quality
MNA	monitored natural attenuation
mph	mile(s) per hour
MSDS	Material Safety Data Sheet
NAICS	North American Industry Classification System
NAS	Naval Air Station
NAVFAC SE	U.S. Naval Facilities Engineering Command Southeast
NSC	National Safety Council
OEL	Occupational Exposure Limit
POC	Point of Contact
PPE	Personal protective equipment

PTSP	Pre-Task Safety Plans
QCM	Quality Control Manager
RAP	Remedial Action Plan
RF	radio frequency
RFP	Request for Proposal
RMP	Risk Management Process
RMSF	Rocky Mountain Spotted Fever
RQ	Reportable Quantity
SBRAC II	Small Business Remedial Action Contract No. N62470-12-D-7004
SOH	Safety and Occupational Health
SOP	Standard Operating Procedure
SSHO	Site Health and Safety Officer
STARI	Southern Tick-Associated Rash Illness
SWO	Stop Work Order
TarGOST®	Tar-specific Green Optical Screening Tool
T&D	transportation and disposal
TO	Task Order
TPTF	Trumbo Point Tank Farm
TRPH	Total Recoverable Petroleum Hydrocarbons
UL	Underwriters Laboratory
USACE	U.S. Army Corps of Engineers
USBLS	United States Bureau of Labor Statistics
UST	underground storage tank
UVOST®	Ultraviolet Optical Screening Tool
WBGT	Wet Bulb Globe Temperature

1.0 Signature Sheets

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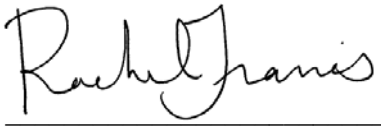
Signature: 

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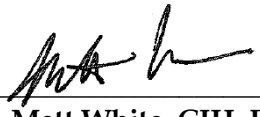
Signature: 

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1.1 Revisions

Revisions Made By: **Date:**

Revisions to Plan:

Revisions Approved By: **Date:**

1.2 Introduction

AGVIQ, LLC (AGVIQ) has been contracted by the U.S. Naval Facilities Engineering Command, Southeast (NAVFAC SE) to implement the Trumbo Point Tank Farm (TPTF) Petroleum Monitoring Assessment at Naval Air Station (NAS) Key West, Key West, Florida under Contract No. N62470-12-D-7004, Task Order (TO) No. JM14.

This Accident Prevention Plan (APP) has been developed to address applicable requirements set forth by 29 Code of Federal Regulations (CFR) 1910, 29 CFR 1926 and the U.S. Army Corps of Engineers, EM 385 1-1, "Safety and Health Requirements Manual." For clarification, this APP and the Site Specific Health and Safety Plan (SSHSP), included herein, shall be collectively referenced as the APP throughout, but implemented together as a single document, in their entirety. The **15 September 2008 version of the EM 385 1-1** shall be applicable the execution of this contract TO work.

2.0 Background Information

2.1 Facility and Site Background

Key West is bounded by the Atlantic Ocean on the east and southeast, the Gulf of Mexico to the north and west and the Florida Straits to the south. Key West is located 153 miles southwest of Miami and 90 miles north of Cuba making it the southernmost city in the continental United States. Key West lies at the western end of a 125 mile chain of keys or low islands which extends southwestward from the southeastern tip of mainland Florida. The Keys are linked by the Overseas Highway whose bridges and causeways straddle the numerous gaps in the chain. The average elevation of the Florida Keys is 5 feet above mean sea level. Key West is mostly 6 to 8 feet in the east, rising in the west to a plateau on the site of the old town of 12 to 18 feet.

2.1.1 Trumbo Point Tank Farm

TPTF has been used as a fuel storage and distribution point by the Navy since 1942. Several aboveground storage tanks (ASTs), as well as associated piping and various pump houses used to transport fuel from the ASTs, are located at the TPTF-Navy (North) site, while the TPTF-Navy (South) site currently consists of an open, grassy area. Most of the storage systems were demolished (above grade structures only) by about the mid-1990s and the large concrete cut and fill tanks were backfilled and graded, with the sub-grade structures abandoned in-place. Based on soil and groundwater contamination identified during several preliminary investigations conducted at TPTF, a Contamination Assessment Report (CAR) was completed in 1996 by ABB Environmental Services, Inc. The CAR identified areas of free product across TPTF and recommended continued free product recovery as an interim remedial action and development of a Remedial Action Plan (RAP) for the site. The RAP was completed in 1999 by Harding Lawson Associates.

The RAP identified several areas at TPTF as impacted with petroleum free product that required remediation. These areas were designated as free product areas. The areas were delineated based on one or more of the following:

- Historical flame ionization detector (FID) readings taken during advancement of soil borings and installation of monitoring wells
- Direct observation of soil samples taken during advancement of soil borings and installation of monitoring wells
- Product measurements by bailer or product-water interface probe in completed monitoring wells

The RAP recommended reducing petroleum contaminant source(s) using multi-phase extraction, passive product removal, and source area excavation. CH2M HILL Constructors, Inc. (CH2M HILL), under a separate contract mechanism, has been implementing the RAP by (1) performing active free product recovery via aggressive fluid vapor recovery (AFVR) using a vacuum truck attached to impacted wells, (2) conducting passive free product

recovery via the installation of petroleum oil traps (i.e., skimmer trap systems) inside impacted wells, (3) using a portable non-aqueous extraction technique free product recovery system, and (4) removing product from wells using disposable bailers.

The sources of free product at the TPTF-Navy (North) site appears to be former Tanks 1, 2, and 3, and Pipelines 1 and 2. Tank 1 (1,050,000-gallon capacity) and Tank 2 (2,310,000-gallon capacity) contained JP-5 jet fuel, and Tank 3 (2,310,000-gallon capacity) historically contained JP-5, but is not currently in use. Former Tank D-2 contained "diesel fuel marine."

The source of free product at the TPTF-Navy (South) site appears to be former Tank D-4. Tank D-4 was a 1,134,000-gallon cut-and-fill underground storage tank (UST) that was constructed partially below-grade and partially above-grade and covered with soil overburden by Eco-Care, Inc. Reportedly, the tank had historically contained "diesel fuel marine and water," "diesel fuel marine and Navy Special," and Bunker C fuel. The tank was demolished in 1996 to 1997. Prior to demolition, the tank was emptied and pressure cleaned/triple rinsed, and the soil overburden and concrete tank were removed to grade. The below-grade portion of the tank was left in place and filled with the concrete fragments from the above-grade tank demolition.

CH2M HILL has been recovering product from this site through implementation of the Petroleum Product Recovery Program since 2003. Following AFVR events, product recharge was noted in some monitoring points in the area near the abandoned tank bottom that was left in place during the 1996 to 1997 tank demolition. Product pooled under the tank bottom was likely the source of the recharge.

In 2008, discussions with the Navy and the State of Florida Department of Environmental Protection (FDEP) resulted in the decision to perform hot spot removal in select areas where free product thickness greater than 2 feet had been observed. Under a separate contract, CH2M HILL developed the Project Execution Plan in April 2009 to outline procedures to be used to perform source area hot spot removal at the TPTF-Navy (South) site at NAS Key West. Remedial activities were conducted in April 2009 and included temporary well abandonment, soil sampling (waste characterization and backfill), soil excavation, free product and contaminated groundwater removal, liquid and solid waste transportation and disposal (T&D), backfill of excavations, removal and disposal of an inactive approximately 1,000-gallon AST, site restoration, and post-interim remedial action product thickness gauging.

Twenty-five 1-inch diameter temporary monitoring points located within the footprint of the proposed excavations were abandoned in the TPTF-Navy (South) site, while a total of four excavations were completed in the Tank D-4 site. From April 23 through April 29, 2009, CH2M HILL removed 858 tons of petroleum-impacted non-hazardous soil. As part of the source removal activities, free product was recovered from each of the four open excavations. Once the excavation was completed at each location, free product seeped into the excavation, making it available for removal. A total of approximately 1,703 gallons of free product and contaminated groundwater were pumped out of the four open excavations by vacuum trucks. It is estimated that the removed liquid contained approximately 5 to 10 percent free product. After excavation activities were complete, the site was restored to its original condition.

In November 2009, over 100 temporary wells were abandoned and several were converted to permanent monitoring points to measure free product levels. In July 2010, CH2M HILL conducted a laser induced fluorescence (LIF) investigation to assess the in place (in situ) distribution of light non-aqueous phase liquid (LNAPL) in the TPTF-Navy (North and South) areas at TPTF as one part of a data gap assessment. The approach called for the measurement of in situ LNAPL thickness by attaching an appropriate LIF instrument (Tar-specific Green Optical Screening Tool [TarGOST®] and Ultraviolet Optical Screening Tool [UVOST®]) to direct push technology (DPT) rods and advancing the instrument to refusal depth at 36 locations in the TPTF-Navy (North and South) sites. This approach was presented in the CH2M HILL 2010 Work Plan Assessment of In-Situ LNAPL Distribution.

The extent of the non-aqueous phase fuel product plume was delineated using LIF technology and LNAPL thickness measurements at existing monitoring wells in July 2010 (Figures 1-3 and 1-4 of the Work Plan). However, the LNAPL delineation indicated that the extents of floating product at TPTF-Navy (North and South) were not completely bounded by the existing well networks. It was therefore recommended that additional shallow monitoring wells be drilled to detect the presence and thickness of LNAPL at locations where the LNAPL plumes identified using LIF were not previously defined.

A supplemental site assessment was conducted at TPTF to obtain data for development of an effective approach for MNA of the dissolved phase plumes as well as LNAPL at TPTF-Navy (North) and TPTF-Navy (South). In August 2011 and November 2011, data were gathered by installation of monitoring wells to confirm LNAPL plume areas identified using LIF technology in July 2010; sampling of LNAPL, soil, and groundwater to assess contamination and evaluate the effectiveness of NA; and LNAPL level gauging to identify the existing LNAPL thickness in monitoring wells across the site. The results of the 2011 supplemental site assessment are summarized below.

- In August 2011, two new monitoring wells (TPTF-N-MW-03 and -04) were installed within the boundary of TPTF-Navy (North) and five new monitoring wells (TPTF-S-MW-12, -13, -14, -15, and -16) were installed within the boundary of TPTF-Navy (South). The newly installed monitoring wells were inspected for LNAPL after well installation, and LNAPL was observed in monitoring wells TPTF-S-MW-14 and -15.

- In November 2011, depth to groundwater and LNAPL levels were measured in monitoring wells across the site. The resulting potentiometric surface map indicated that groundwater flow at the site is somewhat radial. Main flow components are to the northeast and to the south, with some localized depressions. Based on historical measurements, a substantial tidal influence has been observed in the area just north of Tank 1 at TPTF-Navy (North). Changes in water levels have varied by nearly 2 feet from morning to evening in this area.

- In August 2011, groundwater samples were collected from 15 monitoring wells and analyzed for fuel components in accordance with Chapter 62-770, Florida Administrative Code (FAC). Groundwater samples from selected monitoring wells were also analyzed for geochemical and monitored natural attenuation (MNA) parameters. Chloride and total dissolved solids data, along with field parameter readings for salinity and conductivity, support the classification of the aquifer as low yield/poor quality (LY/PQ); groundwater at the site is brackish in nature and not suitable for potable use.

- Analytical results from the August 2011 groundwater sampling event indicated that the extent of dissolved phase contamination at TPTF-Navy (North) and TPTF-Navy (South) is limited and restricted to the site. Although several results exceeded the corresponding groundwater cleanup target levels (GCTLs), only four results (isopropylbenzene at monitoring wells KWM-22 and MW-65, dibenz(a,h)anthracene at monitoring wells MW-04 and FP-05-02-WP-21R) exceeded the corresponding Groundwater Low Yield/Poor Quality Criteria (GLYPQC) values. Of these four results, only the two isopropylbenzene detections also exceeded the corresponding natural attenuation default concentrations. Although groundwater samples from three of the four monitoring wells located along the seawall (MW-1D, MW-63, and MW-65) yielded results for total polynuclear aromatic hydrocarbons (PAHs) that exceeded the corresponding municipal solid waste compost (MSWC) value of 0.031 micrograms per liter, results for all other parameters were below the corresponding MSWC values at the four monitoring wells along the seawall, so it is unlikely that the dissolved plume is impacting surface water.
- Based on data from the August 2011 groundwater sampling event, an evaluation of natural attenuation processes at TPTF-Navy (North) and TPTF-Navy (South) indicated that the site is in a reducing environment (low dissolved oxygen values and highly negative oxidation-reduction potential values) and is showing signs of natural biodegradation. Sulfate appears to be depleted across the site and significant sulfide is present, providing evidence of sulfate reduction. Nitrate also appears to be depleted with no detections across the site, providing evidence of denitrification. The generation of methane is apparent with detections across the site, providing evidence of methanogenesis.
- In August 2011, 20 soil samples were collected from 10 locations, 5 locations within the boundary of TPTF-Navy (North) and 5 locations within the boundary of TPTF-Navy (South). Samples were collected from 0 to 0.5 feet below land surface (bls) and 0.5 to 2 feet bls at each boring location and analyzed for fuel components in accordance with Chapter 62-770, FAC.
- Analytical results from the August 2011 soil sampling event indicated that the extent of soil contamination at TPTF-Navy (North) and TPTF Navy (South) is limited to total recoverable petroleum hydrocarbon (TRPH) and PAHs. Only one result (TRPH in one boring) within the boundary of TPTF-Navy (North) exceeded the corresponding industrial direct exposure SCTL; results were compared to industrial SCTLs since the land use classification for TPTF-Navy (North) is industrial. Various results (TRPH and BEQs in multiple borings) within the boundary of TPTF-Navy (South) exceeded the corresponding residential direct exposure SCTLs; results were compared to residential SCTLs since the land use classification for TPTF-Navy (South) is residential. Three results (TRPH in two borings and 1-methylnaphthalene in one boring) across the TPTF-Navy property exceeded the corresponding leachability values based on groundwater of LY/PQ. Since the contaminated area of the TPTF-Navy (South) has recently been enclosed with protective fencing, the land use within the fenced in area could be reclassified as industrial use and the soil results compared to industrial standards.

- Based on 95 Percent Upper Confidence Limit (UCL 95) calculations, three sample locations/depth intervals at TPTF-Navy (South) and one sample location/depth interval at TPTF-Navy (North) would require soil removal to satisfy the residential and industrial land use classifications, respectively.
- Based on groundwater and product gauging measurements collected in July 2010, August 2011, and November 2011, the LNAPL plumes have been better defined and are confined within the site boundary. Product generally has been limited to the same areas over the past year.
- In August 2011, samples of LNAPL and groundwater were collected from six wells at TPTF-Navy (North) and three wells at TPTF-Navy (South) and evaluated for LNAPL physical properties and fingerprinting. The samples collected at TPTF-Navy (North) appear to be more similar to the JP-5 standard than the Bunker C standard, although there are noticeable chromatographic differences between these samples and the JP-5 standard, indicating weathering has occurred. The samples collected at TPTF-Navy (South), on the other hand, appear to be more similar to the Bunker C standard than the JP-5 standard, although there are noticeable chromatographic differences between these samples and the Bunker C standard, indicating that weathering has occurred.
- Extraction and recovery operations at TPTF have removed the most easily accessible LNAPL and, by design, have decreased the LNAPL pore saturation. Ultimately, the remaining LNAPL will be distributed as immobile, non-recoverable isolated blobs and ganglia. As the LNAPL pore saturation decreases, the mobility of the remaining LNAPL will also decrease. Furthermore, natural weathering processes leading to eventual immobilization of the remaining LNAPL at TPTF-Navy (North) and TPTF-Navy (South) are proceeding. The extent of dissolved phase contamination in groundwater above comparison criteria is limited and anaerobic biodegradation processes are apparent. Therefore, the efficiency and feasibility of active extraction and recovery operations would be expected to decline as LNAPL saturation levels decrease, the remaining LNAPL becomes increasingly viscous, and the LNAPL becomes distributed only as immobile isolated blobs and ganglia.

Additional assessment and/or remedial actions were warranted.

2.2 Project Scope of Work Summary

The primary objective of the petroleum monitoring and assessment at TPTF is to obtain data for development of an effective approach for MNA of the free product and dissolved phase plumes at TPTF-Navy (North and South). This will be accomplished with the installation of up to two additional monitoring wells (if needed), and soil and groundwater to assess contamination and evaluate the effectiveness of natural attenuation.

The following activities will be performed to complete the scope of work for the petroleum monitoring and assessment:

- Site mobilization and demobilization including utility locator survey of all areas where intrusive activities will be performed
- Installation of monitoring wells (if needed)

- Soil and groundwater sampling, analysis, and reporting
- Free product gauging
- Waste management and disposal

2.3 Health and Safety Plan Assumption Set

The assumption set for the development of this APP is that AGVIQ site personnel actions, and actions by subcontractors controlled by AGVIQ who may be covered by this APP, should be based on the following:

- There is no potential Chemical, Biological, Nuclear, or Radioactive (CBNR) weapon/agent or waste exposure to AGVIQ or subcontractor personnel who may be associated with the execution of this contract work.
- Site personnel shall execute good personal hygiene practices to facilitate a negative exposure to dust/particulate, water, or waste materials via incidental dermal or ingestion exposure vectors.
- Where use of personal protective equipment (PPE) equipment is specified, it will be used in accordance with this APP.
- Where the use of air monitoring equipment is specified, it shall be in accordance with this APP. Action levels and action level responses defined by this APP shall be adhered to. Air monitoring data collected during the execution of the TO work phases shall be documented and included for the project file.
- Where content in this APP is marked as "Reserved", or otherwise defined as not applicable, such activities associated with these areas, activities, or hazards are not specifically covered under this APP and must not be performed unless this APP is amended as necessary.

In the event that the above assumption set is not verified, the conditions of this APP will be re-evaluated and amended as necessary to address applicable hazards that may be associated with newly encountered project conditions or newly defined project tasks. In the event that it is determined that site soil, ground water, or sediment may be impacted by chemicals of concern (CoCs) concentrations in excess of established Occupational Exposure Limits (OELs) or CBNR exposure at any level, work shall cease until such engineering or administrative control measures and/or PPE are implemented to reduce potential worker exposures to acceptable levels.

Adjustments to this APP to address or mitigate potential OEL/CBNR exposure to workers or involving modifications to worker PPE or worker/site exposure monitoring (air monitoring) requirements will require review and approval by the Program Certified Industrial Hygienist (CIH). All amendments to this APP must be performed by a designated AGVIQ H&S Program Administrator (HSPA), the Program CIH, or other duly authorized professional.

2.4 HAZWOPER-Regulated Tasks

We do anticipate having Hazardous Waste Operations and Emergency Response (HAZWOPER) regulated tasks, if we come into contact with contaminated waste due to certain work tasks including the handling, removal, containment, investigation or other physical site management of waste/material or other regulated materials, execution of such tasks and potential employee exposure to chemical hazards associated with these tasks may be regulated under 29 CFR 1910.120/29 CFR 1926.65.

- Monitoring well installation (with drill rig), monitoring well development, and soil sampling (with drill rig)
- Groundwater sampling/monitoring
- Free product gauging
- Management and characterization of investigation derived generated waste

2.5 Non-HAZWOPER-Regulated Tasks

HAZWOPER regulations under 29 CFR 1910.120/29 CFR 1926.65 may not be applicable. Where this is considered, it must be demonstrated that the assigned tasks can be performed without the possibility of exposure to chemical hazards in order to use personnel who do not meet the criteria established by these standards. A determination from the AGVIQ Program CIH is required before project tasks are conducted by personnel who do not meet the requirements of 29 CFR 1910.120/29 CFR 1926.65 and where there is question to potential exposure to chemical hazards by site workers. Where it is unlikely or not possible that workers could not be exposed to site chemical hazards during the normal execution of assigned tasks, the task can be considered a Non-HAZWOPER Regulated Task. For this project, the all activities summarized in Section 2.4 can be considered Non-HAZWOPER Regulated Tasks.

- Utility mark-out and clearance
- Land survey of installed wells

3.0 Statement of Safety and Health Policy

The measurement of a successful program includes our ability to execute profitably, on time, without violations and safely. Success can only be achieved when all four components are integrated; therefore, health and safety must be part of every operation, at every responsibility level. It is the intent of AGVIQ to comply with established standards concerning the health and safety of our employees and create work environments that are free of recognized hazards that may result in an accident, injury or illness. To do this, we must be vigilant in the identification and elimination of acts and conditions that can produce or lead to accidents, injuries, and illnesses in our workplace.

Knowledge of an unsafe act or condition does not make the work safe. When an act or work area condition is identified that is not consistent with the established practices of AGVIQ Health and Safety Program (HSP), it is the inherent responsibility of each employee to report such inconsistencies to a supervisor so the act or condition may be evaluated, corrected, controlled, or engineered to a status that does not pose a significant threat. Where an act or condition in the workplace is determined to be Immediately Dangerous to Life and Health (IDLH) of AGVIQ employees, work must stop until the condition has been abated.

Management, supervisory, and worker personnel are all entrusted with implementing the policies and procedures of the AGVIQ APP and prepared site specific health and safety documents. Prevention of accidents, injury, and illness is an achievable objective for all employees, at all responsibility levels, for all program operations. It is a basic requirement that each manager and supervisor make the safety of employees under their tenure an integral component of his or her regular management practices. Additionally, it is the duty of each employee to accept and follow established safety policies and procedures established by AGVIQ

No employee shall be required to work at a location that would jeopardize their life or health. Employee cooperation in detecting, controlling, and reporting workplace hazards is a condition of participation in AGVIQ. It is critical for AGVIQ personnel to immediately inform their supervisor of any situation or work area condition that is beyond their ability to correct or control. AGVIQ personnel will not be disciplined or suffer any retaliation for reporting acts or conditions that are not consistent with the policies and procedures required by the AGVIQ HSP or project specific health and safety documents.

Every effort should be made to provide adequate training to our program participants; however, if an employee is ever in doubt about how to do a job or task safely, it is his or her duty to ask a qualified person for help. Fellow team members that need help should be assisted. Program participants are expected to assist management in accident prevention activities. Everyone is responsible for executing their assigned duties in a safe manner. Every incident (including a near-miss) that occurs in the workplace shall be reported to a first-line supervisor, as soon as possible. Under no circumstances, except in the instance of emergency medical care, should an employee leave the work site without reporting an accident, injury, or illness that occurs in the workplace. When a workplace accident, injury, or illness occurs, everyone is affected. The success and longevity of our program is directly related to maintaining a healthy and safe working environment for everyone.

3.1 Objective

The objective of AGVIQ is to provide a place of employment free of all recognized hazards that are causing or will likely cause death or serious physical harm to our employees. This objective can be facilitated by developing and administering an overall health and safety program, which establishes written policies and procedures to serve as vehicles through which the program requirements will be implemented.

3.2 Purpose

The purpose of this project APP in conjunction with the project specific or program health and safety documents, is to define the policies, procedures, and requirements that must be implemented for AGVIQ and to establish the requirements, responsibilities and expectations for management, supervisors, employees, and subcontractors that may participate in the execution of the program projects. It is the intent of this APP to address applicable requirements set forth by 29 CFR 1910, 29 CFR 1926, EM 385 1-1, and AGVIQ policies and procedures incorporated by reference, herein.

3.3 Goals

The health and safety goal for this project, and the overall goal for the AGVIQ program, is to eliminate workplace accidents, gain worker acceptance through cooperation and training, and provide our clients with a responsible, well-trained, safety-oriented work force.

AGVIQ considers safety the highest priority during work at all project sites and its business offices and has established a goal of zero incidents. Projects will be conducted in a manner that minimizes the probability of near misses, injury, illness, and equipment/ property damage.

4.0 Responsibilities and Lines of Authorities

The following listed AGVIQ personnel will have the authority to intervene and suspend work in the interest of ensuring adherence to Health and Safety policies and procedures defined by the APP and/or AGVIQ.

AGVIQ Program Manager
Sid Allison: (843) 242-8018 (cell)

AGVIQ Senior Program Manager
Paul Rakowski: (757) 213-8581 / (757) 544-6744 (cell)

AGVIQ Project Manager
Amy Twitty: (850) 232-0320 (cell)

AGVIQ H&S Program CIH
Matt White, CIH, P.E.: (907) 748-2730

AGVIQ Site Supervisor
TBD

AGVIQ Site Health and Safety Officer (SSHO)
Nicole Monroe (504) 473-1399 (cell)

AGVIQ H&S Program Administrator
Rachel Francis: (757) 213-8592 / (757) 354-5820 (cell)

4.1 Organization and Responsibility for Health and Safety

The safety and protection of employees, clients, and the community is the first priority. If an activity or condition at a location under control of AGVIQ is determined to be inconsistent with our health and safety policies and procedures, all efforts shall be made to correct the situation immediately or as soon as feasibly possible. At no time should any AGVIQ personnel perform or be allowed to perform duties in a work environment that is IDLH or in an imminently dangerous situation. In these situations, the task will not proceed until the situation is corrected.

4.1.1 Program Manager

The AGVIQ Program Manager is the primary operational and safety official of AGVIQ and has overall responsibility for ensuring that AGVIQ program participants implement the established health and safety policies and procedures adopted by AGVIQ. The Senior Program Manager supports the execution of all operations required of the Program Manager.

4.1.2 Project Manager

The AGVIQ Project Manager is responsible for providing adequate resources (budget and staff) for project-specific implementation of the Health, Safety, and Environment (HS&E) management process. The Project Manager has overall management responsibility for the project tasks identified herein and reports to Program Management on all matters and to the Program CIH on matters involving the health and safety of program participants, project incidents or other health and safety related matters. The Project Manager may explicitly delegate specific tasks to other staff, but retains ultimate responsibility for completion of the following in accordance with this APP or other established health and safety requirements. Designated project coordinators, technical leads, engineers, and other administrative staff support the execution of all operations required of the Project Manager. In general, the Project Manager's responsibilities include but are not limited to the following:

- Include standard terms and conditions, and contract-specific HS&E roles and responsibilities in contract and subcontract agreements (including flow-down requirements to lower-tier subcontractors).
- Select safe and competent subcontractors by:
  - Obtaining, reviewing, and accepting or rejecting subcontractor pre-qualification questionnaires
  - Ensuring that acceptable certificates of insurance (COIs), including AGVIQ as named additional insured, are secured as a condition of subcontract award
  - Including HS&E submittals checklist in subcontract agreements, and ensuring that appropriate site-specific safety procedures, training, and medical monitoring records are reviewed and accepted prior to the start of subcontractor field operations
- Maintain copies of subcontracts and subcontractor COIs (including AGVIQ as named additional insured), bond, contractor's license, training and medical monitoring records, and site-specific safety procedures in the project file accessible to site personnel.
- Provide oversight of subcontractor HS&E practices per the site-specific safety plan.
- Manage the site and interface with third parties in a manner consistent with contract and subcontract agreements and the applicable standard of reasonable care.
- Ensure that both the overall and job-specific HS&E goals are fully and consistently implemented.

4.1.3 Certified Industrial Hygienist

The AGVIQ Program CIH meets the established qualification, training, and experience criteria requirements and exhibits sufficient knowledge in health, safety, and/or industrial hygiene matters to manage and oversee AGVIQ health and safety program. The CIH acts as the responsible program officer to review and approve all developed project specific APPs and provides consultation, recommendations, or requirements with regard to project worker protection and exposure issues. The CIH may also be required to perform the project/program roles and responsibilities of the HSPA, where required. The Program CIH's responsibilities include, but are not limited to, the following:

- Review and approve the project specific APP for field implementation.
- Be available for consultation/direction with regard to project Industrial Hygiene and worker exposure matters, as may be required by the project team, Site Health and Safety Officer (SSHO), or the AGVIQ HSPA; and review and approve any changes to the APP which alters established requirements for worker exposure or perimeter air monitoring or PPE.
- Perform the same roles and responsibilities as the HSPA, where required.
- Meet the requirements of a Health and Safety Manager, where required.
- Coordinate with the Program Manager, Senior Program Manager, and the Project Manager (Program CIH, HSPA, or SSHO, as necessary) on all site or worker health and safety matters.

4.1.4 Health and Safety Program Administrator(s)

The AGVIQ HSPAs administer the overall health and safety program for the AGVIQ program and report directly to the Program Management and the Program CIH with regard to AGVIQ program or significant project matters. The HSPA is responsible for supporting and assisting the AGVIQ program staff in executing the required health and safety policies and procedures adopted by the program, for implementation. The HSPA responsibilities include, but are not limited to, the following:

- Develop and/or review the project APP for final approval by the CIH.
- Provide review and comment on subcontractor pre-qualification questionnaires that fall outside the performance range delegated to the Contracts Administrator and request corrective actions are made, where required.
- Provide review and comment subcontractor training records and site-specific safety procedures prior to start of subcontractor field operations and request corrective actions are made, where required.
- Support SSHO oversight of subcontractor (and lower-tier subcontractors) HS&E practices and interfaces with third parties, as necessary.
- Support and assist program staff in executing the HS&E policies and procedures adopted by the program for implementation, including the program Behavior Based Loss Prevention System (BBLPS) and overall Risk Management Process (RMP).

- Provide consultation and direction to project staff with regard to HS&E project and program requirements and industrial hygiene practices.

4.1.5 Site Supervisors

Site supervisors are entrusted with special duties concerning the safety and health of employees. They are critical links to the success of the injury and illness prevention program and are key components to achieve Loss Prevention goals. For this project, the site supervisor reports to the AGVIQ overall Project Manager on all project matters. Site supervisor responsibilities include but are not limited to the following:

- Provide adequate pre-project planning to allow for the effective procurement of appropriate equipment, materials, safety-related systems, or documents to facilitate the execution of individual project tasks in a safe and efficient manner.
- Coordinate the equipment and material needs to be procured by AGVIQ for the proper execution of the project.
- Promote proper field communication and coordination with the overall project manager, field staff and client, as necessary, to personnel assigned to promote the proper execution of the project.
- Implement the health and safety aspects of the AGVIQ program and ensuring that any onsite AGVIQ personnel adhere to the requirements of this APP, host facility conditions or other applicably health and safety requirements relayed to project personnel as part of the execution of this project.
- Convey hazard information, to which they are advised of, to subordinate employees at the contract project site or facility locations.
- Investigate AGVIQ accidents, injuries, and illnesses that occur under their supervision at the contract project site, in accordance with the accident investigation procedures identified for the program.
- Implement the components of the AGVIQ BBLPS including the execution of routine pre-job safety overviews at AGVIQ contract project locations as the project begins, as new tasks are planned, as new project hazards are identified or when new project team members are assigned to the project site.
- Take prompt action to correct identified acts or conditions which are personally observed by a supervisor or brought to the attention of a supervisor that are not consistent with the conditions of this APP or AGVIQ HSP requirements.
- Promote and ensure an appropriate project safety culture for subordinate site personnel by positive example.
- Stop or correct questionable acts or identified conditions that are under a supervisor's responsibility and which are inconsistent with established safety standards, AGVIQ policies, and procedures and requirements established by this APP.

4.1.6 Site Safety and Health Officer

The SSHO is responsible for verifying that the project is conducted in a safe and healthy manner and includes the following specific obligations:

- Verify this APP remains current and amended when project activities or conditions change.
- Coordinate with the Site Supervisor and the Project Manager (overall) on all site matters and reports to the Program CIH (or HSPA as an alternate) on all health and safety matters.
- Verify AGVIQ site personnel and subcontractor personnel read, or have been briefed on the contents of this APP, and sign **Attachment 2**, APP Acknowledgement Form prior to commencing field activities.
- Verify AGVIQ site personnel and subcontractor personnel have completed any required specialty training (e.g., fall protection, confined space entry) and medical surveillance as identified in Section 6.0, and maintain the Subcontractor H&S Tracking Form, where applicable (see **Attachment 3**).
- Verify adherence with the requirements of this APP and applicable subcontractor's health and safety plan(s).
- Act as the project Hazard Communication Coordinator.
- Act as the project Emergency Coordinator and perform the responsibilities outlined in this APP or as maybe required to properly coordinate the onsite response of emergencies, as they arise.
- Verify that safety meetings are conducted at least daily or more frequently as project tasks or hazards change and documented for the project record in accordance with the requirements of the BBLPS.
- Verify that project H&S forms and permits, found in **Attachment 4**, are being used as intended.
- Verify that the Drug-Free Workplace Program is being implemented.
- Verify that project files available to site personnel include copies of executed subcontracts and subcontractor COIs (including named additional insured), bond, contractor's license, training and medical monitoring records, and site-specific safety procedures prior to start of subcontractor's field operations.
- Manage interface with third parties in a manner consistent with our contract/ subcontract agreements and the applicable standard of reasonable care.
- Coordinate with the HSPA(s) or Program CIH regarding AGVIQ and subcontractor operational performance and third-party interfaces.
- Ensure that the overall, job-specific, HS&E goals are fully and continuously implemented.
- Coordinate with the AGVIQ individual responsible for site operations (i.e., Site Supervisor/Manager or Field Team Leader) and Project Manager, as necessary. In general, the Project Manager will contact the client in the event accidents, injuries or property damage occurs on the project site. The Program CIH or HSPA(s), as necessary, should be contacted by the SSHO as appropriate.

4.1.7 AGVIQ Program Participants

All AGVIQ Program participants (e.g., employees), regardless of job title, share the responsibility for executing their assigned tasks in a healthy and safe manner and must report any or acts or conditions that are not consistent with established health and safety procedures and protocols at the project site without fear of reprisal. It is imperative that AGVIQ Program participants observe the following minimum requirements in order to achieve a safe and healthy workplace:

- Each employee must familiarize themselves with the contents of this APP and the general safety rules herein.
- Each employee will practice procedures and follow all safety rules and regulations for the successful completion of any job task.
- All employees will wear the necessary PPE required for the job or task as specified by the APP or other applicable program requirements.
- The employee will notify their immediate supervisor of any potential workplace hazard or work practice that is not consistent with AGVIQ health and safety policies and procedures and could result in an accident, injury, illness, environmental releases or destruction of property.
- The employee will report all accidents to an immediate supervisor regardless of whether injury or property damage resulted. This includes all near misses (accidents without injury or damage). This requirement serves to bring unsafe conditions to the attention of management.
- Each employee will be subject to contraband search for safety purposes and for the safety of fellow employees.
- Violations of published safety policies and procedures may be cause for disciplinary actions up to and including dismissal.
- Each employee that is taking any prescription or over the counter medications that could alter the manner in which they could be treated in an emergency or effect their job performance/safety of the employee or other employees in the work environments (i.e., via heavy equipment operations) shall notify their supervisor prior to beginning work.

4.2 Employee Competency

Employee competency, as defined by 29 CFR 1926.32(f) and for areas of executable contract work for which an employee has responsibility, shall be established by the appropriate employer only (i.e., AGVIQ). Employee competency is determined by employee training, total work experience and/or on the job training, professional certification, and/or educational degrees.

It is the opinion of AGVIQ that the professionals identified in this APP are competent in their areas of expertise with regard to the management, field execution of the specified contract work, or in the implementation of AGVIQ site specific or program health and safety requirements, as applicable.

Executable onsite contract work for which there is a specific requirement for a competent person to oversee (i.e., excavation, scaffolding, etc.) will not be conducted unless a competent person is available onsite.

In addition to the above, AGVIQ HSP utilizes a team of Health and Safety Professionals who are qualified by experience, training, educational degrees, and professional certification (CIH, Certified Safety Professional, Construction Health and Safety Technician, Associate Safety Professional) to act as the responsible program officers with regard to the overall project specific and program wide implementation of the AGVIQ Health and Safety policies and procedures.

4.3 Requirements for Pre-task Safety and Health Analysis

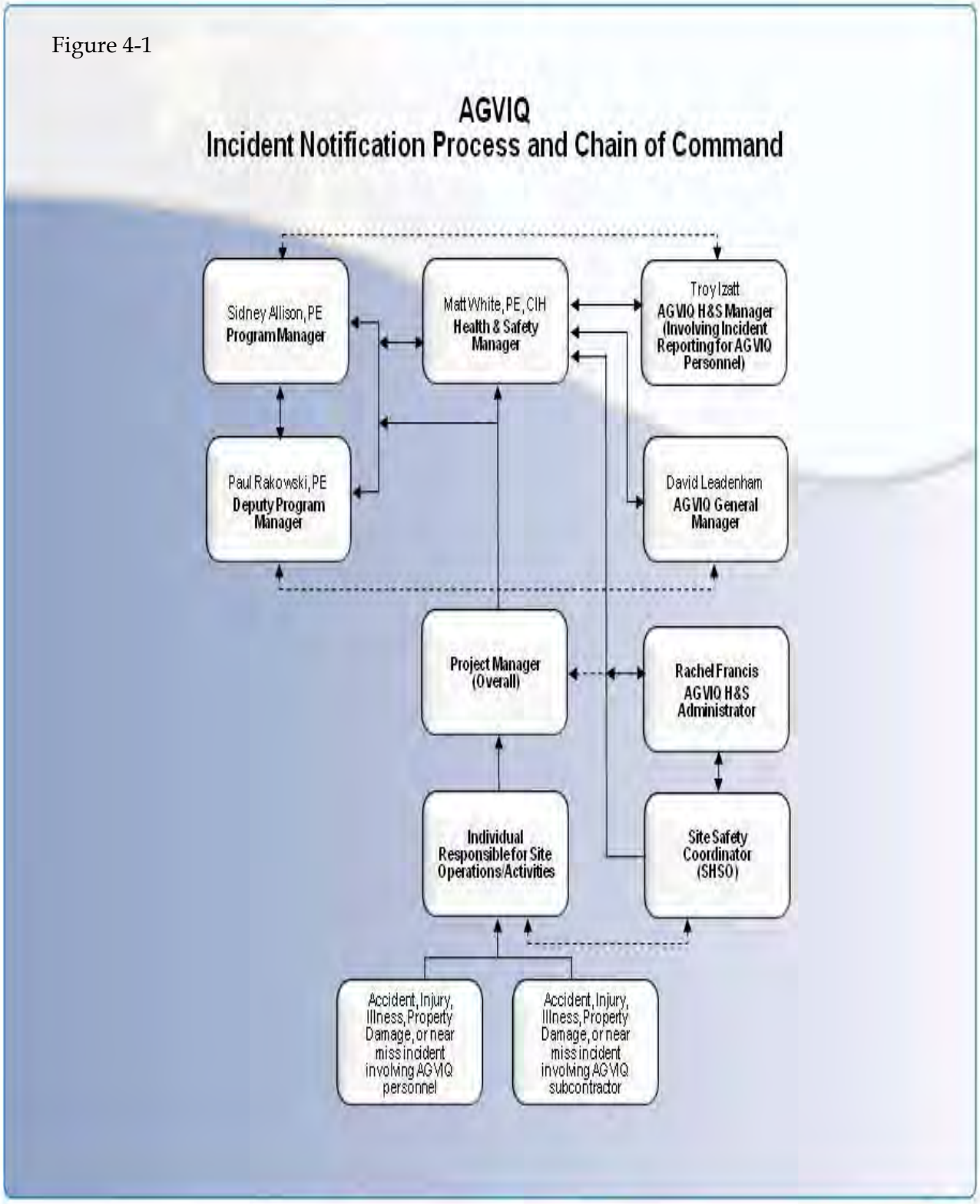
Requirements for completing Pre-Task Safety and Health Analysis prior to the execution of onsite work must be, at a minimum, in accordance with Section 10 of this APP. Activity Hazard Analysis (AHA) documents applicable to this project are included in Attachment 1 of this APP.

The AGVIQ site supervisor/field team leader (FTL) or SSHO will conduct daily safety meetings at the start of each work shift for onsite personnel and periodic work phase meetings (i.e., AHAs) in accordance with Section 10 of this APP. The site supervisor/FTL or SSHO must require subcontractors to follow similar meeting procedures or participate in the AGVIQ daily safety meetings or work phase meetings, as necessary. It is expected that for the execution of this particular contract, conducting joint AGVIQ and subcontractor daily safety and work phase meeting will be integral to the proper implementation of established general and specific health and safety procedures.

4.4 Primary Lines of Authority

Safety responsibilities, accountability, and lines of authority for this project are identified in Sections 4.1 through 4.2 of this APP and graphically represented on Figure 4-1.

Figure 4-1


AGVIQ
Incident Notification Process and Chain of Command
Sidney Allison, PE
Program Manager
Matt White, PE, CIH
Health & Safety Manager
Troy Izatt
AGVIQ H&S Manager (Involving Incident Reporting for AGVIQ Personnel)
Paul Rakowski, PE
Deputy Program Manager
David Leadenham
AGVIQ General Manager
Project Manager (Overall)
Rachel Francis
AGVIQ H&S Administrator
Individual Responsible for Site Operations/Activities
Site Safety Coordinator (SHSO)
Accident, Injury, Illness, Property Damage, or near miss incident involving AGVIQ personnel
Accident, Injury, Illness, Property Damage, or near miss incident involving AGVIQ subcontractor

4.5 Non Compliance with Requirements

The duty for employee disciplinary action must be exercised by the employee's company line manager, supervisor, or corporate official only, as appropriate. Verbal or written reprimands, suspensions, or terminations shall be in accordance with the requirements established by the AGVIQ Corporate Employee Handbook**,** or internal policies and procedures and Standard Operating Procedures (SOPs). The content of these documents applies to employees of the specific employer and its authorized subsidiaries.

To ensure seamless project operations and the best possible work environment for AGVIQ personnel, AGVIQ expects its employees to follow rules of conduct and established site procedures that will protect the health and safety of all AGVIQ personnel.

Where unacceptable employee behavior or workplace actions are identified, it is the intent of the employer to administer equitable and consistent disciplinary actions. It is in the best interest of AGVIQ to ensure fair treatment of all employees by making certain that disciplinary actions are prompt, uniform, and impartial. The major purpose of any disciplinary action is to correct the problem, prevent recurrence, and prepare the employee for satisfactory service in the future.

Employee disciplinary actions are typically exercised in a three (3) step process:

- verbal warning
- written warning
- suspension with or without pay or up to termination of employment, depending on the severity of the problem and re-occurrences of similar unacceptable employee behavior or workplace actions

AGVIQ recognizes that there are certain types of employee problems that are serious enough to justify either a suspension, or, in extreme situations, termination of employment, without going through the usual progressive discipline steps.

By using progressive discipline, most employee problems can be corrected at an early stage, benefiting both the employee and AGVIQ.

4.6 Managers and Supervisors Safety Accountability

It is the duty of the first line supervisor to motivate employees to adhere to AGVIQ's safety policy and procedures and established hazard control measures for each work environment. A first line supervisor, for these purposes, is defined as that person designated to give immediate onsite supervision to personnel involved in a task.

All manager and supervisors must endeavor to implement complete established health and safety policies, procedure for and hazard control measures for all projects and tasks under their supervision. When in doubt, they should seek the assistance of the Program CIH/HSPA, or other authorized program safety professional, prior to initiating a task. This is the only acceptable manner in which to perform the task. If the task cannot be accomplished in a manner that is consistent with established program, regulatory or contract health and safety requirements, it will not be attempted.

Managers and supervisors will:

- Explain the safety procedure involved with a task to each employee and check frequently to see that the employee understands and works as instructed.
- Allocate sufficient time for the training and coaching of all employees to ensure that everyone knows the correct procedure for safely accomplishing required tasks.
- Prevent new employees from performing any tasks until required training is completed.
- Immediately correct unsafe conditions that involve AGVIQ employees or contractors.
- Ensure that the employees are outfitted with and wear PPE as specified by this APP, other AGVIQ procedures, or as directed by the Program CIH, HSPA, Project Manager, or SSHO.
- Set a good safety example.
- Obtain the cooperation of employees and contractors.
- Provide a safe work environment for employees and contractors.
- Confirm contractor safety performance records have been verified prior to contract award and monitor contractor performance during operations.
- Report all accidents, near misses, and property damage in accordance with the Incident Management and Reporting Procedure.
- Establish a safety culture, using the elements of the AGVIQ Safety Improvement process, which promotes awareness, encourages participation, and recognizes excellence.

5.0 Subcontractors and Suppliers

5.1 Subcontractor/Supplier Coordination and Control

AGVIQ subcontractor safety performance and adherence to established industry standards and project policies and procedures will be reviewed prior to being issued a contract for Site work. AGVIQ subcontractors must be required to comply with the most stringent requirement defined by the Subcontractor's own policies and procedures, or requirements outlined in this APP, regulations or other requirements applicable to a project, such as contract flow-down requirements.

