



TETRA TECH

PHIL-24605

December 23, 2011

Project Number 02014

Ms. Lisa Cunningham (3HS11)
United States Environmental Protection Agency (EPA)
1650 Arch Street
Philadelphia, PA 19103

Reference: Contract No. N62470-08-D-1001
Contract Task Order (CTO) No. WE05

Subject: Final Interim Remedial Action Completion Report (IRACR)
Site 1 - Privet Road Compound
Naval Air Station Joint Reserve Base (NAS JRB) - Willow Grove
Horsham, Pennsylvania

Dear Ms. Cunningham:

On behalf of the Navy, Tetra Tech is pleased to submit the final IRACR for the subject site. A copy has also been provided to the Pennsylvania Department of Environmental Protection.

Please do not hesitate to contact me if you have any questions.

Sincerely,

Andrew Frebowitz
Project Manager

AF/nfs

Enclosure

c: Jeffrey Dale (Navy BRAC PMO)
Brian Helland (Navy BRAC PMO)
Robert Lewandowski (Navy BRAC PMO)
Bonnie Capito (NAVFAC) (without enclosure)
Marty Schy (Willow Grove Caretaker Office)
Margaret Pollich (PADEP)
Glenn Wagner (Tetra Tech)
Garth Glenn (Tetra Tech) (without enclosure)
Horsham Township Library
File

Tetra Tech NUS, Inc.

234 Mall Boulevard, Suite 260, King of Prussia, PA 19406-2954
Tel 610.491.9688 Fax 610.491.9645 www.ttnus.com



INTERIM REMEDIAL ACTION COMPLETION REPORT

Site 1 – Privet Road Compound

Groundwater: Operable Unit No. 3

Naval Air Station, Joint Reserve Base (NAS JRB)

Willow Grove, Pennsylvania

1 Overview

This Interim Remedial Action Completion Report (IRACR) documents activities associated with implementation of the selected remedy at Site 1 (Privet Road Compound) Groundwater, Operable Unit 3 (OU 3) at Naval Air Station Joint Reserve Base (NAS JRB) Willow Grove located in Horsham Township, Montgomery County, Pennsylvania (Figure 1). This IRACR has been prepared in accordance with Department of Defense (DoD) and United States Environmental Protection Agency (EPA) Joint Guidance Recommended Closeout and NPL Deletion Process for DoD Facilities (DoD/EPA, 2006).

NAS JRB Willow Grove occupies approximately 1,000 acres of the 1,200 acres maintained by the DoD at the air station and shares facilities/services with the Air Force Reserve. The primary mission of NAS JRB Willow Grove was to provide support for operations involving aviation training activities and to train Navy reservists. NAS JRB was placed on the National Priorities List (NPL) in September 1995. The Base was selected for closure by the Base Realignment and Closure (BRAC) Law in November 2005. The NAS portion of the facility will close in September 2011 and the Air Force will operate the Horsham Air Reserve Station.

There are multiple contaminated sites at NAS JRB Willow Grove, many with OU designations. One of the sites identified as part of the NPL designation was Site 1 – Privet Road Compound. Site 1 lies within a heavily developed section of NAS JRB Willow Grove and is located near the eastern boundary of the Base. The compound was constructed in 1967 to serve as a transfer station for wastes after closure of the Ninth Street Landfill (Site 3). The compound operated between 1967 and 1975. Materials reported to have been disposed at the site include general refuse, sewage sludge, oil and grease emulsion, paint wastes, volatile organic compounds (VOCs), and polychlorinated biphenyls (PCB) fluids from transformers.

Investigations at Site 1 have shown PCB contamination in shallow soils and chlorinated organic contaminants in groundwater. These investigations have shown that these impacted areas are distinct and unrelated; therefore, the Navy and EPA, with agreement the Pennsylvania Department of Environmental Protection (PADEP), organized Site 1 into two OUs – soil (OU 1) and groundwater (OU 3).

A PCB soil removal action for OU 1 was performed in 1999 and a no further action Record of Decision (ROD) was signed in September 2008. A final Focused Feasibility Study (FFS) for OU 3 was submitted in January 2008, and the interim ROD for OU 3 was signed in September 2008. The OU 3 ROD was issued as interim pending resolution of the off-Base groundwater contamination source to be addressed by EPA. The Remedial Investigation (RI) performed for Site 1 OU 3 concluded that the most significant contamination detected at Site 1 does not originate at the Base. An off-Base property located southeast of Site 1 was identified as the probable source area and origination point of the contaminant plume. From there, the plume travels with groundwater and flows onto the Base property through a combination of natural groundwater flow conditions and the pumping effects of Navy supply wells which capture some off-Base groundwater and draw it into the Base property.