All subcontractors who may be required to execute this contract may not be identified at the time that health and safety documents are prepared for submission or implementation. Because of the potentially dynamic and evolving nature of contract requirements and resultant project scheduling at many points during the project evolution, only partial identification of potential subcontractors who may be selected for our project is likely. To this end, continuously updating and amending this APP with potentially selected, newly selected subcontractors would not be practical or cost effective for all parties concerned.

The AGVIQ procurement/contracting team maintains an extensive and detailed process for subcontractor procurement with the Federal Acquisition Regulations (FAR) as the primary driver. Subcontractor selection is based on scope of work pricing, qualifications, current and historical safety performance data and best value evaluations.

5.2 Subcontractor/Supplier Responsibilities

All subcontractor personnel actively engaged in onsite operations will be required to sign in daily at AGVIQ controlled project sites (see **Attachment 2** of the APP) and either attend an AGVIQ sponsored daily safety meeting and work phase meeting (or be required to conduct their own) which addresses daily operations, site specific hazard awareness, or other pertinent issues associated with the scheduled work or complete their own meeting of similar intent.

The details of the each daily or work phase meeting will be documented prior to the start of work at the daily site operations. At the discretion of the AGVIQ Site supervisor, this function may be completed by the SSHO to facilitate the requirement. However, where AGVIQ and subcontractor personnel are engaged in integral site operations, it is recommended that joint meetings are conducted. In addition, Subcontractors must develop and provide AHAs for their work activities to AGVIQ for review, which, depending upon contract conditions, may also be required to be forwarded to the project Owner for review as well.

Typically, the subcontractor reports directly to the AGVIQ Project Manager. The AGVIQ Project Manager may designate subcontractor reporting requirements to the AGVIQ site supervisor (i.e., Superintendent, foreperson, Field Team Leader, or other appropriate designee).

All incidents involving subcontractor personnel must be reported to the AGVIQ site supervisor and a copy of the subcontractor's incident or injury/illness report will be submitted to the AGVIQ site supervisor, Project Manager, Program Manager, and Program CIH as soon as possible (within 24 hours of incident/illness).

AGVIQ subcontractors may be required to acknowledge and adhere to the requirements of the AGVIQ APP. Subcontractors covered by this APP must be provided a copy of it to read and accept prior to initiating work on this Site or be provided a briefing of its contents. However, if the AGVIQ APP does not address specific hazards associated with specialty tasks and equipment that the subcontractor has expertise in (e.g., electrical, scaffold erection, demolition), a subcontractor must be required to develop or implement their own APP which is equally or more stringent than AGVIQ APP or prime contract documents.

Subcontractors are responsible for the health and safety procedures specific to the work, but it is critical that subcontractor work be performed in a manner that is consistent with applicable Occupational Safety & Health Administration (OSHA) standards (29 CFR 1910, 29 CFR 1926, as applicable), EM 385 1-1, or other applicable health and safety plan(s)/protocols. Identified subcontractor health and safety performance or site conditions that are not consistent with established procedures must be corrected.

Subcontractor personnel must not be allowed to ride on tractors, forklifts, or similar vehicles unless specific seats are provided. They must follow project hot work rules if hot work is required for vehicle or equipment maintenance. Subcontractor haul trucks must be loaded and unloaded in a safe and effective manner and materials must be stored safely in designated locations only. Associated packaging will be properly disposed and litter will not be permitted to be scattered or blown from truck beds. Operators of mobile onsite equipment must observe all traffic rules such as speed limits and pedestrian rights-of-way.

AGVIQ continuously endeavors to observe subcontractor safety performance. This process should be reasonable and include observing site hazards, practices and procedures that are not consistent with established HS&E requirements that are both readily observable and occur in common work areas. AGVIQ oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s), protocols, or established safety regulations or contract conditions.

In addition to this level of observation, the site supervisor or SSHO should confirm AGVIQ subcontractor performance against both the subcontractor's safety plan and standard industry procedures or contractual requirements.

Health and safety related communications with AGVIQ subcontractors should be conducted as follows:

- Request subcontractor personnel to read this APP and then require them to sign the APP Acknowledgement Form included in **Attachment 2** of this APP, as applicable.
- Request subcontractor(s) to brief the project team on the hazards and precautions related to their work.

- Verify that applicable subcontractor employee training documents, as applicable, are valid.
- When apparent conditions, actions, or practices are observed that are not consistent with this APP, AGVIQ Health and Safety Program protocols or project/regulatory requirements, notify the subcontractor safety representative and require corrective action—the subcontractor is responsible for determining and implementing necessary controls and corrective actions.
- When identified conditions or practices/actions that are not consistent with AGVIQ health and safety policies and procedures, or other applicable Health and Safety protocols or project/regulatory requirements, are repeated or persist, notify the subcontractor safety representative, individual responsible for site operations and/or Project Manager and stop affected work until adequate corrective measures are implemented. See Stop Work Order (SWO) Form in **Attachment 4** of the APP.
- When an apparent imminent danger exists, immediately remove all affected AGVIQ employees and subcontractors, notify subcontractor safety representative, individual responsible for site operations and/or Project Manager and stop affected work until adequate corrective measures are implemented (see SWO form). Notify the Project Manager (overall) and Program CIH (or HSPA if necessary), as appropriate.
- Document all oral health and safety related communications in project field logbook, daily reports, or other records.
- All subcontractor employees are subject to the same training (or medical surveillance requirement, where applicable) as AGVIQ personnel, depending on job activity and OSHA requirements.

6.0 Training

6.1 New Hire SOH Orientation Training

New Hire Safety and Occupational Health (SOH) orientation will be performed by an employee's line supervisor, human resource representative, intranet training, or by employee review of information provided by the employer. In general, new hire SOH orientation training would most likely include the following components, depending on the employee's hire category:

- Completion of new hire evaluation and any employer specific Drug Free Work Place (DFWP) requirements
- Introduction to company/corporate history
- Organizational structure
- Briefing on job functions and employee performance expectations
- Time keeping and/or expense reporting
- Provision, review, and acknowledgement of Corporate Policies and Procedures Manual (aka Employee Manual) or equivalent
- Provision, review, and acknowledgement of Corporate Health and Safety Program Plan or equivalent
- Verification and update (as necessary) of prerequisite training and medical surveillance testing, where applicable for field work (HAZWOPER/Construction)
- Management and Supervisor training, as applicable

In order to promote the seamless operation of the AGVIQ program as a single entity, orientation to management and supervisory personnel who have not previously participated in AGVIQ programs is provided. This orientation typically would include, but not be limited to the following:

- Background history of the development and functionality of AGVIQ SBRAC II
- Organizational structure
- Project and Program reporting requirements (incident, financial, and chain of command)
- Fund allocation, cost tracking, forecasting, and invoicing procedures
- Review processes for Client Request for Proposal (RFP) responses and project deliverables
- Project concurrence or changed conditioned processes
- Expectations with regard to Client/Customer and project team communications, project performance, Client/Customer expectations, health and safety, and quality control performance

- Resource allocation

All designated AGVIQ personnel who are engaged in site operations, regardless of assignment responsibilities, must review or be provided a detailed briefing on the contents of site specific health and safety plans, APPs, task specific AHAs, and daily safety briefings and must acknowledge such documents by signature.

6.2 Requirements for Mandatory Training and Certificates

AGVIQ engages in construction, environmental remediation, and other consulting services and endeavors to comply with the health and safety training requirements mandated by governmental agencies, internal policies, and client requirements.

Personnel will be provided sufficient training to execute their jobs in a safe and healthy manner. It is the responsibility of AGVIQ to ensure that their employees maintain the appropriate training requirements to complete their assigned duties.

Direct supervisors, with support by the Senior Management and Health and Safety professionals, are responsible for determining the training requirements for a specific project or task and ensure that personnel assigned to AGVIQ operations have the necessary training to complete the project/task safely. Senior management and the Program CIH or HSPAs (or outside vendors) will assure with the delivery of identified required training.

Designated employer personnel and electronic databases facilitate the maintenance of training records and applicable experience documentation. When an employee training is identified being insufficient to perform an assigned task, every effort will be made to provide the necessary training or to provide a trained and experienced alternate until the employee has achieved the required criteria.

Employee training records are available at corporate offices, by electronic means, and generally maintained on the project site. Depending on the size of the project crew and because of work crew dynamics and scheduling, the provision of hard copy employee training records (and medical surveillance records where applicable) for all anticipated personnel who may be assigned to this project, within the content of this APP is impractical. AGVIQ endeavors to maintain these documents onsite for review and will provide them to government officials for verification, upon request.

All AGVIQ personnel performing HAZWOPER regulated tasks are enrolled in a comprehensive health and safety program, which at a minimum, meets the requirements of 29 CFR 1910.120/29 CFR 1926.65 or 29 CFR 1910.134. The medical surveillance and training requirements associated with this project are summarized below.

Training or Medical Surveillance Requirement	Applicability
• 29 CFR 1910.120(e)(3)/29 CFR 1926.65(e)(3) Note: 40 hr or 24 training as applicable to employee assigned duties. No periodic refresher performance so long as the requirements of 29 CFR 1910.120(e)(8)/ 29 CFR 1926.65(e)(8) are maintained.	• All site personnel performing HAZWOPER regulated activities identified in Section 2.4 of this APP.

Training or Medical Surveillance Requirement	Applicability
• 29 CFR 1910.120(e)(8)/29 CFR 1926.65(e)(8) Refresher training required on an annual basis	• All site personnel performing HAZWOPER regulated activities identified in Section 2.4 of this APP.
• 29 CFR 1910.120(e)(4)/29 CFR 1926.65(e)(4) No specific recertification requirements.	• All site manager, supervisory or SSHO personnel performing HAZWOPER regulated activities identified in Section 2.4 of this APP.
• First Aid/CPR 1st Aid – typically 3 yr renewal CPR – 1 or 2 yr renewal (depending on sponsor)	• All designated manager, supervisory or SSHO site personnel (2 per site).
• 29 CFR 1910.120(f)/29 CFR 1926.65(f) On an annual basis under the supervision of a licensed physician, preferably one knowledgeable in occupational medicine	• All site personnel performing HAZWOPER regulated activities identified in Section 2.4 of this APP.
• 29 CFR 1910.134(e) On an annual basis under the supervision of a licensed physician, preferably one knowledgeable in occupational medicine	• All site personnel performing HAZWOPER regulated activities identified in Section 2.4 of this APP and required to utilize respiratory protection
• OSHA 30 hour Construction Safety Training (or equivalent) No specific recertification requirements.	• SSHO • Site Supervisor
• 49 CFR 172.700 Renewal, every 3 years	• Each person who offers for transportation in commerce or transports in commerce hazardous materials

- Initial training required by 29 CFR 1910.120(e)(3)/29 CFR 1926.65(e)(3) shall be 40-hour or 24-hour training initial training, and 3-day/1 day on-the-job experience in accordance with employee's normal assigned duties and anticipated site conditions as applicable to the requirements of 29 CFR 1910.120(e)(3)(i)-(iv)/29 CFR 1926.65(e)(3) (i)-(iv). Site personnel performing operations falling under the requirements of 29 CFR 1910.120/ 29 CFR 1926.65 shall also have 8 hours of refresher training on an annual basis, in accordance with 29 CFR 1910.120(e)(8)/29 CFR 1926.65(e)(8).

- Onsite management and supervisors directly responsible for, or who supervise employees engaged in, hazardous waste operations and individuals designated as an SSH) shall also have an additional 8 hours of management and supervisor training defined by 29 CFR 1910.120(e)(4)/29 CFR 1926.65(e)(4).

- It is our intent to require site personnel designated with management, site supervisor, or SSHO responsibilities to maintain current American Red Cross or American Heart Association sponsored First Aid and Cardio-Pulmonary Resuscitation (FA-CPR) certifications. When a medical facility or physician is not accessible within 5 minutes of an injury to a group of two or more employees for treatment of injuries, at least two employees on each shift shall be trained to administer FA-CPR. These individuals have also been provided training in exercising universal precautions against exposure to blood borne pathogens as a component to FA-CPR training which meets the intent of 29 CFR 1910.1030. This employee training is also regularly complemented by other regularly scheduled employer training curriculums that are typically executed for the HAZWOPER industry, regulated under 29 CFR 1910.120/29 CFR 1926.26.

- All employees who perform work at hazardous waste sites or perform emergency response operations meeting the criteria of 29 CFR 1910.120(a)(1)(i)-(v)/ 29 CFR 1926.65(a)(1)(i)-(v) standards will be subject to the individual employer medical surveillance program requirements. AGVIQ medical surveillance programs conform to the requirements established by 29 CFR 1910.120(f)/1926.65 (f) and/or 29 CFR 1910.134(e).
- In addition, each AGVIQ project site manager or supervisor with SSHO responsibilities or construction oversight responsibilities on construction related projects shall have received an OSHA 30-hour Outreach Construction Safety training course (OSHA 30-hour).
- Certain key project site personnel that may be responsible for packaging and labeling hazardous materials for transportation will have received training in accordance with 49 CFR 172.700.
- Employees being exposed to certain air borne chemicals or contaminants may require medical monitoring requirements defined by OSHA standards but outside of the medical monitoring requirements defined by 29 CFR 1910.120(f) or 29 CFR 1910.134(e), as applicable to anticipated site conditions.
- Where it is determined that employees will be performing certain assigned tasks (e.g., confined-space entry, scaffold, fall protection, forklift operations, etc.), then training, additional to that identified above, will be applicable and must be provided by the employer.

6.3 Procedures for Periodic Safety and Health Training of Supervisors and Employees

Supervisor and employee training is established as a routine training provided by AGVIQ as a method of adhering to OSHA, Department of Transportation (DOT), or other which is required to be provide by an employer to an employee. The types and frequency of routine training provided to AGVIQ program participants by AGVIQ is identified in Section 6.2 of this APP.

Additional supervisor and employee training is supplemented by the implementation of the RMP implemented by AGVIQ, which is detailed in Section 10.0 of this APP. Execution of the AGVIQ RMP provides a means and method to achieve overall project goals established by the project/program. Implementation of AHAs and daily safety meetings as part of the RMP provides a method for routine supervisor and employee awareness training. The desired result of the implementation of the RMP is to facilitate the identification and control of certain risks (or liabilities) that may be encountered during the execution of the project. Additionally, the implementation of our RMP processes establishes and maintains a level of expectation with regard to overall project and program health and safety performance.

6.4 Requirements for Emergency Response Training

There are no specific requirements for emergency response training for this project other than the following:

- 29 CFR 1910.120(e)(3)/29 CFR 1926.65(e)(3) standard
- On the job experience associated with operations regulated by 29 CFR 1910.120(e)(3)/ 29 CFR 1926.65(e)(3) standard
- FA-CPR training and blood borne pathogen training
- Note: Confined Space Entry (CSE) rescue training under 29 CFR 1910.146(k)(2(iii-iv) for CSE operations is not applicable to this project.

7.0 Safety and Health Inspections

The AGVIQ site supervisor or SSHO are required to perform site inspections using the checklists/forms included in **Attachment 4** of this APP. The forms included in **Attachment 4**, are not intended to be an all-inclusive detail of inspection forms/checklists which may be needed during the execution of this project, but is intended to represent a submittal basis only.

Site inspections/evaluations will be made by the site supervisor, SSHO or other designated AGVIQ representative, depending on assigned job function. Discrepancies or HS&E inconsistencies identified during the inspection and evaluation process will be corrected as soon as practicable and documented on the Loss Prevention Observation (LPO) form and/or Deficiency Tracking System form included in **Attachment 9** of this APP. Serious inconsistencies that represent potential immediate harm or danger to an employee will be corrected immediately or controlled to a condition where it does not represent a threat to the employee. Inspections that identify IDLH situations will require that work be immediately stopped and personnel removed from the work area until the situation is abated, corrected, or controlled to a non-hazardous condition.

The site supervisor or SSHO (when designated by the Project Manager or site supervisor) is responsible for conducting and preparing reports of inspections of work processes, site conditions and maintaining these documents for the project record, as necessary. Heavy equipment operators who are assigned to operate onsite heavy equipment are responsible for inspecting their assigned equipment on a daily basis. Corrective actions resulting from discrepancies identified during inspections will be reviewed with the Project Manager and implemented, as necessary. Copies of these reports are maintained on file at the project locations.

A member of AGVIQ senior management or their designated representative may periodically conduct site visits and perform additional assessments of project health and safety performance, at their own discretion or at the request of a corporate official employee, site supervisor or manager. Any discrepancies identified as part of these inspection processes will be addressed with the Project Manager by the senior management team and may be corrected in the field if minor in nature.

The table below provides a typical list of the type and frequency of inspections that may be associated with this project and what individuals should perform such inspections.

Inspection Type	Designated Person	Frequency
Loss Prevention Observation	Any site personnel, but typically the Site Supervisor, SSHO, or Quality Control Manager (QCM)	Weekly
Deficiency Tracking Log (includes general site inspection)	Any site personnel, but typically the Site Supervisor, SSHO, or QCM	Entered Daily

Inspection Type	Designated Person	Frequency
Borehole/Well Installation	Project Geologist/Technician	Upon installation
Drill Rig Inspection	Driller	Daily
Fire Extinguishers	Any site personnel, but typically the Site Supervisor, SSHO, or QCM	Once Monthly Once Annually
First Aid Kits	Any site personnel, but typically the Site Supervisor, SSHO, or QCM	Before onsite use and at least every 3 months or more frequently depending on use
Hand and Power Tools	Individual using tool	Before Use
Electric Cords and Ground Fault Circuit Interrupters (GFCIs)	Individual using electric cord and GFCI	Before Use
Waste Containers	Site Supervisor or SSHO/QCM	Daily

7.1 External Inspections/Certifications

The following is a list of potential external inspections that may be or will be required by NAVFAC.

- Issuance of Florida One Call utility clearance request;
- Issuance of NAVFAC/NAS Key West Excavation Permit

8.0 Accident Reporting and Investigation

8.1 Exposure Data (man-hours worked)

AGVIQ records and reports information related to annual labor hours and workplace injuries and illnesses as required by 29 CFR 1904. Where annual summary postings are required under 29 CFR 1904.32(b)(6), they will be posted by AGVIQ, in our appropriate workplace environment(s).

Designated employee representatives from AGVIQ tabulate and track labor hours posted to the AGVIQ program and lost work day and recordable incident information attributable to the execution of all AGVIQ contracts and issued contract TOs. This process is executed for the purpose of establishing a safety performance history. AGVIQ safety performance data is extrapolated from the following:

- Tabulated Employer Labor Hours
- Established Incident Reporting Processes
- Incident Investigation Reports
- Formal Project Audits

For the Construction (North American Industry Classification System [NAICS] code -23) and Remediation Services (NAICS code – 56291) industries, which is typical of the contract work that AGVIQ typically executes, the AGVIQ calculated Days Away, Restricted or Transferred (DART) and OSHA Recordable Incident Rates for our entire operating period, are currently well below DART Incident Rate (IR) and OSHA Recordable Incident Rate tabulated by the 2008 United States Bureau of Labor Statistics (USBLS) for these industries (see below).

- USBLS IR Construction Benchmark (2009): 4.2 [1]
- USBLS DART Construction Benchmark (2009): 2.3 [1,2]
- USBLS IR Remediation Services Benchmark (2009): 3.2 [3]
- USBLS DART Remediation Services (NAICS Code 56291) Benchmark (2009): 1.5 [2,3]

[1] NAICS Code 23
[2] DART total all sizes
[3] NAICS Code 56291

8.2 Accident Investigations, Reports and Logs

Completion of incident and near-miss incident investigation reports for AGVIQ shall be performed using the forms in **Attachment 10** of this APP and generally via the procedures identified herein. The AGVIQ Program CIH, HSPA, or their designee (SSHO, site supervisor, project manager) conducts accident/incident investigations and prepares the required incident or near-miss incident investigation reports for the following conditions:

- Near miss incidents

- DART or other OSHA recordable cases
- Spills, releases, discharges, or environmental violations
- Property damage incidents resulting in over $1,000 of loss
- A fatal injury *
- A hospitalization of three or more people resulting from a single occurrence *
- A weight-handling equipment incident
- A permanent total disability
- A permanent partial disability

* Within 8 hours after the death of any employee from a work-related incident or the in-patient hospitalization of three or more employees as a result of a work-related incident, you must orally report the fatality/multiple hospitalization by telephone or in person to the area OSHA that is nearest to the site of the incident. You may also use the OSHA toll-free central telephone number, 1-800-321-OSHA (1-800-321-6742).

Completed incident and near miss incident investigation reports are to be reviewed by the CIH/HSPA, Project Manager (overall), site management (SSHO, site Supervisor) team and Program Management team. Incident and near-miss incident reports must be submitted to the Project Manager, Program CIH/HSPA, and the Program Management team as soon as possible and within 24 hours. At a minimum the Project Manager and Program Management personnel, including the Program CIH must be verbally notified immediately, or, in a case where emergency medical treatment is required, as soon as injured personnel have been transported to and received by a medical treatment facility.

In addition to the above, the Project Manager (or site supervisor when designated by the Project Manager or Program Management team) must also be responsible for reporting all injuries to NAVFAC as soon as reasonably possible but no later than 24 hours. Where an incident has, or appears to have, any of the consequences listed below, these incidents shall be <u>immediately</u> reported to NAVFAC.

- Fatal injury/illness
- Permanent totally disabling injury/illness
- Permanent partial disabling injury/illness
- Three or more persons hospitalized as inpatients as a result of a single occurrence
- $200,000 or greater accidental property damage or damage in an amount specified by U.S. Army Corps of Engineers (USACE) in current accident reporting regulations
- Arc Flash Incident/Accident

Except for rescue and emergency measures, the accident scene shall not be disturbed until it has been released by the investigating official. The Contractor is responsible for obtaining appropriate medical and emergency assistance and for notifying fire, law enforcement, and regulatory agencies. The Contractor shall assist and cooperate with personnel conducting investigations on behalf of NAVFAC.

In addition to the incident and near-miss incident investigation report forms contained in **Attachment 10** of this APP, for all OSHA recordable accidents where property damage is in excess of $2,000, a Contractor Significant Incident Report (CSIR) must also be completed. If the CSIR is being used as initial notification of a Fatality or High Visibility Mishap, the initial form is due within 4 hours of the serious accident. A CSIR form marked "Follow-up" or "Final" is required within 5 days.

8.2.1 Best Management Practices for Incident Investigation

The causes of loss and near-loss incidents can be similar, so by identifying and correcting the causes of loss and near-loss incidents, future loss incidents may be prevented. When loss or near-loss incidents occur, identifying and correcting conditions or acts that create these incidents can be achieved by engaging the following processes:

- Gather all relevant facts, focusing on fact-finding, not fault-finding, while answering the who, what, when, where, and how questions.
- Draw conclusions, putting facts together into a probable scenario.
- Determine the incident root cause(s) and contributing factors of incidents. These are basic factors on why or how conditions or acts are created that result in incidents.
- Develop and implement solutions, matching all identified root causes and contributing factors with solutions so that future conditions or acts that have attributed to incidents are eliminated in the future.
- Communicate incident as a lesson learned to all project personnel.
- File follow-up on implemented corrective action to confirm solution is appropriate.

The purpose of an incident investigation is to understand how the incident happened, analyze the root causes, and prevent recurrence by implementing corrective actions. To conduct an effective investigation, all information must be as detailed and comprehensive as possible. The investigation must be based on facts that clearly identify the sequence of events and the factors that contributed to the incident. The investigation team should not be involved with any punitive actions resulting from the investigation. Fairness and impartiality are essential. The following provides general Best Management Practice guidance in completing incident investigations.

- An unbiased approach is necessary to obtain objective findings.
- Visit the accident scene as soon as possible while the facts are fresh and before witnesses forget important details.
- If possible, interview the injured worker at the scene of the accident and talk through re-enactment.
- Conduct all interviews as privately as possible. Interview witnesses individually and separately. Talk with anyone who has knowledge of the accident/incident, even if he/she did not actually witness it. Only retrieve witness statement from individuals who actually observed the accident/incident. Document witness interviews.
- Document details graphically. Use the IRF as well as sketches, diagrams, and photographs as needed. Take measurements where appropriate.

- Focus on the causes and hazards leading to the accident/incident. Develop an analysis of what happened, how it happened and how it could have been prevented. Determine what caused the accident/incident itself, not just the injury.
- Include a Corrective Action plan in every investigation. Describe how you will prevent such accidents in the future. Completion of the Root Cause Analysis may assist in the formulation of such plans.
- Save any evidence if a third party or defective product contributed to the accident/incident. It should be critical to the recovery of claims costs.

9.0 Plans Required by the Safety Manual

9.1 Layout Plans

Site locus maps, layout plans, haul route maps, drawings, or sketches are included in the project work plan, for which this APP is an integral component of and need not be duplicated in this section of this APP.

9.2 Emergency Response Plans

9.2.1 Emergency Planning

(Reference SOP # HSE&Q 106, Emergency Planning)

The site supervisor and/or SSHO performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with identified onsite parties, the NAVFAC points of contact (POCs), and local emergency-service providers, as necessary. These pre-emergency planning activities include the following:

- Review the facility emergency and contingency plans where applicable.
- Determine what onsite communication equipment is available (e.g., two-way radio, cellular phones, air horn).
- Verify that the Buddy System will and is being used for all assigned work.
- Determine what offsite communication equipment is needed (e.g., nearest telephone, cell phone).
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital. Communicate the information to onsite personnel.
- Review changed site conditions, onsite operations, and personnel availability in relation to emergency response procedures.
- Where appropriate and acceptable to the client, inform emergency room and ambulance and emergency response teams of anticipated types of site emergencies.
- Designate one vehicle as the emergency vehicle; place hospital directions and map inside and keep keys in ignition during field activities.
- Inventory and check site emergency equipment, supplies, and potable water.
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, and releases.
- Rehearse the emergency response plan before site activities begin, including driving route to hospital.
- Brief new workers on the components of the APP and emergency response plan.

9.2.2 Emergency Equipment and Supplies

The site supervisor/SSHO shall verify the availability and readiness of emergency support equipment listed below.

Emergency Equipment and Supplies	Location
20-lb (or two 10-lb) fire extinguisher (A, B, and C classes) w/annual maintenance and monthly inspection tags	Support Area
First aid kit/CPR Shield	Support Area
Eye wash	Support Area
Potable water	Support Area
Blood borne-pathogen kit	Support Area
Additional equipment (specify): Mobile phone and contact information	Support Area for site supervisor/site management and SSHO at a minimum
Spill Control/Clean-up Materials/Proper Spill Response PPE	Support Area

9.2.3 Evacuation

The Site Supervisor/SSHO will direct the coordination of response to emergency or medical support situations. Response considerations include the following elements:

- Evacuation routes and assembly areas will be specified at the commencement of field work. Evacuation route(s) and assembly area(s) will be designated by the site supervisor or SSHO before work begins and posted at the designated evacuation rally point or construction support facility.
- Personnel shall be advised of the assembly and accounting process during emergency conditions, able to understand evacuation signals and know where final evacuation assembly areas are located. The site supervisor or SSHO will account for personnel assembly area(s).
- Designation of a vehicle to be available to support emergency conditions or response actions.
- Evaluation of existing and potential hazards that may be associated with any experienced emergency condition and mitigation measures necessary to control hazards so the response measures can be executed without additional danger.
- Assessment of the situation and condition of any victims.
- Determination of the resources needed for victim stabilization and transport and additional emergency support.
- Enforcement of the Buddy System. No one will be permitted to perform a response to an emergency condition alone.
- Removal of injured personnel from the area and/or control of the emergency condition.

- Decontamination of injured parties will be accomplished after stabilization of their medical conditions, where necessary. Gross decontamination may be required if their condition poses immediate threat to the victim's life. If decontamination may cause additional harm to an injured person, then alternate measures such as wrapping the injured person in material to prevent the spread of contamination during extrication and transport may be required. In this situation, emergency medical transport personnel and the receiving medical facility must be advised of potential contamination issues of injured personnel, as early as possible.

Evacuation signals for the project site are listed below.

Signal	Meaning
Grasping throat with hand	Emergency-help me.
Thumbs up	OK; understood.
Grasping buddy's wrist	Leave area now.
Continuous sounding of vehicle horn/air horn **(Verify signal does not coincide with evacuation signals for government personnel in close proximity to the site)**	Emergency; leave site now.
Air raid-type siren	Leave Site immediately
Severe Weather Warnings (radio, TV, internet)	Leave the region in accordance with the facility evacuation orders or directives from program/project management team

Figure 9-1 depicts an Evacuation Route Map for the TPTF. This evacuation route map could be used for evacuation due to pending severe weather conditions, site emergency, or in the event that was being evacuated and secured due to a national emergency.

9.2.4 Procedures and Tests

It is the intention of the project team to verify that emergency response processes are in place and capable of being executed, prior to the start of field assignments. However, because of the nature of the facility, response to medical or fire emergencies will most likely be by outside public responders with secured or escorted access. As such, it may be impractical and disruptive to the primary mission of these responders to perform procedural response testing. In this case, the designated site supervisor or SSHO shall verify that emergency services are available for response, that contact information is appropriate, and that responders know how to access anticipated work areas.

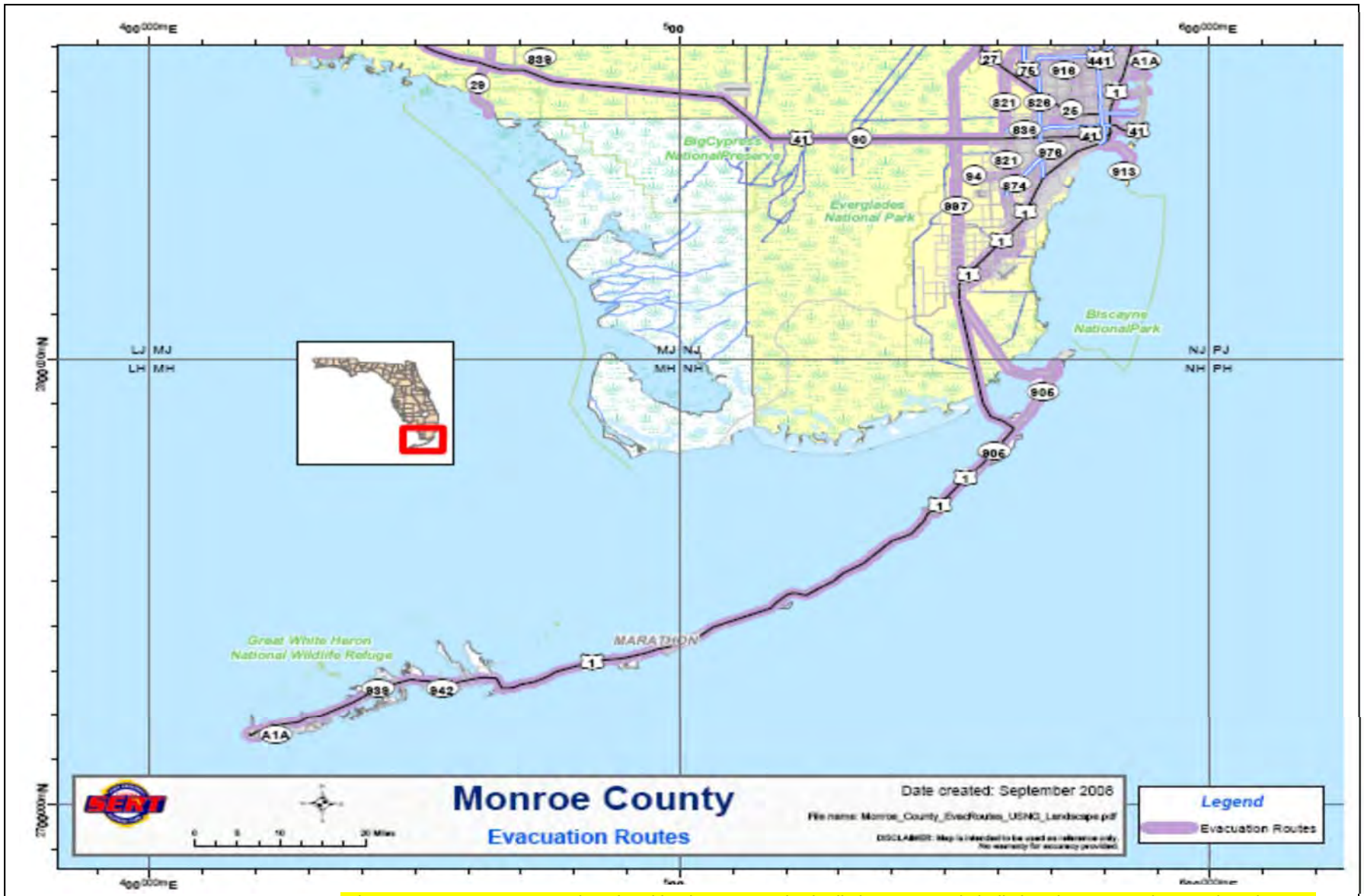


FIGURE 9-1:
Monroe County Florida Evacuation Route

When an emergency evacuation signal is given or required, all site personnel shall shut down operations and equipment, complete any personnel decontamination procedures, secure the site to the extent possible, account for all site personnel and proceed to the evacuation assembly area near the Trumbo Point access Gate. Site personnel shall contact the AGVIQ management team in accordance with Figure 4-1 “Incident Reporting Process and Chain of Command” via the contact numbers contained in Attachment 4 “Emergency Contact List” of this APP. Site personnel shall secure further instructions from the NAS Key West security forces or NAVFAC POCs in order to continue with evacuation procedures, as needed.

9.2.5 Spill Plans

The initial response to any spill or discharge will be to protect human health and safety, and then the environment. Identification, containment, treatment, and disposal assessment will be the secondary response.

If for some reason a chemical spill is not contained, within a dike or sump area, an area of isolation must be established around the spill. The size of the area will generally depend on the size of the spill and the materials involved. If the spill is large (greater than 55 gallons) and involves a tank or a pipeline rupture, an initial isolation of at least 100 feet in all directions should be used, depending on the hazards posed by the spilled or released material. Small spills (less than or equal to 55 gallons) or leaks from a tank or pipe, depending on the hazards posed by the spilled or released material, will require evacuation of at least 50 feet in all directions to allow cleanup and repair and to prevent exposure. When any spill occurs, only those persons involved in overseeing or performing emergency operations will be allowed within the designated hazard area and must maintain appropriate training, and be enrolled in a medical surveillance program in accordance with the requirements of 29 CFR 1910.120 and possess proper experience and PPE, to do so. If possible, the area will be roped off or otherwise blocked to provide restricted access to authorized personnel only.

If the spill results in the formation of a toxic vapor cloud (by reaction with surrounding materials or by outbreak of fire) or creates a toxic or IDLH situation, then further evacuation and response procedures must be engaged. In general, an area at least 500 feet wide and 1,000 feet long will be evacuated downwind if volatile materials are spilled. Consult the DOT Emergency Response Guide for isolation distances for listed hazardous materials.

If an incident may threaten the health or safety of the surrounding community, the public will be informed (via proper local and state emergency management planning agencies) and possibly evacuated from the area. The onsite emergency coordinator will inform the proper agencies in the event this is necessary. A Project Emergency Contact List is provided in Attachment 5 of this APP. For work at NAS Key West, AGVIQ understands that such chemicals or materials that could create such a situation are not present on site nor will AGVIQ bring such materials onsite as part of its scheduled work.

Reporting of spills or releases of oil or hazardous materials to appropriate agencies and stakeholders (i.e., NAVFAC, U.S. Environmental Protection Agency, FDEP, etc.) must be reported when spilled or released quantities of oil or hazardous materials are in excess of established Reportable Quantities (RQs) for the material in question. Contractor will report to the client and the client will inform the necessary government agency.

In a spill or release response/containment, personnel shall take the following measures:

- Immediately warn any nearby workers and notify individual responsible for site operations.
- Assess the spill area to ensure that it is safe to respond.
- Evacuate area if spill presents an emergency.
- Provide notification to project stakeholders.

- Ensure all unnecessary persons are removed from the hazard area.
- Put on protective clothing and equipment.
- If a flammable material is involved, remove all ignition sources, and use only spark- and explosion-proof equipment for recovery of material.
- Remove all surrounding materials that could be especially reactive with materials in the waste. Determine the major components in the waste at the time of the spill.
- Stop source of spill and establish site control for spill area.
- If wastes reach a storm sewer, dam the outfall by using sand, earth, sandbags, etc. Pump this material out into a temporary holding tank or drums as soon as possible.
- Place all small quantities of recovered liquid wastes (55 gallons or less) and contaminated soil into drums for incineration or removal to an approved disposal site.
- Spray the spill area with foam, if available, if volatile emissions may occur.
- Apply appropriate spill control media (e.g., clay, sand, lime) to absorb discharged liquids.
- For large spills, establish diking around leading edge of the spill using booms, sand, clay, or other appropriate material. If possible, use diaphragm pump to transfer discharged liquid to drums or holding tank. Follow proper ground and bonding procedures of equipment during recovery efforts. Intrinsically safe equipment must be used in recovery operations.
- For small fires or chemical releases, take the following actions:

    1. Shut down operations and evacuate the immediate work area
    2. Notify appropriate response personnel
    3. Account for personnel at the designated assembly area(s)
    4. Assess the need for site evacuation, and evacuate the site as warranted

Instead of implementing a work-area evacuation, small fires or spills posing minimal safety or health hazards may be controlled by onsite personnel, assuming that personnel who respond to these emergencies are properly trained to do so and wearing appropriate PPE to protect themselves against hazards that may be associated with the response.

In addition to the above, AGVIQ will have project field staff that are trained in accordance with 29 CFR 1910.120, are enrolled in a medical surveillance program meeting the criteria of 29 CFR 1910.120(f) and have previous experience training to mitigate unanticipated small releases of materials that could occur on this project (i.e., petroleum, oil or lubricants) with heavy equipment and spill materials that will be readily available at the project site.

9.2.5.1 Anticipated Hazardous Materials

There are no anticipated hazardous materials for this TO.

9.2.5.2 Notification

In the event a spill occurs that requires notification, a project person shall follow the AGVIQ Incident Notification Process and Lines of Authority organizational chart identified in Section **4.4** of this APP.

In addition, the AGVIQ Project Manager shall make notification to the designated project NAVFAC POC and environmental compliance representative(s) or other designated NAVFAC personnel, such that additional appropriate community and/or federal/state agencies may be engaged and notified, as applicable. The AGVIQ overall Project Manager shall coordinate with the designated project NAVFAC POC for support with regard to adhering to local, state, or federal regulations for spill notification clean-up and closure requirements.

It is understood that appropriate NAVFAC notification contacts shall be identified at the project Pre-Construction Conference and incorporated for reference, herein in the Emergency Contact List, in the implemented final version of this APP, available for onsite reference.

9.2.6 Firefighting Plan

AGVIQ personnel are not considered Firefighting Organizations or Fire Brigades. Only small/containable fires that are containable by the use of first response fire protection equipment (i.e., 2.5- to 10-lb ABC fire extinguishers) may be controlled by AGVIQ personnel. All other response shall be considered firefighting measures and shall be conducted by facility provided or public agency firefighting teams.

Fire prevention measures and first response fire protection equipment shall be conducted in accordance with the information identified in Section 9.7 Health and Safety Hazard Control Program – Fire Prevention, and Section 9.2 Emergency Response Plans of the APP, respectively.

9.2.7 Posting of Emergency Telephone Numbers

Emergency contact numbers appropriate to project operations are included in **Attachment 5** of this APP and are referenced as the Emergency Contact List. Where temporary construction support facilities are established at the project site, this Emergency Contact List shall be posted in a conspicuous location. Where temporary construction facilities are not allowed or provided, the list shall be available for quick reference by the AGVIQ personnel via this APP and location shall also be made known to designated site personnel.

9.2.8 Man Overboard / Abandon Ship

(Reserved)

9.2.9 Medical Support

Location and direction to medical support facilities shall be posted in a conspicuous location where temporary construction facilities or support are established at the project site. Where temporary construction facilities or a designated administrative/support office are not allowed or provided, the list shall be available for quick reference by site supervisor or SSHO personnel executing site operations and its location shall also be made known to other site personnel.

In addition, the project shall be outfitted with first aid kits of suitable size and quality (contents) to meet health and safety requirements for onsite first aid and CPR response. Personal protective devices shall be provided such that universal precautions against blood

borne pathogens can be exercised while administering CPR or first aid. Eye wash stations, either portable or stationary, will be available.

An effective means of communication and to summon transportation of injured workers to medical treatment facilities must be evaluated and established prior to the start of field activities. Communication devices shall be tested in the area of use to assure functionality. When a medical facility or physician is not accessible within 5 minutes of an injury to a group of two or more employees for the treatment of injuries, at least two employees on each shift shall be qualified to administer first-aid and CPR.

AGVIQ employee injuries and illnesses must also be reported to the Project and Program Management team identified in Section 4.0 this and APP Human Resources contacts in **Attachment 5**, once the notification requirements identified in Section 4.4 of this APP have been fulfilled. If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the designated medical consultant or site Emergency Response Support personnel, as applicable.

It must be understood that for life threatening emergencies, get or summon medical attention immediately.

During non-emergencies, follow these procedures as appropriate.

- Notify appropriate emergency response authorities (e.g., 911).
- The site supervisor or SSHO will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room.
- Prevent further injury.
- Initiate first aid and CPR where feasible and where worker Universal Precautions to Blood borne Pathogens can be completed.
- Perform decontamination where feasible; lifesaving and first aid or medical treatment take priority.
- Make certain that the injured person is accompanied to the emergency room.
- When contacting the medical consultant, give your name and telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken.
- Report incident as outlined in Section 8.0 and in accordance with the Primary Lines of Authority identified in Section 4.4 of this APP.
- A map showing the route to the local hospital is shown on Figure 9-2.

FIGURE 9-2: Hospital Route Map, Trumbo Point, NAS Key West

(Total distance about 4.8 miles @ ~ 12 minutes)

Time	Mile	Instruction	For
9:00 AM	**0.0**	**Depart TPTF Area [Trumbo Rd, Key West, FL 33040] on Mustin St [Trumbo Rd] (South)**	**0.4 mi**
9:01 AM	0.4	Turn LEFT (South) onto Grinnell St	174 yds
9:02 AM	0.5	Turn LEFT (North-East) onto Eaton St	0.2 mi
9:03 AM	0.7	Bear RIGHT (East) onto Palm Ave	0.7 mi
9:05 AM	1.4	Turn LEFT (East) onto US-1 [N Roosevelt Blvd]	2.6 mi
9:10 AM	4.0	Turn LEFT (North) onto College Rd [E Junior College Rd]	0.8 mi
9:12 AM	**4.8**	**Arrive Lower Keys Medical Center**	

9.3 Plan for prevention of Alcohol and Drug Abuse

The AGVIQ policy statement on alcohol and drug abuse is provided in Section 10.5 of the APP, and will not be elaborated further upon in this section.

9.4 Site Sanitation Plan

Toilet facilities for this project shall be of the pre-manufactured, temporary/portable type chemical toilets typical of construction projects and shall be constructed so the occupants are protected against weather and falling objects (reasonably sized); all cracks shall be sealed; and the door shall be tight-fitting, self-closing, and capable of being latched. Adequate ventilation (natural via vents) shall be provided and all windows and vents shall be screened. Toilet facilities will be lighted via natural lighting.

Provisions for routinely servicing and cleaning all toilets and properly disposing of the waste shall be established before placing toilet facilities into operation. The method of sewage disposal shall be managed by the temporary/portable toilet vendor. Separate toilet rooms for each sex need not be provided if toilet rooms can only be occupied by one person at a time, can be locked from the inside, and contain at least one toilet seat.

Washing facilities shall be provided within or adjacent to the temporary/portable type chemical toilet facilities and as needed to maintain healthful and sanitary conditions. Each washing facility shall be maintained in a sanitary condition and provided with tepid water, suitable for hand washing, soap, and individual means of drying. If it is not practical to provide a water source for hand washing using running water due to low ambient air temperatures (~32^{o}F) then hand sanitizers may be used as a substitute. Washing facilities shall be on the project work site.

Trash and garbage generated by the normal site operations must be properly stowed, containerized, and secured such that vermin will not be attracted and disposed of offsite on a regular basis. Trash and garbage generated as a result of executed site operations shall not be disposed of in base receptacles.

At no time shall waste or trash generated during site operations be disposed of in NAS Key West trash or garbage containers.

9.5 Access and Haul Road Plan

At this time it is anticipated that project haul operations will be limited to the delivery or pick-up of waste containers required for the disposal of generated waste, delivery of backfill material (topsoil, backfill, riprap), and delivery of field supplies. The site access and haul road have not yet been defined or authorized by the Base. It is assumed that the project haul route will be established on or before the project pre-construction meeting and project kick-off. At this time, the project haul can only be approximated as the route identified in Figure 9-1, Evacuation Route Map.

9.6 Respiratory Protection Plan

(Reference SOP # HSE&Q 121, Respiratory Protection)

(Reserved)

At this time, there is no identified task or site condition where the use of respiratory protection equipment will be required by site personnel.

9.7 Health and Safety Hazard Control Program

Exposure to certain project specific hazards in the work place may include injury/accidents, occupational illnesses or property damage due to execution of a variety of assigned tasks or as a result of existing site conditions. This section of the APP is provided to aid employees in the recognition of potential specific and general project hazards and provide procedures and practices to be implemented on the project site that may facilitate the reduction or elimination of occupational incidents that may be attributed to identified project hazards. All AGVIQ personnel are required to contact the designated Project Manager, SSHO, Program CIH/HSPA identified in this APP regarding any questions or concerns to ensure the execution of this TO in a healthy and safe manner.

9.7.1 Adverse Weather

Sudden inclement weather can rapidly encroach upon field personnel. Because of the time of year that this project is being executed and its geographical region, field crew members could experience a variety of adverse weather conditions during the course of a normal work assignment.

Personnel performing work outdoors should carry clothing appropriate for foul weather conditions (rain gear, etc.) that may be expected. In severe weather conditions, (i.e., high wind, rain squalls, electrical storms), the field crews must evacuate from an outdoor work environment area and find safe shelter until the weather abates and until a decision is made to resume the field activities. The following information is provided for field personnel subject to outdoor work environments as procedures must be exercised where adverse weather is encountered or is expected to occur during an assigned work day.

Frequently observe the skyline for developing rain squalls, thunder storms or other severe weather systems that may be developing. Check internet, local TV weather or radio channels for daily forecasts and plan daily work activities accordingly. Have a portable radio available onsite to monitor local weather or marine forecasts. If onsite internet or radio monitoring are not available, check with the home office support personnel who may be able to determine the severity of developing storm systems through internet access or other methods.

Use the 30-30 rule for lightning. When you see lightning, count the time until you hear thunder. If this time is 30 seconds or less- seek shelter. If you can't see the lightning, just hearing the thunder is a good back-up rule. Wait 30 minutes or more after hearing the last thunder before leaving the shelter.

Shut down operations during heavy rain/lightning events, high wind or heavy snow conditions and identify safe haven location. Safe haven locations should be identified prior

to the start of work. Safe haven structures must be grounded where there is a potential for a lightning event.

9.7.2 Aerial Lifts

(Reference SOP # HSE&Q-301, Aerial Lifts)

(Reserved)

Aerial lifts will not be used on this project.

9.7.3 Air Compressor Operations

(Reserved)

Compressed air sources will not be used on this project.

9.7.4 Asbestos

(Reference SOP # HSE&Q-502, Asbestos)

(Reserved)

9.7.5 Biological Hazards and Controls

The following sections provide information on potential biological hazards. Site personnel shall notify their overall supervisors and their project site supervisor of any potential allergic reactions that may occur as a result of contact with biological hazards in the workplace. If employee antidotes are required to counteract allergic reactions from biological hazard exposure, employees shall make personnel, who may be required to administer personal antidotes, aware of the location, type, and quantity of antidotes needed to counteract any potential allergic reaction(s).

9.7.5.1 Alligators

The habitat of the American Alligator includes coastal regions of much of the Southeastern US. As such, personnel performing field activities must be aware of the potential to encounter alligators. The following safe work practices must be followed when accessing areas that can potentially be considered a viable alligator habitat.

- Always use the buddy system.
- With a buddy, survey the area for alligators or signs of alligators prior to entering areas that can be considered potential alligator habitats.
- Maintain radio and cellular phone communications with other team members.
- Avoid approaching the edge of the creek which could potentially be within striking distance of a submerged alligator.
- If an alligator is observed in the work area or signs of alligator presence is observed (tracks, nests, eggs) evacuate the work area immediately.
- Notify the project supervisor /project manager if alligators or signs of an alligator habitat are observed.

9.7.5.2 Venomous Snakes

Snakes typically are found in underbrush, tall grassy areas, near cover such as fallen logs, brush piles, rock walls, abandoned foundations, or rock ledges. They may be resting or waiting for prey. Watch where you place your hands and feet. Walk around, rather than over, fallen logs. When traveling through areas thought to contain venomous snakes, you can minimize the possibility of an encounter by using common sense. If you encounter a snake do your best to stay calm and look around as there may be other snakes. Turn around and walk away on the same path you used to approach the area. If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Seek medical attention immediately. **DO NOT apply ice, cut the wound, or apply a tourniquet**. Try to identify the type of snake: note color, size, patterns, and markings to assist medical personnel with proper treatment measures (see below – Identification of Poisonous Snakes).

Six species snakes native to the TPTF area are venomous and are as follows:

1. Copperhead

2. Canebrake Rattlesnake

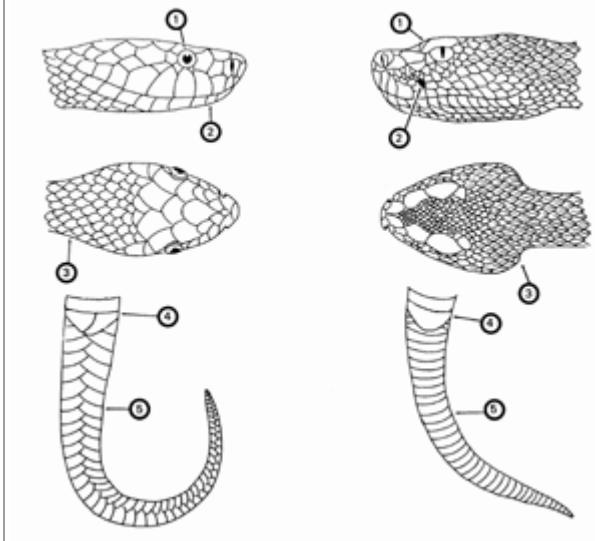
3. Eastern Diamondback Rattlesnake

4. Pigmy Rattlesnake

5. Cottonmouth

6. Coral Snake

Major Identification Features Non-venomous Snake	**Major Identification Features Venomous Snake**
1. Round pupils 2. No sensing pit 3. Head slightly wider than neck 4. Divided anal plate 5. Double row of scales on the underside of the tail	1. Elliptical pupils 2. Sensing pit between eye and nostril 3. Head much wider than neck 4. Single anal plate 5. Single scales on the underside of the tail



9.7.5.2.1 Poisonous Plants

Poison ivy, poison oak, and poison sumac typically are found in brush or wooded areas, which are common to the site. They are more commonly found in moist areas or along the

edges of wooded areas. Shrubs are usually 12 to 30 inches high, or can also be a tree-climbing vine, with triple leaflets and short, smooth hair underneath. Plants are red and dark green in spring and summer, with yellowing leaves anytime especially in dry areas. Leaves may achieve bright reds in fall, but plants lose its (yellowed, then brown) leaves in winter, leaving toxic stems. All parts of the plant remain toxic throughout the seasons.

Become familiar with the identity of these plants (see below). Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention.

Poison Ivy

Poison Sumac

Poison Oak

Exposure:

Contamination with poison oak, ivy or sumac can happen through several pathways. These include:

- Direct skin contact with any part of the plant
- Contact with clothing that has been contaminated
- Contact from removing shoes that have been contaminated, as your shoes may be coated with oil)
- Sitting in a vehicle that has become contaminated
- Contact with any objects or tools that have become contaminated

Exposure to poison oak, ivy or sumac often becomes an OSHA recordable illness. Take proper action if you are potential contaminated. The dermatitis is so severe that many people seek medical care and get prescription cortisone creams or steroid shots to reduce the suffering caused by the itch.

Best Work Practices:

If you must work on a Site that has been identified to potentially contain poison oak, ivy or sumac, the following precautions are necessary:

- Identify plants containing urushiol – The best way to prevent exposure is to recognize the plant and avoid working in areas where poison oak, ivy or sumac is present.

- If you must work in areas with urushiol containing plants, contact you project manager and health and safety manager to determine the best procedures to prevent contamination.
- Do not drive vehicles onto the Site where it will come into contact with poison oak, ivy or sumac. Vehicles which need to work in the area, such as drill rigs or heavy equipment must be washed and decontaminated as soon as possible after leaving the Site.
- All tools used in the area, including those used to cut back the plants, surveying instruments used in the area, air monitoring equipment or other test apparatus must be decontaminated before they are placed back into the Site vehicle. If on-Site decontamination is not possible, use plastic to wrap any tools or equipment until they can be decontaminated. If working on or near the ground surface, place plastic on the ground to cover the grass and foliage.
- PPE, including Tyvek® coveralls, gloves, and boot covers must be worn. PPE and plastic used to cover the ground must be placed into separate plastic bags and sealed if they are not disposed immediately into a trash receptacle.
- Shower as soon as possible to remove any potential contamination. Any body part with suspected or actual exposure should be washed with Tecnu® or other product designed for removing urushiol. If you do not have Tecnu wash with cold water. Do not take a bath, as the oils can form and invisible film on top of the water and contaminate your entire body upon exiting the bath.
- Zanfel™ may also be used to treat exposed areas that are experiencing signs and symptoms of poison oak, ivy or sumac contamination. Refer to the Zanfel™ information guide below for specific product and contact information.
- Use products such as IvyBlock™ to prevent poison oak, ivy and sumac contamination. IvyBlock™ is approved by the FDA to prevent the rash caused by poison oak, ivy and sumac.
- If there is exposure use the following first aid procedures, or others you may find to alleviate the pain and itching.

Poison Oak, Ivy, and Sumac First Aid :

Self-Care/First Aid

- Wash (decontaminate) all affected areas with warm water and a strong soap.
- Keep your hands away from your eyes, mouth and face.
- Do not scratch or rub the rash.
- Apply any of these to the skin rash:
  - Calamine (not Caladryl) lotion
  - Zanfel™ lotion
  - Zinc oxide ointment
  - Paste made with baking soda - mix 3 teaspoons of baking soda with 1 teaspoon of water

- Take an over-the-counter antihistamine such as Benadryl, as stated on the label.
- If self-care/first aid measures don't bring relief, call your doctor.

Urushiol Plant Facts:

Urushiol Oil is Potent.

- Only 1 nanogram (billionth of a gram) needed to cause rash
- Average is 100 nanograms for most people
- ¼ ounce of urushiol is all that is needed to cause a rash in every person on earth
- 500 people could itch from the amount covering the head of a pin
- Specimens of urushiol several centuries old have found to cause dermatitis in sensitive people
- 1 to 5 years is normal for urushiol oil to stay active on any surface including dead plants
- Derived from urushi, Japanese name for lacquer

New Cream to Treat Exposure to Poison Plants:

Exposure to poison oak, ivy and sumac can be uncomfortable, and in some cases the rash can become so severe that medical care is required. A relatively new product is available Zanfel™ (www.zanfel.com) that helps prevent blistering and itching from becoming severe. If you are working in an area with poison oak, ivy or sumac, you can obtain this cream by contacting and notifying your supervisor of the need to purchase this material.

Please remember, the cream does not replace preventative measures, including:

- Avoiding contact with poison oak, ivy and sumac
- Wearing Tyvek™ coveralls and gloves to prevent contact
- Washing with Tecnu® (or a similar product) after potential exposure
- Washing clothing and decontaminating equipment with an oil-cutting detergent

More information about Zanfel™ (from Zanfel):

Zanfel™ is an effective wash for urushiol-induced contact dermatitis. Urushiol is the toxin known to cause the itching and rash associated with poison oak, ivy, sumac, poisonwood, and related plants. Zanfel works by surrounding urushiol and bonding with it, thereby enabling it to be rinsed away. Unlike some products that require use within 10 to 20 minutes of contact or that required continued use until the rash is gone (which can take up to 5 weeks), Zanfel offers relief at any stages of the reaction and often with only one wash. Individuals with particularly severe reactions may require additional washes. Most individuals experience relief from the itching within 30 seconds of application. The rash will begin to subside within hours if the reaction is mild to moderate. Severe and systemic cases will still require medical attention. Severe cases are defined as breakouts that are present on more than 15-percent of the body, and new breakouts continue to develop after day 4.

9.7.5.3 Ticks

Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to one-quarter inch in size. Wear tightly woven light-colored clothing with long sleeves and pant legs tucked into/taped to boots; spray only outside of clothing with permethrin or permanone and spray skin with only N, N-diethyl-meta-polyamide (DEET); and check yourself frequently for ticks. Where exposure to ticks is verified, personnel shall consider wearing bug-out suits to minimize potential exposures to ticks or other biting insects (i.e., chiggers). However, when these suits are used when ambient air temperatures are elevated (> 70 degrees) heat stress preventive measures and monitoring protocols must be implemented. See the Heat Stress section in this APP for additional information.

Hazard Control:

The methods for controlling exposure to ticks include, in order of most-preferred to least:

- Avoiding tick habitats and ceasing operations in heavily infested areas
- Reducing tick abundance through habitat disruption or application of acracide
- Personal protection through use of repellants and protective clothing
- Frequent tick inspections and proper hygiene
- Vaccinations are not available and preventive antibiotic treatment after a bite is generally not recommended.

Tick Identification:

There are five varieties of hard-bodied ticks that have been associated with tick-borne pathogens. These tick varieties include:

- Deer (Black Legged) Tick (eastern and pacific varieties)
- Lone Star Tick
- Dog Tick (American and Brown)
- Rocky Mountain Wood Tick
- Western Black-legged tick

Illnesses and Signs/Symptoms:

There are six distinguishable tick-borne pathogens that cause human illness in the United States. These pathogens may be transmitted during a tick bite – normally hours after attachment. The illnesses, presented in approximate order of most common to least, include:

- Lyme (bacteria)
- Rocky Mountain Spotted Fever (RMSF) (bacteria)
- Ehrlichiosis (bacteria)
- Southern Tick-Associated Rash Illness (STARI) (bacteria)
- Tularemia (Rabbit Fever) (bacteria)
- Babesia (protozoan parasite)

Symptoms will vary based on the illness, and may develop in infected individuals typically between 3 and 30 days after transmission. Some infected individuals will not become ill or may develop only mild symptoms. These illnesses present with some or all of the following signs and symptoms: fever, headache, muscle aches, stiff neck, joint aches, nausea, vomiting,

abdominal pain, diarrhea, malaise, weakness, and small solid, ring-like, or spotted rashes. The bite Site may be red, swollen, or develop ulceration or lesions. A variety of long-term symptoms may result when untreated, including debilitating effects and death.

Tick Removal:

1. Use fine-tipped tweezers or shield your fingers with a tissue, paper towel, or nitrile gloves.
2. Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin. (If this happens, remove mouthparts with tweezers. Consult your healthcare provider if infection occurs.)
3. Do not squeeze, crush, or puncture the body of the tick because its fluids (saliva, hemolymph, and gut contents) may contain infectious organisms. Releasing these organisms to the outside of the tick's body or into the bite area may increase the chance of infectious organism transmission.
4. Do not handle the tick with bare hands because infectious agents may enter through mucous membranes or breaks in the skin. This precaution is particularly directed to individuals who remove ticks from domestic animals with unprotected fingers. Children, elderly persons, and immune-compromised persons may be at greater risk of infection and should avoid this procedure.
5. After removing the tick, thoroughly disinfect the bite site and wash your hands with soap and water.
6. You may wish to save the tick for identification in case you become ill. Your doctor can use the information to assist in making an accurate diagnosis. Place the tick in a plastic bag and put it in your freezer. Write the date of the bite on a piece of paper with a pencil and place it in the bag. See First Aid and Medical Treatment information below.

Previously infected individuals are not conferred immunity – re-infection from future tick bites can occur even after a person has contracted a tick-borne disease.

First-Aid and Medical Treatment:

Tick bites should always be treated with first-aid. Clean and wash hands and disinfect the bite Site after removing embedded tick. Consult a healthcare professional if infection or symptoms and effects of tick-borne illnesses are developing.

Medical treatments for tick-borne infections include antibiotics and other medical interventions. Diagnosis of specific illness involves both clinical and laboratory confirmations. Preventive antibiotic treatment in non-ill individuals who have had a recent tick bite is recommended in specific cases only.

Tick Analysis Procedure for Lyme disease:

For tick removal, follow the instructions in your tick removal kit using a fine pointed pair of tweezers. If the tick is alive, place it in two layered zip-lock bags. It is highly recommended that you wear gloves when removing the tick from the skin to avoid infection.

It is important to remove the entire tick and place it in a zip-lock bag. Place the zip-lock bag in an envelope and contact your applicable health care representative, project manager and health and safety representative for instructions on where to send the tick for analysis of certain tick-borne pathogens.

9.7.5.4 Spiders - Brown Recluse

It is regarded by many as the most dangerous spider in the United States. The Brown Recluse can be present as a result of interstate shipping/transportation the Brown Recluse spider can be found most anywhere in the United States.

Brown Recluse Spiders are usually 1 inch or larger in size, including the legs and can grow as large as 3 inches. Young Brown Recluse spiders are smaller and somewhat lighter in color. Brown recluse spider bites don't always hurt right away.

In fact, you may not know that you have been bitten until other symptoms appear. Symptoms of a brown recluse spider bite may include the following:

- Reddened skin followed by a blister that forms at the bite Site
- Mild to intense pain and itching for 2 to 8 hours following the bite
- An open sore with a breakdown of tissue (necrosis) that develops within a few hours to 3 to 4 days following the bite and the area may become painful, itchy, hot, swollen, red and tender. An irregular ulcerous sore, caused by necrosis, will often appear that is from 1/4 inch to 10 inches in diameter. Prompt attention is the best defense against preventing the necrosis. The wound is often described as being reddish and surrounded by a bluish area with a narrow whitish separation in between the red and the blue. This gives it the famous bull's eye pattern. In just hours, a bite from the highly venomous Brown Recluse spider can create blisters and cause tissue damage.

Some people have a severe, systemic (whole-body) reaction to brown recluse spider bites, including the rapid destruction of red blood cells and anemia. Signs and symptoms include:

- Fever and chills
- Skin rash all over the body with many tiny, flat purple and red spots
- Nausea or vomiting
- Joint pain

If you think you have been bitten by a brown recluse spider:

1. Remain calm. Too much excitement or movement will increase the flow of venom into the blood.
2. Try to collect the spider, without being bitten, (even a mangled specimen has diagnostic value), if possible, for positive identification by a spider expert. A plastic bag, small jar, or pill vial is useful and no preservative is necessary, but rubbing alcohol helps to preserve the spider.

3. Apply a cool, wet cloth to the bite or cover the bite with a cloth and apply an ice bag to the bite.
4. Do not apply a tourniquet. It may cause more harm than benefit.
5. Try to positively identify the spider to confirm its type.
6. Seek prompt medical attention.

A brown recluse bite can be serious and will likely require immediate medical care. Seek medical attention if you believe you have been bitten by a recluse spider, especially if severe symptoms develop throughout your body or an open sore and necrosis develop. A brown recluse spider bite is diagnosed through a physical examination and questions about the bite. You should be prepared to describe the spider, where and when the bite took place, and what you were doing at the time. Your health professional will ask what your main symptoms are, when they began, and how they have developed, progressed, or changed since the bite.

Before utilizing outdoor temporary sanitary facilities, be sure to check the unit to verify there are not any spiders.

9.7.5.5 Spiders - Widow

Black Windows can potentially be encountered at the site. Females range from 8-15 mm in body length; males are smaller, sometimes very small (2 mm). Most have globose, shiny abdomens that are predominantly black with red markings (although some may be pale and/or have lateral stripes), with moderately long, slender legs. These spiders are nocturnal and build a three-dimensional tangled web, often with a conical tent of dense silk in a corner where the spider hides during the day. In nature, most species are found under rocks and logs, but they readily adapt to human-altered environments, where they are most commonly found in outbuildings (sheds, barns, privies), water meter holes, nursery cans, and under any item or structure (e.g., barbeque grill, slide, sand box) that has been undisturbed for a lengthy period.

Formerly, many bites by black widows (usually by female spiders) occurred in outhouse structures, but widow bites occur most frequently when the spider is trapped against human skin, either by reaching under objects where the spider is hiding or when putting on clothing, gloves or shoes containing the spider. Widow spiders are generally very timid and only bite in self-defense when they accidentally contact humans.

Northern Black

Northern Widow

Note: The northern widow is similar to the southern widow except the telltale red markings are shaped slightly different.

Bite symptoms are systemic, spreading through the lymphatic system, and usually start about 1 to 3 hours after the bite. The most common symptoms are intense pain, rigid abdominal muscles, muscle cramping, malaise, local sweating, nausea, vomiting, and hypertension. Other symptoms may include tremors, labored breathing, restlessness, increased blood pressure, and fever. If left untreated, widow bite symptoms usually last 3 to 5 days.

If bitten, remain calm, and immediately seek medical attention (contact your physician, hospital and/or poison control center). Apply an ice pack directly to the bite area to relieve swelling and pain. Try to collect the spider, without being bitten, (even a mangled specimen has diagnostic value), if possible, for positive identification by a spider expert. A plastic bag, small jar, or pill vial is useful and no preservative is necessary, but rubbing alcohol helps to preserve the spider. A hospital stay may be recommended, particularly for those with a heart condition or with health problems. A physician may administer a specific antivenin to counteract the venom or calcium gluconate to relieve pain. Calcium gluconate and/or antivenin may be administered to relieve or counteract symptoms.

Before utilizing outdoor temporary sanitary facilities, be sure to check the unit to verify there are no spiders.

9.7.5.6 Blood Borne Pathogens

Blood borne pathogens are pathogenic microorganisms present in human blood or other potentially infectious material that can cause disease. These pathogens include, but are not limited to, the Hepatitis B Virus (HBV) and the Human Immunodeficiency Virus (HIV). Other potentially infectious material includes any human body fluid that is visibly contaminated with blood, such as saliva or vomit. It also includes all body fluids in situations where it is difficult or impossible to differentiate between body fluids, such as during an emergency response and any unfixed tissue (other than intact skin) from a human (living or dead).

In emergency medical situations, certain employees may need to render first aid as a collateral duty in response to workplace accidents or injuries. This category includes the SSHO, site managers/supervisors, or individuals certified in FA and CPR and shall have received training in exercising universal precautions against exposure to blood borne pathogens as a component to FA/CPR training, which meets the intent of 29 CFR 1910.1030. However, additional worker training programs in to blood borne pathogens may also be required when it is expected that employees could contact landfill waste or other waste streams containing potentially infectious material. This situation is not reasonably expected for this project. Blood borne pathogen employee training is also complemented by other regularly scheduled employer training curriculums that are typically executed for the HAZWOPER industry, regulated under 29 CFR 1910.120/29 CFR 1926.26. The only worker exposure to blood borne pathogens anticipated for this project will potentially be to those individuals providing FA/CPR to an injured or down worker.

To eliminate or minimize employee exposure to blood borne pathogens, workers who may be exposed to blood borne pathogens or potentially infectious material must implement the following hazard control measures.

Employees expected to render first aid shall be cognizant of and adhere to the following with regard to potential exposure to blood borne pathogens:

- First aid kits and a Blood borne Pathogens Protection Kit shall be immediately available at the Site. The kit is commercially available through most safety or medical supply vendors.
- These kits shall contain gloves, masks, CPR protectors, biohazard disposal bags, antiseptic cleanser, splash-proof goggles, towels, wipes, and an absorbent powder to clean up spills. Gloves, masks, and other PPE measures must be donned by personnel responding to emergency or first aid situations where exposure to Blood borne Pathogens could occur.

A portable eye wash station or means of conducting eye washing or flushing shall be readily available at the project site location.

- Always wash your hands and face with antiseptic soap and running water after contacting potentially infectious material. If washing facilities are unavailable, use an antiseptic cleanser with clean paper towels or moist towelettes. When antiseptic cleansers or towelettes are used, always rewash your hands and face with soap and running water as soon as available. Do not consume food or beverages, smoke, chew tobacco, or perform another hand to eye/face/mouth activity until after thoroughly cleaning your hand (with antiseptic soap and water), then your face and only after the employee has removed themselves from the designated work area that contains materials that can be reasonably considered being contaminated with blood borne pathogens.
- Use universal precautions when dealing with materials or situations where there is a potential for blood borne pathogens. Universal precaution is an approach to infection control whereby all human blood and potentially infectious material are treated as if known to be infectious for HIV, HBV, and other blood borne pathogens.
- Personnel who may be exposed to Blood borne Pathogens should review and implement all applicable components of # HSE&Q 202, Blood borne Pathogens.

9.7.5.7 Mosquito Bites

Because of the detection of the West Nile Virus throughout the United States, it is recommended that preventive measures be taken to reduce the probability of being bitten by mosquitoes whenever possible. Mosquitoes are believed to be the primary source for exposure to the West Nile Virus as well as several other types of encephalitis. The following guidelines should be followed to reduce the risk of these concerns for working in areas where mosquitoes are prevalent.

- Stay indoors at dawn, dusk, and in the early evening.
- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Spray clothing with repellents containing pyrethrum or DEET because mosquitoes may bite through thin clothing.

- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35 percent DEET. DEET in high concentrations (greater than 35 percent) provides no additional protection.
- Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands.
- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's DIRECTIONS FOR USE, as printed on the product.
- Note: Vitamin B and ultrasonic devices are NOT effective in preventing mosquito bites.

Symptoms of Exposure to the West Nile Virus:

Most infections are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death.

The West Nile Virus incubation period is from 3 to 15 days.

If you have any questions or to report any suspicious symptoms, contact our line supervisor, project health and safety representative and/or designated corporate occupational physician, as per your employers policy, for support with suspect exposures to West Nile Virus.

9.7.5.8 Rabid Animals

Encounters with a rabid animal can lead to rabies transmission when virus from the animal's saliva, brain tissue, or spinal fluid enters open cuts or wounds in skin or mucous membranes. Therefore, not every encounter with a rabid animal is a true exposure requiring intervention. Treatment is often provided unnecessarily to people who have encountered but had no true exposure to a potentially rabid animal.

Any penetration of the skin by an animal's teeth is considered a "bite exposure." Local wound care should be performed immediately on anyone bitten by an animal. Local treatment of wounds involving immediate and extensive washing of all bite wounds, scratches, or other Sites of potential exposure for 10 minutes with soap and water is arguably the most important measure for preventing rabies following an exposure to a rabid animal. Experiments done in animals suggest that thorough and vigorous cleansing to the depth of the wound with a 20% soap solution can reduce the risk of developing rabies. Tetanus booster vaccine (Td) should be given if indicated. A health care provider should be consulted to determine whether other measures are necessary. When a bite exposure has been determined, laboratory testing of the animal, if available, may be indicated depending upon the circumstances of the exposure (such as whether it was provoked or not) and the species involved. The risks associated with bites from different animals vary from place to place. For work on this particular contract, contact with rabid dogs, cats, raccoons, and rats could be possible.

Non-bite exposures include any scratches, abrasions, or contamination of mucous membranes by an infected animal's saliva, brain tissue, or spinal fluid. Other types of contacts (such as with the blood, urine, feces, or fur of an animal) would not by themselves be considered exposures capable of transmitting rabies even if the animal were known to be

rabid. The virus is not hardy; once dry, saliva containing rabies virus is considered non-infectious.

9.7.6 Buried Objects/Utilities (locating)

Do not begin subsurface construction activities (e.g., excavation or drilling) or other ground disturbing activities until a check for underground utilities and similar obstructions has been conducted. Contact the local utility mark-out or locating service identified for the area of operations.

Local Utility Mark-Out Service
Name: Sunshine State One Call of Florida, Inc.
Phone: http://www.callsunshine.com/corp/index.html
Website: (800) 432-4770

The use of as-built drawings and utility company searches must be supplemented with a geophysical or other survey by a qualified, independent survey contractor to identify additional and undiscovered buried utilities. Examples of the type of geophysical technologies include:

- Ground Penetrating Radar (GPR), which can detect pipes, including both metallic and non-metallic gas pipes, tanks, conduits, and cables, at depths up to 30 feet depending on equipment. Sensitivity for both minimum object size and maximum depth detectable depends on equipment selected, soil conditions, etc.
- Radio Frequency (RF) involves inducing an RF signal in the pipe or cable and using a receiver to trace it. Some electric and telephone lines emit RF naturally and can be detected without an induced signal. This method requires knowing where the conductive utility can be accessed to induce RF field if necessary.
- Dual RF is a modified version of RF detection using multiple frequencies to enhance sensitivity but with similar limitations to RF.
- Ferromagnetic Detectors are metal detectors that will detect ferrous and non-ferrous utilities. Sensitivity is limited, e.g., a 100-millimeter iron disk to a depth of about one meter or a 25-millimeter steel paper clip to a depth of about 20 centimeters.
- Electronic markers are emerging technologies that impart a unique electronic signature to materials such as polyethylene pipe to facilitate location and tracing after installation. Promising for future installations but not of help for most existing utilities already in place.

9.7.6.1 Procedure

The following procedures shall be used to identify and mark underground utilities during subsurface construction activities on the project.

- The survey subcontractor shall determine the most appropriate geophysical technique or combinations of techniques to identify the buried utilities on the project, based on the survey contractor's experience and expertise, types of utilities anticipated to be present, and specific Site conditions.

- The survey contractor shall employ the same geophysical techniques used on the project to identify the buried utilities, to survey the proposed path of subsurface construction work to confirm no buried utilities are present.
- Identify customer specific permit and/or procedural requirements for excavation and drilling activities. For military installations, contact the Base Civil Engineer and obtain the appropriate form to begin the clearance process.
- Contact utility companies or the state/regional utility protection service at least three working days prior to excavation activities to advise of the proposed work, and ask them to establish the location of the utility underground installations prior to the start of actual excavation.
- Schedule the independent survey.
- Obtain utility clearances for subsurface work on both public and private property.
- Clearances are to be in writing, signed by the party conducting the clearance.
- Underground utility locations must be physically verified by hand digging using wood or fiberglass-handled tools when any adjacent subsurface construction activity (e.g., mechanical drilling, excavating) work is expected to come within 5 feet of the marked underground system. If subsurface construction activity is within 5 feet and parallel to a marked existing utility, the utility location must be exposed and verified by hand digging every 100 feet.
- Protect and preserve the markings of approximate locations of facilities until the markings are no longer required for safe and proper excavations. If the markings of utility locations are destroyed or removed before excavation commences or is completed, the Project Manager must notify the utility company or utility protection service to inform them that the markings have been destroyed.
- Conduct a Site briefing for employees regarding the hazards associated with working near the utilities and the means by which the operation will maintain a safe working environment. Detail the method used to isolate the utility and the hazards presented by breaching the isolation.
- Monitor for signs of utilities during advancement of intrusive work (e.g., sudden change in advancement of auger or split spoon during drilling or change in color, texture, or density during excavation that could indicate the ground has been previously disturbed).
- In addition to the information contained in this section, personnel performing hand augering operations should use a fiberglass ground probe to search ahead to the next sample interval prior to advancing the hand auger. When performing environmental sampling, decontamination of the fiberglass ground probe shall apply.

When the client or other onsite party is responsible for determining the presence and locations of buried utilities, the AGVIQ site supervisor shall confirm the arrangement and be available onsite to verify the location of underground utilities or identified subsurface anomalies that may be in question and require further investigation measures.

9.7.6.2 Unknown or Suspect Buried Objects/Materials

If unknown or suspect objects/materials are encountered (i.e., exposed or partially buried drums, biological waste, cylinders, munitions and explosives of concern, unexpected stained/discolored soil) are encountered during site operations, ongoing activities shall be immediately suspended. AGVIQ or subcontractor personnel encountering unknown or suspect objects/materials shall:

- Secure the area and identify the location of the object/material to the extent possible, without causing bodily injury to yourself or others and without disturbing the object.
- Evacuate the work area.
- Immediately notify the project manager of the encountered condition.
- Not provide additional disturbance or otherwise handle the suspect object/material.

The site supervisor/ FTL or SHSO shall contact the Project Manager and the CIH/HSPAs to evaluate potential hazards associated with the specific situation encountered. The project team will then address the need for the use of special procedures, engineering controls, PPE or specialized subcontract personnel to safely mitigate the situation.

9.7.7 Chemical Injections

Chemical injections are not anticipated for this TO.

9.7.8 Concrete Work

(Reference SOP # HSE&Q-302, Concrete & Masonry)

(Reserved)

9.7.9 Confined Space

(Reference SOP # HSE&Q-203, Confined Space)

(Reserved)

9.7.10 Cranes

(Reference SOP # HSE&Q-303, Cranes)

(Reserved)

Crane operations/activities will not be performed as part of this TO.

9.7.11 Dismantling Operations

(Reference SOP # HSE&Q-305, Demolition

9.7.12 Cutting Operations

(Reference SOP # HSE&Q 314, Welding & Cutting)

(Reserved)

9.7.12.1 Compressed Gas Cylinders

(Reserved)

No compressed gas cylinders will be used during cutting operations.

9.7.13 Drilling/Direct Push Technology

(Reference SOP # HSE&Q 204, Drilling)

During the execution of this TO, hollow stem auger drilling techniques will be used for the installation of new groundwater monitoring wells and sampling of subsurface soil conditions. When drilling operations are implemented at the site, at a minimum, the following practices must be implemented.

- Prior to conducting any onsite intrusive activities, it must be verified that subsurface utilities will not be impacted by proposed site operations. See procedures for Buried Objects/Utilities (locating) Locating in this APP.
- PPE and air monitoring requirements shall be executed in accordance with Attachment 1 Site Safety and Health Plan of this APP in an effort to minimize potential dermal and inhalation exposures to identified site contaminants of concern during all drilling activities. In addition, good personal hygiene practices and procedures must be maintained (see Section 9.33.10 of this APP).
- Drill rig inspections and maintenance and documentation of such inspections and maintenance shall be performed daily prior to the start of onsite work.
- The drill rig should not to be operated in inclement weather**. Drill rigs with a rotary "cat-head" mechanism shall not be operated during precipitation events.**
- Suspended drill rods, tools or wash tub shall not be passed over ground personnel and ground personnel shall not be allowed to walk under or in front of suspending drilling rods, tools or wash tub.
- The drill rig operator is to verify that the rig is properly leveled and stabilized (extension of stabilizers on firm ground) before raising the mast.
- Personnel should be cleared from the sides and rear of the rig before the mast is raised.
- **The drill rig operator shall not to drive the rig with the mast in the raised position.**
- The drill rig operator must check for overhead power transmission lines or other overhead utilities before raising the mast. A minimum distance of 10 feet between mast and overhead lines <50 kilovolts (kV) is required. Increased separation will be required for lines greater than 50 kV. To determine proper clearance from energized overhead
- Electric lines, consult the reference table below.

Nominal System Voltage (kV)	Minimum Rated Clearance (feet)
0-50	10
51 - 200	15
201 - 300	20
301 – 500	25
501 – 750	35
751 – 1000	45

- Do not raise drill rig masts underneath or adjacent toward overhead utilities. Do not drive drill rig mast raised. Be cognizant of utility pole guy wires and above ground transformers in relation to operating drill rigs.
- If the drill rig comes into contact with electrical wires and becomes electrically energized, do not touch any part of the rig or any person in contact with the rig and stay as far away as possible. Notify emergency personnel immediately.
- Personnel must stand clear before equipment startup.
- Make and maintain eye contact with operator prior to/while approaching drill rig. Do not disturb the driller while the driller is actively engaged in drilling operations (i.e., operating controls, hoisting or lowering drill rods/tools/equipment).
- The drill rig operator shall keep the drill rig at a zero energy state when not at the drill rig controls.
- Do not wear loose-fitting clothing, watches, or have long hair etc., that may get caught in moving parts of the drill rig.
- Do not smoke or permit other spark-producing equipment around drill rig.
- The drill rig shall be equipped with a kill wire or switch and personnel associated with the drilling operation are to be informed of its location.
- When lines are pressurized on or adjacent to the drill rig as a result of the drilling or grouting operations, safety lashings/whip line checks, clips or other suitable restriction means must be in place on hoses/connections to prevent injury in the event connections become dislodged or hoses rupture.
- The drill rig operator is to verify that all machine guards are in place while the rig is in operation.
- The drill rig operator should be equipped with at least one fire extinguisher.
- Where it may be required to limit access and prevent inadvertent entrance of unauthorized and untrained personnel into the active drilling operation areas, the erection of warning tape, suitable signage, orange safety fencing or other appurtenances around the active drilling area may be necessary, in accordance with the requirements of Section 9.33.10 Site Control Measures of this APP.

9.7.13.1 Machine Guarding

Machine guarding procedures for the anticipated work will be applicable to the execution of the subsurface drilling operations, excavation equipment, well abandonment/cutting and removal of well casing, fencing, and soil stabilization structure. For this activity, the following machine guarding precautions will be applicable to the work.

- Ensure that all machine guards are in place to prevent contact with drive lines, belts, pinch points, mechanically energized equipment, or any other sources of mechanical injury.

- Maintenance and repair of equipment that results in the removal of guards or would otherwise put anyone at risk requires that mechanic parts be brought to a aero energy state and locked/blocked so the equipment cannot be energized.

9.7.14 Electrical Safety

(Reference SOP # HSE&Q-206, Electric Safety)

Several types of electrical hazards may be encountered during the execution of the project. These hazards might include, but not be limited to, hazards associated with the operation of heavy haul trucks adjacent to overhead or underground utilities, use of generators, power chords and electric hand tools used during, mobilization, and demobilization.

Where the electrical exposure hazards are possible in the work environment, the following standard work practices must be implemented.

- Review and implement all applicable components of SOP # HSE&Q-206, Electrical Safety, except where other requirements may be more stringent.
- Maintain safe clearance distances between overhead power lines and haul trucks picking up waste containers unless the power lines have been verified as being de-energized and grounded or unless insulating barriers have been installed to prevent physical contact. To determine proper clearance from energized overhead electric lines, consult the reference table below.

Nominal System Voltage (kV)	Minimum Rated Clearance (feet)
0-50	10
51 - 200	15
201 - 300	20
301 – 500	25
501 – 750	35
751 – 1000	45

- Do not allow haul trucks operators to raise haul chassis underneath or in close proximity to overhead utilities or pull toward overhead utilities with dump bodies raised. Be cognizant of utility pole guy wires in relation to operating haul trucks.
- Do not connect electrically operated tools directly to 12-volt vehicle/tractor/boat batteries as an electrical power source. Use generators and power cords equipped with GFCIs.
- Only qualified personnel (by training, experience, and/or licensure) are permitted to work on electrical systems.
- Do not tamper with or access electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until hazardous energy control procedures (i.e., lock-out/tag-out) are implemented.

- Inspect electrical equipment, power tools, and extension cords for damage prior to use. Do not use defective electrical equipment and remove from service.
- All temporary wiring, including extension cords and electrical power tools, must have GFCIs installed.
- Extension cords must be:
  - Equipped with third-wire grounding.
  - Covered, elevated, or protected from damage when passing through work areas.
  - Protected from pinching if routed through doorways.
  - Not fastened with staples, hung from nails, or suspended with wire.
- Electrical power tools and equipment must be effectively grounded or double-insulated and Underwriters Laboratory (UL) approved.
- Operate and maintain electric power tools and equipment according to manufacturers' instructions.
- Protect all electrical equipment, tools, switches, and outlets from environmental elements.

9.7.15 Fall Protection

(Reference SOP # HSE&Q-310, Fall Protection)

The anticipated fall protection hazards are associated with the execution of this TO is the use of aerial lifts during cleaning processes. Fall protection measures built into the aerial lifts will be used after they are inspected for soundness. All requirements of EM 385 1-1, Sections 21.A and 21.I will be followed.

- Anchorage strength shall be a minimum of 5,000 lb.
- The connector between the front D-ring of the harness and the ladder cable, rope or sleeve shall be 9 inches (20 centimeters) long.
- The free fall distance shall not exceed 2 feet.
- There shall be 100% transition at the top of the ladder for safe access to above work surface or roof.

Below are the hazard controls and safe work practices to follow when personnel or subcontractors are exposed to unprotected heights such as pipeline replacement at the top of the ground water treatment facility. Ensure the requirements in the referenced SOP are followed.

- Fall protection systems must be used to eliminate fall hazards when performing construction activities at a height of 6 feet (1.8 meters) or greater and when performing general industry activities at a height of 4 feet (1.2 meters) or greater.
- AGVIQ staff exposed to fall hazards must complete initial fall protection training by completing either the 10-Hour Construction Safety Awareness training course or the Fall Protection computer-based training module. Staff must also and receive project-specific

fall protection training using the fall protection evaluation form attached to this APP. Staff shall not use fall protection systems for which they have not been trained.

- The SSHO or designee must complete the Project Fall Protection Evaluation Form and provide project-specific fall protection training to all AGVIQ staff exposed to fall hazards.
- The company responsible for the fall protection system shall provide a fall protection competent person to inspect and oversee the use of fall protection system. AGVIQ staff shall be aware of and follow all requirements established by the fall protection competent person for the use and limitation of the fall protection system.
- When AGVIQ designs or installs fall protection systems, staff shall be qualified as fall protection competent persons or work directly under the supervision of a AGVIQ fall protection competent person.
- When horizontal lifelines are used, the company responsible for the lifeline system shall provide a fall protection qualified person to oversee the design, installation, and use of the horizontal lifeline.
- Inspect personal fall arrest system components prior to each use. Do not use damaged fall protection system components at any time, or for any reason. Fall protection equipment and components shall be used only to protect against falls, not to hoist materials. Personal fall arrest systems that have been subjected to impact loading shall not be used. The Safety Coordinator shall periodically inspect AGVIQ fall protection equipment using the Fall Protection Inspection Log form.
- Personal fall arrest systems shall be configured so that individuals can neither free-fall more than 6 feet (1.8 meters) or contact any lower level.
- Only attach personal fall arrest systems to anchorage points capable of supporting at least 5,000 pounds (2268 kilograms). Do not attach personal fall arrest systems to guardrail systems or hoists.
- Remain within the guardrail system when provided. Leaning over or stepping across a guardrail system is not permitted. Do not stand on objects (boxes, buckets, bricks, blocks, etc.) or ladders to increase working height on top of platforms protected by guardrails.
- Only one person shall be simultaneously attached to a vertical lifeline and shall also be attached to a separate independent lifeline.

9.7.16 Excavation Activities

(Reference SOP # HSE&Q-307, Excavation & Trenching Safety)

(Reserved)

There are no excavation activities associated with the execution of this TO that fall under the requirements of 29 CFR 1926, Subpart P or EM 385 1-1, Section 25.

9.7.17 Fall Protection

(Reference SOP # HSE&Q-310, Fall Protection)

(Reserved)

There are no anticipated fall protection hazards associated with the execution of this TO under the requirements of EM 385 1-1, Section 21.A that must be addressed in this APP.

9.7.18 Fire Prevention

The information provided below is the minimum Fire Prevention procedures that must be engaged for the project site.

- Before conducting any hot work operations, the area shall be surveyed to ensure it is free of the following hazards:
  - Proximate combustible materials
  - The presence or possible generation of potentially explosive atmospheres (flammable gases, vapors, liquids, or dusts)
  - The presence or nature of an oxygen-enriched atmosphere
- All flammable or combustible materials from where welding, cutting or other hot work operations are to occur shall be removed to the extent possible.
- Institute the Hierarchy of Fire Control. Objects to be welded, cut, or heated shall be:
  - Moved to a location free of dangerous combustibles
  - If the work cannot be moved, all moveable fire hazards in the vicinity shall be taken to a safe place (moved at least 35 feet (10.6 meters) horizontally from the welding or cutting area) or the combustible material and construction shall be protected from the heat, sparks, and slag of welding
  - When welding or cutting must be done in a location where combustible or flammable materials are located, inspection and authorization shall be required before such operations are begun (the location shall be checked for latent fires by qualified fire watch personnel after the work is completed)
- Personnel shall ONLY be allowed to smoke in designated areas, where allowed at all. Designated area must be free of combustible, flammable or potentially explosive materials.
- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet. Use only metal safety cans for storage and transfer of fuel and use funnels and nozzles during fueling operations.
- Fire extinguishers will be provided so that the travel distance from any work area to the nearest extinguisher is less than 100 feet. When 5 gallons or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet. Extinguishers must:
  - Be maintained in a fully charged and operable condition.
  - Be visually inspected each month.