Groundwater in the immediate vicinity of Site 1 is the primary source of water supply for the Base. NAS JRB obtains potable water from two deep supply wells located east of Site 1 on the opposite side of Privet Road. Water from these wells contains VOCs at concentrations above regulatory-permitted levels. Water drawn from these wells is treated to remove VOCs before distribution and use. This treatment is conducted in order for the Base to comply with the Safe Drinking Water Act (SDWA) and pre-dates any Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedial decisions for this site. Treated water does not currently pose a threat to public health.

The selected remedy documented in the Site 1 OU 3 interim ROD is a limited action remedy to include the implementation of land use controls (LUCs) and periodic groundwater monitoring in conjunction with a review of site conditions and risks every five years. Land use controls include the restriction on the use of groundwater prior to and following Base closure and transfer of the property (Tetra Tech, 2008).

A portion of the property was transferred to the Air Force in 2010 and a consolidated reserve center and storm water management basin were constructed on the site as shown in Figure 2. In 2011 the property containing the two supply wells was transferred to the Air Force, which plans to continue to operate the water supply wells and the associated treatment systems. The Public Water Supply permit for these wells was transferred from Navy to the PA Air National Guard on September 14, 2011.

2 Remedial Action Objectives

The human health risk assessment concluded that under a future residential land use scenario, exposure to VOCs in the groundwater through ingestion, dermal contact, and inhalation, would pose a potential carcinogenic risk exceeding EPA's target risk range for the lifetime resident. To address these risks, the following Remedial Action Objective (RAO) was established for Site 1 groundwater:

- Protect the health of future groundwater users by preventing their contact with groundwater that is contaminated with VOCs at concentrations greater than the regulatory benchmark levels.

To further define and implement the RAO, the ROD (Tetra Tech, 2008) specified the following LUCs for Site 1 groundwater:

- Land use restrictions will be identified in a Navy document that identifies the restriction on the use of site groundwater prior to and following closure of the Base and transfer of the property.
- In the event the affected property is transferred to another federal agency, this LUC will be included in the DoD Form 1354, Transfer and Acceptance of Military Real Property. The receiving agency will be bound by the same environmental restrictions as the Navy.
- LUCs will consist of deed restrictions that prohibit the use of untreated groundwater for drinking if the property is transferred to a non-Federal entity.

In addition, the ROD specified that periodic monitoring be performed to ensure the Navy and regulatory agencies have the data necessary to evaluate and ensure the protectiveness of the remedy.

3 Remedial Actions

The LUC Remedial Design (RD) (Tetra Tech, 2010) for OU 3 was completed in August 2010 and defines the land use controls required by the OU 3 ROD.

The implementation of the interim remedy was completed in accordance with the LUC RD and ROD for OU 3. Major activities associated with the implementation of the remedy include:

- LUCs were implemented to prevent exposure to COCs in groundwater in accordance with the LUC RD. The LUCs are identified in the Base Master Plan (Air National Guard, 2010). A groundwater LUC has been established which states no new groundwater wells may be installed without written consent of PADEP and EPA. The LUC also states access to existing and any additional monitoring wells, including supply wells, will be limited by the Navy or subsequent land owner to the organization responsible for groundwater monitoring. Figure 2 shows the area affected by the LUCs.
- Collection of groundwater samples from three on-site monitoring wells and two Navy supply wells to monitor the nature of contamination. Sampling was conducted in September 2009, September 2011, and additional sampling will be performed.

4 Demonstration of Completion

The Site 1 Groundwater Monitoring Results report (Tetra Tech, 2009) documents the results of the first round of periodic groundwater monitoring. The monitoring report for the September 2011 sampling is still being prepared. Table 1 presents a demonstration towards attainment of the remedial objectives through

a comparison of RAOs and LUC objectives for Site 1 groundwater to the results of the interim Remedial Action. Table 2 presents a summary of results for significant VOCs [trichloroethene (TCE) and tetrachloroethene (PCE)] detected during the September 2009 monitoring event compared to historical sample results.

Table 1
Demonstration of/towards attainment of the remedial objectives

RAO and LUC Objectives	Interim Remedial Action Results
Protect the health of future groundwater users by preventing their contact with groundwater that is contaminated with VOCs at concentrations greater than the regulatory benchmark levels.	LUCs are in place that prohibits the installation of any new groundwater wells without written consent from EPA and PADEP.
Land use restrictions will be identified in a Navy document that identifies the restriction on the use of site groundwater prior to and following closure of the Base and transfer of the property.	LUCs have been identified in the Base Master Plan prepared by the Air National Guard in July 2010.
In the event the affected property is transferred