  - Undergo a maintenance check each year.
  - The area in front of extinguishers must be kept clear.
  - Appropriately sized, easily accessible ABC fire extinguisher in work area. Fire extinguishers must be inspected monthly (inspection tag) and have an annual maintenance/inspection certification (tag) attached to the extinguisher.
  - Fire extinguishers shall be approved by a nationally recognized testing laboratory and labeled to identify the listing and labeling organization and the fire test and performance standard that the fire extinguisher meets or exceeds.
- Combustible materials stored outside should be at least 10 feet from any building.
- Solvent waste and oily rags must be kept in a fire-resistant, properly labeled covered container until removed from the site.
- Personnel shall consider their safety when engaging only incipient stage fires. Fires resulting from residual product in lines or tanks should be handled by Fire and Emergency Services.

9.7.18.1 Fire Watch

In any instance where flammable or combustible materials have been exposed to fire hazards (such as cutting operations requiring a hot work), a fire watch shall be assigned to remain at the location for at least one (1) hour after the exposure has ended. These instances may include, but not be limited to the following;

- Slag, weld splatter, or sparks might pass through an opening and cause a fire.
- Fire-resistant guards or curtains are not used to prevent ignition of combustible materials on or near decks, bulkheads, partitions, or overheads.
- Combustible material closer than 35 feet (10.7 m) to the hot work in either the horizontal or vertical direction cannot be removed, protected with flame-proof covers, or otherwise shielded with metal or fire-resistant guards or curtains.
- The hot work is carried out on or near insulation, combustible coatings, or sandwich-type construction that cannot be shielded, cut back, or removed, or in a space within a sandwich type construction that cannot be inerted.
- Combustible materials adjacent to the opposite sides of bulkheads, decks, overheads, metal partitions, or sandwich-type construction may be ignited by conduction or radiation.
- The hot work is close enough to cause ignition through heat radiation or conduction on the following:
  - Insulated pipes, bulkheads, decks, partitions, or overheads
  - Combustible materials and/or coatings
- The work is close enough to unprotected combustible pipe or cable runs to cause ignition.

9.7.19 Flight Line Safety

There are no activities on or adjacent to flight line operations associated with the execution of this TO.

9.7.20 General Practices and Housekeeping

Maintaining proper site housekeeping measures promotes the elimination of slip, trip and fall hazards and exhibits a perception of pride in our work product and habits. Poor housekeeping can result in the basis of citations under 29 CFR 1926.25(a) or other applicable regulations. Good housekeeping practices must be implemented on every AGVIQ controlled project site and at a minimum shall be as follows:

- Maintain good housekeeping at all times in all project work areas.
- During the course of executed project operations, construction, alteration, or repairs, form and scrap lumber with protruding nails, and all other debris, shall be kept cleared from work areas, passageways, and stairs, in and around buildings or other structures.
- Combustible scrap and debris shall be removed at regular intervals during the course of construction. Safe means shall be provided to facilitate such removal.
- Containers shall be provided for the collection and separation of waste, trash, oily and used rags, and other refuse. Containers used for garbage and other oily, flammable, or hazardous wastes, such as caustics, acids, harmful dusts, etc. shall be equipped with covers and appropriately labeled. Garbage and other waste shall be disposed of at frequent and regular intervals.
- Establish common paths of travel and keep them free from the accumulation of materials.
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions.
- Provide slip-resistant surfaces, ropes, and/or other devices to be used.
- Designate specific areas for the proper storage of materials.
- Store tools, equipment, materials, and supplies in an orderly manner.
- As work progresses, neatly store scrap and unessential materials or remove them from the work area.
- Provide containers for collecting trash and other debris and remove them at regular intervals.
- Clean up all spills quickly. Clean oil and grease from walking and working surfaces.

9.7.21 Hand and Power Tools

(Reference SOP # HSE&Q 210, Hand and Power Tools)

Hand (and possible power tools) will be used during most all operations. When the use of hand and power tools is necessary to properly complete assigned tasks, the following work practices must be implemented, where applicable.

- Review and implement all applicable components of SOP # HSE&Q 210, Hand and Power Tools except where other requirements may be more stringent.
- Tools will be inspected prior to use, and damaged tools will be tagged and removed from service.
- Hand tools will be used for their intended use and operated in accordance with manufacturer instructions and design limitations.
- Maintain all hand and power tools in a safe condition.
- Do not set power tools down in muddy or wet areas, which may damage the tool and/or or create a potential for electric shock.
- Use PPE (such as gloves, safety glasses, earplugs, and face shields) when exposed to a hazard from a tool.
- Do not carry or lower a power tool by its cord or hose.
- Portable power tools will be plugged into GFCI-protected outlets.
- Portable power tools will be UL listed and have a three-wire grounded plug or be double insulated.
- Disconnect tools from energy sources when they are not in use, before servicing and cleaning them, and when changing accessories (such as blades, bits, and cutters).
- Safety guards on tools must remain installed while the tool is in use and must be promptly replaced after repair or maintenance has been performed.
- Store tools properly in a place where they will not be damaged or come in contact with hazardous materials.
- If a cordless tool is connected to its recharge unit, both pieces of equipment must conform strictly with electrical standards and manufacturer's specifications.
- Tools used in an explosive environment must be rated for work in that environment (that is, intrinsically safe, spark-proof).
- When using a knife or blade tool, stroke or cut away from the body with a smooth motion. Be careful not to use excessive force that could damage the tool, the material being cut or unprotected hands.

Working with manual and pistol-grip hand tools may involve highly repetitive movement, extended elevation, constrained postures, and/or awkward positioning of body members (for example, hand, wrist, arm, shoulder, neck, etc.). Consider alternative tool designs, improved posture, the selection of appropriate materials, changing work organization, and sequencing to prevent muscular, skeletal, repetitive motion, and cumulative trauma stressors.

9.7.21.1 Knife Use

Knives (fixed/utility) shall not be used. If it is demonstrated that a knife is the right tool for the job, this plan will be amended and the activity that knife use will be used for shall be reviewed. An AHA shall also be developed to address hazards and subsequent controls, PPE, and training.

9.7.21.2 Knife Use

Knives (fixed/utility) shall not be used. If it is demonstrated that a knife is the right tool for the job, this plan will be amended and the activity that knife use will be used for shall be reviewed. An AHA shall also be developed to address hazards and subsequent controls, PPE, and training.

9.7.21.3 Responsibilities

- Supervisors with assistance from the SSHO are responsible for funding and ensuring the correct tool is being used, employees wear the proper PPE when using knives, and they have reviewed this policy.
- Employees are responsible for having and utilizing the proper PPE while performing an activity requiring the use of a knife. Employees are also responsible for understanding the proper use of a knife.

9.7.21.4 Glove Requirements

- In general, Kevlar cut resistant gloves are to be worn when using a knife in an occupational setting.
- Other types of gloves may be required and will be identified within the AHA / written procedure. Example - Leather gloves may be worn when using the acetate sleeve cutter.

9.7.21.5 Standard Control Measures for Knife Use

- All employees that will use a knife must be trained or have experience with the proper use of a knife, prior to using it.
- When using a knife or blade tool, stroke or cut away from the body with a smooth motion. Be careful not to use excessive force that could damage the tool, the material being cut, or unprotected hands.
- When using a knife always cut away from yourself.
- Many tasks using a utility knife require a knife edge but not a sharp point. For these tasks you can add protection against puncture wounds by using a rounded-tip blade.
- If you use a folding knife, it must be a locking blade type.
- Never use a knife that will fold under pressure.
- If you use a fixed blade knife, make sure there is a handle guard to keep your hand from slipping forward. Also, make sure the handle is dry and non- greasy/slippery to assure a better grip.
- When cutting, make the force of the cut carry the blade away from any part of your body. If you have a peculiar situation where this is not possible, protect yourself with a leather apron, or other material placed between you and the blade. Consider putting the material to be cut in a vise, or other holding device.
- If you carry a fixed blade knife, use a sheath or holder.
- Store utility knives safely, retract the blade or sheath an open blade before storing. Never, leave a knife with the blade exposed on the floor, on a pallet, on a work surface, or in a drawer or cabinet.

- Keep your knife sharp. A dull blade requires you to use more force to cut, and consequently increases the risk of slip or mistake.
- Knives used on the job, but not carried with you, must be properly stored when not in use.
- Never use a defective knife.
- Utility knife blades must be used, recognize that they are brittle and can snap easily. Don't bend them or apply side loads to them by using them to open cans or pry loose objects. Use the knife only to cut. It was not designed to work as a pry bar, screw driver, hole punch, and other assorted things that make it seem so easy.
- Stay focused on the cutting job. It only takes a second of inattention with a sharp blade to produce a serious cut. Letting the mind wander or talking with others while using a knife greatly increases the risk of an accident and injury. If you are interrupted while working with a knife, stop cutting, retract the blade, and place the knife down on a secure surface before dealing with the interruption. You should never continue cutting while distracted! As always, utilize the hierarchy of controls and first attempt to engineer out the hazard and frequently ask ourselves do we have the right tool for the job.

9.7.21.6 Examples of Preferred Tools and Kevlar Cut Resistant Gloves

A safety spring provides for automatic blade shoot-back into the handle when contact w/cutting surface is lost.

9.7.22 Haul Trucks

It is anticipated that haul trucks will be used for the delivery of empty waste containers used to store generated waste material and debris generated during the execution of the TO or for the pickup of full containers of waste material/debris upon the completion of the project. When haul trucks are used in this manner, the following work practices shall be implemented.

- All haul trucks must follow the designated for the project site project. At this time it is anticipated that the project haul route details will be the route identified on Figure 9-1, Evacuation Route Map.
- Haul truck operators should be familiar with their equipment and inspect all equipment before use.
- Haul truck operators shall not be allowed to raise the haul chassis underneath or within 10′ of overhead utilities. Depending on the voltage of the overhead utilities, more separation may be required. Refer to the Electrical Safety section of this APP for specific separation distances from overhead electrical utilities.
- Haul truck operators should ensure all persons are clear before operating trucks or equipment. Before moving, operators should sound horn or alarm. All equipment should be equipped with an operational backing alarm.
- Haul trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots.
- Employees should stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the equipment operator.
- Where haul truck operators must exit the truck within the site boundary, the driver must be in the same level of PPE as other site personnel.
- If possible, minimize steep grades on haul roads.
- Where grades are steep, provide signs indicating the actual grade as well as measures for a runaway truck.

9.7.23 Heavy Equipment

(Reference SOP # HSE&Q 306, Earth Moving Equipment)

Small heavy earthmoving equipment (track excavator, skid steer etc.) will be used to complete this TO. When heavy equipment is used on the project, the following work

procedures shall be exercised by AGVIQ personnel who may be designated to operate or supervise the operation of site heavy equipment.

- AGVIQ authorizes only those employees qualified by training or previous experience to operate heavy equipment.
- Equipment must be checked at the beginning of each shift to ensure the equipment is in safe operating condition and free of apparent damage. The check should include service brakes, parking brakes, emergency brakes, tires, horn, back-up alarm, steering mechanism, coupling devices, seat belts, and operating controls. All defects will be corrected before the equipment is placed in service.
- Documentation of this inspection must be maintained onsite at all times.
- Refer to the Earthmoving Equipment Inspection Form
- Equipment must be on a stable foundation such as solid ground or cribbing; outriggers are to be fully extended.
- Seat belts shall be used by all personnel operating AGVIQ equipment.
- Equipment must not be used to lift personnel; loads must not be lifted over the heads of personnel.
- Equipment, or parts thereof, which are suspended must be substantially blocked or cribbed to prevent shifting before personnel are permitted to work under or between them. All controls will be in a neutral position, with the motors stopped and brakes set.
- Equipment that is operating in reverse must have a reverse signal alarm distinguishable from the surrounding noise or a signal person when the operator's view is obstructed.
- When equipment is used near energized power lines, the closest part of the equipment must be at least 10 feet from power lines < 50 kV. Check the electric safety section of this APP for separation distances when working adjacent to overhead energized power lines in excess of 50 kV. A person must be designated to observe clearances and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means. All overhead power lines must be considered energized until the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded.
- Underground utility lines must be located before excavation begins. See "Procedures for Locating Buried Utilities" contained in this APP for additional information.
- Operators loading/unloading from vehicles are responsible for seeing that vehicle drivers are in the vehicle cab or in a safe area.
- The parking brake will be set whenever equipment is parked; wheels must be chocked when parked on inclines.
- When heavy equipment is not in operation, the blade/bucket must be blocked or grounded; the master clutch must be disengaged when the operator leaves the cab.

When equipment is unattended, power must be shut off, brakes set, blades/buckets landed, and shift lever in neutral.

9.7.24 Land Clearing Operations

(Reserved)

9.7.25 Manual Lifting

(Reference SOP # HSE&Q 112, Manual Lifting)

Manual lifting is likely to occur during many phases of the project, but especially during mobilization and demobilization events and during the installation of erosion and sediment control features. Personnel executing assigned tasks where manual lifting is required should use the following procedures to help reduce the potential for personal injury.

- AGVIQ personnel should notify supervisors or designated safety representatives of pre-existing medical conditions that may be aggravated or re-injured by lifting activities, such that AGVIQ may evaluate safe operational procedures with regard to the required task.
- Proper lifting techniques (use of knees and not back) must be used when lifting any object.
- Plan storage and staging to minimize lifting or carrying distances.
- Use drum dollies/carts with a latching mechanism when handling full/loaded drums. Avoid "chimming" drums wherever possible.
- Split heavy loads into smaller loads.
- Use mechanical lifting aids whenever possible.
- Have someone assist with the lift— especially for heavy (>40 lb) or awkward loads. Note: If AGVIQ personnel are not capable of lifting 40 lbs., seek assistance from a team member to split the load.
- Make sure the path of travel is clear prior to the lift.

9.7.26 Noise

(Reference SOP # HSE&Q 108, Hearing Conservation Program)

Unprotected exposure to excessive noise levels may lead to gradual and permanent hearing loss. The greater the intensity of a noise and the longer a person is exposed to the noise, the greater the chance of hearing loss. A hearing loss can be permanent or temporary. After certain noise exposures, a person may experience a temporary threshold shift (hearing loss) that results in the inability to hear certain sounds. The ability to hear will usually return. However, repeated or intense noise exposure can prevent this recovery, resulting in permanent hearing loss.

Employee hearing conservation is particularly important when working around haul trucks or during the operation of electric rotary, impact or reciprocating powered hand tools.

Each employee is responsible for the following:

- Notify the site supervisor or SSHO of high-noise-level areas.
- Wear hearing protection when required.
- Complete noise training and audiometric testing (as required).
- Hearing protection is required in work environments exceeding 85 decibels (dB).
- Hearing protection will be worn when operations occur within or adjacent to high-noise sources (i.e., potentially exceeding 85 dB).

9.7.27 Pressure Washing Operations

Pressure washing operations are anticipated. Whenever pressure washing operations are performed at the site, the following procedures must be implemented.

- Rain gear (disposal coated chemical suits for HAZWOPER operations), 16-inch-high, steel-toed rubber boots, safety glasses, hard hat with face shield, and inner and outer nitrile gloves should be worn, at a minimum during pressure washing operations.
- Only trained, authorized personnel may operate the high-pressure washer.
- Rinse waste from pressure washing operations must be collected and properly disposed.
- Follow manufacturer's safety and operating instructions.
- Inspect pressure washer before use and confirm dead man switch fully operational.
- The wand must always be pointed at the work area.
- The trigger should never be tied down.
- Never point the wand at yourself or another worker.
- The wand must be at least 42 inches from the trigger to the tip.
- The operator must maintain good footing.
- Non-operators must remain a safe distance from the operator.
- No unauthorized attachment may be made to the unit.
- Do not modify the pressure washer wand.
- All leaking or malfunctioning equipment must be repaired immediately or the unit taken out-of-service.
- Capture, containerize and label all fluids during decontamination operations for proper transportation and disposal.

9.7.28 Sample Handling

Sampling and sample handling are the main component of this TO. Proper work practices and procedures to be followed during these activities include:

- Skin contact with water, soil, sediment or debris of undetermined chemical characterization shall be avoided at all times.
- PPE and Air Monitoring requirements shall be executed in accordance with this APP to minimize potential dermal and respiratory exposures to identified site contaminants of concern while conducting sample collection or characterization of potentially contaminated media (soil, water, drilling fluids/cuttings, PPE, soil vapor, etc.). In addition, good personal hygiene practices and procedures must be maintained of this APP).
- Sample only labeled drums/container whose content is known. Unknown drums or containers that show evidence of excessive buckling/bulging, corrosion, vapors, crystallization, unusual discoloration or other abnormalities may not be sampled without the evaluation of engineering controls, proper PPE, air monitoring equipment and the use of properly trained personnel familiar with the sampling of unknown drum contents.
- Sample drums/containers without leaning over the drum/container opening.
- Transfer the content of container being sampled using a method that minimizes contact with material.
- PPE and Air Monitoring requirements shall be executed in accordance with this APP in an effort to minimize potential dermal and respiratory exposures to identified site contaminants of concern. In addition, good personal hygiene practices and procedures must be maintained.
- Spill-containment procedures specified in Section 9.2.5 must be appropriate for the material to be handled.
- Caution should be exercised when filling bottles containing acid or base preservatives. Both liquid and vapor phases of acid can cause severe burns.
- Following sample collection, sample container lids should be tightened securely to prevent any leaks, and the containers should be rinsed with clean water to ensure that they are free of chemical constituents. Sample activities, sample collection, and equipment decontamination procedures.

9.7.29 Slips, Trips, and Falls

Slip, trip and fall hazards exist in virtually ALL work environments. Even though slip, trip and fall hazards are typically thought of as posing low risk to workers, they account for a large percentage of worker injuries. As such, workers should be exercise caution about becoming complacent to recognizing and removing slip, trip and fall hazard from designated work areas. To eliminate slip, trip and fall hazards from the work place the following should be implemented.

- Walk or climb only on equipment and/or surfaces designed for personnel access.

- Maintain three points of contact when climbing or working from ladders.
- Observe and avoid areas of unprotected holes, ramps, and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures, etc.). If these conditions cannot be corrected, mark these hazards (i.e., high visibility pant, traffic cones, etc.) so that workers may recognize and avoid them.
- Employees walking in ditches, uneven surfaces, swales and other drainage structures adjacent to roads, across undeveloped land or in controlled industrial work/process areas must use caution to prevent slips and falls, which can result in twisted or sprained ankles, knees, and backs.
- Whenever possible work from areas which have flat, stable surfaces and do not enter steep sided ditches/excavations.
- Sturdy, hard toe boots that provide sufficient ankle support shall be used on AGVIQ project site.

9.7.30 Stairways and Ladders

(Reference SOP # HSE&Q 214, Stairways and Ladders)

(Reserved)

9.7.31 Munitions and Explosives of Concern

(Reference SOP # HSE&Q 610, Explosives Usage and Munitions Response)

(Reserved)

9.7.32 Vehicular Traffic (Exposure to)

(Reference SOP # HSE&Q 216, Traffic Control)

All the sites will have vehicular traffic in close proximity to them. The information provided below is intended to provide standard work practices that must be exercised when personnel are working in or around traffic or around haul truck routes or as general requirements for vehicle operation while on Department of Defense (DoD) facilities.

- When parking your vehicle, park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so it can serve as a barrier.
- Shut off and secure Site vehicles prior to exiting them. Park on level ground where possible. If parking on an incline, engage parking brake. If the vehicle has a manual transmission, ensure the transmission is in gear (not neutral) and the parking brake is engaged before exiting the vehicle.
- Exercise caution when exiting traveled way or parking along street— avoid sudden stops, use flashers, etc.
- All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.
- Eye protection should be worn to protect from flying debris.

- Remain aware of factors that influence traffic-related hazards and required controls—sun glare, rain, wind, limited sight-distance, hills etc.
- Always remain aware of an escape route, such as behind an established barrier or parked vehicle.
- Always pay attention to moving traffic – never assume drivers are looking out for you.
- Work as far from traveled way as possible to avoid creating confusion for drivers.
- When workers must face away from a haul truck to perform assigned duties, a buddy system should be used, where one worker is looking toward traffic.
- Work area should be protected by a physical barrier.
- Lookouts should be used when physical barriers are not available or practical.

In addition to the above work practices, AGVIQ personnel and AGVIQ subcontractors shall adhere to the following procedures while operating motor vehicles or other motorized equipment on military/government facilities.

- Always use a seat belt while driving on military/government controlled facilities.
- Always observe posted speed limits, traffic signs and signals.
- Never use a cell phone or two-way radio while driving on military/government controlled facilities.

Violating these requirements may result in loss of military/government facility driving privileges.

9.7.33 Visible Lighting

Site work should be performed during daylight hours whenever possible. Work conducted during hours of darkness (including dusk and dawn) requires the set-up of supplemental lighting equipment. (Note: A general rule of thumb is that the illumination intensity must be sufficient to read a newspaper without difficulty). At this time, it is thought that no work executed under this TO will be performed at night. If work is to be performed at night, a night operations lighting plan shall be developed to ensure that all activities are completed safely. Although it is not anticipated that work executed under this TO will be performed during dusk, dawn or night time periods, the chart below provides a reference for illumination requirements for various construction related work environments.

Illumination (Foot Candles)	Illumination (Lux)	Area of Operation
5	~ 55	General construction area lighting
3	~ 33	General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas
5	~ 55	Indoors: warehouses, corridors, hallways, and exit ways
5	~ 55	Tunnels, shafts, and general underground work areas: (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during

Illumination (Foot Candles)	Illumination (Lux)	Area of Operation
		drilling, mucking, and scaling. Bureau of Mines approved caplights shall be acceptable for use in the tunnel heading)
10	~ 108	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active store rooms, mess halls and indoor toilets and workrooms.)
30	~ 323	First aid stations, infirmaries, and offices

Notes:

A **foot candle** is a unit of illumination on a surface that is everywhere one foot from a point source of one candle. A **lux** is a unit of measurement of the intensity of light. It is equal to the illumination of a surface one meter away from a single candle.

Conversions:

Foot Candles (FC) = Lux x .0929

Lux = Foot candles x 10.76 - (i.e.: 50 FC = 538 LUX)

The following safe work practices shall be considered with regard to lighting in the workplace.

- Do not enter poorly lit areas without first providing portable illumination.
- Do not use non-explosion proof lighting in areas of flammable or combustible gases or liquids.

9.7.34 Working Alone

(Reserved)

No site personnel will be allowed to work alone on this project, although certain elements of this project will consist of one staff member working onsite with subcontractor personnel to oversee activities.

9.7.35 Working Around Material Handling Equipment

The operation of material handling equipment will be an integral component to the completion of the remedial objectives for the project and it is important to observe the following measures when working in the same areas as heavy equipment and haul trucks.

- Never approach operating equipment/vehicles from the rear. Always make positive contact with the operator, and confirm that the operator has stopped the motion of the equipment.
- Never approach the side of operating equipment; remain outside of the swing and turning radius.
- Maintain distance from pinch points of operating equipment/vehicles.
- Never turn your back on any operating equipment/vehicles.
- Never climb onto operating equipment or operate subcontractor/client equipment/vehicles.

- Never ride equipment/vehicles unless authorized to do so and unless it is designed to accommodate passengers (equipped with firmly attached passenger seat).
- Never work or walk under a suspended load.
- Never use equipment as a personnel lift; do not ride excavator buckets, crane hook, or material handling equipment forks.
- Always stay alert and maintain a safe distance from operating equipment, especially equipment/vehicles on cross slopes and unstable terrain.
- Suspended loads will not pass over workers at any time.
- Site personnel are prohibited from passing under suspended loads.

9.7.35.1 Rigging

SOP # HSE&Q 316, Rigging

(Reserved)

It is not anticipated that the use of rigging will be required to execute this TO.

9.7.35.2 Powered Industrial Trucks

(Reference HSE-309, Forklifts)

(Reserved)

It is not anticipated that the use of Powered Industrial trucks will be used on this TO.

9.7.36 Working on or Over Water

(Reserved)

No site personnel shall be working on or over water during the execution of this TO.

9.8 Hazard Communication Program

A hard copy of the AGVIQ Hazard Communication program information and Material Safety Data Sheet (MSDS) material shall be provided at the project site.

In general, the site supervisor or SSHO will be the main contact in any onsite emergency coordination or communication situation and will ensure offsite emergency agencies have been contacted prior to the start of and verify that emergency contact numbers contained in this APP are accurate/operational work. The site supervisor or SSHO will communicate with all potential emergency response organizations that would respond to an onsite emergency condition. In the event that during an emergency situation, the primary site supervisor or SSHO is not available or not capable of performing this function, an alternate site supervisor or SSHO or Site Supervisor can fulfill these duties. The site supervisor or SSHO or designee will serve as the Hazard Communication Coordinator, and will perform the following:

- Review the COCs and other applicable hazard communication information contained this APP.

- Request or confirm locations of MSDSs from the client, contractors, and subcontractors or material vendors for chemicals to which AGVIQ employees are potentially exposed. Maintain MSDSs in this APP (**Attachment 6**).
- Complete an inventory of chemicals brought onsite. See **Attachment 7** of this APP. Give employees required chemical-specific HAZCOM training information using the format included in **Attachment 7** of this APP.
- Confirm that an inventory of chemicals brought onsite is available.
- Prior to, or as chemicals arrive onsite, obtain an MSDS for each hazardous chemical.
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.
- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.

9.8.1 Shipping and Transportation of Chemical Products

Chemicals brought to the site might be defined as hazardous materials by the DOT. All staff who ship the materials or transport them by road must receive training in shipping dangerous goods. All hazardous materials that are shipped (e.g., via Federal Express) or are transported by road must be properly identified, labeled, packed, and documented by trained staff. Contact the AGVIQ Project Manager and program regulatory specialist for additional information.

9.9 Process Safety Management

(Reserved)

The requirements of EM 385 1-1, Section 06.B.04 are not applicable to this TO.

9.10 Lead Abatement Plan

(Reserved)

The requirements of EM 385 1-1, Section 06.B.05 are not applicable to this TO.

9.11 Asbestos Abatement Plan

(Reserved)

It is not anticipated to encounter asbestos for this TO.

9.12 Radiation Safety Program

(Reserved)

There are no expected radiological hazards associated with the execution of this TO.

9.13 Abrasive Blasting

(Reserved)

There are no abrasive blasting operations associated with the execution of this TO.

9.14 Heat/Cold Stress Monitoring Program

9.14.1 Heat Stress Monitoring and Prevention

Because the work may be performed during periods where high ambient air temperatures could be prevalent, there is a potential for the development of heat stress related disorders. Workers should be aware of necessary procedures to prevent heat related disorders, be cognizant of the signs and systems that indicate heat related disorders are occurring and know when first aid or medical treatment may be required to treat heat related disorders. The following information is provided as procedural information to monitor and prevent heat related injuries to site workers, while performing assigned tasks.

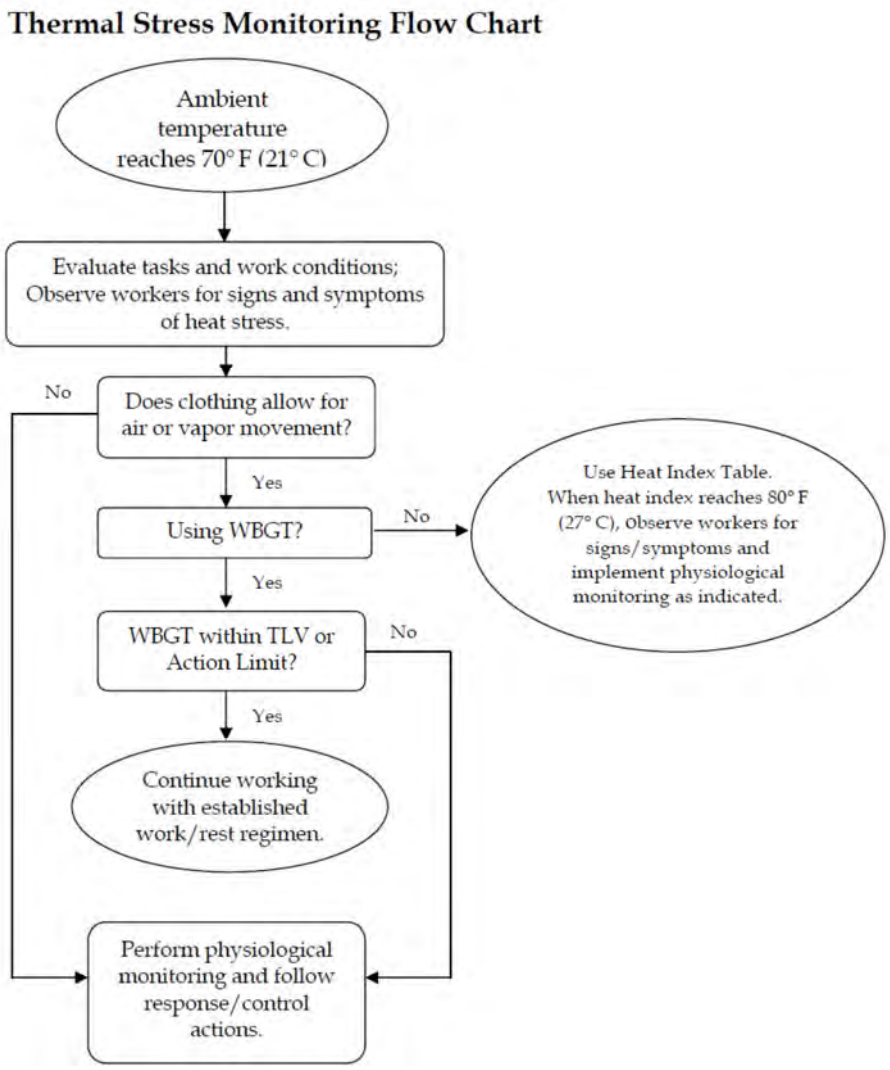
- It is recommended that personnel drink 16 ounces of water before beginning work. Water maintained at 50°F to 60°F shall be available. Under severe conditions, drink 1 to 2 cups every 20 minutes, for a total of 1 to 2 gallons per day. Do not use alcohol in place of water or other non-alcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours.
- Acclimate yourself by slowly increasing workloads.
- Use cooling devices, such as cooling vests, to aid natural body ventilation.
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- Conduct field activities in the early morning or evening and rotate shifts of workers, if possible.
- Whenever possible, avoid direct sun, which can decrease physical efficiency and increase the probability of heat stress. Take regular breaks in a cool, shaded area. Use a wide-brim hat or an umbrella when working under direct sun for extended periods.
- Provide adequate shelter/shade to protect personnel against radiant heat (sun, flames, hot metal).
- Maintain good hygiene standards by frequently changing clothing and showering.
- Observe one another for signs of heat stress. Persons who experience signs of heat syncope, heat rash, or heat cramps should consult the SSHO to avoid progression of heat-related illness.
- **To counteract the onset of heat stress symptoms, a work-break regimen must be established during the executed work.**

For employees in permeable work clothing, Wet Bulb Globe Temperature (WBGT) Index or physiological monitoring shall be conducted and work/rest regimens established.

SYMPTOMS AND TREATMENT OF HEAT STRESS					
	Heat Syncope	**Heat Rash**	**Heat Cramps**	**Heat Exhaustion**	**Heat Stroke**
Signs and Symptoms	Sluggishness or fainting while standing erect or immobile in heat.	Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid steady pulse and low blood pressure; oral temperature normal or low	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature (104°F or above).
Treatment	Remove to cooler area. Remove outer impermeable protective clothing. Rest victim lying down in supine position (on back, facing up) with head shoulders slightly elevated. Increase fluid intake. Recovery usually is prompt and complete. Where effected person is conscious, have them loosen their clothing to promote cooling surface between clothing/body.	Remove to cooler area. Remove outer impermeable protective clothing. Remove to cooler area. Remove outer impermeable protective clothing. Rest victim lying down in supine position (on back, facing up) with head shoulders slightly elevated. Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection. Where effected person is conscious, have them loosen their clothing to promote cooling surface between clothing/body.	Remove to cooler area. Remove outer impermeable protective Rest victim lying down in supine position (on back, facing up) with head shoulders slightly elevated. Increase fluid intake. Where effected person is conscious, have them loosen their clothing to promote cooling surface between clothing/body.	Remove to cooler area. Rest victim lying down in supine position (on back, facing up) with head shoulders slightly elevated. Administer fluids by mouth. Seek medical attention immediately. Where effected person is conscious, have them loosen their clothing to promote cooling surface between clothing/body.	Remove to cooler area. Rest victim lying down in supine position (on back, facing up) with head shoulders slightly elevated. Where effected person is conscious, have them loosen their clothing to promote cooling surface between clothing/body. Call ambulance, and <u>get medical attention immediately!</u> Provide <u>sips</u> of cool water to if fully conscious and not nauseous or vomiting. Cool rapidly by soaking clothing in cool–but not cold–water. This procedure shall only be performed where directed by someone with medical training/ licensure (i.e., EMT, physician) and only as a lifesaving precaution. Evaluate employee's condition by an occupational physician prior to resuming normal assigned duties.

9.14.2 Monitoring Heat Stress

Thermal Stress Monitoring



Thermal Stress Monitoring – Permeable or Impermeable Clothing

When permeable work clothes are worn (street clothes or clothing ensembles over street clothes), regularly observe workers for signs and symptoms of heat stress and implement physiological monitoring as indicated below. This should start when the heat index reaches 80°F (27°C) [see Heat Index Table below], or sooner if workers exhibit symptoms of heat stress indicated in the table above. These heat index values were devised for shady, light wind conditions; exposure to full sunshine can increase the values by up to 15°F (8°C). Also, strong winds, particularly with very hot, dry air, can be extremely hazardous.

When wearing **impermeable clothing** (e.g., clothing doesn't allow for air or water vapor movement such as Tyvek), physiological monitoring as described below shall be conducted when the ambient temperature reaches 70°F (21°C) or at a lower temperature when workers begin to exhibit signs and symptoms of heat stress.

Heat Index	Possible Heat Disorders	Minimum Frequency of Physiological Monitoring
80°F - 90°F (27°C - 32°C)	Fatigue possible with prolonged exposure and/or physical activity	Observe Workers for signs of heat stress and implement physiological monitoring if warranted.
90°F - 105°F (32°C - 41°C)	Sunstroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity	Every 2 hours, or sooner, if signs of heat stress are observed.
105°F - 130°F (41°C - 54°C)	Sunstroke, heat cramps, or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity.	Every 60 minutes or sooner if signs of heat stress are observed.
130°F or Higher (54°C or Higher)	Heat/Sunstroke highly likely with continued exposure.	Every 30 minutes or sooner if signs of heat stress are observed.
Source: National Weather Service		

Procedures for when Heat Illness Symptoms are experienced:

- **Always** contact the SSHO when any heat illness related symptom is experienced so that controls can be evaluated and modified, if needed.
- In the case of cramps, reduce activity, increase fluid intake, move to shade until recovered.
- In the case of heat stroke symptoms, call 911, have a designee give location and directions to ambulance service if needed, follow precautions under the emergency medical treatment of this HSP.

9.14.3 Cold Stress Monitoring and Prevention

- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain/foul weather gear is a must in cool/cold weather, especially where precipitation events are occurring.
- Consider monitoring the work conditions and adjusting the work schedule using guidelines developed by the U.S. Army (wind-chill index) and the National Safety Council (NSC).
- Wind-chill index is used to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For those reasons, it should only be used as a guideline to warn workers when they are in a situation that can cause cold-related illnesses.
- NSC Guidelines for Work and Warm-Up Schedules can be used with the wind-chill index to estimate work and warm-up schedules for fieldwork. The guidelines are not absolute; workers should be monitored for symptoms of cold-related illnesses. If symptoms are not observed, the work duration can be increased.

Wind Chill Chart

Wind (mph) \ Temperature (°F)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5		36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10		34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15		32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20		30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25		29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30		28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35		28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40		27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45		26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50		26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55		25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60		25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes | 10 minutes | 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

- Persons who experience initial signs of immersion foot, frostbite, hypothermia should consult the SHSO to avoid progression of cold-related illness.
- Observe one another for initial signs of cold-related disorders.
- Obtain and review weather forecast— be aware of predicted weather systems along with sudden drops in temperature, increase in winds, and precipitation.

SYMPTOMS AND TREATMENT OF COLD STRESS			
	Immersion (Trench) Foot	Frostbite	Hypothermia
Signs and Symptoms	Feet discolored and painful; infection and swelling present.	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.
Treatment	Seek medical treatment immediately.	Remove victim to a warm place. Re-warm area quickly in warm–but not hot water. Have victim drink warm fluids, but not coffee or alcohol. Do not break blisters. Elevate the injured area, and get medical attention.	Remove victim to a warm place. Have victim drink warm fluids, but not coffee or alcohol. Get medical attention.

9.15 Crystalline Silica Monitoring Plan

(Reserved)

Exposures to crystalline silica are not anticipated during the execution of this project.

9.16 Night Operations Lighting Plan

(Reserved)

At this time, no work executed under this TO will be performed at night. If work is to be performed at night, a night operations lighting plan shall be developed to ensure that all activities.

9.17 Fire Prevention Plan

Fire prevention shall be conducted in accordance with the information identified in Section 9.7.17 of the APP, Health and Safety Hazard Control Program - Fire Prevention.

9.18 Wild Land Fire Management Plan

(Reserved)

The requirements of EM 385 1-1, 09.K are not applicable to this TO.

9.19 Hazardous Energy Control Plan

(Reserved)

At this time, there are no anticipated situations where the components of a hazardous energy control (HEC) program would be required to be implemented during the execution of this TO.

9.20 Critical Lift Plan

(Reserved)

No cranes will be utilized during the execution of this TO.

9.21 Contingency for Severe Weather Plan

Generally, only personnel and vehicles will need to be demobilized from the site in the event a severe weather event was expected. Drums of generated waste that may be generated as part of ongoing work will be secured by being strapped together. For the executable work associated with this TO, the adverse weather procedures identified in Section 9.7.1 Adverse Weather of this APP should be sufficient for the work.

9.22 Float Plan

(Reserved)

The requirements of EM 385 1-1, 19.F.04 are not applicable to this TO.

9.23 Site Specific Fall Protection and Prevention Plan

(Reserved)

There are no anticipated significant fall protection hazards under the requirements of EM 385 1-1 Section 21.A that must be addressed by this APP.

9.24 Demolition Plan

(Reserved)

Demolition activities will not be performed during the execution of this TO.

9.25 Excavation/Trenching Plan

(Reserved)

9.26 Emergency Rescue (Tunneling)

(Reserved)

No tunneling will be performed during the execution of this TO.

9.27 Underground Construction Fire Prevention and Protection Plan

(Reserved)

No underground construction that could cause a fire will be performed during the execution of this TO.

9.28 Compressed Air Plan

(Reserved)

The requirements of 26.I.01 are not applicable to this TO.

9.29 Formwork Shoring and Removal Plan

(Reserved)

The requirements of EM 385 1-1, Section 27 Concrete, Masonry, Steel Erection, and Residential Construction are not applicable to this TO.

9.30 Precast Concrete Plan

(Reserved)

The requirements of EM 385 1-1, Section 27 Concrete, Masonry, Steel Erection, and Residential Construction are not applicable to this TO.

9.31 Lift Slab Plans

(Reserved)

The requirements of EM 385 1-1, Section 27 Concrete, Masonry, Steel Erection, and Residential Construction are not applicable to this TO.

9.32 Steel Erection Plans

(Reserved)

The requirements of EM 385 1-1, Section 27 Concrete, Masonry, Steel Erection, and Residential Construction are not applicable to this TO.

9.33 Site Safety and Health Plan of HRTW

A Site Specific Safety and Health Plan addressing the requirements of Section 28.B of EM 385 1-1 is located in **Attachment 1** (SSHP) of this APP.

9.34 Blasting Safety Plan

(Reserved)

No blasting operations will be conducted during the execution of this TO.

9.35 Diving Plan

(Reserved)

No diving operations will be conducted during the execution of this TO.

9.36 Confined Space Program

(Reference SOP # HSE&Q 203, Confined Space)

(Reserved)

10.0 Risk Management Process

AGVIQ utilizes a BBLPS to support the implementation of our RMP by identifying, analyzing and controlling certain risks (or liabilities) that may be encountered during the execution of its assigned projects. The BBLPS is a system to prevent or reduce losses using behavior-based tools and proven management techniques to focus on behaviors or acts that could lead to losses.

The basic loss prevention tools that will be used to implement the BBLPS on this project include:

- Activity Hazard Analysis (AHA)
- Pre-Task Safety Plans (PTSP)
- Loss Prevention Observations (LPO)
- Loss and Near Loss Investigations (L/NLI)
- Drug Free Workplace Program (DFWP)

The Project Manager and site superintendent are responsible for implementing the BBLPS on the project site. These personnel typically delegate authority to the SSHO for the project specific implementation of the BBLPS, but the Project Manager and Site Superintendent/Supervisor or Field Team Leader remains accountable for its implementation.

In an effort to provide a safe and healthy workplace for all program participants, AGVIQ promotes and implements a DFWP. AGVIQ personnel must participate in and adhere to the requirements of the DFWP.

10.1 Activity Hazard Analysis

One of the key elements in executing the BBLPS, and subsequently reducing project risk, is the use of an AHA for each major phase of work. An AHA defines the activity being performed, the hazards posed, and control measures required to perform the work safely. Workers are briefed on the AHA before doing the work and their input is solicited before, during, and after the performance of work to further identify the hazards posed and control measures required. Details of our AHA process and Completed AHAs can be found in Section 1.3 and Attachment 1 of the SSHP.

10.2 Pre-Task Safety Plans

Daily safety meetings are held with all designated project site personnel in attendance in order to review the potential hazards that may be associated with daily work assignments, reevaluate required H&S procedures or information presented in task specific AHAs. The purpose of these daily meetings is to set-forth various hazard control measures or policies and procedures which must be implemented by project staff to facilitate the reduction or elimination of work place incidents that could be associated with the scheduled work.

The topics developed and delivered during each production day are documented on a PTSP.

At the start of each day's activities, the site supervisor, SSHO or other qualified and designated person completes the PTSP, provided in Attachment 8, with input from the work crew, during their regular daily safety meeting. The day's tasks, personnel, tools, and equipment that will be used to perform these tasks are listed, along with the hazards posed and required H&S procedures, as identified in the AHA. The use of PTSPs better promotes worker participation in the hazard recognition and control process, while reinforcing the task-specific hazard and required H&S procedures with the crew each day.

After the delivery of each PTSP, all personnel in attendance at the daily safety meeting shall acknowledge the delivered material with the addition of their printed name, signature and date that the material was delivered to them on the last page of the form. These completed PTSPs shall be kept onsite in a neat and organized manner for review by management or project Owner, as deemed necessary.

The use of safety meetings via the use of a PTSP or other similar format is a common safety practice in the construction industry.

10.3 Loss Prevention Observations

LPOs are a tool to be used by management, site supervisor the SSHO to determine whether workplace behaviors, acts and conditions are consistent or not consistent with established health and safety procedures, site specific APP requirements, or other established safety standards. An LPO may also be completed by individual work crew members to initiate a necessary corrective action, to identify a work crew members positive performance or contribution or undesirable act that would endanger the employee or other co-workers. Completion of the LPO provides a mechanism for management to reinforce positive actions for work practices performed correctly, while also identifying and eliminating work procedures, site conditions, or behaviors that could result in eventual losses.

At a minimum, at least one LPO each week for tasks/operations addressed in the project-specific APP or AHA will be completed by the AGVIQ site supervisor or SSHO to compare the actual work process against established work procedures identified in the project-specific APP and AHAs. The LPO form in **Attachment 9** will be used for this process.

10.3.1 Deficiency Tracking System

On NAVFAC contracts where adherence to the USACE EM 385-1-1, Safety and Health Requirements Manual is required in addition to OSHA regulations, the site supervisor is responsible for ensuring that the a Deficiency Tracking System or log is maintained. The deficiency tracking system is used to identify and monitor the status of safety and health deficiencies observed at the project-specific location, in chronological order. The deficiency tracking system includes the following information:

- Date deficiency identified
- Description of deficiency
- Name of person responsible for correcting deficiency
- Projected resolution date

- Date actually resolved

The deficiency tracking system or log is posted on a project bulletin board or other conspicuous place commonly accessed by project or facility personnel, updated daily, and available for review by the NAVFAC POCs or by AGVIQ Project Management, Senior Management or Health and Safety Representatives. At project or facility sites where the use of a Deficiency Tracking System is required, this log supplements the LPO process.

At the end of the project, or when facility operations are completed, hard copies of the deficiency tracking system data or logs are included in the final record.

10.4 Loss/Near-Loss Investigations

L/NLIs are detailed in Section 8.0 Accident Reporting and Investigation of this APP and will not be further elaborated upon in this section.

10.5 Drug-Free Workplace Program

AGVIQ does not tolerate illegal drugs, or any use of drugs, controlled substances, or alcohol that impairs an employees work performance or behavior. AGVIQ has established a policy that its employees and subcontractors will not be involved in any manner with the unlawful manufacture, distribution, dispensation, possession, sale, or use of illegal drugs in the workplace. The use or possession of alcohol in the workplace is also prohibited. Any violation of these prohibitions may result in discipline or immediate discharge.

Attachment 1
Site Safety and Health Plan

Site Safety and Health Plan

Petroleum Monitoring and Assessment at Trumbo Point Tank Farm

Naval Air Station Key West
Key West, Florida

Revision No. 00

Contract No. N62470-12-D-7004
Contract Task Order No. JM14

Submitted to:

U.S. Naval Facilities Engineering Command

Prepared by:

February 2014
Revision No. 00

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Acronyms and Abbreviations

AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
BBLPS	Behavior Based Loss Prevention System
CBRNE	Chemical, Biological, Nuclear, Radiological, Explosive
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
COC	Chemicals of Concern
CRZ	Contamination Reduction Zone
DFOW	Definable Feature of Work
DFWP	Drug Free Workplace Program
EMS	Emergency Medical Services
EZ	Exclusion Zone
GDA	Government Designated Authority
HAZWOPER	Hazardous Waste Operations and Emergency Response
H&S	Health and Safety
HS&E	Health, Safety, and Environment
HSPA	Health and Safety Program Administrator
HTRW	Hazardous, Toxic, and Radioactive Waste
LLC	Limited Liability Company
mg/m^3	milligrams per cubic meter
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PAHs	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PEL	Permissible Exposure Limit (OSHA)
PPE	Personal Protective Equipment
ppm	Parts per million
PTSP	Pre-Task Safety Plan
RAC	Risk Assessment Code
SBRAC II	Small Business Remedial Action Contract No. N62470-12-D-7004
SOH	Safety and Occupational Health
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SZ	Support Zone
TSD	Treatment, Storage, and Disposal
TO	Task Order
WZ	Work Zone

1.0 Site Safety and Health Plan of Hazardous, Toxic, and Radioactive Waste (HTRW) Work (28.B)

1.1 Occupational Safety and Health Hazards with Site Cleanup 28.B.01.a

Several occupational physical hazards are associated with the execution of this Task Order (TO) and are as follows:

- Contact with site chemicals of concern (COCs) on the surface and subsurface during sampling activities
- Physical hazards associated with slips, trips, and falls or manual lifting
- Physical hazards associated with heavy equipment operations
- Physical hazards associated with elevated remedial system decommissioning work

All site work shall be performed in accordance with the project Accident Prevention Plan (APP) and this Site Safety and Health Plan (SSHP). In accordance with the allowance of EM 385 1-1, Section 28.B.02 "*general information adequately covered in the APP (introduction, site background, SOH organization and lines of authority, general site control and layout and general site safety procedures, logs, reports and inspections) need not be duplicated.*" Health and safety hazard control measures policies and procedures, and means and methods or other information presented throughout this APP that sufficiently addresses the requirements of EM 385 1-1, Section 28.B.02 will not be further elaborated upon in this SSHP.

1.2 Site Description and Contamination Characterization 28.B.02.a

A site description for the project site is provided in Section 2.0 "Background Information" of the APP and will not be further elaborated upon in this section of the SSHP. Information on all potential site COCs is listed below in Table 1-1. Only potential contaminants with listed occupational exposure limits are listed.

Table 1-1 Contaminants of Concern [1] (Refer to Project Files for more detailed contaminant information)					
Contaminant	**Maximum[a] Concentration (ug/L)**	**Exposure Limit[b]**	**IDLH[c]**	**Symptoms and Effects of Exposure**	**PIP[d] (eV)**
Benzene	GW: 3.48 JB ug/L SS: 3.24J ug/kg	0.5 ppm[e] Skin	500 Ca	Eye, nose, skin, and respiratory irritation; headache; nausea; dermatitis; fatigue; giddiness; staggered gait; bone marrow depression	9.24
Ethyl Benzene	GW: 0.44J ug/L	100 ppm	800	Eye, skin, and mucous membrane irritation; headache; dermatitis; narcotic; coma	8.76
Napthalene	GW: 0.241J ug/L	10	250	Nausea; diarrhea; vomiting; blood in urine; damage red blood cells	8.12
Total Petroleum Hydrocarbons As Petrol Note: A complex mixture of volatile hydrocarbons]	GW: Note: Light-Non Agueous Phase Liquid (LNAPL) present at the site GW: 15,600J SS: 18,100 ug/kg	None	Ca ND	Irritation eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid); possible liver, kidney damage; [potential occupational carcinogen]	UNK
Toluene	GW: 0.78 J ug/L SS: 3.95J ug/kg	20 ppm[e]	500	Eye and nose irritation, fatigue, weakness, confusion, dizziness, headache, dilated pupils, excessive tearing, nervousness, muscle fatigue, paresthesia, dermatitis, liver and kidney damage	8.82
Xylenes	GW: 0.932 ug/L SS: 1.28J ug/kg	100 ppm	900	Irritated eyes, skin, nose, and throat; dizziness; excitement; drowsiness; incoherence; staggering gait; corneal vacuolization; anorexia; nausea; vomiting; abdominal pain; dermatitis	8.56
Arsenic	SS: 6.9 mg/kg	0.01 mg/m^3	5 mg/m^3 as As Ca	Ulceration of nasal septum, respiratory irritation, dermatitis, gastrointestinal disturbances, peripheral neuropathy, hyperpigmentation	NA
Lead	GW: 4.22 ug/L	0.05 mg/m^3	100 mg/m^3 as Pb	Weakness lassitude, facial pallor, pale eye, weight loss, malnutrition, abdominal pain, constipation, anemia, gingival lead line, tremors, paralysis of wrist and ankles, encephalopathy, kidney disease, irritated eyes, hypertension	NA

Table 1-1 Contaminants of Concern [1]
(Refer to Project Files for more detailed contaminant information)

Contaminant	Maximum[a] Concentration (ug/L)	Exposure Limit[b]	IDLH[c]	Symptoms and Effects of Exposure	PIP[d] (eV)

Footnotes:

[a] Specify sample-designation and media: SB (Soil Boring), A (Air), D (Drums), GW (Groundwater), L (Lagoon), TK (Tank), S (Surface Soil), SL (Sludge), SW (Surface Water), SD (Sediment), SG (Soil Gas)
[b] Appropriate value of PEL or TLV listed.
[c] IDLH = immediately dangerous to life and health (units are the same as specified "Exposure Limit" units for that contaminant);

NL = No limit found in reference materials;
CA = Potential occupational carcinogen.
[d] PIP = photoionization potential; NA = Not applicable; UK = Unknown.
[e] Denotes a value established by the ACGIH.

PEL = Denotes OSHA Permissible Exposure Limit unless otherwise identified.
J = Sample result is estimated.
Ca = Potential Occupational Carcinogen
ST = Short Term Exposure Limit or "excursion limit usually a 15 minute duration unless otherwise noted.
ND = Not Determined

1.2.1 Chemical, Biological Radiological, or Nuclear Hazards and Controls

Hazards	Controls
Not Applicable	Not Applicable

1.2.2 Potential Routes of COC Exposure

Dermal: Contact with contaminated media (soil, used Personal Protective Equipment (PPE), or heavy equipment impacted by COCs). This route of exposure is minimized through proper use of PPE, as specified in Section 9.33.7.

Inhalation: Airborne particulates impacted by COCs. This route of exposure is minimized through proper dust control, respiratory protection and air monitoring, as specified in Sections 9.33.7 and 9.33.8, respectively.

Other:

Inadvertent ingestion of contaminated media: This route should not present a concern if good hygiene practices are followed (e.g., wash hands/face before eating, drinking, or smoking).

Inadvertent injection of contaminated media: This route should not present a concern unless a puncture of contaminated PPE were to occur, which resulted in breaking the employees skin and the resulting wound was impacted by contaminated media.

1.3 Hazard/Risk Analysis 28.B.02.b

A health and safety risk analysis (Table 1-2) has been performed for each task. In the order listed below, the Health and Safety Program Administrator (HSPA) considers the various methods for mitigating the hazards. Employees are trained on this hierarchy of controls during their hazardous waste training and reminded of them throughout the execution of projects:

- Elimination of the hazards (use remote sampling methodology to avoid going into a confined space)
- Substitution (reduce exposure to vapors by use of a geoprobe instead of test pitting)
- Engineering controls (ventilate a confined space to improve air quality)
- Warnings (establish exclusion zones to keep untrained people away from hazardous waste work)
- Administrative controls (implement a work-rest schedule to reduce chance of heat stress)
- Use of PPE (use of respirators when action levels are exceeded)

The hazard controls and safe work practices are summarized in the following sections of this APP/SSHP:

- General hazards and controls
- Project-specific hazards and controls
- Physical hazards and controls
- Biological hazards and controls
- COCs

Table 1-2 Activity Hazard Analyses Basis						
	Project Activities					
Potential Hazards	Land Surveys	Utility Clearance	Monitoring well installation, soil sampling and well development	Free product gauging	Ground water sampling and monitoring events	Management of generated waste
Adverse Weather	X	X	X	X	X	X
Air Compressors						
Asbestos						
Biological	X	X	X	X	X	
Buried Utilities			X			
Chainsaws/Brushcutters						
Chemical Hazards			X	X	X	X
Compressed Gas Cylinders						
Concrete and Masonry						
Confined Space						
Cranes & Rigging						
Cutting/Cuts& Abrasions			X	X	X	X
Demolition/Dismantling						
Electrical Safety			X	X	X	
Drilling			X			
Excavations						X
Fire Prevention	X	X	X	X	X	X
Hand & Power Tools			X	X	X	X
Haul Truck Operations						X
Heat Stress/Cold Stress	X	X	X	X	X	
Heavy Equipment						X
Housekeeping		X	X	X	X	
Ladders & Stairs						X
Lockout /Tagout						
Manual Lifting	X	X	X	X	X	X
Mechanical Guarding						X
Material Handling Hazards						
MPPEH/Explosive Hazards	X	X	X		X	
Noise			X			
Pinch/Struck by			X			
Pressure Washing			X			
Pressurized Lines/ Equipment						X
Sampling Handling			X	X	X	
Slips/Trips/Falls	X	X	X		X	X
Spill Prevention			X			
Suspended Loads						X
Vehicle Traffic	X	X	X	X	X	X
Visible Lighting	X	X	X	X	X	X
Welding and cutting						
Working Alone				X		

1.3.1 Activity Hazard Analysis

An Activity Hazard Analysis (AHA) must be developed for each AGVIQ job activity. The AHA shall define the work tasks required to perform each activity, along with potential Health, Safety, and Environment (HS&E) hazards and recommended control measures for each hazard. In addition, a listing of the equipment to be used to perform the activity, inspection requirements to be performed and training requirements for the safe operation of the equipment listed must be identified. Workers are briefed on the AHA before performing the work and their input is solicited prior, during, and after the performance of work to further identify the hazards posed and control measures required. The AHA shall identify the work tasks required to perform each activity, along with potential HSE hazards and recommended control measures for each hazard.

Hazard controls, applicable AGVIQ core standards, and SOPs should be used as a basis for preparing AHAs. AHAs prepared for AGVIQ activities are included as Attachment 1 to this SSHP.

1.3.2 Subcontractor Activity Hazard Analysis

AGVIQ subcontractors are required to provide AHAs specific to their scope of work on the project for acceptance by AGVIQ. Each subcontractor shall submit AHAs for their field activities, as defined in their scope of work, along with their project-specific safety plan and procedures. Additions or changes in field activities, equipment, tools, or material used to perform work or hazards not addressed in existing AHAs requires either a new AHA to be prepared or an existing AHA to be revised.

1.4 Staff Organization, Qualifications, and Responsibilities 28.B.02.c

Staff organization, qualifications and responsibilities is identified in Section 4.0 “Responsibilities and Lines of Authority” and Section 6.0 “Training” of the APP and will not be elaborated upon further in this section.

Qualifications of key site personnel must be provided to the government designated authority (GDA), under separate cover for review well in advance

1.4.1 Training, General and Project-Specific 28.B.02.d

General and project specific training is identified in Section 6.0 “Training” of the APP and will not be elaborated upon further in this section.

1.5 Medical Surveillance 28.B.02.f

Site worker medical surveillance requirements is identified in Section 6.0 “Training” of the APP and will not be further elaborated upon in this section of the SSHP.

1.6 Personal Protective Equipment and Exposure Monitoring 28.B.02.e

(Reference SOP HSE-117, *Personal Protective Equipment*)

Where site workers are engaged in the excavation, handling of soil, or dust particles impacted by potential site COCs, the use of worker PPE in addition to the other hazard control measures presented in this APP is required for the duration of the task (see task schedule in Work Plan). The proper use of PPE is essential to ensure personnel safety. All site workers will be trained on the proper fitting, use, donning and doffing procedures, limits of use, and inspection, maintenance, cleaning, and storage requirements. The SSHO shall perform an inspection of the use of PPE to ensure the continued effectiveness of this program.

- PPE must be worn by employees when actual or potential hazards exist and engineering controls or administrative practices cannot adequately control those hazards.
- A PPE assessment has been conducted by the HSPA based on project tasks (see PPE specifications below). Verification and certification of assigned PPE by task is completed by the HSPA or designee.
- The use of PPE adds physical stress (heat/cold stress) to the wearer. Follow procedures in Section 9.14 of the APP to reduce these hazards.
- Employees must be trained to properly wear and maintain the PPE.
- In work areas where actual or potential hazards are present at any time, PPE must be worn by employees working or walking through the area.
- Areas requiring PPE should be posted or employees must be informed of the requirements in an equivalent manner.
- PPE must be inspected prior to use and after any occurrence to identify any deterioration or damage.
- PPE must be maintained in a clean and reliable condition.
- Damaged PPE shall not be used and must either be repaired or discarded.
- PPE shall not be modified, tampered with, or repaired beyond routine maintenance.
- If a task other than the tasks described in this table needs to be performed, contact the HSPA so this table can be updated.

Table 1-3 below outlines PPE to be used according to task based on project-specific hazard assessment. If a task other than the tasks described in this table needs to be performed, contact the HSPA so this table can be updated.

1.7 Exposure Monitoring/Air Sampling 28.B.02.g

(Reference SOP HSE-207, Exposure Monitoring for Airborne Chemical Hazards)

Required air monitoring and equipment calibration specifications are listed in Tables 1-3 and 1-4, respectively. When performing site monitoring, record all the information, such as in a field logbook. Note date and time, describe monitoring location (for example, in breathing zone, at source and site location), and what the reading is. If any action levels are reached, note it in the field logbook and note the action taken.

- Exposure records (air sampling) must be preserved for the duration of employment plus 30 years. Ensure that copies of the field logbook are maintained in the project file.
- Copies of all project exposure records (e.g., copies of field logbook pages where air monitoring readings are recorded and associated calibration) shall be maintained in the project files.
- **An exposure assessment has been conducted by the HSPA and reviewed by the Certified Industrial Hygienist (CIH) based on project tasks. Below is the required air monitoring required to be performed during the completion of this TO.**

TABLE 1-3 Air Monitoring and Personal Protective Equipment[a] Requirements

Task	Level	Body	Head	Respirator
• Utility Mark-out and clearance • Land Survey of installed wells	D	• Designated and appropriate work clothes; • Steel toe work boots that provide sufficient ankle support (preferably leather); • Work gloves (cut resistant).; Reflective safety vest	• Hardhat • Safety glasses • Hearing protection (as applicable)[b]	None required
A function, identified below where potential dermal contact with site COCs **IS LIMITED to the hands ONLY.** • Monitoring well installation (with HSA drill rig) and monitoring well development • Ground water sampling/monitoring • Free product gauging, monitoring, sampling of existing monitoring wells • Management and characterization of investigation derived generated waste	Modified D_1	• Designated and appropriate work clothes; • Steel toe work boots that provide sufficient ankle support (preferable leather); • Work gloves (cut resistant); • Reflective safety vest; Inner surgical-style nitrile & outer chemical resistant nitrile gloves.	• Hardhat • Safety glasses • Ear protection (as applicable) [b] • Face shields (as applicable - to prevent splash hazards to the face)	None required.
A function, identified below where potential dermal contact with site COCs **is NOT limited to the hands only**. • Monitoring well installation (with HSA drill rig) and monitoring well development • Ground water sampling/monitoring • Free product gauging, monitoring, sampling of existing monitoring wells • Management and characterization of investigation derived generated waste	Modified D_2	• **Coveralls:** Poly coated or uncoated Type®chemical resistant disposable coveralls. Poly coated will be used for exposure to liquid chemicals or other dangerous splash hazards. • **Boots:** Hard-toed work boots that provide sufficient ankle support (preferable leather); with outer rubber boot covers or hard-toe chemically resistant rubber boots with steel shank. • **Gloves:** Inner & Outer surgical-style nitrile chemical-resistant nitrile gloves.	• Hardhat • Safety glasses • Ear protection (as applicable) [b] • Face shields – Pressure Washing (also applicable to other assigned tasks to prevent splash hazards to the face)	None required.
A function, identified below where potential dermal contact with site COCs is **NOT** limited to the hands and/or a potential respiratory hazard may exist above established action levels. • Any conditions were air monitoring action levels are exceeded and the Program CIH indicates that an upgrade to Level C PPE is required. **NOTE: An upgrade to Level C PPE would require approval by the Program CIH, Project Manager and Client and revision to this APP before work may proceed.**	C	• **Coveralls:** Poly coated chemical resistant disposable coveralls. Poly coated will be used for exposure to liquid chemicals or other dangerous splash hazards. • **Boots:** Hard to work boots that provide sufficient ankle support (preferable leather); with outer rubber boot covers or hard to chemically resistant rubber boots with steel shank. • **Gloves:** Inner & Outer surgical-style nitrile chemical-resistant nitrile gloves.	• Hardhat • Ear protection (as applicable)[b] • Spectacle inserts (where necessary)	APR, full face, with organic vapor cartridges.

Reasons for Upgrading or Downgrading Level of Protection	
Upgrade[f]	**Downgrade**
• Request from individual performing tasks. • Change in work tasks that will increase contact or potential contact with hazardous materials. • Occurrence or likely occurrence of gas or vapor emission. • Known or suspected presence of dermal hazards. • Instrument action levels exceeded (when implemented).	• New information indicating that situation is less hazardous than originally thought. • Change in site conditions that decrease the hazard. • Change in work task that will reduce contact with hazardous materials.

TABLE 1-4 Air Monitoring Equipment Specifications

Instrument	Tasks	Action Levels[a]	Level of Protection or Action	Frequency [b]	Calibration
PID: OVM or equivalent **(10.6 eV lamp or equivalent)** **Or Flame Ionization Detector**	• Monitoring well installation (with HSA drill rig) and monitoring well development • Ground water sampling/monitoring • Free product gauging, monitoring, sampling of existing monitoring wells • Management and characterization of investigation derived generated waste	0 – 1 ppm (in worker BZ)	Level D, Modified D1, or D2 as identified by Table 9-1 for dermal protection. Continue Work.	Any activity where: 1) unusual odors or vapors are present that may be attributed to site COCs, 2) discolored soil/sediment or free phase product is observed/encountered during the execution of tasks identified in section 2.4 of this APP and 3) during initial start-up of tasks identified in section 2.4 of this APP or when 4) when additional measures may be required do to encountered site conditions, but only after consultation w/the Program CIH.	Daily *
		1 - 5 ppm (sustained 5 mins in worker BZ)	Level D, Modified Level D_1 or D_2 as identified by Table 9-1 for dermal protection and begin compound specific monitoring using Drager CMS (or alternate Drager or Sensidyne gas indicator tube methods - See "Instruments" below/left) in the order of 1) Benzene, 2) Toluene 3) Xylene and 4) Ethyl benzene.	Continuously or until 1) level is below 1 ppm, 2) Compound specific action level is exceeded. **Note: Toluene, Xylene and Ethyl benzene indicator tubes monitoring could be discontinued or performed at a less frequent rate and at the discretion of the SSHO & CIH/HSPA if observed results are below and remain below (i.e. 50% less than) established action levels.**	
		> 5 ppm (sustained 5 mins. in worker BZ)	Stop work. Evacuate area for 10 minutes and recheck BZ and work area. If levels persist/continue to be elevated, consult with the CIH/HSPA for proper engineering and/or administrative controls or PPE upgrade requirements or before working in environments were COCs are potentially in excess of OELs.	Continuously upon re-start of work to verify 0-1 ppm in worker BZ and until it is determined that compound specific concentrations are less than 50% of the established action levels.	
Drager Chip Measurement System (CMS) with the following compound specific measurement chips: Benzene = Chip # 64 06030 Toluene = Chip # 64 06250 o Xylene = Chip # 64 06260 Drager Accuro hand pump and Ethyl benzene gas detection tube #124SB **<u>ALTERNATE Testing Method</u>** **Sensidyne or Draeger pump** With indicator tubes **Note: For Benzene indicator tubes, ensure that any "pre-filter" tubes are secured to reduce cross sensitivity/false positive readings to Toluene, Ethyl benzene and Xylene.** **<u>Sensidyne gas detection tubes:</u>** Benzene = 118SE (w/ prefilter) Ethylbenzene = 124SB Toluene = 179S; Xylene =143SB **Or** **<u>Drager gas detection tubes:</u>** Benzene = 118SE (w/ prefilter) Ethylbenzene = 124SB Toluene = 179S; Xylene =143SB	• Monitoring well installation (with HSA drill rig) and monitoring well development • Ground water sampling/monitoring • Free product gauging, monitoring, sampling of existing monitoring wells • Management and characterization of investigation derived generated waste	Benzene< 0.5 ppm Toluene < 20.0 ppm Xylene < 50.0 ppm Ethylbenzene < 50.0 ppm	Level D, Modified D1, or D2 as identified by Table 9-1 for dermal protection. **Note: Where Benzene, Toluene, Xylene or Ethyl Benzene concentrations are less than the defined action levels but could be attributing to adverse worker side effects (nausea, eye irritation, dizziness, headache) contact the Program CIH to discuss the need to implement appropriate engineering/administrative controls or PPE upgrade requirements to reduce or eliminate such potential side effects.**	When PID reading > 1 ppm and until PID reading < 1 ppm	N/A
		Benzene >0.5 ppm < 5 ppm Toluene > 20.0 ppm < 200 ppm Xylene > 50.0 ppm < 500 ppm Ethylbenzene >50.0 ppm < 500 ppm	Stop work. Evacuate area for 10 minutes and recheck BZ and work area. If levels persist, consult with the Program CIH/HSPA for proper engineering and/or administrative controls or PPE upgrade requirements or before working in environments were COCs are potentially in excess of OELs. *Note:* ***If Benzene concentrations are sustained in worker breathing zones in excess of 5 ppm, workers must also evacuate from the work area(s) and requirements for respiratory protection upgrades must be evaluated by the project manager and the Program CIH.***	Restart of work to verify compound specific levels are less than 50% of the established action levels.	
Combustible Gas Indicator with LEL and O_2, sensors	• Monitoring well installation (with HSA drill rig) Any other situation where the potential for an explosive atmosphere may exist.	0_2 19.5 – 23.5% LEL < 10%	Continue work, Follow PPE requirements as identified by Table 9-1.	When PID reading > 1 ppm and until PID reading < 1 ppm	(see section 6.1)
		0_2 <19.5 or >23.5% LEL > 10%	Stop work. Evacuate area for 10 minutes and recheck BZ and work area. If levels persist, consult CIH/HSPA for proper engineering controls or PPE requirements or before investigating of any "unknown" conditions. If levels persist, consult with the Program CIH/HSPA for proper engineering before working in potential explosive or O2 deficient/enriched atmospheres.	Continuously upon re-start of work to verify action levels are not exceeded.	

[a] Action levels apply to sustained breathing-zone measurements (5 minutes) above background.

[b] The exact frequency of monitoring depends on field conditions and is to be determined by the SSHO; generally, every 5 to 15 minutes is acceptable; more frequently may be appropriate. **Monitoring results shall be recorded on forms provided in <u>Attachment 4</u> of this APP. Documentation shall include instrument and calibration information, time, measurement results, personnel/location to the corresponding measurement taken (e.g., "Breathing Zone/MW-3", "at surface/SB-2", etc.).**

1.8 Heat and Cold Stress 28.B.02.h

The procedures for heat and cold stress monitoring are presented in Section 9.14 "Heat and Cold Stress Monitoring Program" of the APP and will not be further elaborated upon in this section of the SSHP.

1.9 Standard Operating Safety Procedures, Engineering Controls, and Work Practices 28.B.02.i

Site Rules and Prohibitions 28.B.02.i(1)

Site rules and prohibitions and requirements are defined by the sections identified below and will not be further elaborated upon in this section of this SSHP.

Section 8.0 of the APP	Accident Reporting and Investigation
Section 9.2 of the APP	Emergency Response Plans
Section 9.7 of the APP	Health Hazard Control Program
Section 1.12 of the SSHP	Site Control Measures
Section 10.5 of the APP	Drug Free Work Place Program

1.10 Work Permit Requirements 28.B.02.i(2)

Any work permit requirements necessary to execute the assigned work is identified in Section 7.1 "External Inspections/Certifications" of the APP and will not be further elaborated upon in this section of the SSHP.

1.11 Material Handling Procedures 28.B.02.i(3)

Hazard Control Measures for haul truck activities, rigging and working around material handling equipment are included in Section 9.7 "Health and Safety Hazard Control Program" of the APP and will not be further elaborated upon in this SSHP.

1.12 Drum, Container, Tank Handling 28.B.02.i(4)

(NA)

1.13 Comprehensive AHA of Treatment Technologies 28.B.02.i(5) (NA)

1.14 Site Control Measures – General 28.B.02.j

Access to the site will be limited to only those authorized personnel designated to work at the site. Site workers and visitors shall sign-in and sign-out as they enter and exit the site work boundaries (see Attachment 4 of APP). In addition to these procedures, the following measures shall be implemented as general site control processes.

- Project managers and team leaders are to:
  - Evaluate and ensure worker safety in remote/secluded work areas.
  - Confirm if potentially dangerous activities could be occurring in or adjacent to any AGVIQ work areas that may jeopardize worker health and safety.

  - Reschedule field activities when potentially dangerous activities are not occurring adjacent to AGVIQ work locations. Ensure proper two communications with workers in remote work areas. Utilize buddy system.
- Evaluate and ensure worker safety in remote/secluded work areas.
- Confirm if potentially dangerous activities could be occurring in or adjacent to any AGVIQ work areas that may jeopardize worker health and safety.
- Reschedule field activities when potentially dangerous activities are occurring adjacent to AGVIQ work locations. Ensure proper two-way communications with workers in remote work areas.
- Establish and maintain the "Buddy System."
- Designate an emergency evacuation route (see Figure 9-1 of the APP).
- Designate an evacuation assembly area.
- Topics for briefing on site safety: Review the site Accident Prevention, site-specific hazards, locations of work zones, site contaminants, PPE and air requirements, equipment, special procedures, emergencies.
- The SSHO records safety briefing attendance in a logbook and documents the topics discussed.
- Ensure that applicable AGVIQ personnel have received the behavior based loss prevention system (BBLPS) training.
- Be aware of any potential for hazardous chemical exposure and know what precaution/training is required.
- Establish support and work zones. Delineate with flags or cones as appropriate. Support zone should be in an area absent of construction hazards. Use access control at entry and exit from each work zone.
- Know how an emergency should be reported.
- Identify exact facility location and position (where possible) when contacting Emergency Medical System (EMS)/Fire Dispatch.
- Have readily available copy of the Hospital Route Map.
- Establish onsite communication consisting of the following:
  - Line-of-sight and hand signals
  - Air horn
  - Two-way radio or cellular telephone if available
- Establish offsite communication.
- Know how, what, when injuries/accidents are reported and treated.

The site supervisor, SSHO or other authorized designee is to conduct periodic inspections of work practices and site conditions to determine the effectiveness of this plan. Such inspections should identify site conditions or actions that are not consistent with the policies and procedures of the Health and Safety (H&S) program, report to the AGVIQ Project Manager (overall) and the AGVIQ CIH or Health and Safety Program

Administrator (HSPA). The project team shall develop and implement corrective action procedures in a timely manner.

1.14.1 Site Control Measures

To prevent both exposure of unprotected personnel and migration of potential contamination, work areas and personal protective equipment requirements will be clearly identified. This APP recommends that the area surrounding each of the work areas be divided into three distinct zones; exclusion zone (EZ), contamination reduction zone (CRZ), and support zone (SZ).

Only individuals who meet the requirements of 29 CFR 1910.120/29 CFR1926.65 and who are authorized by AGVIQ for site operations or the SSHO shall be allowed entry into the EZ and CRZ. Suitable means and methods (high visibility fencing, caution tape signage, traffic cones, traffic delineators or other physical barriers) shall be employed to demarcate the EZ and CRZ boundaries at this site to prevent unauthorized entry into these controlled work zones. A CRZ for decontamination shall be established adjacent to the EZ. The SZ shall be kept free from contamination.

A typical EZ/CRZ/SZ representation is illustrated in Section 1.15 “Personal Hygiene and Decontamination” of this APP.

1.14.2 Exclusion Zone

An EZ will be constructed to surround each work area where the greatest potential for worker exposure to potential site COCs or other recognized hazards may exist. The EZ may need to be transient as the work progresses, depending upon the type of work that is being executed. Because of potential site space limitations, the exclusion zone fencing may also include any available “permanent” perimeter fencing or other established physical barriers. Note that the term “permanent” is often used to describe the outer limits (or perimeter) of a work site or designated site area. Other temporary barriers (i.e., caution tape, high visibility construction fencing); maybe used to supplement existing permanent barriers to demarcate the EZ to identify the restricted access. Access to the EZ will be restricted to personnel wearing the prescribed level of protective equipment and meeting the training and medical criteria of this plan.

1.14.3 Contamination Reduction Zone

Each CRZ zone should be established as a clearly marked corridor between the EZ and the SZ in which tools and equipment are decontaminated and personnel can don, doff and dispose of and/or decontaminate PPE. The CRZ for each area will be located immediately adjacent to the EZ. This area should also demarcated/identified from support areas with yellow tape, high visibility construction fencing or other suitable barriers.

The CRZ is where personnel will begin the sequential decontamination process when exiting the EZ. To prevent cross contamination and for accountability purposes, all personnel must enter and leave the EZ through the CRZ.

Contaminated personnel tools and equipment will exit the EZ directly to the CRZ. Each CRZ will contain a constructed decontamination stations for personnel and equipment. If possible, the CRZ will be located upwind of each EZ, however due to site constraints this may not be possible. Temporary support zones for each work area will be located adjacent to the CRZs.

1.14.4 Support Zone

Temporary support zones and staging areas will be established at the entrance of each control area. Potable water, an eye wash, and first aid supplies will be located at each temporary support zone. No hazardous or potentially hazardous materials will be allowed in the support zone unless it is in a properly labeled container that has no external contamination. Eating, drinking and smoking will only be allowed in this area, at designated locations.

1.14.5 HAZWOPER Compliance Plan

Certain parts of the site work are covered by state or federal Hazardous Waste Operations and Emergency Response (HAZWOPER) standards and therefore require training and medical monitoring. Anticipated HAZWOPER tasks (Section 2.3 of the APP) might occur consecutively or concurrently with respect to non-HAZWOPER tasks. This section outlines procedures to be followed when approved activities specified in Section 2.3 of this APP do not require 24- or 40-hour training. Non-HAZWOPER-trained personnel also must be trained in accordance with all other state and federal Occupational Safety and Health Administration (OSHA) requirements.

- In many cases, air sampling, in addition to real-time monitoring, must confirm that there is no exposure to vapors, particulates, or mist before non-HAZWOPER-trained personnel are allowed on the site, or while non-HAZWOPER-trained staff are working in proximity to HAZWOPER designated activities. Other data (e.g., soil) also must document that there is no potential for exposure. The Program CIH must approve the interpretation of these data.
- When non-HAZWOPER-trained personnel are at risk of exposure, the site Supervisor or SSHO must post the exclusion zone and inform non-HAZWOPER-trained personnel of the:
  - Nature of the existing contamination and its locations
  - Limitations of their access
  - Emergency action plan for the site
- Periodic air monitoring with direct-reading instruments conducted during regulated tasks also should be used to ensure that non-HAZWOPER-trained personnel (e.g., in an adjacent area) are not exposed to airborne contaminated media.

When exposure is possible, non-HAZWOPER-trained personnel must be removed from the site until it can be demonstrated that there is no longer a potential for exposure to health and safety hazards.

1.15 Personal Hygiene and Decontamination 28.B.02.k

Regardless of whether a CRZ or other decontamination zones must be established to ensure proper decontamination or personnel or equipment, established procedures must be adhered to ensure that direct and indirect worker contact with COCs or hazardous materials does not occur. This is generally achieved by workers adhering to good personal hygiene practices. These practices include but are not limited to the following:

- Eating, drinking, smoking, and tobacco use shall only be conducted in designated areas and not in areas where there is any exposure to hazardous material/waste, flammable/combustible liquids and gases may exist

- Wash hands and face before eating, drinking, smoking or using tobacco and at the end of the work-shift
- Shower as soon as feasible after completing field activities

The site supervisor or SSHO shall establish areas for eating, drinking, and smoking at the site so that incident exposure to site COCs does not possibly occur.

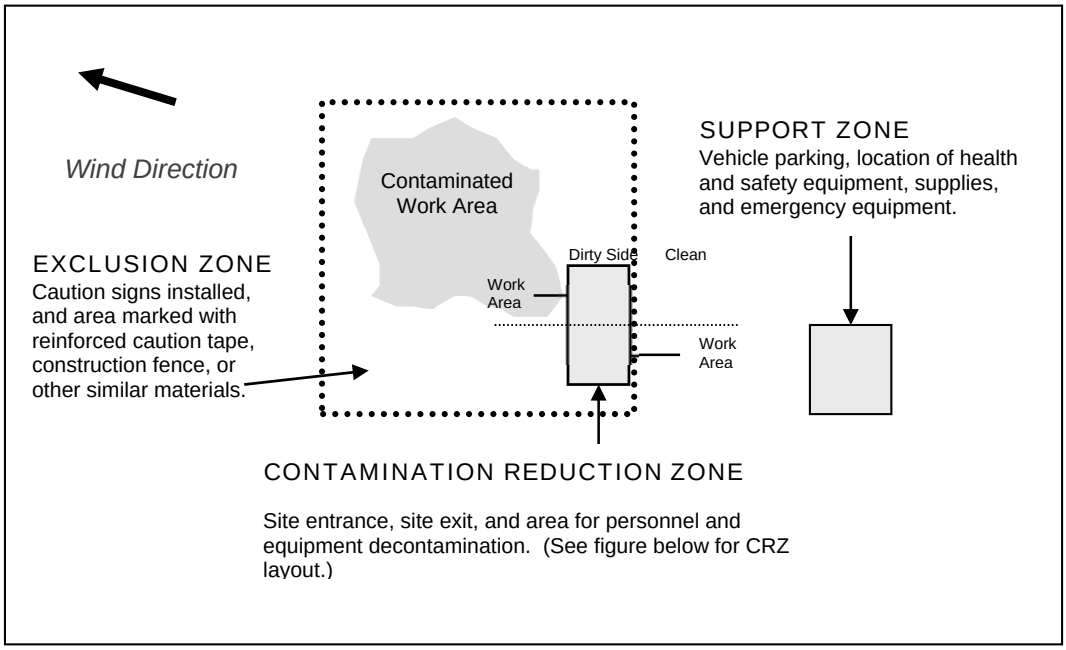
1.15.1 General Decontamination Specifications

When the establishment of an EZ and CRZ is required, the site supervisor or SSHO must establish and monitor the decontamination procedures and their effectiveness. Decontamination procedures found to be ineffective will be modified by site supervisor or SSHO. The site supervisor or SSHO must ensure that procedures are established for disposing of materials generated on the site. Where the establishment of EZ(s) or CRZ(s) are required on the site, the use of contact lenses are not permitted in exclusion or decontamination zones. For this project, the use of Modified Level D2 PPE may or may not be required, depending on the actual site conditions that are encountered and whether direct contact with material is needed to execute site operations. If it is determined that the establishment of decontamination coordinators (i.e., EZ/CRZ) are needed, and respirator cleaning stations will be warranted, than it is essential for workers to maintain good positive personal hygiene practices and proper containerization, labeling, storage, disposal and overall management of spent disposable PPE. Where the establishment of an EZ and CRZ decontamination corridors are required the detail below identifies a typical worker/equipment decontamination sequence. Figure 1-1, below, graphically represents personnel and equipment decontamination processes.

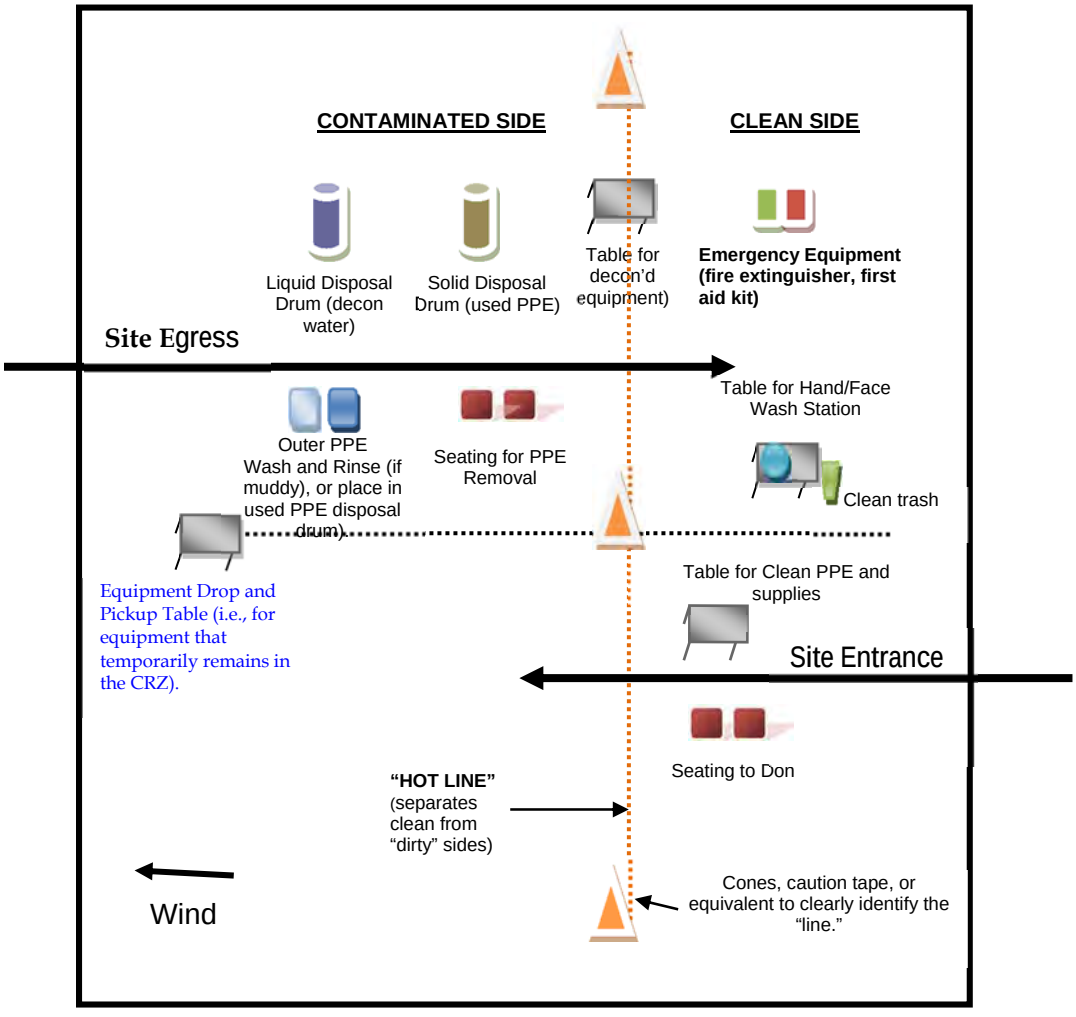
Personnel	Sample Equipment	Heavy Equipment
– Boot wash/rinse – Glove wash/rinse – Outer-glove removal – Body-suit removal – Inner-glove removal – Respirator removal – Hand wash/rinse – Face wash/rinse – Shower ASAP – Collect, properly containerize, label, and dispose of all spent PPE – Collect, properly containerize, label and dispose of all spent decontamination fluid contain for offsite disposal **(Do not dispose of spent PPE or similar waste in government disposal receptacles.)**	– Wash/rinse equipment – Solvent-rinse equipment – Contain solvent waste for offsite disposal – Collect, properly containerize, label and dispose of all spent decontamination fluid and residual solids for offsite disposal	– Power wash – Steam clean – Collect, properly containerize, label and dispose of all spent decontamination fluid or residual solids

Figure 1-1 Typical Decontamination Process

Work Area – Set up appropriately based on wind direction



Typical Contamination Reduction Zone



1.16 Equipment Decontamination 28.B.02.l

The sequence and location of equipment decontamination is defined by Section 1.2.10.1 and Figure 1-1, Decontamination Procedure. Procedures for establishment of site control zones, such as EZ or CRZ, as related to equipment decontamination processes are defined in Section 1.14 of this SSHP.

1.17 Emergency Equipment and First Aid 28.B.02.m

The requirements for emergency preparedness, equipment and supplies are provided in Section 9.2 "Emergency Response Plans" of the APP and will not be elaborated upon further in this SSHP.

1.17.1 Emergency Response and Contingency Procedures 28.B.02.n

The requirements for emergency preparedness, equipment and supplies are provided in Section 9.2 "Emergency Response Plans" of the APP and will not be elaborated upon further in this SSHP.

1.17.1.1 Pre-Emergency Planning 28.B.02.n(1)

The requirements for emergency response and contingency procedures are provided in Section 9.2 "Emergency Response Plans" of the APP and will not be elaborated upon The requirements for pre-emergency planning are provided in Section 9.2 "Emergency Response Plans" of the APP and will not be elaborated upon further in this SSHP.

1.17.1.2 Personnel and Lines of Authority - Emergency Situations 28.B.02.n(2)

Personnel and lines of authority for both chain of command and emergency situations are included in Section 4.0 "Responsibilities and Lines of Authority" of the APP and will not be elaborated upon further in this SSHP.

1.17.1.3 Criteria and Procedures for Emergency Recognition and Site Evacuation 28.B.02.n(3)

Procedures of emergency recognition and site evacuation are outline in Section 9.2 "Emergency Response Plans" of the APP and will not be elaborated upon further in this SSHP.

1.17.1.4 Decontamination and Medical Treatment of Injured Personnel 28.B.02.n(4)

In the event a worker in an EZ needs medical assistance primary consideration must be given to remove all site contaminants before transfer of the employee to an uncontaminated area or atmosphere or before being handled by untrained/protected medical response personnel.

Decontamination of personnel exposed to site COCs should be decontaminated as quickly as possible via the following procedures:

- After removal from the contaminated area, the exposed individual(s) will be decontaminated by washing the contaminated areas with appropriate decontamination solutions and flushing with potable water. In particular, direct skin (dermal) contact must be addressed via decontamination with soapy water. Decontamination operations must be performed as quickly as possible, as time is off the essence in emergency medical situations. Field team personnel shall utilize

disposable PPE wherever possible to promote rapid decontamination of personnel in the EZ.

- If a respirator is used in the EZ, the respirator mask is left on the exposed individual until decontamination has been completed unless it has been determined that areas of the face were contaminated and the mask must be removed to decontaminate.
- After decontamination, the contaminated clothing is removed and skin contamination washed away. If possible, decontamination is completed before the exposure individual is taken to a medical facility.
- ONLY potable water will be used when flushing the eyes or mouth.
- All receptacles used for containing protective clothing shall be equipped with lids that can be closed to prevent the release of contaminants and the introduction of rainfall.
- Initiate first aid and CPR, upon completion of decontamination operations.
- Make certain that the injured person is accompanied to the emergency room.
- When contacting the medical consultant, give your name and telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken.
- Report incident as outlined in Section 8.0 "Accident Reporting and Investigation" of the APP.
- A map showing the route to the local hospital is shown on Figure 9-2 of the APP and will not be reproduced in this SSHP.

1.17.2 Route Map to Emergency Medical Facilities 28.B.02.n(5)

The route map to area emergency medical facilities is provided by Figure 9-2 of Section 9.2.9 "Medical Support" of the APP and need not be reproduced in this SSHP.

1.17.3 Criteria for Alerting Medical Facilities 28.B.02.n(6)

There are no specific or unusual hazards [i.e., Chemical, Biological, Radiological, Nuclear, Explosive (CBRNE)] that requires notification to area responders prior to the start of site operations. Any unanticipated medical, fire or security issue that may result during the execution of this

1.17.4 Responsibilities 28.C

The responsibilities for HAZWOPER regulated activities will be the same as for non-HAWOPER regulated activities. Both project level and AGVIQ program level responsibilities for all operations are included in Section 4.0 "Responsibilities and Lines of Authority" of the APP and will not be further elaborated upon in this SSHP.

1.17.5 Training 28.D

All training requirements for this project are discussed in Section 6.0 "Training" of the APP and will not be elaborated upon further in this SSHP.

1.17.6 Medical Surveillance 28.E

All worker surveillance requirements for this project are discussed in Section 6.0 "Training" of this APP and will not be elaborated upon further in this SSHP.

1.17.7 Resource Conservation and Recovery Act (RCRA) TSD Facilities 28.F

N/A

The criteria of EM 385 1-1, Section 28 are not applicable to the site operations nor are Treatment, Storage and Disposal (TSD) facility conditions under the requirements of 40 CFR 264/265 applicable to this project.

1.17.8 Facility/Construction Project Emergency Response 28.G

Facility/construction project emergency response emergency procedures are outlined in Section 9.2 "Emergency Response Plans" of the APP and will not be elaborated upon further in this SSHP.

Attachment 1
Completed AHAs

Activity Hazard Analysis (AHA)

ACTIVITY/WORK TASK:	**Utility Locate**	Overall Risk Assessment Code (RAC) (Use highest code)		**L**
	SIGNATURES	Activity #	2	AHA # **1**
PWD/OICC/ROICC OFFICE				
NAME & DATE ACCEPTED BY GDA:				
CONTRACT NUMBER:	N62470-12-D-7004			
TASK ORDER/DELIVERY #:	JM14			
PRIME CONTRACTOR:	AGVIQ			
SUBCONTRACTOR:	NA			
DATE OF PREPARATORY MEETING:				
DATE OF INITIAL INSPECTION:				
CONTRACTOR COMPETENT PERSON:	NA			
SITE SAFETY and HEALTH OFFICER				

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

ACCEPTANCE BY GOVERNMENT DESIGNATED AUTHORITY (GDA)

E = EXTREMELY HIGH (PWO/OICC/ROICC)

H = HIGH RISK (FEAD DIRECTOR)

M = MODERATE RISK (CM or ET or PAR)

L = LOW RISK (ET or PAR)

Review each **"Hazard"** with identified safety **"Controls"** and determine (RAC)

Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" .Place the highest RAC at the top of AHA. This is the overall risk assessment code for this activity

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible after controls are in place

"Probability" is the likelihood to cause an incident, near miss, or accident did occur and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely after controls are put in place.

Job Steps	Hazards	Controls	RAC
Site Survey/ Utility Locate	• Biological	• Prior to starting field activities, notify supervisors of known allergies to stinging insects and location of antidotes. • Use insect repellant with DEET or other insect repellent to deter being bit by mosquitoes or other stinging/biting insects. • Avoid exposure to blood borne pathogens if first aid must be provided. Use universal precautions against exposure to blood borne pathogens. • Observe ground surfaces, enclosed structures, ground water well heads, surrounding vegetation other site features for presence of spiders, bee/wasp hives, ticks, chiggers and other stinging/biting insects. • Where exposure to poisonous plants that have oils, berries or needle-like projects could cause skin irritations, infections or allergic reactions use disposable coveralls for protection.	L

IAW EM 385 01.A.13 CONTRACTOR-REQUIRED AHA "WORK WILL NOT BEGIN UNTIL THE AHA FOR THE WORK ACTIVITY HAS BEEN ACCEPTED BY THE GDA"
THE AHA SHALL BE REVIEWED AND MODIFIED AS NECESSARY TO ADDRESS CHANGING SITE CONDITION, OPERATIONS OR CHANGE OF COMPETENT/QUALIFIED PERSON'S

		• Tape pant legs to boots and ensure there are no open seams between boots and pant legs to minimize potential for access points for stinging/biting insects.	
	• Driving	• Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio while driving. Violating these rules may result in loss of military/government facility driving privileges.	L
	• Fire Prevention	• Appropriately sized, easily accessible ABC fire extinguisher in work area. • Fire extinguishers must be inspected monthly (inspection tag) and have an annual maintenance/inspection certification (tag) attached to the extinguisher.	L
	• Manual Lifting	• AGVIQ or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities, especially lifting operation involving repetitive motions. • When lifting objects, lift using knees, not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. Use heavy equipment to transfer heavy or awkward loads wherever possible. Have someone assist with the lift— especially for heavy (> 40lbs.) or awkward loads. Do not attempt to manually lift objects that should otherwise be lifted with heavy equipment. • Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift. Avoid carrying heavy objects above shoulder level.	L
	• Slips, Trips, Falls/ housekeeping	• Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet surfaces, and where unprotected holes, drainage areas, rip rap, utilities, ground protrusions exist. Observe, mark and avoid any potential slip, trip and fall hazards. • Use sturdy hard-toe work boots with sufficient ankle support. • Institute and maintain good housekeeping practices. Clean Work Areas as activities proceed. Remove and store materials from pathways and commonly traveled areas as soon as possible. • Three points of contact when enter/exiting equipment.	L
	▪ Vehicular Hazards	• When parking your vehicle, park in a manner that will allow for exit from vehicle, park vehicle so it can serve as a barrier, where practicable. • Shut off and secure site vehicles prior to exiting them. Park on level ground where possible. If parking on an incline, engage parking brake. If the vehicle has a manual transmission, ensure the transmission is in gear (not neutral) and the parking brake is engaged before exiting the vehicle. • Exercise caution when exiting traveled way or parking along street— avoid sudden stops, use flashers, etc.	L

		• All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests. • Eye protection should be worn to protect from flying debris. • Remain aware of factors that influence traffic-related hazards and required controls— sun glare, rain, wind, limited sight-distance, hills etc. • Always remain aware of an escape route, such as behind an established barrier or parked vehicle. • Always pay attention to moving traffic – never assume drivers are looking out for you. • Work as far from traveled way as possible to avoid creating confusion for drivers. • When workers must face away from a haul truck to perform assigned duties, a "buddy system" should be used, where one worker is looking toward traffic. • Work area should be protected by a physical barrier. • Lookouts should be used when physical barriers are not available or practical.	

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Miscellaneous power and manual hand tools. • First Aid/BBP/CPR shield • Communication devices	• Review APP by new site personnel. • 1st Aid/CPR (2 per site when medical attention a medical facility or physician is more than 5 minutes away to two or more employees. • Supervisors - BBLPS, 30 hour OSHA Construction Safety Training or equivalent	• Visual Inspections of designated work areas identify and address hazardous conditions. • Equipment inspections and maintenance. • Emergency Response equipment Inspections • (Fire Extinguishers, Eye wash First Aid/CPR etc.)

PRINT NAME **SIGNATURE**

Supervisor Name: _____ _____ **Date/Time:** _____

Safety Officer Name: _____ _____ **Date/Time:** _____

Employee Name(s): _____ _____ **Date/Time:** _____

_____ _____ **Date/Time:** _____

_____ _____ **Date/Time:** _____

_____ _____ **Date/Time:** _____

_____ _____ **Date/Time:** _____

_____ _____ **Date/Time:** _____

_____ _____ **Date/Time:** _____

_____ _____ **Date/Time:** _____

_____ _____ Date/Time: _____

Activity Hazard Analysis (AHA)

ACTIVITY/WORK TASK:	**Groundwater well installation/Soil sampling and Well Development**	Overall Risk Assessment Code (RAC) (Use highest code)					**L**
	SIGNATURES	Activity #	3		AHA #		**1**
PWD/OICC/ROICC OFFICE		**Risk Assessment Code (RAC) Matrix**					
NAME & DATE ACCEPTED BY GDA:		**Severity**	**Probability**				
CONTRACT NUMBER:	N62470-12-D-7004		Frequent	Likely	Occasional	Seldom	Unlikely
TASK ORDER/DELIVERY #:	JM14	Catastrophic	**E**	**E**	**H**	**H**	**M**
PRIME CONTRACTOR:	AGVIQ LLC.	Critical	**E**	**H**	**H**	**M**	**L**
SUBCONTRACTOR:	TBD	Marginal	**H**	**M**	**M**	**L**	**L**
DATE OF PREPARATORY MEETING:		Negligible	**M**	**L**	**L**	**L**	**L**
DATE OF INITIAL INSPECTION:							
CONTRACTOR COMPETENT PERSON:	NA						
SITE SAFETY and HEALTH OFFICER							
ACCEPTANCE BY GOVERNMENT DESIGNATED AUTHORITY (GDA)		Review each **"Hazard"** with identified safety **"Controls"** and determine (RAC)					
E = EXTREMELY HIGH (PWO/OICC/ROICC)		Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" .Place the highest RAC at the top of AHA. This is the overall risk assessment code for this activity					
H = HIGH RISK (FEAD DIRECTOR)		**"Severity"** is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible after controls are in place					
M = MODERATE RISK (CM or ET or PAR)							
L = LOW RISK (ET or PAR)		**"Probability"** is the likelihood to cause an incident, near miss, or accident did occur and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely after controls are put in place.					

Job Steps	**Hazards**	**Controls**	**RAC**
Material Sampling - General hazards with sampling			
Sampling with long handled tools	• Muscle/back strain, over-exertion, body torque, improper position, fatigue • Hand fatigue, blisters • Handle striking body or head • Exposure to COC vapors	• Do not twist at the waist, maintain an upright posture, handle should be between the workers thigh and lower chest. • Do not over exert, do not jerk • Take breaks • Wear proper PPE listed in the SSHP • Monitor breathing zone in accordance with the SSHP	**L**
Sample Preparation & Packaging Preparation of sample containers	• Handling of chemicals/spilling of chemicals on skin, clothes or eyes.	• Never leave open chemicals unattended. • Know location of nearest eyewash station. • Wear proper PPE. (nitrile gloves, safety glasses, acid apron) • Keep prep and pack area well ventilated (open window) • Know location of MSDS, absorbent spill cloth, Hazmat spill kit • Make sure all caps are secure • Know location of MSDS forms	**L**

IAW EM 385 01.A.13 CONTRACTOR-REQUIRED AHA "WORK WILL NOT BEGIN UNTIL THE AHA FOR THE WORK ACTIVITY HAS BEEN ACCEPTED BY THE GDA"
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Receiving pre-preserved bottles	• Glass containers/broken glass, cuts to hands • Packaging material / acid leak	• Use caution when opening package • Wear proper PPE (nitrile gloves, safety glasses)	**L**
Receiving coolers from the field	• Heavy coolers/back injury • Ticks, insects/Lyme Disease, spider bites and stings • Poison Ivy, Sumac/ rash	• Bend at knees, ask for assistance • Use handtruck when necessary • Use caution when taking contents out of cooler. Inspect coolers for ticks/spiders • Apply ivy block	**L**
Preparing coolers for delivery	• Strapping machine/ tripping over unrolled tape. • Tape gun/cuts to hands • Heavy coolers/back injury	• Make sure strapping machine is properly rolled. • Use caution, be aware of cutting edge; To extent possible, break tape by pushing tape gun away from you; ensure hands and legs are not in the path of the tape gun • Bend at knees, ask for assistance • Use handtruck as necessary	**L**
	Drilling Equipment	• Drillers must verify that the rig is properly leveled and stabilized. • Driller must check for overhead power lines before raising mast. A minimum distance of 10ft between mast and overhead lines. • Personnel should be cleared from sides and rear of rig while mast is raised. Driller will not drive while mast is in the raised position. • Do not wear loose fitting clothing or watches that may get caught in moving parts • Kill wire or switch must be able to located and activated by all personnel supporting the operation. • Drill rig should be equipped with a fire extinguisher. • The driller is to verify that the drill rig and cabling is maintained, in proper working condition and inspected before operation. Keep documentation on site. • Avoid/take care around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear. • Equipment shall only be operated by personnel qualified by prior training or experience. • Do not smoke or use other spark-producing equipment near rig. • For pneumatically pressured lines, safety lashes or whip checks should be affixed to hoses to prevent injury in the event of rupture. • Drillers are to verify that all machine guards are in place while in operation.	**M**

	Pressure Washing	• Inspect pressure washer before use and confirm dead man switch fully operational. • The wand must always be pointed at the work area. • The Wand trigger should never be tied down in the open position. • Never point the wand at yourself or another worker. • The wand must be at least 42 inches from the trigger to the tip. • The operator must maintain good footing. • Non-operators must remain a safe distance from the operator. • No unauthorized attachment may be made to the unit. • Do not modify the wand. • All leaks or malfunctioning equipment must be repaired immediately or the unit taken out-of-service. • Rain gear (disposal coated chemical suits for Hazwoper operations), 16-inch-high steel-toed rubber boots, safety glasses, hard hat with face shield, and inner and outer nitrile gloves should be worn, at a minimum during pressure washing operations.	L
	Concrete/Grout Mixing	• When mixing concrete/grout for the installation groundwater (GW) wells concrete pads, grouting GW well annulus, do not breathe cement dust or get concrete dust or mixed concrete on your skin or in your eyes. • When emptying concrete/cement bags for hand mixing of concrete, have an assistant mist cement powder to minimize airborne cement dust. • Wear dust mask when visible dust emission occur in personal breathing zone.	**M**
Material Sampling Soil Sampling	• Excavations	• Inspect the excavation every day and after everyday hazard increasing event. Documentation of this inspection must be maintained daily and available as part of the project record. Documentation should be available on-site for inspection. • Slope excavations in accordance with the APP. • Do not enter excavation until the compete person gives you permission.	**L**
Water Sampling	• Confined Spaces	• Do not enter Frac-tanks or other holding tanks.	**L**
	• Exposure to Liquids	▪ Follow air monitoring requirement in the SSHP ▪ Follow PPE listed in the SSHP, if there is a potential for splash don face shields, goggles, and coated tyvek.	**L**
Debris Sampling	• Concrete dust	• Use dust control methods such as water spray. • Follow air monitoring section of the SSHP.	**L**

	Manual Lifting	• AGVIQ personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities, especially lifting operation involving repetitive motions. • When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. Use heavy equipment to transfer heavy or awkward loads wherever possible. Have someone assist with the lift—especially for heavy (> 40lbs.) or awkward loads. Do not attempt to manually lift objects that should otherwise be lifted with heavy equipment. • Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift. Avoid carrying heavy objects above shoulder level.	**L**

Equipment to be Used	**Training Requirements/Competent or Qualified Personnel name(s)**	**Inspection Requirements**
• Fire extinguisher (with fuel and electrical sources) • Eye wash (small portable type) • Miscellaneous power and manual hand tools. • First Aid/BBPK/CPR shield • Spill Kit • Communication devices	• Review APP by new site personnel. • 1st Aid/CPR (2 per site when medical attention a medical facility or physician is more than 5 minutes away to two or more employees. • Supervisors - BBLPS, 30 hour OSHA Construction Safety Training or equivalent • Heavy equipment operators qualified previously • Competent Person Requirement & Name: TBD	• Visual Inspections of designated work areas identify and address hazardous conditions. • Equipment inspections and maintenance. • Emergency Response equipment Inspections • (Fire Extinguishers, Eye wash First Aid/CPR etc.)

PRINT NAME	SIGNATURE	
Supervisor Name:		**Date/Time:**
Safety Officer Name:		**Date/Time:**
Employee Name(s):		**Date/Time:**
		Date/Time:
		Date/Time:
		Date/Time:
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Activity Hazard Analysis (AHA)

ACTIVITY/WORK TASK:	**Free Product Gauging, Monitoring, Sampling from Groundwater Wells**	Overall Risk Assessment Code (RAC) (Use highest code)			**M**
	SIGNATURES	Activity #	1	AHA #	**1**
PWD/OICC/ROICC OFFICE					
NAME & DATE ACCEPTED BY GDA:					
CONTRACT NUMBER:	N62470-12-D-7004				
TASK ORDER/DELIVERY #:	JM14				
PRIME CONTRACTOR:	AGVIQ LLC				
SUBCONTRACTOR:					
DATE OF PREPARATORY MEETING:					
DATE OF INITIAL INSPECTION:					
CONTRACTOR COMPETENT PERSON:					
SITE SAFETY and HEALTH OFFICER					

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

ACCEPTANCE BY GOVERNMENT DESIGNATED AUTHORITY (GDA)

E = EXTREMELY HIGH (PWO/OICC/ROICC)

H = HIGH RISK (FEAD DIRECTOR)

M = MODERATE RISK (CM or ET or PAR)

L = LOW RISK (ET or PAR)

Review each **"Hazard"** with identified safety **"Controls"** and determine (RAC)

Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" .Place the highest RAC at the top of AHA. This is the overall risk assessment code for this activity

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible after controls are in place

"Probability" is the likelihood to cause an incident, near miss, or accident did occur and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely after controls are put in place.

Job Steps	Hazards	Controls	RAC
Free Product Gauging, Monitoring, Sampling from Groundwater Wells	Buried Utilities or Unknown Objects	• Contact **DIGSAFE SYSTEM, INC.** to secure a utility owner verification request number at **(800) DIG SAFE or 811 or www.digsafe.com** for utility clearance verification. Keep copies of any written documentation (faxes, email printouts) regarding utility location verification provided by utilities owners in the office project file and in a working field file on-site. • Photo document owner provided field utility mark-outs as related to proposed limits of ground disturbing activities prior to the start of work. • Conduct "third" party utility clearance when the locations of utilities may be in question and document results of third party utility location. • Determine if a NAVFAC "Excavator Permit" is required prior to performing any ground disturbing activities.	L

		• Hand dig around identified utilities (within 5′) or as otherwise required by a NAVFAC issued excavation permit. • Review base engineering records or drawings against utility owner or third party utility mark-out to verify any potential differences. • Protect and preserve the markings of approximate locations of facilities until the markings are no longer required for safe and proper excavations. If the markings of utility locations are destroyed or removed before excavation commences or is completed, utilities must be relocated/marked. • Where unknown or unanticipated buried objects are encountered (i.e. drums, tanks, cylinders, munitions of explosive concern, soil with unusual staining or odor) AGVIQ or subcontractor personnel shall 1) secure equipment to the extent possible, without causing bodily injury, 2) evacuate the work area and 3) immediately notify the site manager, SSHO or PM of the encountered condition. Work may only resume with appropriate documentation/notification that exposure hazards (physical or chemical) do not exist. Notify AGVIQ Project Manager and program officials (and applicable NAVFAC POCs via the Project Manager) and do not resume work until authorized to do so.	
Free Product Gauging, Monitoring, Sampling from Groundwater Wells	Chemical Exposure	• All personnel performing this task shall be trained in accordance with 29CFR1910.120 and been rolled in a medical monitoring program. • Regulated or hazardous waste or materials shall not be transported by company or employee's vehicle. • Be cognizant of the potential of harmful gas or vapor build-up in the well head areas or worker breathing zone. • Adhere to PPE and action monitoring level requirements identified in APP. • Review contaminants of concern for the project and consult project specific APP. • Practice "no hand-face" contact at all times. • Always wash hands before eating, drinking, smoking and leaving site. • Do not allow dermal contact or incidental ingestion of impacted groundwater or recovered free product. Skin contact with contaminated water, debris, or equipment shall be avoided at all times. Do not kneel or step in potentially contaminated media without first donning proper PPE. • Exercise good hygiene practices. Always wash hands before eating, drinking, smoking and leaving site. Only eat, drink, smoke or chew tobacco in designated areas.	L

		• When mixing concrete for the installation of concrete pads or bollard footings, don not breath cement dust or get concrete dust or mixed concrete on your skin or in your eyes.	
	Drilling Operations	• Drill rig inspections and maintenance and documentation of such inspections and maintenance shall be performed daily prior to the start of on-site work. • The drill rig should not to be operated in inclement weather. A "cat-head" drive mechanism shall not be operated during precipitation events. • Suspended drill rods shall not be passed over ground personnel and ground personnel shall not be allowed to walk under or in front of suspending drilling rods. • The drill rig operator is to verify that the rig is properly leveled and stabilized (extension of stabilizers on firm ground) before raising the mast. • Personnel should be cleared from the sides and rear of the rig before the mast is raised. • The driller is not to drive the rig with the mast in the raised position. • The driller must check for overhead power lines before raising the mast. A minimum distance of 10 ft between mast and overhead lines (<50 kV) is recommended. Increased separation will be required for lines greater than 50 kV. See Electric Safety in this APP for proper separation requirements and other standard operating procedures associated with working near power transmission lines. • Do not raise drill rig masts underneath or adjacent toward overhead utilities. Do not drive drill rig mast raised. Be cognizant of utility pole guy wires and above ground transformers in relation to operating drill rigs. • Personnel should stand clear before equipment startup. Maintain eye contact with operator prior to/while approaching drill rig. • The driller is to verify that the rig is in neutral when the operator is not at the controls. • Become familiar with the hazards associated with the drilling method used. • Do not wear loose-fitting clothing, watches, etc., that may get caught in moving parts. • Do not smoke or permit other spark-producing equipment around drill rig.	M

		• The drill rig must be equipped with a kill wire or switch and personnel associated with the drilling operation are to be informed of its location. • When lines are pressurized on or adjacent to the drill rig as a result of the drilling or grouting operations, safety lashings/whip line checks, clips or other suitable restriction means should be in place on hoses/connections to prevent injury in the event connections become dislodged or hoses ruptures. • Be aware and stand clear of heavy objects that are hoisted overhead by the drill rig. • The driller is to verify that all machine guards are in place while the rig is in operation. • The drill rig should be equipped with at least one fire extinguisher. • If the drill rig comes into contact with electrical wires and becomes electrically energized, do not touch any part of the rig or any person in contact with the rig and stay as far away as possible. Notify emergency personnel immediately. • Ensure that all machine guards are in place to prevent contact with drive lines, belts, pinch points, mechanically energized equipment, or any other sources of mechanical injury. • Unplugging jammed equipment will only be performed when equipment has been shut down, blocked, all sources of energy have been isolated and tested. Maintenance and repair of equipment that results in the removal of guards or would otherwise put anyone at risk requires lockout of that equipment prior to work.	
Free Product Gauging, Monitoring, Sampling from Groundwater Wells	Slips, Trips, Falls	• Clear walkways work areas of objects Institute and maintain good housekeeping practices. Observe/avoid debris in a work area. • Only walk or climb only on surfaces designed for personnel access. • Be aware of poor footing and potential slipping and tripping hazards in the work area (holes, ditches, rip rap, utilities, and wet surfaces). Observe and avoid areas of unprotected holes and ground penetrations or protrusions. Employees walking in ditches, swales and other drainage structures adjacent to roads, across undeveloped land or in controlled industrial work/process areas must use caution to prevent slips and falls, which could result in twisted or sprained ankles, knees, and backs.	L

		• Sturdy, hard toe work boots that provide ankle support shall be used during field operations.	
	Visible Lighting	• Perform tasks in daylight hours.	L
	Cuts/Abrasions	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects. • Do not use razor knives. • Cut away from the body and never towards another worker. • Maintain all hand and power tools in a safe condition. Remove damaged hand and power tools from service.	L
	Fire - Explosion Prevention	• Use only metal safety cans for storage and transfer of fuel. • Use funnels and nozzles during fueling operations. • Appropriately sized, easily accessible ABC fire extinguisher in work area. Fire extinguishers must be inspected monthly (inspection tag) and have an annual maintenance/inspection certification (tag) attached to the extinguisher. • Fire extinguishers shall be approved by a nationally recognized testing laboratory and labeled to identify the listing and labeling organization and the fire test and performance standard that the fire extinguisher meets or exceeds.	L
Free Product Gauging, Monitoring, Sampling from Groundwater Wells	Sample Handling	• Caution should be exercised when filling bottles containing acid or base preservatives. Both liquid and vapor phases of acid can cause severe burns. • Following sample collection, sample container lids should be tightened securely to prevent any leaks, and the containers should be rinsed with clean water to ensure that they are free of chemical constituents. Sample activities, sample collection, and equipment decontamination procedures. • Minimize transportation of drums or other containers with IDW. • Sample only labeled drums or drums known to contain IDW. Unknown drums or drums that show evidence of excessive buckling/bulging, corrosion, vapors, crystallization, unusual discoloration or other abnormalities may not be sampled without the evaluation of engineering controls, proper PPE air monitoring equipment and the use properly trained personnel familiar with the sampling of unknown drum contents.	L
	Hand & Power tools	• Select and use the proper tool for the task. • Do not use tools that have been damaged or repaired in a manner which is not consistent with manufacturer's requirements.	L

		• Tools inspected before use. Maintain all tools in a safe condition • Electric cords must be free from defects. • All required guards shall be in place and functional. • Hand held powered tools equipped with constant pressure switch. • Tools disconnected from energy source when not in use. • Do not leave hand held power in standing water/liquid. • Electrical power tools and equipment must be effectively grounded or double-insulated UL approved.	
	Manual Lifting	• Personnel to notify supervisors or safety representatives of pre-existing medical conditions that may be aggravated or re-injured by lifting activities such that an evaluation of operational procedures may be performed with regard to the required task. • When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports should be considered. • Plan storage and staging to minimize lifting or carrying distances. • Split heavy loads into smaller loads. • Have someone assist with the lift— especially for heavy (> 40lbs.) or awkward loads. (Note: If AGVIQ employee is not capable of carrying 40 lbs., seek assistance.). • Make sure the path of travel is clear prior to the lift. • Do not lift manhole covers, open/lift hatches or other access points to vessels, tanks or subsurface structures without proper authorization to do so, proper tools and proper personnel protective equipment. • Use carts, hand trucks additional personnel etc. to move large, awkward loads. • Avoid carrying heavy objects above shoulder level.	L
Free Product Gauging, Monitoring, Sampling from Groundwater Wells	High Ambient Temperature	• Provide and drink fluids to prevent worker dehydration. • Minimize intake of caffeinated fluids. • Institute a proper work-break regiment in a cool area to avoid heat stress symptoms and overexertion. • Monitor for signs and symptoms of heat stress (maintain use of buddy system) when the ambient air temperature exceeds 70˚F, the relative humidity is high (>50 percent), or when workers exhibit symptoms of heat stress and especially when wearing disposable or other types of coveralls. 1) Heat Syncope = Sluggishness or fainting while standing erect or immobile in heat.	L

		Treatment = Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete. 2) Heat Rash = Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure. *Treatment = Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.* 3) Heat Cramps = Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours. *Treatment = Remove to cooler area. Rest lying down. Increase fluid intake.* 4) Heat exhaustion = Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low. *Treatment = Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.* 5) Heat Stroke = Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature. *Treatment = Cool rapidly by soaking in cool–but not cold–water. Call ambulance, and get medical attention immediately!*	
	Low Ambient Temperature	• Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather. • Frequent intake of non-caffeinated fluids to maintain body core temperature. • Frequent intake of non- caffeinated to prevent dehydration. • Obtain and review weather forecast— be aware of predicted weather systems. • Observe one (buddy system) another for initial signs of cold-related disorders. • Frequent observance of Wind Chill Chart (APP) to assist with work warming regiment determination and frostbite avoidance	L
Free Product Gauging, Monitoring, Sampling from Groundwater Wells	Vehicular Traffic	• Shut off and secure site vehicles prior to exiting them. Park on level ground where possible. If parking on an incline, engage parking brake. If the vehicle has a manual transmission, ensure the transmission is in gear (not neutral) and the parking brake is engaged before exiting the vehicle. • Exercise caution when exiting traveled way or parking along street— avoid sudden stops, use flashers, etc. • Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.	L

		• All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests. • All road control devices and signs are to be obeyed. • ANY vehicle on plant displaying a flashing red light or ANY forklift truck (loaded or empty) shall be given the right-of-way. • When meeting a vehicle so equipped or a forklift truck, pull to the right edge of the road and stop until the approaching vehicle passes. • When approaching from the rear, maintain a 100-foot distance. DO NOT PASS.	
	Electrical Safety	• If/when electrical extension cords are required to complete work, extension cords must be: - Equipped with third-wire grounding. - Covered, elevated, or protected from damage when passing through work areas. - Protected from pinching if routed through doorways. - Not fastened with staples, hung from nails, or suspended with wire. - Extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed. - Inspected all extension cords daily for structural integrity, ground continuity, and damaged insulation. - Kept out of water/liquids. - Electrical power circuits should be inspected before plugging in extension cords. - Maintain proper separation between Power Transmission Lines/over overhead utilities and drill rig masts. See Electric Safety Section in HSP for references to proper separation between operating equipment and power transmission lines/overhead utilities.	M
	Other	• **Verify that EMS services are available and can respond in a prompt manner prior to the start of work.** • Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio while driving on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges. • Base or Local Emergency medical Service and Fire Dispatch numbers programmed into cellular phones. Have hospital route maps readily available. • Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.	L

EQUIPMENT REQUIRED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
• Fire extinguisher (with fuel and electrical sources) • Eye wash (small portable type) • Miscellaneous power and manual hand tools. • First Aid/BbPK/CPR shield • Extension chords • Spill Kit • Haul trucks (delivered heavy equipment or materials) • Dolly, wheelbarrow, trash cans with casters to move removed debris to roll-off container • Communication devices • Pumps/controllers • Water quality meters • Water level indicators	• Visual Inspections of designated work areas identify and address hazardous conditions. • Equipment inspections and maintenance. • Emergency Response equipment Inspections • (Fire Extinguishers, Eye wash First Aid/CPR etc.) • Inspections of hand tools (power) and extension cords if used.	• Review AHA with all task personnel • Review of APP for new site personnel. • 1st Aid/CPR (2 per site when medical attention a medical facility or physician is more than 5 minutes away to two or more employees. • Supervisors - SC-HW (29CFR1910.120(e)(4), 30 hour OSHA Construction Safety Training or equivalent • All personnel have training and medical surveillance per 29CFF1910.120. • Competent Person Requirement & Name: NA

PRINT NAME	SIGNATURE	
Supervisor Name:		**Date/Time:**
Safety Officer Name:		**Date/Time:**
Employee Name(s):		**Date/Time:**
		Date/Time:
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Activity Hazard Analysis (AHA)

ACTIVITY/WORK TASK:	Groundwater Sampling and Monitoring events	Overall Risk Assessment Code (RAC) (Use highest code)			**M**
	SIGNATURES	Activity #	1	AHA #	**1**
PWD/OICC/ROICC OFFICE		**Risk Assessment Code (RAC) Matrix**			
NAME & DATE ACCEPTED BY GDA:					
CONTRACT NUMBER:	N62470-12-D-7004				
TASK ORDER/DELIVERY #:	JM14				
PRIME CONTRACTOR:	AGVIQ LLC				
SUBCONTRACTOR:					
DATE OF PREPARATORY MEETING:					
DATE OF INITIAL INSPECTION:					
CONTRACTOR COMPETENT PERSON:					
SITE SAFETY and HEALTH OFFICER					

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

ACCEPTANCE BY GOVERNMENT DESIGNATED AUTHORITY (GDA)

Review each **"Hazard"** with identified safety **"Controls"** and determine (RAC)

E = EXTREMELY HIGH (PWO/OICC/ROICC)	Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" .Place the highest RAC at the top of AHA. This is the overall risk assessment code for this activity
H = HIGH RISK (FEAD DIRECTOR)	**"Severity"** is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible after controls are in place
M = MODERATE RISK (CM or ET or PAR)	
L = LOW RISK (ET or PAR)	**"Probability"** is the likelihood to cause an incident, near miss, or accident did occur and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely after controls are put in place.

Job Steps	Hazards	Controls	RAC
	Slips, Trips, Falls	• Clear walkways work areas of objects Institute and maintain good housekeeping practices. Observe/avoid debris in a work area. • Only walk or climb only on surfaces designed for personnel access. • Be aware of poor footing and potential slipping and tripping hazards in the work area (holes, ditches, rip rap, utilities, and wet surfaces). Observe and avoid areas of unprotected holes and ground penetrations or protrusions. Employees walking in ditches, swales and other drainage structures adjacent to roads, across undeveloped land or in controlled industrial work/process areas must use caution to prevent slips and falls, which could result in twisted or sprained ankles, knees, and backs. • Sturdy, hard toe work boots that provide ankle support shall be used during field operations.	L

	Visible Lighting	• Perform tasks in daylight hours.	L
	Cuts/Abrasions	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects. • Do not use razor knives. • Cut away from the body and never towards another worker. • Maintain all hand and power tools in a safe condition. Remove damaged hand and power tools from service.	L
	Fire - Explosion Prevention	• Matches and other spark producing devices, including automobile cigarette lighters, are not allowed on this facility. • Use only metal safety cans for storage and transfer of fuel. • Use funnels and nozzles during fueling operations. • Appropriately sized, easily accessible ABC fire extinguisher in work area. Fire extinguishers must be inspected monthly (inspection tag) and have an annual maintenance/inspection certification (tag) attached to the extinguisher. • Fire extinguishers shall be approved by a nationally recognized testing laboratory and labeled to identify the listing and labeling organization and the fire test and performance standard that the fire extinguisher meets or exceeds.	L
	Hand & Power tools	• Select and use the proper tool for the task. • Do not use tools that have been damaged or repaired in a manner which is not consistent with manufacturer's requirements. • Tools inspected before use. Maintain all tools in a safe condition • Electric cords must be free from defects. • All required guards shall be in place and functional. • Hand held powered tools equipped with constant pressure switch. • Tools disconnected from energy source when not in use. • Do not leave hand held power in standing water/liquid. • Electrical power tools and equipment must be effectively grounded or double-insulated UL approved.	L
	Manual Lifting	• Personnel to notify supervisors or safety representatives of pre-existing medical conditions that may be aggravated or re-injured by lifting activities such that an evaluation of operational procedures may be performed with regard to the required task. • When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports should be considered. • Plan storage and staging to minimize lifting or carrying distances. • Split heavy loads into smaller loads.	L

		• Have someone assist with the lift— especially for heavy (> 40lbs.) or awkward loads. (Note: If AGVIQ employee is not capable of carrying 40 lbs., seek assistance.). • Make sure the path of travel is clear prior to the lift. • Do not lift manhole covers, open/lift hatches or other access points to vessels, tanks or subsurface structures without proper authorization to do so, proper tools and proper personnel protective equipment. • Use carts, hand trucks additional personnel etc. to move large, awkward loads. • Avoid carrying heavy objects above shoulder level.	
	Low Ambient Temperature	• Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather. • Frequent intake of non-caffeinated fluids to maintain body core temperature. • Frequent intake of non- caffeinated to prevent dehydration. • Obtain and review weather forecast— be aware of predicted weather systems. • Observe one (buddy system) another for initial signs of cold-related disorders. • Frequent observance of Wind Chill Chart (APP) to assist with work warming regiment determination and frostbite avoidance	L
	Vehicular traffic & Haul trucks	• Shut off and secure site vehicles prior to exiting them. Park on level ground where possible. If parking on an incline, engage parking brake. If the vehicle has a manual transmission, ensure the transmission is in gear (not neutral) and the parking brake is engaged before exiting the vehicle. • Exercise caution when exiting traveled way or parking along street— avoid sudden stops, use flashers, etc. • Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier. • All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests. • **All haul trucks must following the designated Haul Route established for the project.** • Haul truck operators should be familiar with their equipment and inspect all equipment before use.	L

		• Haul truck operators should ensure all persons are clear before operating trucks or equipment. Before moving, operators should sound horn or alarm. All equipment should be equipped with an operational backing alarm. • Haulage trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots. • Employees should stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the equipment operator. • Where grades are steep, provide signs indicating the actual grade as well as measures for a runaway truck. • Haul roads should be well lit, sufficiently wide (at least 50% of the width of the equipment on both sides of road) and equipped with reflectors to indicate access points. • Haul roads should have adequate right-of-way signs indicating haul directions, where appropriate	
	Other	• **Verify that EMS services are available and can respond in a prompt manner prior to the start of work.** • Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio while driving. Violating these rules may result in loss of military/government facility driving privileges. • Buddy System maintained for groundwater sampling. • Base or Local Emergency medical Service and Fire Dispatch numbers programmed into cellular phones. Have hospital route maps readily available. • Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.	L

EQUIPMENT REQUIRED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	RAC
• Fire extinguisher (with fuel and electrical sources) • Eye wash (small portable type) • Miscellaneous power and manual hand tools. • First Aid/BbPK/CPR shield • Extension chords • Spill Kit • Haul trucks (delivered heavy equipment or materials) • Dolly, wheelbarrow, trash cans with casters to move removed debris to roll-off container • Communication devices • Pumps/controllers • Water quality meters • Water level indicators	• Visual Inspections of designated work areas identify and address hazardous conditions. • Equipment inspections and maintenance. • Emergency Response equipment Inspections • (Fire Extinguishers, Eye wash First Aid/CPR etc.) • Inspections of hand tools (power) and extension cords if used.	• Review AHA with all task personnel • Review of APP for new site personnel. • 1st Aid/CPR (2 per site when medical attention a medical facility or physician is more than 5 minutes away to two or more employees. • Supervisors - SC-HW (29CFR1910.120(e)(4), 30 hour OSHA Construction Safety Training or equivalent • All personnel have training and medical surveillance per 29CFF1910.120. • Competent Person Requirement & Name: NA	

PRINT NAME	**SIGNATURE**	
Supervisor Name:		**Date/Time:**
Safety Officer Name:		**Date/Time:**
Employee Name(s):		**Date/Time:**
		Date/Time:
		Date/Time:
		Date/Time:
		Date/Time:
		Date/Time:
		Date/Time:
		Date/Time:
		Date/Time:

IAW EM 385 01.A.13 CONTRACTOR-REQUIRED AHA "WORK WILL NOT BEGIN UNTIL THE AHA FOR THE WORK ACTIVITY HAS BEEN ACCEPTED BY THE GDA"
THE AHA SHALL BE REVIEWED AND MODIFIED AS NECESSARY TO ADDRESS CHANGING SITE CONDITION, OPERATIONS OR CHANGE OF COMPETENT/QUALIFIED PERSON'S

Activity Hazard Analysis (AHA)

ACTIVITY/WORK TASK:	**Management of Generated Waste**	Overall Risk Assessment Code (RAC) (Use highest code)					**M**
	SIGNATURES	Activity #	1	AHA #			**1**
PWD/OICC/ROICC OFFICE		**Risk Assessment Code (RAC) Matrix**					
NAME & DATE ACCEPTED BY GDA:							
CONTRACT NUMBER:	N62470-12-D-7004	**Severity**	**Probability**				
TASK ORDER/DELIVERY #:	JM14						
PRIME CONTRACTOR:	AGVIQ LLC,		Frequent	Likely	Occasional	Seldom	Unlikely
SUBCONTRACTOR:	**TBD**						
DATE OF PREPARATORY MEETING:		Catastrophic	**E**	**E**	**H**	**H**	**M**
DATE OF INITIAL INSPECTION:		Critical	**E**	**H**	**H**	**M**	**L**
CONTRACTOR COMPETENT PERSON:	NA	Marginal	**H**	**M**	**M**	**L**	**L**
SITE SAFETY and HEALTH OFFICER		Negligible	**M**	**L**	**L**	**L**	**L**
ACCEPTANCE BY GOVERNMENT DESIGNATED AUTHORITY (GDA)		Review each **"Hazard"** with identified safety **"Controls"** and determine (RAC)					
E = EXTREMELY HIGH (PWO/OICC/ROICC)		Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" .Place the highest RAC at the top of AHA. This is the overall risk assessment code for this activity					
H = HIGH RISK (FEAD DIRECTOR)		**"Severity"** is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible after controls are in place					
M = MODERATE RISK (CM or ET or PAR)							
L = LOW RISK (ET or PAR)		**"Probability"** is the likelihood to cause an incident, near miss, or accident did occur and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely after controls are put in place.					

Job Steps	Hazards	Controls	RAC
	• Heavy Equipment	• Use caution around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear. • Equipment shall only be operated by personnel qualified by prior training or experience. • Ensure that a stable ground surface is available for the operation of heavy equipment. • Equipment operators shall not leave the cab of the equipment while they are lifting/controlling a load unless the load has been delivered to its intended transport location or the load has been fully secured (no potential for rolling onto or crushing ground personnel) and the equipment and controls are fully secured/disengaged and equipment is “de-energized”.	**L**
	• Pinched/Struck-by/ Caught-in-between	• Sufficient separation between ground support personnel and any operating heavy equipment must be maintained. • Wear reflective vests or high visibility clothing to promote visibility of ground personnel by equipment operators. • Isolate equipment swing areas from workers, fixed objects or other equipment. Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. Make/maintain eye contact with operators before approaching equipment. Do not approach equipment from rear or from blind spot of operator. Stay out of the swing radius of operating heavy equipment. • Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations. • Ensure equipment has operable back-up alarms. • Step away from heavy equipment when adjustments (positioning) are made. • Ensure heavy equipment operator has spotter for obstructed views and backing up.	**L**
	• Contact with potentially contaminated soils	• Follow air monitoring and PPE sections of the SSHP • Do not kneel or sit on the ground.	**L**

			L
	• Contact with potentially contaminated soils	• Follow air monitoring and PPE sections of the SSHP • Do not kneel or sit on the ground.	**L**
	• Haul trucks & Vehicular traffic	• All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests. • All haul trucks must following the designated Haul Route established for the Site. • Haul truck operators should ensure all persons are clear before operating trucks or equipment. Before moving, operators should sound horn or alarm. All equipment should be equipped with an operational backing alarm. • Haul trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots. • Employees should stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the equipment operator. • Haul roads should have adequate right-of-way signs indicating haul directions, where appropriate • Ground personnel shall not approach haul trucks from the rear or blind spots of haul truck operators.	**L**
	• Pressure washing	• Only trained, authorized personnel may operate the pressure washer. • Follow manufacturer's safety and operating instructions. • Inspect pressure washer before use and confirm a power shut-off or emergency stop switch is fully operational. • The wand must always be pointed at the work area only. • The trigger should never be tied down in the open position. • Never point the wand at yourself or another worker. • The wand must be at least 42 inches from the trigger to the tip. • The operator must maintain good footing. • Non-operators must remain a safe distance from the operator. • No unauthorized attachment may be made to the unit. • Do not modify the wand. • All leaks or malfunctioning equipment must be repaired immediately or the unit taken out-of-service.	**L**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Fire extinguisher (with fuel and electrical sources) • Eye wash (small portable type) • Miscellaneous power and manual hand tools. • First Aid/BBPK/CPR shield • Track excavator(s) • Loader • Spill Kit • Communication devices	• Review APP by new site personnel. • 1st Aid/CPR (2 per site when medical attention a medical facility or physician is more than 5 minutes away to two or more employees. • Supervisors - BBLPS, 30 hour OSHA Construction Safety Training or equivalent • Heavy equipment operators qualified by previous training or experience. • Competent Person Requirement & Name: NA	• Visual Inspections of designated work areas identify and address hazardous conditions. • Equipment inspections and maintenance. • Cold Weather Gear • Emergency Response equipment Inspections • (Fire Extinguishers, Eye wash First Aid/CPR etc.)

PRINT NAME	**SIGNATURE**	
Supervisor Name: _____	_____	**Date/Time:** _____
Safety Officer Name: _____	_____	**Date/Time:** _____
Employee Name(s): _____	_____	**Date/Time:** _____
_____	_____	**Date/Time:** _____
_____	_____	**Date/Time:** _____
_____	_____	**Date/Time:** _____
_____	_____	**Date/Time:** _____
_____	_____	**Date/Time:** _____
_____	_____	**Date/Time:** _____
_____	_____	**Date/Time:** _____
_____	_____	Date/Time: _____

Attachment 2
Accident Prevention Plan
Acknowledgement Form

ACCIDENT PREVENTION PLAN

ACKNOWLEDGEMENT FORM

AGVIQ

Task Order JM14

AGVIQ project employees and subcontractors listed below have been provided with a copy of this Accident Prevention Plan, have read or been briefed on its contents and agree to abide by its provisions.

Project Name: **Task Order:**

EMPLOYEE NAME (Please print)	**EMPLOYEE SIGNATURE**	**COMPANY**	**DATE**

Attachment 3
Subcontractor H&S Tracking Form

Subcontractor H&S Tracking Form

Project Name: **Task Number:** **Date:**

Subcontractor		Completed as Needed						Completed Within the Last 12 Months		
Name	Company	40-hour Training	8-hour Site Supervisor Training	Confined Space Entry Training	FA/CPR /BBP	Hazard Specific Training	Equipment Specific Training	Med Clearance	Fit Test	8-hour Refresher Training
		Enter "√" if Completed						Enter Date Last Completed		

Hazard Specific Training may include Hazard Communication (HAZCOM), asbestos, lead, fall protection, electrical, lock-out tag-out, drilling, demolition, etc.
Equipment Specific Training may include Industrial (fork) truck, aerial lift, crane, portable extinguisher, respirator, scaffolding, etc.
Medical Clearance documents must **not** include actual medical reports. Only accept a signed physician's statement of fitness to work.

Attachment 4
Project H&S Forms/Permits

AGVIQ LLC
AGVIQ ENVIRONMENTAL SERVICES

AGVIQ – Task Order JM14
Key West, FL – Site Sign In Sheet

DATE	NAME	COMPANY	IN	OUT	IN	OUT

AGVIQ – Task Order JM14

Key West, FL – Site Sign-In Sheet

Date	Time	Activity	Location	Mercury Vapor	%O_2	%LEL	CO

Stop Work Order Form

REPORT PREPARED BY:

Name:	Title:	Signature:	Date:

ISSUE OF NONPERFORMANCE

Description:_____ _____ _____ _____ _____	Date of Nonperformance: _____

SUBCONTRACTOR SIGNATURE OF NOTIFICATION:

Name:	Title:	Signature:	Date:

** Corrective action is to be taken immediately. Note below the action taken, sign and return to CCI.*

SUBCONTRACTOR'S CORRECTIVE ACTION

Description:_____ _____ _____ _____ _____	Date of Corrective Actions: _____

SUBCONTRACTOR SIGNATURE OF CORRECTION:

Name:	Title:	Signature:	Date:

Attachment 5
Emergency Contact List

Emergency Contact List

Security Dispatch: (305) 293-2114 **Emergencies:** (305) 293-3333 or 911 Emergency Fire, EMS: 911	**AGVIQ Medical Consultant(s)** Refer to AGVIQ VB office for a detailed list of Medical Facilities/contacts.
AGVIQ Program Director Name: Dave Leadenham AGVIQ Phone: (757) 213-8580/ (757) 544-6958	**AGVIQ Program Manager** Name: Sid Allison Phone: (843) 242-8018 **AGVIQ Senior Program Manager** Name: Paul Rakowski Phone: (757) 213-8581/(757) 544-6744 **AGVIQ Project Manager** Name: Amy Twitty Phone: (850) 232-0320 (cell)
AGVIQ Site Superintendent/Alternate SSHO Name: Cell Phone: **AGVIQ HSPA** Name: Rachel Francis - AGVIQ Cell Phone: (757) 354-5820 (757) 213 8592	**AGVIQ Program CIH** Name: Matt White Phone: (907) 748-2730 **AGVIQ SSHO/QCM** Name: Nicole Monroe Cell Phone: (504) 473-1399
AGVIQ Corporate Health and Safety Manager Name: Troy Izatt Office phone (907) 365-6182 Cell phone (907) 748-3697	**Federal Express Dangerous Goods Shipping** Phone: (800) 238-5355 **Emergency Number for Shipping Dangerous Goods** Phone: (800) 255-3924
Hospital Name/Address: (See Figure 9-2 of this APP)	

Attachment 6
Material Safety Data Sheets
(provided onsite)

Attachment 7
Chemical Specific Training Form and Project Specific Chemical Product Hazard Communication Form

CHEMICAL-SPECIFIC TRAINING FORM

Location:	Task Order: JM14
Trumbo Point Tank Farm	Trainer:

TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:

The SSC will use the product MSDS to provide the following information concerning each of the products listed above.

☐ Physical and health hazards

☐ Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)

☐ Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants will have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and the written hazard communication program will be made available for employee review in the facility/project hazard communication file.

Attachment 8
Pre-Task Safety Plan

EXAMPLE ONLY

DAILY PRE-TASK SAFETY PLAN (PTSP)

Project: _____ Location: _____ Date:_____
Site Safety & Health Officer: _____ Job Activity: _____ Site #:_____

Task Personnel:

_____
_____
_____

List Tasks:

_____

Tools/Equipment/Materials required (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools, cords, generators, compressed gases, regulated chemical products, etc.):

_____

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (Check all that apply):

_X_ Chemical burns/contact Dermal protection (hands), eye protection. See APP for PPE requirements per task.	__ Trench, excavations, cave-ins	__Ergonomics
__ Pressurized lines/equipment Drilling equipment support vehicles (skidsteer)	X_ Overexertion Work/break regiment as dictated by task. Maintain fluid intake for hydration	_X_ Chemical splash Use PPE in accordance with the APP. Protect hands from splash during decon activities.
_X_Thermal burns Watch for warm engine/muffler components on generators.	__ Pinch points	X Poisonous plants/insects Review APP for identification of poisonous snakes in the geographic area. Long sleeves in areas where poison ivy, sumac or oak may exist. Use insect repellent. Tape pant legs to boots (ticks).
X_ Electrical GCFIs for generators, Inspect. & protect extension cords, cords rated for use & have 3rd wire grounding	X_Cuts/abrasions Do not use razor knives. Cut away from body. Identify and avoid rusty/jagged or sharp surfaces from above ground features (brush, pipe chases/supports, utility structures, doors)	X_ Eye hazards/flying projectile Use eye protection at all times. Ensure head protection is used in areas where heavy brush, trees, thorns, vines exist when accessing well heads.
__ Weather conditions Foul and cold weather clothing as dictated by expected conditions	X_ Spills Use funnels & nozzles during fueling of generators.	__ Inhalation hazard
__Heights/fall> 6’	__ Overhead Electrical hazards	X_ Heat/cold stress Work/break regiment as dictated by heat exposure Provide sufficient fluids for employee intake. Recommended employees begin with 16 oz. of water before initiating field work.
X_Noise Use hear protection in loud work environments	__ Elevated loads	__ Water/drowning hazard
X_Explosion/fire Metal safety cans for fuel storage, No open flame, sparks ignition in hazardous/flammable/ combustible storage areas. Let engine surfaces cool before fueling.	X_ Slips, trip and falls Exercise good general housekeeping practices Identify/remove slip/trip falls hazards in work area. Watch for and avoid holes, ground protrusions. Watch for entanglement of feet around vines and brush.	__ Heavy equipment
X_ Radiation Solar. UV protection on skin and UV eye protection. ANSI rated safety eye protection only.	X_Manual lifting >50 lbs or awkward loads, get assistance. If employee not capable of lifting 40 lbs. seek assistance.	__ Aerial lifts/platforms
__ Confined space entry	__Welding/cutting	__ Demolition

Continue on page 3 of 3 (if necessary)

Hazard Control Measures (Check all that apply):

PPE	Protective Systems	Fire Protection	Electrical
X_ Head protection	__ Locate buried utilities	__ Fire extinguishers	__ Lockout/tagout
__ Face protection	__ Competent person	__ Fire watch	__ Grounded
X_Hard toe work boots	__ Daily inspections	__ Non-spark tools	__ Panels covered
__ Thermal/lined	__ Sloping	__ Grounding/bonding	X_GFCI/extension cords
X_ Eye	__ Shoring	__ Intrinsically safe equipment	__ Power tools/cord inspected
X_Dermal/hand	__ Trench box	__Combustible materials storage	__Insulated tools/gloves
__ Hearing	__ Barricades	__Chemical Storage	
__ Respiratory			
X_Reflective vests			

Fall Protection	Air Monitoring	Proper Equipment	Welding & Cutting
__ Harness/lanyards	_X_ PID/FID	__ Aerial lift/ladders/scaffolds	__ Cylinders secured/capped
__ Adequate anchorage	__ Detector tubes	__ Forklift/ Heavy equipment	__ Cylinders separated/upright
__ Guardrail system	__ Radiation	__ Backup alarms	__ Flash-back arrestors
__ Covered opening	__ Personnel sampling	__ Hand/power tools	__ No cylinders in CSE
__ Fixed barricades	__ LEL/O2	__ Crane w/current inspection	__ Flame retardant clothing
__ Warning system	__ Other	__ Proper rigging	__ Appropriate goggles
		__ Operator qualified	

Confined Space Entry	Medical/Emerg. Response	Heat/Cold Stress	Vehicle/Traffic
__ Isolation	X_ First-aid & BBP kit	X_Work/rest regime	__ Traffic Awareness
__ Air monitoring	X_Eye wash	X_ Rest area	__Traffic control
__ Trained personnel	X_FA-CPR training	X_Liquids available	__ Barricades
__ Permit completed	X_Route to hospital	X_Monitoring	__ Flags
__ Rescue provisions		__ Training	__ Signs

Permits	Demolition	Inspections	Training
__ Hot work	__ Pre-demolition survey	__ Ladders/aerial lifts	X_ Hazwaste
__ Confined space	__ Structure condition	__ Lanyards/harness	__ Construction
__ Lockout/tagout	__ Isolate area/utilities	__ Scaffolds	__Equipment
__ Excavation	__ Competent person	__ Heavy equipment	__ Competent person
__ Demolition	__ Hazmat present	__Cranes and rigging	X_Task-specific (AHA)
__ Energized work		__Other per Field Safety Plan	X_ Hazcom
__Local/Environmental			

Field Notes:

_____

_____

_____

Additional Space for Project Specific Hazard Awareness (if necessary):

1) Observe government/military facility posted speed limits.
2) Wear seat belts in vehicles while on government/military facilities.
3) Do not use cell phones or two way radios while driving or actively operating equipment on government/military facilities.
4) Failure to do so may result in loss of driving privileges on government/military facilities.
5) Report all accidents/injuries and property damage to the Project Manager and Program CIH immediately.
6) Maintain hospital route maps in site vehicles. Know facility EMS, Fire and Security dispatch #s.
7) Secure any loads to hauling vehicle (pick-up truck) with appropriate rated tie down straps.
8) Use reflective vests/ high visibility clothing in high traffic areas or in areas were material handling operations are occurring.

Attendees:

Name (Printed):	Signature:

Meeting Conducted By:

Name Printed	Signature

Attachment 9
Loss Prevention Observation Form

Loss Prevention Observation Form		
Project:	Observer:	
Position/Title of worker observed:	Background Information/comments:	
Task/Observation Observed:		Date:

- Identify and reinforce safe work practices/behaviors
- Identify and improve on at-risk practices/acts
- Identify and improve on practices, conditions, controls, and compliance that eliminate or reduce hazards
- Proactive PM/Site Manager support facilitates eliminating/reducing hazards (material/personnel resources)
- Positive, corrective, cooperative, collaborative feedback/recommendations

Actions & Behaviors	**Consistent w/ H&S Program**	**Not Consistent w/ H&S Program**	**Observations/Comments**
Current & accurate Pre-Task Planning/Briefing (Project safety plan, AHA, PTSP, tailgate briefing, c., as needed)			**Positive Work Practices Observed:**
Personnel properly trained/qualified/experienced			
Tools/equipment available and adequate			
Proper use of tools			**Questionable Activity/Condition Observed:**
Barricades/work zone control			
Housekeeping			
Communication			
Work Approach/Habits			
Attitude			
Focus/attentiveness			**Actions/Comments:**
Pace			
Uncomfortable position			
Inconvenient location			
Position/Line of fire			
Apparel (hair, loose clothing, jewelry)			
Repetitive motion			**Observed Worker's Corrective Actions/Comments:**
Other…			

Safety and Occupational Health Deficiency Tracking Log						
Item	Date Identified	Identified By	Deficiency Description	Resolution Date	Corrected By	Actual Correction Date
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						

Attachment 10
Loss/Near Loss Incident Report Form

Incident Report Form

Type of Incident (Select at least one)

- ☐ Injury/Illness
- ☐ Property Damage
- ☐ Spill/Release
- ☐ Environmental/Permit Issue
- ☐ Near Miss
- ☐ Other

General Information (Complete for all incident types)

Preparer's Name: _____ Preparer's Employee Number: _____

Date of Report: _____ Date of Incident: _____ Time of Incident: _____ am/pm

Type of Activity (Provide activity being performed that resulted in the incident)

- ☐ Asbestos Work
- ☐ Confined Space Entry
- ☐ Construction Mgmt- Haz Waste
- ☐ Construction Mgmt - Non-Haz Waste
- ☐ Demolition
- ☐ Drilling-Haz Waste
- ☐ Drilling-Non Haz Waste
- ☐ Drum Handling
- ☐ Electrical Work
- ☐ Excavation Trench-Haz Waste
- ☐ Excavation Trench-Non Haz
- ☐ Facility Walk Through
- ☐ General Office Work
- ☐ Keyboard Work
- ☐ Laboratory
- ☐ Lead Abatement
- ☐ Motor Vehicle Operation
- ☐ Moving Heavy Object
- ☐ Other (Specify) _____
- ☐ Process Safety Management
- ☐ Tunneling
- ☐ Welding
- ☐ Wetlands Survey
- ☐ Working from Heights
- ☐ Working in Roadways
- ☐ WWTP Operation

Location of Incident (Select one)

- ☐ Company Premises (JVI Office: _____)
- ☐ Field (Project #: _____ Project/Site Name: _____ Client: _____)
- ☐ In Transit (Traveling from: _____ Traveling to: _____)
- ☐ At Home

Geographic Location of Incident (Select region where the incident occurred)

- ☐ Northeast
- ☐ Northeast
- ☐ Northwest
- ☐ Southwest
- ☐ Corporate
- ☐ Canadian
- ☐ Asia Pacific
- ☐ Europe Middle East
- ☐ Latin America

If an AGVIQ subcontractor was involved in the incident, provide their company name and phone number:

_____

Describe the Incident (Provide a brief description of the incident): _____

_____

_____

_____

_____

-

Injured Employee Data (Complete for Injury/Illness incidents only)

If AGVIQ employee injured

Employee Name: _____ Employee Number: _____

If AGVIQ Subcontractor employee injured

Employee Name: _____ Company: _____

Injury Type

- ☐ Allergic Reaction
- ☐ Amputation
- ☐ Asphyxia
- ☐ Bruise/Contusion/Abrasion
- ☐ Burn (Chemical)
- ☐ Burn/Scald (Heat)
- ☐ Cancer
- ☐ Carpal Tunnel
- ☐ Concussion
- ☐ Cut/Laceration
- ☐ Dermatitis
- ☐ Dislocation
- ☐ Electric Shock
- ☐ Foreign Body in eye
- ☐ Fracture
- ☐ Freezing/Frost Bite
- ☐ Headache
- ☐ Hearing Loss
- ☐ Heat Exhaustion
- ☐ Hernia
- ☐ Infection
- ☐ Irritation to eye
- ☐ Ligament Damage
- ☐ Multiple (Specify)

  _____
- ☐ Muscle Spasms
- ☐ Other (Specify)

  _____
- ☐ Poisoning (Systemic)
- ☐ Puncture
- ☐ Radiation Effects
- ☐ Strain/Sprain
- ☐ Tendonitis
- ☐ Wrist Pain

Part of Body Injured

- ☐ Abdomen
- ☐ Ankle(s)
- ☐ Arms (Multiple)
- ☐ Back
- ☐ Blood
- ☐ Body System
- ☐ Buttocks
- ☐ Chest/Ribs
- ☐ Ear(s)
- ☐ Elbow(s)
- ☐ Eye(s)
- ☐ Face
- ☐ Finger(s)
- ☐ Foot/Feet
- ☐ Hand(s)
- ☐ Head
- ☐ Hip(s)
- ☐ Kidney
- ☐ Knee(s)
- ☐ Leg(s)
- ☐ Liver
- ☐ Lower (arms)
- ☐ Lower (legs)
- ☐ Lung
- ☐ Mind
- ☐ Multiple (Specify)
- ☐ Neck
- ☐ Nervous System
- ☐ Nose
- ☐ Other (Specify)

  _____
- ☐ Reproductive System
- ☐ Shoulder(s)
- ☐ Throat
- ☐ Toe(s)
- ☐ Upper Arm(s)
- ☐ Upper Leg(s)
- ☐ Wrist(s)

10.5.1.1.1.1.1.1.1 *Nature of Injury*

- ☐ Absorption
- ☐ Bite/Sting/Scratch
- ☐ Cardio-Vascular/Respiratory System Failure
- ☐ Caught In or Between
- ☐ Fall (From Elevation)
- ☐ Fall (Same Level)
- ☐ Ingestion
- ☐ Inhalation
- ☐ Lifting
- ☐ Mental Stress
- ☐ Motor Vehicle Accident
- ☐ Multiple (Specify)

  _____
- ☐ Other (Specify)

  _____
- ☐ Overexertion
- ☐ Repeated Motion/Pressure
- ☐ Rubbed/Abraded
- ☐ Shock
- ☐ Struck Against
- ☐ Struck By
- ☐ Work Place Violence

- Initial Diagnosis/Treatment Date: _____

Type of Treatment

- ☐ Admission to hospital/medical facility
- ☐ Application of bandages
- ☐ Cold/Heat Compression/Multiple Treatment
- ☐ Cold/Heat Compression/One Treatment
- ☐ First Degree Burn Treatment
- ☐ Heat Therapy/Multiple treatment
- ☐ Multiple (Specify)

  _____
- ☐ Heat Therapy/One Treatment
- ☐ Non-Prescriptive medicine
- ☐ None
- ☐ Observation
- ☐ Other (Specify)

  _____
- ☐ Prescription- Multiple dose
- ☐ Prescription- Single dose
- ☐ Removal of foreign bodies
- ☐ Skin Removal
- ☐ Soaking therapy- Multiple Treatment
- ☐ Soaking Therapy- One Treatment
- ☐ Stitches/Sutures
- ☐ Tetanus
- ☐ Treatment for infection
- ☐ Treatment of 2nd /3rd degree burns
- ☐ Use of Antiseptics – multiple treatment
- ☐ Use of Antiseptics – single treatment
- ☐ Whirlpool bath therapy/multiple treatment
- ☐ Whirlpool bath therapy/single treatment
- ☐ X-rays negative
- ☐ X-rays positive/treatment of fracture

Number of days doctor required employee to be off work: _____
Number of days doctor restricted employee's work activity: _____
Equipment Malfunction: Yes ☐ No ☐ Activity was a Routine Task: Yes ☐ No ☐
Describe how you may have prevented this injury:
_____
_____
_____

Physician Information		Hospital Information	
Name:	_____	Name:	_____
Address:	_____	Address:	_____
City:	_____	City:	_____
Zip Code:	_____	Zip Code:	_____
Phone:	_____	Phone:	_____

Property Damage (Complete for Property Damage incidents only)

Property Damaged: _____ Property Owner: _____
Damage Description: _____
Estimated Amount: $ _____

Spill or Release (Complete for Spill/Release incidents only)

Substance (attach MSDS): _____ Estimated Quantity: _____
Facility Name, Address, Phone No.:
_____
Did the spill/release move off the property where work was performed?:
_____
Spill/Release From: _____ Spill/Release To: _____

Environmental/Permit Issue (Complete for Environmental/Permit Issue incidents only)

Describe Environmental or Permit Issue:
_____
Permit Type:
_____
Permitted Level or Criteria (e.g., discharge limit):
_____
Permit Name and Number (e.g., NPDES No. ST1234):
_____
Substance and Estimated Quantity:
_____
Duration of Permit Exceedance:
_____

Verbal Notification (Complete for all incident types)(Provide names, dates and times)

AGVIQ Personnel Notified: _____
Client Notified: _____

Root Cause Investigation

This attachment is provided to assist in accessing, completing, and reviewing an incident investigation. It is important to remember the following when conducting an investigation:

Gather relevant facts, focusing on fact-finding, not fault-finding.
Draw conclusions, pitting facts together into a probable scenario.
Determine incident root cause(s), the basic causes why an unsafe act/condition existed.
Develop and implement solutions, matching all identified root causes with solutions.

Documentation
The following should be included in the Incident Report Form (IRF) to document the incident.

Description

Provide a description of the event and the sequence of events and actions that took place prior to the incident. Start with the incident event and work backwards in time through all of the preceding events that directly contributed to the incident. The information should identify why the event took place as well as who was involved, when and where the event took place, and what actions were taken.

Cause Analysis

Using the form and flowchart in this attachment the root cause of the incident will be determined. This form must be retained in the project and/or regional HS&E files.

Immediate Causes—List the substandard actions or conditions that directly affected the incident. The following are examples of immediate causes:

> ***Substandard Actions*:** Operating equipment without authority; failure to warn; failure to secure; operating at improper speed; making safety device inoperable; using defective equipment; failing to use PPE; improper loading; improper lifting; improper position for task; under influence of alcohol or drugs; horseplay.
>
> ***Substandard Conditions:*** Exposure to hazardous materials; exposure to extreme temperatures; improper lighting; improper ventilation; congestion; exposure to fire and explosive hazard; defective tools, equipment or materials; exposure to extreme noise; poor ventilation; poor visibility; poor housekeeping.

Basic Causes—List the personal and job factors that caused the incident. The following are examples of basic causes:

> ***Personal Factors:*** Capability; knowledge; skill; stress; motivation.
>
> ***Job Factors:*** Abuse or misuse; engineering; maintenance; purchasing; supervision; tools and equipment; wear and tear; work standards.

Corrective Action Plan

Include all corrective actions taken or those that should be taken to prevent recurrence of the incident. Include the specific actions to be taken, the employer and personnel responsible for implementing the actions, and a time frame for completion. Be sure the corrective actions address the causes. For example, training may prevent recurrence of an incident caused by a lack of knowledge, but it may not help an incident caused by improper motivation.

The following are examples of management programs that may be used to control future incidents. These programs should be considered when determining specific corrective actions.

Management Programs: Accident/incident analysis; emergency preparedness; engineering controls; general promotion; group meetings; health control; hiring and placement; leadership and administration; management training; organizational rules; personal protective equipment; planned inspections; program audits; program controls; purchasing controls; task analysis and procedures; task observation.

Loss/Near-Loss Investigation Report Form

Employer Information

Company Name: _____

Project Name: _____ Task Order: _____

Project Location: _____

Task Location: _____

Job Assignment: _____

Preparer's Name: _____ Preparer's Employee Number: _____

Incident Specific Information

Date of Incident: _____ Time of Incident: _____ a.m./p.m.

Location of incident:
☐ Company premises
☐ Field
☐ In Transit
☐ Other:_____
_____

Address where the incident occurred: _____

Equipment Malfunction: Yes ☐ No ☐ Activity was a Routine Task: Yes ☐ No ☐

Describe any property damage: _____

Specific activity the employee was engaged in when the incident occurred:
_____
_____

All equipment, materials, or chemicals the employee was using when the incident occurred:
_____
_____

Describe the specific incident and how it occurred:
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Describe how this incident may have been prevented:

_____
_____
_____
_____
_____
_____
_____
_____

Contributing Factors (Describe in detail why incident occurred):

_____
_____
_____
_____
_____

Date employer notified of incident: _____ To whom reported: _____

Witness Information (First Witness)

Name: _____
Employee Number_____
Address:_____
City: _____
Zip Code : _____
Phone: _____

Witness Information (Second Witness)

Name: _____
Employee Number_____
Address:_____
City: _____
Zip Code : _____
Phone: _____

Additional information or
comments:_____
_____
_____

A ROOT CAUSE ANALYSIS FORM MUST BE COMPLETED FOR ALL INJURIES AND ILLNESSES OR ACTUAL LOSSES.

COMPLETION OF THE ROOT CAUSE ANALYSIS FORM FOR NEAR LOSSES IS OPTIONAL, AT THE DISCRETION OF THE HEALTH AND SAFETY MANAGER.

Determination of Root Cause(s)

For losses or near losses the information may be gathered by the supervisor or other personnel immediately following the loss or near loss. Based on the complexity of the situation, this information may be all that is necessary to enable the investigation team to analyze the loss, to determine the root cause, and to develop recommendations. More complex situations may require the investigation team to revisit the loss site or re-interview key witnesses to obtain answers to questions that may arise during the investigation process.

Photographs or videotapes of the scene and damaged equipment should be taken from all sides and from various distances. This point is especially important when the investigation team will not be able to review the loss scene.

The investigation team must use the Root Cause Analysis Flow Chart to assist in identifying the root cause(s) of a loss. Any loss may have one or more root causes and contributing factors. The root cause is the primary or immediate cause of the incident, while a contributing factor is a condition or event that contributes to the incident happening, but is not the primary cause of the incident. Root causes and contributing factors that relate to the *person* involved in the loss, his or her peers, or the supervisor should be referred to as personal factors. Causes that pertain to the *system* within which the loss or injury occurred should be referred to as job factors.

<u>Personal Factors</u>

1. Lack of skill or knowledge, lack of motivation
5. Correct way takes more time and/or requires more effort
6. Short-cutting standard procedures is positively reinforced or tolerated
7. Person thinks that there is no personal benefit to always doing the job according to standards

<u>Job Factors</u>

2. Lack of or inadequate operational procedures or work standards.
3. Inadequate communication of expectations regarding procedures or standards
4. Inadequate tools or equipment

<u>Other</u>

8. Uncontrollable Factors *****

The root cause(s) could be any one or a combination of these seven possibilities or some other uncontrollable factor. In the vast majority of losses, the root cause is very much related to one or more of these seven factors. * **Uncontrollable factors should be used rarely and only after a thorough review eliminates all seven other factors.**

Root Cause Analysis Form

Root Cause Analysis (RCA)

Root Cause Categories (RCC): Select the RCC numbered below that applies for the root cause (RC) and/or contributing factor (CF) in the first column, then describe the specific root cause and corrective actions in each column.

1. **Lack of skill or knowledge**
2. **Lack of or inadequate operational procedures or work standards**
3. **Inadequate communication of expectations regarding procedures or work standards**
4. **Inadequate tools or equipment**
5. **Correct way takes more time and/or requires more effort**
6. **Short-cutting standard procedures is positively reinforced or tolerated**
7. **Person thinks there is no personal benefit to always doing the job according to standards**
8. **Uncontrollable Factor (Note: Uncontrollable factors should be used rarely and only after a thorough review eliminates "all" seven other factors.)**

RCC #	Root Cause(s)	Corrective Actions	RC[1]	CF[2]	Due Date	Completion Date	Date Verified

[1] RC = Root Cause; [2] CF = Contributing Factors (check which applies)

Investigation Team Members

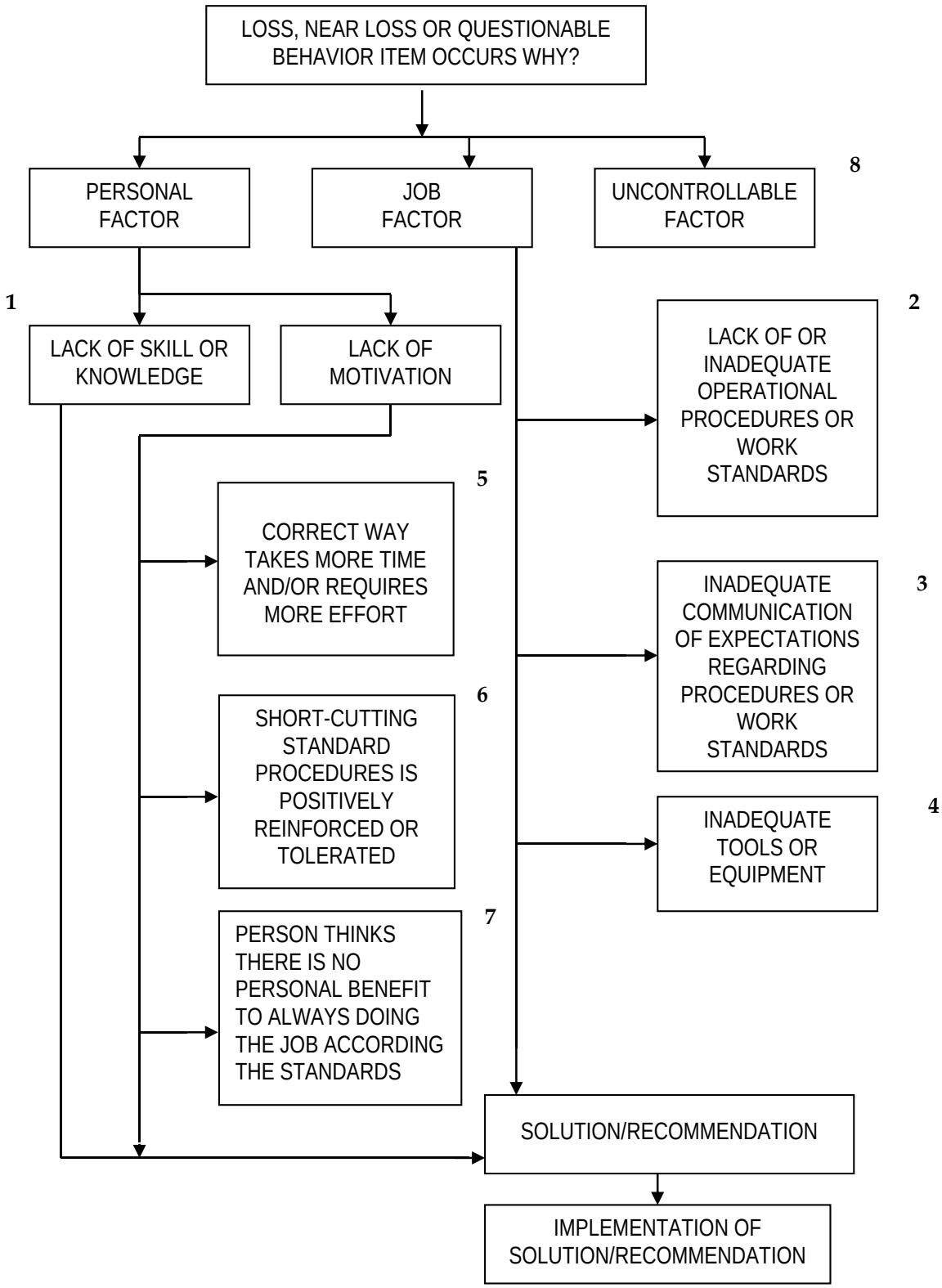
Name	Job Title	Date

Results of Solution Verification and Validation

Reviewed By

Name	Job Title	Date

Root Cause Analysis Flow Chart



Attachment 11
Hurricane Preparedness Plan

Hurricane Preparedness Plan

Petroleum Monitoring and Assessment at
Trumbo Point Tank Farm
Naval Air Station Key West
Key West, Florida

Revision No. 00

Contract No. N62470-12-D-7004
Contract Task Order No. JM14

Submitted to:

U.S. Naval Facilities
Engineering Command

Prepared by:

February 2014

Revision 00

Contents

Attachments

Acronyms and Abbreviations

COR	Condition of Readiness
FEAD	Facility Engineering & Acquisition Division
FEMA	Federal Emergency Management Administration
SHSO	Health and Safety Officer
mph	mile(s) per hour
NOAA	National Oceanic and Atmospheric Administration
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment

1.0 Introduction

1.1 Purpose

This procedure outlines the general responsibilities and actions to be taken in preparation for and response to a hurricane or hurricane warnings posted for the coastal regions of Florida where NAS Key West is located. All personnel should understand that predicting the occurrence and path of a hurricane is difficult, however the risk can be minimized and controlled by following the procedures in this plan.

1.2 Scope

This procedure is applicable to all contractor personnel, subcontractors, and equipment present at NAS Key West.

1.3 Discussion

This procedure provides information on how to protect personnel and property in the event of a hurricane. For Florida, attention must be paid to all tropical storms and hurricanes due to the uncertainty of time and location of landfall.

The following table demonstrates accuracy of forecasting a hurricane landfall. Probability of a landfall occurrence is low-more than 24 hours in advance of a storm.

Hours Before Landfall	Maximum Probability Values
72 Hours	10 Percent
48 Hours	13-18 Percent
36 Hours	20-25 Percent
24 Hours	35-45 Percent
12 Hours	60-70 Percent

2.0 Definitions

The following definitions apply to various terms used in this document.

Conditions of Readiness (COR):

- **Condition V -** Destructive winds are possible at NAS Key West **within 96 hours**. Normal daily job site cleanup and good housekeeping practices.
- **Condition IV** - Destructive winds are possible at NAS Key West **within 72 hours**. Normal daily job site cleanup and good housekeeping practices. Collect and store in piles or containers, scrap lumber, waste material and rubbish, for removal and disposal at the end of each workday. Maintain the construction site, including storage areas, free of accumulation of debris. Stack form lumber in neat piles less than 4 feet high. Remove all trash debris and other objects which could become missile hazards. Contact the Facility Engineering & Acquisition Division (FEAD) for Condition requirements, updates, and completion of required actions.
- **Condition III** - Destructive winds are possible at NAS Key West **within 48 hours**. Maintain **Condition IV** requirements. Begin securing the job site for and taking those actions necessary for **Condition I**, which cannot be completed within 18 hours. Cease all routine activities, which might interfere with securing operations. Begin collecting and stowing all gear and portable equipment. Make preparations for securing buildings. Review requirements pertaining to **Condition II** and continue action as necessary to attain **Condition III** readiness. Contact the weather station on Base for weather and COR updates and completion of required actions.
- **Condition II** - Destructive winds are possible at NAS Key West **within 24 hours.** Curtail or cease routine activities until securing operations are complete. Reinforce or remove formwork and scaffolding. Secure machinery, tools, equipment, and materials, or remove from job site. Expend every effort to clear all missile hazards and loose equipment from the job site. Contact FEAD for weather and COR updates and completion of required actions.
- **Condition I** - Destructive winds are possible in at NAS Key West **within 12 hours**. Perform and complete all remaining actions required for lower conditions of readiness. Secure the job site and leave the government premises.
- **Destructive Winds** - Generally winds reaching or exceeding the force of a tropical storm ($\geq$ 39 miles per hour [mph] or 34 knots). Winds from any storm system (tropical or otherwise) that are determined to have the potential to cause property damage or personal injury which would warrant NAS Key West to initiate a Condition IV alert.
- **Gale** - Non-tropical windstorm with winds 38 to 63 mph (33 to 55 knots).
- **Hurricane** - A tropical cyclone in which the maximum sustained surface wind is 74 mph (64 knots) or greater.

- **Hurricane Warning** - A warning that sustained winds of 74 mph (64 knots) or higher, associated with a hurricane, are expected in a specified coastal area in 24 hours or less.
- **Hurricane Watch** - An announcement for specific areas where a hurricane or an incipient hurricane poses a possible threat to a coastal area, generally within 36 hours.
- **Missile Hazard** - Any object that may become airborne during high winds.
- **Severe Weather -** Any storm of tropical or non-tropical origin that has the capacity to produce destructive winds.
- **Storm** - Non-tropical windstorm with winds 38 to 62 mph (33 to 55 knots).
- **Storm Surge** - An abnormal rise in sea level accompanying a hurricane or other intense storm, and whose height is the difference between the observed level of the sea surface and the level that would have occurred in the absence of the storm.
- **Storm Tide** - The actual sea level resulting from the astronomical tide combined with the storm surge. This term is used interchangeably with Hurricane Tide.
- **Tornado** - Violent rotating columns of air with winds 115 to 288 mph (100 to 250 knots).
- **Tropical Depression** - A tropical low-pressure system in which the maximum sustained surface wind is 38 mph (33 knots) or less.
- **Tropical Storm** - A tropical low pressure system in which the maximum surface wind ranges from 39 to 73 mph (34 to 63 knots) inclusive. This is the strength at which the National Hurricane Center applies a name to the storm.
- **Tropical Storm Watch** - Tropical storm conditions pose a threat to a coastal area generally within 36 hours.
- **Tropical Storm Warning** - A warning for tropical storm conditions with sustained winds within the range of 39 to 73 mph (34 to 63 knots), which are expected in a specified coastal area within 24 hours or less.

3.0 Emergency Operating Procedures

3.1 Condition V – Destructive Winds are Possible within 96 Hours (Early Preparedness)

The SSHO will notify the project manager and site superintendent (field team leader) when a tropical storm has been named and/or any severe weather has the potential to produce destructive winds at NAS Key West within **96 hours**. This will initiate COR Condition V. This phase will continue until:

- The storm or condition is downgraded.
- The storm track poses no threat to the site.
- Condition IV begins.

During Condition V, the progress of the storm will be monitored and tracked by Hurricane Tracking Maps (**Attachment A**). The Base will be contacted at least twice daily for Condition Requirements updates and to inform him of completion of required actions for Condition V.

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Condition V.

3.2 Condition IV – Destructive Winds are Possible within 72 Hours

This COR starts when severe weather is within 72 hours of posing a threat to the project location. The SHSO will ensure that the following steps are taken:

- Monitor the storm and inform the Project Manager and Site Superintendent (field team leader) of its progress.
- Check PPE supplies and equipment to determine if any shipments are required or if pending shipments should be advanced or postponed.

During Condition IV, the progress of the storm will be continuously monitored and tracked. The Site Superintendent (field team leader) or SSHO will instruct site personnel to begin general cleanup of all loose materials that may pose a hazard during high winds or rain. This will include removal of all debris, trash, and other debris that may become missile hazards. All form lumber will be stacked in neat piles less than 4 feet high. The FEAD will be contacted at least twice daily for Condition Requirements updates and to inform him of completion of required actions for Condition IV. Attachment 5 of the APP includes a list of emergency telephone numbers.

The Site Superintendent (field team leader) or SSHO will keep all site personnel advised of the status of the storm and site preparation activities. Due to the urgency and amount of work involved in preparing for a threatening storm, all construction operations that might interfere with securing operations, such as starting a major excavation, will cease.

The Site Superintendent (field team leader) will ensure that the following steps are taken:

- Fill fuel tanks in all equipment onsite.
- Secure stockpiled material onsite.
- Review requirements for Condition IV with all site personnel.
- Maintain Condition IV requirements.

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Condition IV.

3.3 Condition III – Tropical Storm Warning (Destructive Winds are Possible within 48 Hours)

This COR starts when severe weather poses a threat to the project site within 48 hours. Condition III activities will also start if a threatening tropical storm is upgraded to a hurricane, or a severe storm approaching NAS Key West has generated destructive winds in other locations. The Project Manager, Site Superintendent (field team leader), and SSHO will determine when to cease all operations based upon current weather conditions and/or as directed by the Base contact. If the storm or Condition is downgraded, the Project Manager, Site Superintendent (field team leader), and SSHO will contact the Base contact to decide if a downgrade of the COR is appropriate. Actions for Condition III will be maintained and the following shall also be completed:

- Machinery, tools, equipment, and materials will be secured or removed from the site.
- Take actions to secure job site necessary for Condition I that cannot be completed within 18 hours.

See **Attachment A** for the Hurricane Preparedness Responsibility Checklist - Condition III.

3.4 Condition II – Destructive Winds are Possible within 24 Hours (Tropical Storm Warning)

Condition II begins when destructive winds are anticipated within 24 hours and/or as directed by the Base contact. The Project Manager, Site Superintendent (field team leader), and SSHO will determine when to demobilize from the site based upon weather conditions. During this phase:

Site Superintendent Responsibilities:

Where a Site Superintendent (field team leader) is assigned to the project and onsite at the time of the Condition II warning, this individual shall be responsible for the following actions:

- Secure machinery, tools, equipment, and materials or remove them from the job site.
- Conduct a roll call of personnel onsite and inform the SSHO.
- Notify personnel, on leave, of schedule changes.
- Personnel needing to leave the project to attend to personal matters will notify their Site Superintendent (field team leader) immediately.
- Heavy equipment will be secured according to the manufacturer's recommendations.

- All small field equipment will be secured.
- Where a full time SSHO is not assigned to or is not on the site at the time of the Condition II warning, the Site Superintendent (field team leader) shall execute the above responsibilities and the SSHO responsibilities identified in Section 3.4.2 below.

SSHO Responsibilities:

Where a SSHO is assigned to the project and onsite at the time of the Condition II warning, this individual shall be responsible for the following actions:

- All visitors from the site are evacuated.
- Make a final site walk-through to determine that the site is secure and clear all missile hazards from the job site.
- Inform the Project Manager that all personnel are being released from the site.
- Where a full time Site Superintendent (field team leader) is not assigned to or is not on the site at the time of the Condition II warning, the SSHO shall execute the above responsibilities and the Site Superintendent (field team leader) responsibilities identified in Section 3.4.1 above.

If the storm or Condition is downgraded, the Project Manager, Site Superintendent (field team leader), and SSHO will conference to decide if a downgrade of the phase is necessary.

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Condition II.

3.5 Condition I – Destructive Winds are Possible within 12 Hours

Condition I begins when destructive winds are anticipated within 12 hours and/or as directed by the Base contact. The Site Superintendent (field team leader) will ensure that the following steps are taken:

- Complete all remaining actions required for lower conditions of readiness.
- Secure job site access and evacuate to safe refuge.

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Condition I.

3.6 Resuming Site Operations

The Project Manager will contact the Base to determine when site operations will resume. Although the hurricane/severe weather has passed, hazards may still exist because of water damage, other hazardous conditions, dangers from electric shock, poisonous snakes, etc.

The SSHO will conduct a damage survey with the Project Manager and Site Superintendent (field team leader). Photographs of the storm damage at the site will be taken by the Site Superintendent (field team leader). They will develop a prioritized recovery plan from the survey findings. Subsequently, all site personnel will be notified when it is safe to return to work. Required personnel and subcontractor expertise will be mobilized to the site to repair any damaged equipment.

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Resume Site Operations.

4.0 Debriefing

Following the return to work of site personnel, the Site Superintendent (field team leader) will conduct a debriefing with site personnel. The debriefing will accomplish the following objectives:

- Finalize a recovery plan.
- Review the Hurricane Preparedness Plan for effectiveness.
- Suggest and agree on improvements to the plan.
- Incorporate plan changes.

When completed, the project manager and/or Site Superintendent (field team leader) will meet with site personnel to discuss any corrective actions or changes in this plan.

5.0 References

The following references and sources of information may be consulted for additional guidance on hurricane preparedness and response:

- Disaster Planning Guide for Business and Industry, Federal Emergency Management Administration (FEMA).
- U.S. Department of Commerce; National Oceanic and Atmospheric Administration (NOAA).

Attachment A

Hurricane Preparedness Responsibility Checklist

Hurricane Preparedness Checklist

Condition V (Landfall Within 96 Hours)

Date/Time Entered Condition V:_____

Severe Weather/Tropical Storm:

_____

Action Items

- ☐ Notify Project Manager
- ☐ Track of Storm Poses No Threat
- ☐ Storm or Condition is Downgraded
- ☐ Upgrade to Condition IV

Storm Location

Date/Time:_____ Date/Time:_____

Location/Coordinates:_____ Location/Coordinates:_____

Date/Time:_____ Date/Time:_____

Location/Coordinates:_____ Location/Coordinates:_____

Condition V Action Items Complete:_____

Date:_____

Hurricane Preparedness Checklist

Condition IV (Landfall Within 72 hours)

Date/Time Entered Condition IV:_____

Action Items

- ☐ Notify Project Manager
- ☐ Notify Site Superintendent (field team leader)
- ☐ Notify Site Personnel
- ☐ Assemble shift personnel to begin preparation
- ☐ Track storm on hurricane tracking map (if applicable) (Attachment B)

The Project Foremen will ensure the following steps are taken:

- ☐ Secure all heavy equipment located at the site in accordance with manufacturer's specifications. All equipment will be moved to a secured site location.
- ☐ All equipment fuel tanks will be filled.
- ☐ All subcontractors with equipment or supplies onsite will be notified to begin removal procedures.

Condition IV Action Items Complete:_____

Date:_____

Hurricane Preparedness Checklist

Condition III (Landfall Within 48 hours)

Date/Time Entered Condition III:_____

Action Items

- ☐ Provide the status of the storm to site personnel on an hourly basis
- ☐ Take actions to secure job site necessary for Condition I that cannot be accomplished in 18 hours
- ☐ Recheck all items on checklist for Condition IV to ensure they are complete (i.e., gas tanks are still filled)

See itemized equipment checklist (itemized list of equipment to be secured/removed and COR for action)

Condition III Action Items Complete:_____

Date:_____

Hurricane Preparedness Checklist

Condition II (Landfall Within 24 Hours)

Date/Time Entered Condition II:_____

Action Items

- ☐ Evacuate all visitors from the site
- ☐ Conduct a role call of site personnel and inform the SSHO
- ☐ Check the status of all incoming shipments of supplies and equipment
- ☐ Remove all unnecessary vehicles from the site
- ☐ Secure heavy equipment in accordance with manufacturer's specification
- ☐ Secure all valuable records and equipment
- ☐ Release personnel from the site
- ☐ Recheck all items on checklist for Conditions IV and III to ensure they are complete (i.e., gas tanks are still filled)

Condition II Action Items Complete:_____

Date:_____

Hurricane Preparedness Checklist

Condition I (Landfall Within 12 Hours)

Date/Time Entered Condition I:_____

Action Items

- ☐ Complete all action items for lower conditions of readiness
- ☐ Secure job site access and evacuate to safe refuge

Condition I Action Items Complete:_____

Date:_____

Hurricane Preparedness Checklist

Resume Site Operations

Date/Time Resume Site Operations:_____

Action Items

- ☐ Conduct a damage survey
- ☐ Notify all site personnel when to return to work
- ☐ Develop a prioritized recovery plan
- ☐ Inspect electrical equipment before re-energizing to detect and repair damage
- ☐ Provide bottled water for drinking until normal drinking water is deemed safe to drink
- ☐ Remove storm debris from site
- ☐ Notify Base of the resumption of site activities

Resume Site Operations Action Items Complete:_____

Date:_____

Hurricane Preparedness Checklist

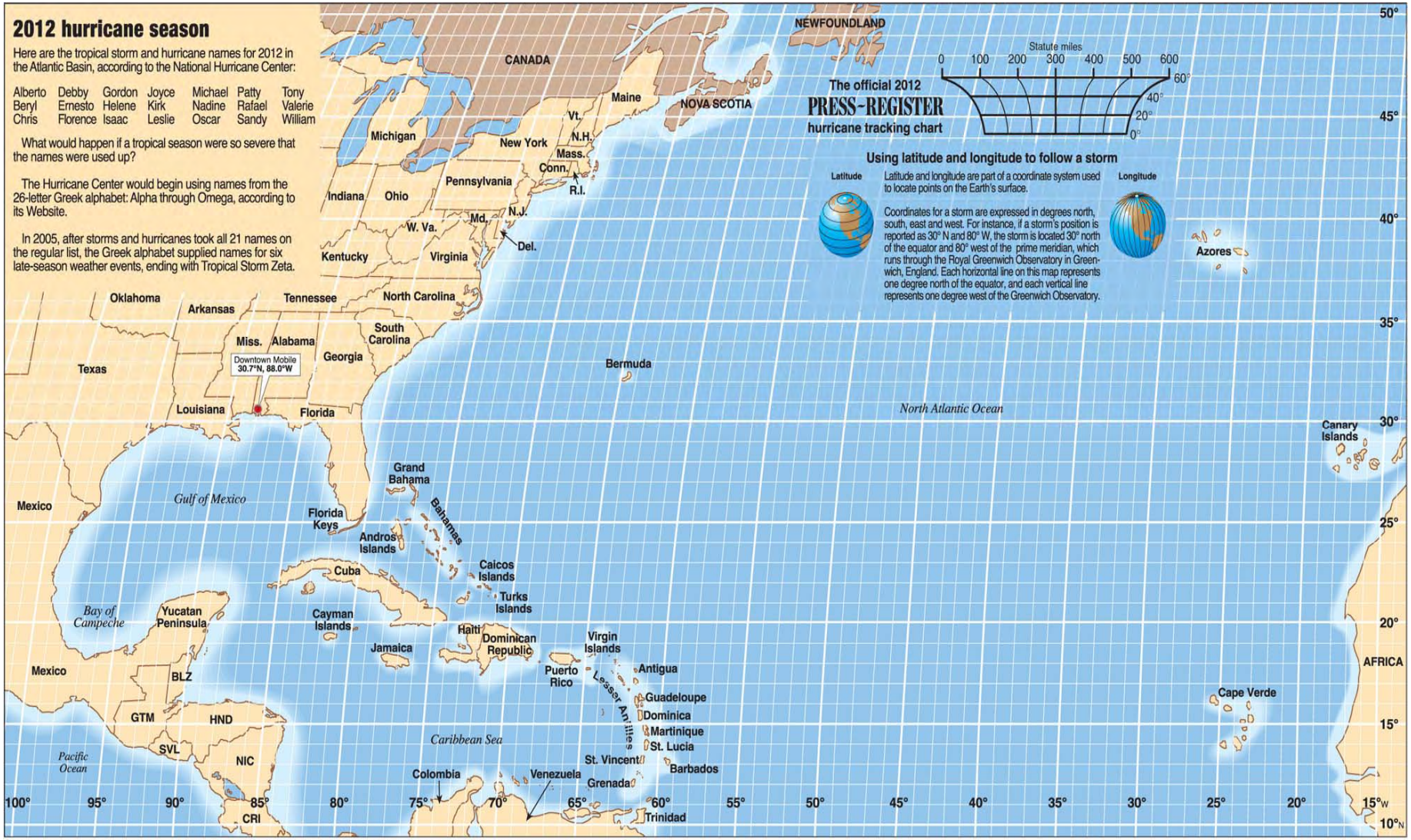
Itemized Equipment Checklist, Condition III.

Equipment	Secure in Place	Remove from Project Site

Attachment B

Hurricane Tracking Map

HURRICANE TRACKING MAP



Source: Tracking map based on National Geographic Atlas of the World, sixth edition, Robinson projection map, standard parallels 38°N and 38°S.

Press-Register graphic

Appendix C
Field Forms

AGVIQ	PROJECT NUMBER	BORING NUMBER	SHEET 1 OF __

SOIL BORING LOG

PROJECT : **LOCATION :**

GROUND SURFACE ELEVATION (FT): DRILLING CONTRACTOR :

DRILLING METHOD AND EQUIPMENT USED : Track-Mounted Rotasonic

WATER LEVELS (FT): START : END : LOGGER :

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. FID (unfilt ppm)	Notes	Aquifer Properties
0								
1							*nm = not measured	
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

PROJECT NUMBER	WELL NUMBER	SHEET______ OF ______

WELL DEVELOPMENT LOG

PROJECT : **LOCATION**
DEVELOPMENT CONTRACTOR : DATE:
DEVELOPMENT METHOD AND EQUIPMENT USED :
START WATER LEVELS (in ft): START : END : LOGGER :

MAXIMUM DRAWDOWN DURING PUMPING (in feet):
RANGE AND AVERAGE DISCHARGE RATE (in gallons per minute):
TOTAL QUANTITY OF WATER DISCHARGED (in gallons):
DISPOSITION OF DISCHARGE WATER:

Date Time (military)	Water Volume Discharged (gal)	Depth to Water (ft btoc)	Turbidity (NTU)	Temperature (°C)	pH	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Salinity (%)	ORP (mV)	Remarks (color, odor, sheen, sediment, etc.)

PROJECT NUMBER	WELL NUMBER	SHEET____ OF ____

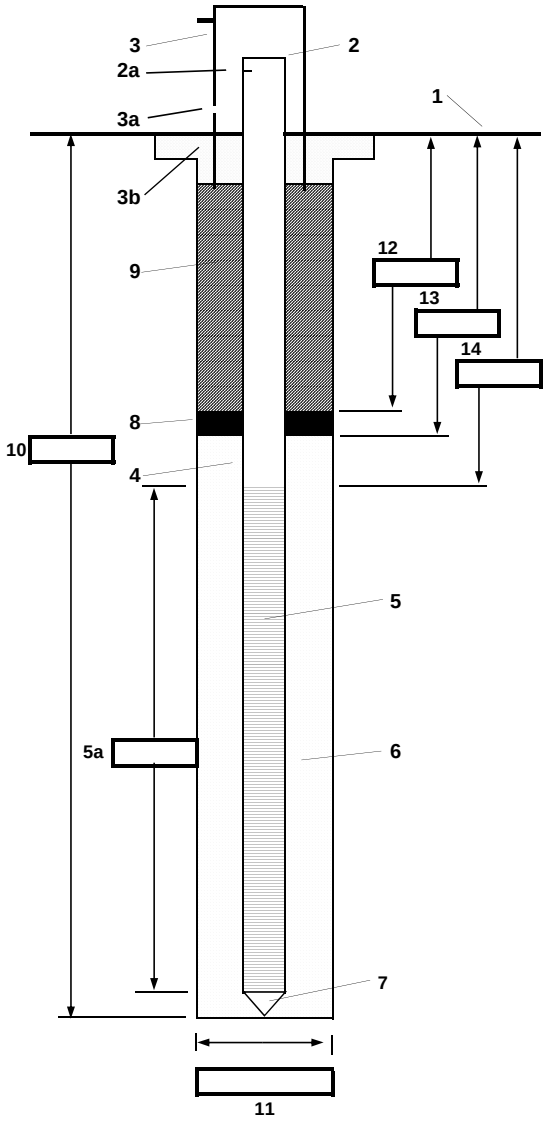
WELL COMPLETION DIAGRAM

PROJECT : _____ **LOCATION :** _____

DRILLING CONTRACTOR : _____ DR: _____

DRILLING METHOD AND EQUIPMENT USED : _____

WATER LEVELS (feet): START : END : LOGGER :



1- Ground elevation at well _____

2- Top of casing elevation _____
a) vent hole installed? (yes/no) _____

3- Wellhead protection cover type _____
a) weep hole installed? (yes/no) _____
b) concrete pad dimension (square feet) _____

4- Casing diameter (inches) _____
Type of well casing _____

5- Type/slot size of screen _____
a) Length of screen (feet) _____

6- Type of screen filter pack _____
a) Quantity used (50-pound bags) _____

7- Well point (inches) _____

8- Type of seal _____
a) Quantity used (50-pound bags) _____

9- Grout mix
a) Quantity used (94-pound bags) _____
b) Method of placement _____

10- Total well depth (ft bls) _____
Development method: _____

11- Borehole diameter (inches) _____

12- Depth to top of bentonite (ft bls) _____

13- Depth to top of filter pack (ft bls) _____

14- Depth to top of well screen (ft bls) _____

Development time (hours) _____

Estimated purge volume (gallons) _____

Comments: _____

GROUNDWATER SAMPLING LOG (modified from FDEP FD9000-24, revised August 28, 2012)

☐ System On ☐ System Off ☐ Not Applicable (no system)

SITE NAME:	SITE LOCATION:	DATE (MM/DD/YYYY):
WELL ID:	SAMPLE ID:	Field duplicate: Y N Duplicate ID: _____

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

Time	Volume Purged (gallons)	Cumulative Volume Purged (gallons)	Purge Rate (gpm)	Depth to Water (ft BTOC)	pH (standard units)	Temp. (°C)	SP.COND (mS/cm)	Dissolved Oxygen (mg/L)	Salinity (part per thousand)	Turbid (NTUs)	Color/ Odor (describe)	ORP (mV)	Depth to Product (ft BTOC)

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING

PURGING/SAMPLING EQUIPMENT CODES: B = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP =** Peristaltic Pump; **O** = Other (Specify)
MATERIAL CODES: PE **= Polyethylene;** PP **= Polypropylene;** S **= Silicone;** T **= Teflon;** O **= Other (Specify)**

WQ Meter Type & Serial Number, Calibration Notes (including cal solution lot numbers/expiration dates):	**SAMPLE PUMP TYPE OR BAILER:**

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: _____ µm

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:

FIELD DECONTAMINATION: PUMP Y N BAILER Y N TUBING Y N (re-used) N (replaced)	Turbidimeter Serial Number:

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Well Info	**QC**	**Remarks/Notes/Comments/Exceptions/Site Conditions**
☐ **Needs repair** _____ ☐ **Tubing left in well**	☐ **DI Water Lot #**_____	
☐ **Need well tag** _____ ☐ **No tubing left in well**	☐ **MS/MSD** _____	
☐ **Locking cap** _____	☐ **Equipment blk** _____	
☐ **Well integrity** _____	☐ **Ambient blk** _____	
☐ **Protective Post/Abutment** _____	☐ **Trip blk**_____	

☐ **VOCs** ☐ **FLPRO** ☐ **PAHs** ☐ **SVOCs** ☐ **OC Pesticides** ☐ **OP Pesticides** ☐ **PCBs** ☐ **Dioxin/Furan** ☐ **Metals** ☐ **EDB/DBCP**

☐ **Alkalinity** ☐ **BOD** ☐ **Chloride** ☐ **Nitrate/Nitrate** ☐ **Sulfate** ☐ **Sulfide** ☐ **TOC** ☐ **Hydrogen** ☐ **VFAs** ☐ **TCLP** ☐ _____

Appendix D
Project QC Documentation

SUBMITTAL REGISTER	Contract No.: N62470-12-D-7004								TO No.: JM14							
	TO Title: Petroleum Monitoring Assessment TPTF										Location: Key West, Florida			Contractor: AGVIQ		
Item Number		Item Description	Para. Number	Approving Authority	Other Reviewers	Submittal Number	Scheduled Submission Date	AGVIQ Review Date	AGVIQ Disposition	AGVIQ Transmit Date	QC Admin Received Date	QC Disposition	QC Admin Transmit Date	Contracting Officer Received	Contracting Officer Disposition	Contracting Officer Return	Remarks
General Documentation																	
1	SD-09 Reports	Work Plan	CP - 2.1.2	G	AGVIQ	SD-09	Prior to start of construction					Active					
2		APP	CP - 2.1.2	G	AGVIQ	SD-09	Prior to start of construction					Active					
3		Tier II UFP-SAP	CP - 2.1.7	G	AGVIQ	SD-09	Prior to start of construction/Sampling					Active					
		Annual Report		G	AGVIQ	SD-09	Quarterly					Pending					
4	SD-18 Records	Testing Plan and Log	WP - 3.4	G	AGVIQ	SD-18	As needed					Pending					
		Preparatory Phase Report	WP - 3.6	G	AGVIQ	SD-18	As needed					Pending					
5		Daily Production Report	WP - 3.6	G	AGVIQ	SD-18	Min Weekly or as determined during KO Meeting					Pending					
6		Daily QC Report	WP - 3.6	G	AGVIQ	SD-18	Min Weekly or as determined during KO Meeting					Pending					
7		Rework Items List	WP - 3.5	G	AGVIQ	SD-18	Min Weekly or as determined during KO Meeting					Pending					
Sampling Requirements																	
8	SD-08 Statements	Sampling Logs (COCs)	WP - 4.3	G	AGVIQ	SD-08	As Required					Pending					
9	SD-09 Reports	Groundwater Sampling and MNA Reports	CP - 2.1.5	G	AGVIQ	SD-09	Quarterly					Pending					
10	SD-12 Field Test Reports	Field Data Sheets	WP - 4.3	G	AGVIQ	SD-12	After each sampling event with Quarterly Reports					Pending					
11		Groundwater Analytical Results	WP - 4.7	G	AGVIQ	SD-12	After each sampling event with Quarterly Reports					Pending					
12		Disposal Sample Analytical Results	WP - 4.7	G	AGVIQ	SD-12	As Required					Pending					
13	SD-13 Certification	Laboratory Certification	WP - 4.7	G	AGVIQ	SD-13	Prior to sampliing					Pending					
Transportation and Disposal of Waste Material																	
14	SD-08 Statements	Treatment Facility Permit	WP - 5.0	G	AGVIQ	SD-08	As needed					Pending					
15	SD-18 Records	Shipment Manifests	WP - 5.0	G	AGVIQ	SD-18	As needed					Pending					
16		Delivery Certificates	WP - 5.0	G	AGVIQ	SD-18	As needed					Pending					
17		Treatment and Disposal Certificate	WP - 5.0	G	AGVIQ	SD-18	As needed					Pending					
18		T&D Log	WP - 5.0	G	AGVIQ	SD-18	As needed					Pending					

TRANSPORTATION AND DISPOSAL LOG

TO No	Project No	Project Name	Site Description	Container Type	Container Designation	Waste Profile Sample No	Contractor	Transporter	Date Transported	Transporter EPA ID	Load ID	Disposal Facility	Disp Fac EPA ID	Media	Waste Type (Haz, Nonhaz, TSCA)	Waste Code/ Haz Waste No	Disposal Date	Manifest Number	Disposal Treatment Method (Enter disposal quantity under appropriate method)					Certificate of Disp/ Destruc Date	Comments/Notes	File Status (see note)
																			Incineration	Recycle	Landfill	Other	Unit			
JM14	4034/478903	TPTF - NASKW	PETROLEUM SITE																							

Notes:
File Status Codes
1 = Need Manifest
2 = Need Weight Ticket
3 = Need CD
4 = File Complete

AGVIQ	**CONTRACTOR PRODUCTION REPORT** (ATTACH ADDITIONAL SHEETS IF NECESSARY)	DATE OF REPORT: REVISION NO: REVISION DATE:

TO NO: JM14	PROJECT NAME/LOCATION: TPTF - NAS KEY WEST		REPORT NO:
PROJECT NO:	SUPERINTENDENT:	SITE H&S SPECIALIST:	
AM WEATHER:	PM WEATHER:	MAX TEMP: F	MIN TEMP: F

SUMMARY OF WORK PERFORMED TODAY

JOB SAFETY

Was A Job Safety Meeting Held This Date? ☐ Yes ☐ No	**TOTAL WORK HOURS ON JOB SITE THIS DATE** (Including Continuation Sheets)	
Were there any lost-time accidents this date? (If Yes, attach copy of completed OSHA report) ☐ Yes ☐ No	CH2MHILL On-Site Hours	
Was a Confined Space Entry Permit Administered This Date? (If Yes, attach copy of each permit) ☐ Yes ☐ No	AGVIQ On-Site Hours	
Was Crane/Manlift/Trenching/Scaffold/HV Elec/High Work/Hazmat Work Done?? (If Yes, attach statement or checklist showing inspection performed) ☐ Yes ☐ No	Subcontractor On-Site Hours	
	Total On-Site Hours This Date	
Was Hazardous Material/Waste Released into the Environment? (If Yes, attach description of incident and proposed action) ☐ Yes ☐ No	Cumulative Total of Work Hours From Previous Report	
	Total Work Hours From Start of Construction	

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB

DESCRIPTION OF EQUIPMENT/MATERIAL RECEIVED	MAKE/ MODEL/ MANUFACTURER	EQUIPMENT/ LOT NUMBER	INSPECTION PERFORMED BY	NUMBER/ VOLUME/ WEIGHT

EQUIPMENT USED ON JOB SITE TODAY.

EQUIPMENT DESCRIPTION	EQUIPMENT MAKE/MODEL	SAFETY CHECK PERFORMED BY	NUMBER OF HOURS		
			USED	IDLE	REPAIR

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the delivery order [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

VISITORS TO THE SITE:

LIST OF ATTACHMENTS (OSHA report, confined space entry permit, incident reports, etc.):

SAFETY REQUIREMENTS HAVE BEEN MET ☐

SUPERINTENDENT'S SIGNATURE _____ DATE _____

AGVIQ AGVIQ ENVIRONMENTAL SERVICES	**CONTRACTOR PRODUCTION REPORT** (ATTACH ADDITIONAL SHEETS IF NECESSARY)	DATE OF REPORT: REVISION NO: REVISION DATE:
TO NO: JM14	PROJECT NAME/LOCATION: TPTF - NAS KEY WEST	REPORT NO:
PROJECT NO:	SUPERINTENDENT:	SITE H&S SPECIALIST:

WORK PERFORMED TODAY

EMPLOYEE	WORK PERFORMED	EMPLOYER	FEMALE?	MINORITY?	TITLE/TRADE	HRS

INCLUDE ALL PERSONNEL WORK HOURS IN THE TOTAL WORK HOURS ON JOB SITE

SAFETY REQUIREMENTS HAVE BEEN MET ☐

SUPERINTENDENT'S SIGNATURE _____ DATE _____

AGVIQ	**CONTRACTOR QUALITY CONTROL REPORT** (ATTACH ADDITIONAL SHEETS IF NECESSARY)	REPORT DATE: REVISION NO: REVISION DATE:
TO NO: JM14	PROJECT NAME/LOCATION: TPTF – NAS KEY WEST	REPORT NO:
PROJECT NO: 4032/478903	PROJECT QC MANAGER:	SITE H&S SPECIALIST:

SAFETY MEETINGS AND INSPECTIONS

WAS A SAFETY MEETING HELD THIS DAY?	☐ YES	☐ NO	IF YES, ATTACH SAFETY MEETING MINUTES
WAS CRANE USED ON THE SITE THIS DAY?	☐ YES	☐ NO	IF YES, ATTACH DAILY CRANE REPORT OF INSPECTION AND CONTRACTOR CRANE OPERATION CHECKLIST

DEFINABLE FEATURES OF WORK STATUS

DFOW No.	Definable Feature Of Work	Preparatory	Initial	Follow-Up
1		☐	☐	☐
2		☐	☐	☐
3		☐	☐	☐
4		☐	☐	☐
5		☐	☐	☐
6		☐	☐	☐
7		☐	☐	☐
8		☐	☐	☐
9		☐	☐	☐
10		☐	☐	☐
11		☐	☐	☐
12		☐	☐	☐
13		☐	☐	☐
14		☐	☐	☐
15		☐	☐	☐

PREPARATORY

WAS PREPARATORY PHASE WORK PERFORMED TODAY? ☐ YES ☐ NO

IF YES, FILL OUT AND ATTACH SUPPLEMENTAL PREPARATORY PHASE CHECKLIST.

DFOW No.(from list above).	TASK/ACTIVITY	PREPARATORY PHASE REPORT NO.

INITIAL AND FOLLOW-UP FEATURE OF WORK COMMENTS

DFOW No.(from list above)	Phase	Comment/Finding/Action
	Initial ☐ Follow up ☐	
	Initial ☐ Follow up ☐	
	Initial ☐ Follow up ☐	
	Initial ☐ Follow up ☐	
	Initial ☐ Follow up ☐	
	Initial ☐ Follow up ☐	
	Initial ☐ Follow up ☐	
	Initial ☐ Follow up ☐	
	Initial ☐ Follow up ☐	

REWORK ITEMS IDENTIFIED TODAY (NOT CORRECTED BY CLOSE OF BUSINESS)			**REWORK ITEMS CORRECTED TODAY (FROM REWORK ITEMS LIST)**	
TASK/ACTIVITY	DATE ISSUED	DESCRIPTION	TASK/ACTIVITY	CORRECTIVE ACTION(S) TAKEN

AGVIQ	**CONTRACTOR QUALITY CONTROL REPORT** (ATTACH ADDITIONAL SHEETS IF NECESSARY)	REPORT DATE: REVISION NO: REVISION DATE:
CTO NO: JM13	PROJECT NAME/LOCATION: AREA C SW NTC ORLANDO	REPORT NO:
PROJECT NO: 4032	PROJECT QC MANAGER:	SITE H&S SPECIALIST:

SAMPLING/TESTING PERFORMED

SAMPLING/TESTING PERFORMED	SAMPLING/TESTING COMPANY	SAMPLING/TESTING PERSONNEL

MATERIALS/EQUIPMENT INSPECTION (Materials received and inspected against specifications)

MATERIAL/EQUIPMENT DESCRIPTION	SPECIFICATION	MATERIAL ACCEPTED?	COMMENT/REASON/ACTION
		YES ☐ NO ☐	
		YES ☐ NO ☐	
		YES ☐ NO ☐	
		YES ☐ NO ☐	
		YES ☐ NO ☐	
		YES ☐ NO ☐	
		YES ☐ NO ☐	

SUBMITTALS INSPECTION / REVIEW

SUBMITTAL NO	SUBMITTAL DESCRIPTION	SPEC/PLAN REFERENCE	SUBMITTAL APPROVED?	COMMENT/REASON/ACTION
			YES ☐ NO ☐	
			YES ☐ NO ☐	
			YES ☐ NO ☐	
			YES ☐ NO ☐	

OFF-SITE SURVEILLANCE ACTIVITIES, INCLUDING ACTIONS TAKEN:

ACCUMULATION/STOCKPILE AREA INSPECTION

INSPECTION PERFORMED BY:			SIGNATURE OF INSPECTOR:				
ACCUMULATION/ STOCKPILE AREA LOCATION							
NO OF CONTAINERS:		NO OF TANKS:		NO OF ROLL-OFF BOXES:		NO OF DRUMS:	

INSPECTION RESULTS:

TRANSPORTATION AND DISPOSAL ACTIVITIES/SUMMARY/QUANTITIES:

GENERAL COMMENTS (rework, directives, etc.):

LIST OF ATTACHMENTS (examples, as applicable: preparatory phase checklist, QC meeting minutes, safety meeting minutes, crane inspections, crane operation checklist, COCs, weight tickets, manifests, profiles, rework item list, testing plan and log, etc.):

On behalf of the contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report.

PROJECT QC MANAGER'S SIGNATURE DATE

On behalf of the contractor, I attest that the work for which payment is requested, including stored material, is in compliance with contract requirements.

PROJECT QC MANAGER'S SIGNATURE DATE

SMALL BUSINESS RAC	**PREPARATORY PHASE REPORT**	REPORT NO:	REPORT DATE: REVISION NO: REVISION DATE:
PROJECT NO: 4034/478903	DEFINABLE FEATURE OF WORK:	SITE/ACTIVITY: TPTF – NAS KEY WEST	

PERSONNEL PRESENT

NAME	POSITION	COMPANY/GOVERNMENT

SUBMITTALS

REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER.	HAVE ALL SUBMITTALS BEEN APPROVED? YES ☐ NO ☐
IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED?	
ARE ALL MATERIALS ON HAND? YES ☐ NO ☐	
IF NO, WHAT ITEMS ARE MISSING?	
CHECK APPROVED SUBMITTALS AGAINST DELIVERED MATERIAL. (THIS SHOULD BE DONE AS MATERIAL ARRIVES).	
COMMENTS:	

MATERIAL STORAGE

ARE MATERIALS STORED PROPERLY? YES ☐ NO ☐	
IF NO, WHAT ACTION IS TAKEN?	

SPECIFICATIONS

REVIEW EACH PARAGRAPH OF SPECIFICATIONS.
DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK.
CLARIFY ANY DIFFERENCES.

PRELIM WORK & PERMITS

ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE.	
IF NO, WHAT ACTION IS TAKEN?	

AGVIQ **Small Business RAC II**	**PREPARATORY PHASE REPORT**	REPORT NO:	REPORT DATE: REVISION NO: REVISION DATE:
PROJECT NO: 4032	DEFINABLE FEATURE OF WORK:	SITE/ACTIVITY: AREA C SW NTC ORLANDO	

TESTING

IDENTIFY TEST TO BE PERFORMED, FREQUENCY, AND BY WHOM.

TEST	FREQUENCY	PERFORMER

WHEN REQUIRED?

WHERE REQUIRED?

REVIEW TESTING PLAN.

HAVE TEST FACILITIES BEEN APPROVED?

TEST FACILITY	APPROVED?
	YES ☐ NO ☐
	YES ☐ NO ☐

SAFETY

ACTIVITY HAZARD ANALYSIS APPROVED? YES ☐ NO ☐

REVIEW APPLICABLE PORTION OF EM 385-1-1 AND AHA.

MEETING COMMENTS

NAVY/ROICC COMMENTS DURING MEETING.

OTHER ITEMS OR REMARKS

OTHER ITEMS OR REMARKS:

QC REPRESENTATIVE'S NAME	QC REPRESENTATIVE'S SIGNATURE		DATE	

AGVIQ
AGVIQ ENVIRONMENTAL SERVICES

Photo Log

TO Number	Project Number	Project Name	Site	Film Cassette Number	Photo Number	Date	Time	Task and Description	View Direction	Taken By
JM14	478903									

Punch List / Rework Items List

PUNCH LIST /REWORK ITEMS

PROJECT NAME:	TPTF - NAS KEY WEST		PROJECT NUMBER: 4034/478903					
Item No	Date Identified	Description	Referenced Spec or Drawing	Date Subcontractor Notified	Proposed Date of Action Completion	Action Performed	Resolution	Date Completed
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								

NON-CONFORMANCE REPORT

PART 1 – General Information

Date Submitted:	NCR Number:
Submitted To:	Company/ Title/Position:
Prepared By:	Company/ Title/Position:
Project Name:	Project Number: 4034/478903
TO Number: JM14	Contract Number: N62470-12-D-7004

PART 2 – Non-Conformance/Deficiency Report

Description of Non-Conforming Item or Condition or Deficiency				
Contract Requirement or Project Specification/Drawing				
Test/Inspection/Audit Identifying Non-Conformance/Deficiency				
Reportable Release?	Yes ☐		No ☐	
Material Name:			Quantity:	
Disposition:	Repair ☐	Rework ☐	Use-As-Is ☐	Reject ☐

PART 3 – Investigation/Root Cause Determination

Personnel Responsible for Investigative Process:
Investigative Process Findings:
Probable Root and Contributing Cause(s):

PART 4 – Corrective Actions

Proposed Corrective Actions and Completion Dates:		
Personnel Responsible for Implementation of Corrective Actions:		
Resulting Actions and Effectiveness of Those Actions:		
Personnel Responsible for Monitoring Effectiveness of Corrective Actions:		
Corrective actions have been completed and monitored for effectiveness.		
Signature	Company/Title	Date

PART 5 – Preventive Actions

Proposed Preventive Actions and Completion Dates:		
Personnel Responsible for Implementation of Preventive Actions:		
Resulting Actions and Effectiveness of Those Actions:		
Personnel Responsible for Monitoring Effectiveness of Preventive Actions:		
Preventive actions have been completed and monitored for effectiveness.		
Signature	Company/Title	Date

NON-CONFORMANCE REPORT

PART 6 – Response Approval

Responses Accepted By		
Signature	Company/Title	Date
Signature	Company/Title	Date

PART 7 – Quality Control Follow-Up

Comments/Findings of Follow-Up Observation / Inspection / Audit:				
Verification Results	Satisfactory	☐	Unsatisfactory	☐

PART 8 – NCR Closure

NCR Closed		
	Construction Quality Manager	
Signature	Company/Title	Date

PROJECT MOBILIZATION CHECKLIST
(Choose the items needed for the project site. This is not an all inclusive listing)

NEED	ITEM	DATE NEEDED	MEDIA H = Hardcopy E = Electronic
	DOCUMENTS		
☐	One copy of the Contract		H ☐ E ☐
☐	One copy of Contract Management Plan		H ☐ E ☐
☐	One copy of AGVIQ Insurance Certificate		H ☐ E ☐
☐	One copy of TO Work Authorization		H ☐ E ☐
☐	One copy of the Current Project Schedule		H ☐ E ☐
☐	One copy of approved budget and baseline schedule		H ☐ E ☐
☐	One copy Request for Proposal or Bid for each Subcontract/Addenda		H ☐ E ☐
☐	One copy of Awarded Subcontractors Contract		H ☐ E ☐
☐	One copy of Each Executed Subcontract		H ☐ E ☐
☐	One copy of Each Subcontractors Insurance Certificate		H ☐ E ☐
☐	One copy of Each Subcontractors Work Plans		H ☐ E ☐
☐	One copy of Full size drawings and other materials used to maintain As-Built records		Hardcopy
☐	One copy of facility map with expanded supplemental areas enlarged		H ☐ E ☐
☐	One copy of Each Subcontractors Health and Safety Plan and AHAs		H ☐ E ☐
☐	One copy of Each Subcontractors Quality Plan		H ☐ E ☐
☐	One copy of final Planning deliverables, including updates		H ☐ E ☐
☐	One copy of Current Material Safety Data Sheets for each material brought onsite, kept in a MSDS Notebook (MSDS for contaminants of concern are located in the Site-Specific Health and Safety Plan.		H ☐ E ☐
☐	One copy of Each Onsite Person's Current OSHA Medical, Respirator Fit Test, and Training Certificate for hazardous waste activities		H ☐ E ☐
☐	One copy of Project Health and Safety Plan		H ☐ E ☐

NEED	ITEM	DATE NEEDED	MEDIA H = Hardcopy E = Electronic
☐	One copy of Work Breakdown Structure (Charge Codes) updated		H ☐ E ☐
☐	One copy of QC forms including: ☐ Submittal Register ☐ Testing Plan and Log ☐ Rework Items List form ☐ Waste Tracking Log		H ☐ E ☐
☐	One copy of Health and Safety forms including: ☐ Self- inspection Checklist ☐ Accident Reporting Form ☐ Tailgate Meeting Form ☐ Confined Space Entry Form ☐ Emergency Phone List Form ☐ Incident Investigation Form		H ☐ E ☐
☐	Department of Labor Required Postings ☐ OSHA 5 in 1 poster ☐ State Required DOL Posters		Hardcopy
☐	One copy of Client's POC Phone List and Local Phone Directory		H ☐ E ☐
☐	One copy of Applicable Country, State, Count, or City Regulations		H ☐ E ☐
☐	One copy of State Workers Compensation Posting		H ☐ E ☐
☐	"Right to Know" bulletin board		H ☐ E ☐
☐	One copy of DBA applicable wage rate sheet for posting in trailer		H ☐ E ☐
☐			H ☐ E ☐
☐			H ☐ E ☐
☐			H ☐ E ☐
☐			H ☐ E ☐
☐			H ☐ E ☐
☐			H ☐ E ☐
☐			H ☐ E ☐

COMMUNICATIONS			
NEED	**ITEM**	**DATE NEEDED**	**DATE ON SITE**
☐	AGVIQ Signs for site vehicles		
☐	Job Site Board at entrance to Work Area		
☐	Telephone Lines		
☐	Modem Line		
☐	Router with built-in eight port hub		
☐	Fax Machine (rental)		
☐	Copy Machine (with 20 document sorter) (rental)		
☐	Telephones		
☐	Printers (rental)		
☐	Answering machine		
☐	Radios or Cellular Phones		
☐			H ☐ E ☐
☐			H ☐ E ☐
☐			H ☐ E ☐
☐			H ☐ E ☐
OFFICE FURNISHINGS			
☐	Adequate Office Space for size and duration of Project		
☐	Desks		
☐	Office Chairs and Visitors Chairs		
☐	File Cabinets		
☐	Bookcases		
☐	Tables		
☐	Coffee Pot and supplies		
☐	Small Refrigerator for FOOD ONLY		
☐	Small Refrigerator for SAMPLES (if required by Sampling Plan)		

☐	Water Cooler and supplies		
☐	Trash containers		
☐	Microwave Oven		
☐	Fire Extinguisher (Two 10-lb ABC) or as required by Base		
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OFFICE SUPPLIES			
☐	Digital Camera		
☐	Tape Dispensers and a supply of scotch tape		
☐	Masking Tape		
☐	Strapping Tape (Shipping)		
☐	Heavy Duty Stapler and Staples		
☐	Staple Remover		
☐	Heavy Duty 3-Hole Punch		
☐	Three Ringed Binders		
☐	Writing Tablets (Legal Pads)		
☐	Copy Paper (Plain, Letterhead, and Envelopes)		
☐	Scissors		
☐	Pens, Pencils, erasers, etc.		
☐	Paper Clips (small, medium)		
☐	Binder Clips (small, medium, large)		
☐	White-Out		
☐	Rubber Bands (assorted)		
☐	Computer Diskettes		
☐	File Folders		
☐	Hanging Folders		

☐	File Cabinet Frames		
☐	Extensions Cords		
☐	Rubber Stamps (received w/date, draft, final, copy, original, etc.)		
☐	Stamp Pads (Blue, if copied comes out as black)		
☐	Calendars (Safety will supply at least one per site)		
☐	Shipping supplies and daily service (Fed EXP, UPS, etc.)		
☐	Wall clock		
☐	Bulletin Boards		
☐	Grease Boards		
☐	Permanently Bound Logbooks (Waterproof)		
☐	Black indelible pens		
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PERSONAL PROTECTIVE EQUIPMENT (Site Personnel and Visitors)			
☐	Hard Hats		
☐	Safety Glasses/Goggles		
☐	Reflective Vests		
☐	Steel-toed Rubber Boots (Several in assorted sizes)		
☐	Tyvek (Large and XXLarge to start)		
☐	Work Gloves (leather)		
☐	Site Gloves (nitrile, vinyl,- as specified in the HSP)		
☐	Hearing Protection (Earmuffs, earplugs)		
☐	Respirators/Appropriate Cartridges as specified in the Health and Safety Plan		
☐	Duct Tape		
☐	Barricades		

☐	Barricade Tape		
☐	Warning Signs (as appropriate for work zones and hazards)		
☐	First Aid Kit (2, one for office, one for field)		
☐	Job site tool kit		
☐	Job Trailer for storage of PPE and Sampling Equipment at Work-Site		
☐	Bug Suit		
☐	Tick Kit		
☐			
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☐			
MONITORING EQUIPMENT (as specified in the HSP)			
☐	Flame Ionization Detector (OVA 128, TVA 1000)		
☐	Photo Ionization Detector (Hnu, MiniRae, MultiRae, TVA 1000)		
☐	Combustible Gas Detector/Oxygen Detector (MSA 260,MSA 261, etc.)		
☐	Dust Monitoring Meter		
☐	pH, temperature, conductivity meter		
☐	Water Level Indicator		
☐	Detector Tubes (as specified in HSP)		
☐	Radiation Meter and/or Monitoring Equipment		
☐	Sound Level Meter		
☐	Wind speed and direction indicator		
☐	Instrument Calibration and carrier gasses		
☐			
☐			
☐			
☐			
DECONTAMINATION SUPPLIES (as specified in Health and Safety Plan)			

☐	Alconox/Liquinox		
☐	Metal Wash Tubs		
☐	Rubbing Alcohol		
☐	Respirator Wipes		
☐	Respirator Disinfectant		
☐	Paper towels		
☐	Rolled sheets of plastic (10 mill visqueen)		
☐	Garbage Cans		
☐	Decontamination Zone Barricade Tape		
☐	Drying Rack (Suits, Boots, etc.)		
☐	Shaded Cover (Awning or Dining Fly) for Heat Stress		
☐	Garbage Can Liners		
☐	Scrub Brushes		
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SPILL EQUIPMENT			
☐	Sorbent Pads (pads and/or pigs) for chemicals of concern and materials brought on site		
☐	55-gallon drums / with labels		
☐	55-gallon drum liners		
☐	Rolled sheets of plastic (10 mill visqueen)		
☐	Shovels		
☐	Brooms		
☐	Mops		
☐	Empty sand bags		
☐	Assistance of Fire Department (Brief them on site activities)		
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COORDINATION AND MUTUAL UNDERSTANDING MEETING MINUTES

Meeting Date:		Prepared by:	
Meeting Location:		Date Prepared:	
Project Name/Location:	TPTF – NAS KEY WEST	CTO No	JM14
Project No.	4034/478903	Contract No:	N62470-12-D-7004
Task/Activity/Site:			
Attendees:			
Copies to:			

Purpose: The purpose of this meeting is to develop a mutual understanding of the QC details, including forms to be used; administration of on-site and off-site work; schedule and method for transmitting submittals; and coordination of AGVIQ's management, production, and the Project QC Manager's duties with the Contracting Officer or designated representative.

AGVIQ Representative _____ Date _____

Navy CO or Designated Representative _____ Date _____

REQUEST FOR INFORMATION/CLARIFICATION

CONTRACT NO. **N62470-12-D-7004** **PROJECT NO. 4034/478903**

PROJECT TITLE & LOCATION: **TPTF – NAS KEY WEST**

BRIEF DESCRIPTION OF RFI:

TO:	NAME		TITLE	
FROM:	NAME		TITLE	
Date Submitted:	RFI No		DCN No	
Please Respond By:			Page:	of
REFERENCE				
DELIVERABLE NO.(S):				
DRAWING(S)/SPECS:				

1) DESCRIPTION OF EXISTING CONDITION AND/OR DEFICIENCY:

NAME TITLE

PROJECT TEAM MEMBER SIGNATURE DATE

2) RECOMMENDED SOLUTION:

NAME TITLE	NAME TITLE
PROJECT MANAGER APPROVAL SIGNATURE DATE	PROJECT TEAM MEMBER SIGNATURE DATE

3) RESPONSE/DISPOSITION:

NAME	NAME
LEAD ENGINEER SIGNATURE DATE	PROJECT MANAGER SIGNATURE DATE

RFC Required? **Yes** ☐ **No** ☐ **Schedule Impact?** **Yes** ☐ **No** ☐ **Cost Impact?** **Yes** ☐ **No** ☐

4) CLIENT RESPONSE/DISPOSITION CONCURRENCE:

NAME	NAME
QC MANAGER SIGNATURE DATE	AFCEE REP SIGNATURE DATE

REVIEW DISTRIBUTION			FINAL DISTRIBUTION		
☐ CLIENT REP	☐ FACILITY REP	☐ AGVIQ LEAD ENG	☐ CLIENT REP	☐ FACILITY REP	☐ AGVIQ LEAD ENG
☐ CLIENT CONTRACTS	☐ AGVIQ PM	☐ Other	☐ CLIENT CONTRACTS	☐ AGVIQ PM	☐ Other
☐ KA	☐ AGVIQ PROJ ENG	☐	☐ KA	☐ AGVIQ PROJ ENG	☐

PROJECT STATUS MEETING AGENDA/MINUTES

Meeting Date:		Prepared by:	
Meeting Location:		Date Prepared:	
Project Name/Location:	TPTF – NAS KEY WEST	TO No	JM14
Project No.	4034/478903	Contract No:	N62470-12-D-7004
Task/Activity/Site:			
Attendees:			
Copies to:			

Meeting Agenda

1. Health and Safety Moment
2. Review previous meeting minutes
3. Review schedule
   a) Work or testing accomplished since last meeting
   b) Rework items identified since last meeting
   c) Rework items completed since last meeting
4. Review status of submittals
   a) Submittals reviewed and approved since last meeting
   b) Submittals required in the near future
5. Review work to be accomplished in the next 2 weeks and documentation required
   a) Establish completion dates for rework items
   b) Inspections required
   c) Testing required
   d) Status of off-site work or testing
   e) Documentation required
6. Resolve H&S, QC and production problems
7. Address items that may require revising the project plans, specifications, and drawings
   a) Request for Information (RFI) status

PROJECT STATUS MEETING AGENDA/MINUTES

Minutes

1.
2.
3.
4.
5.
6.
7.

PRE-CONSTRUCTION MEETING AGENDA

(with Subcontractors)

I. Introduction
   - A. Meeting attendees introduction
   - B. Purpose of the meeting

II. Review of Scope of Project
   - A. Overview of base activities
   - B. Review CTO-specific scope of work

III. Communications
   - A. Project communication links
     1. Offsite contacts
        - a. Operations
        - b. Accounts payable/accounts receivable
        - c. Subcontracts
     2. Onsite contacts
        - a. Site management
        - b. Quality control
        - c. Health and safety
     3. Communication
        - a. Timely and open
        - b. Confidentiality

IV. Health and safety
   - A. Employee paperwork
   - B. Activity hazard analysis
   - C. Meetings
   - D. Conduct
   - E. Emergency procedures

V. Submittals

A. Daily reports (CPR and CQCR)

B. Monthly invoicing (DBA and schedule of values)

C. Sampling /analytical records

D. Testing reports

E. Waste disposal packages (characterization data, profiles, manifest)

F. Waste documentation (facility-signed manifests, weight tickets, certificates of disposal/destruction/recycling)

VI. Change Management

A. Request for information

B. Change in scope of work

C. Change approval prior to initiating work

D. Change in work plans

VII. Weekly Meetings

A. Progress meetings

B. QC meetings

VIII. Schedule

VIII. Operations

A. Construction means and methods

B. Personnel, equipment, resources

AGVIQ ENVIRONMENTAL SERVICES

TRANSMITTAL: **XXXXXX-XX**

To: **From:**

Attn: **Date:**

Contract: N62470-12-D-7004

TO: JM14

Re: Submittal Document No.

We Are Sending You:

Quantity	Description

If material received is not as listed, please notify us at once

Remarks:

Copy To: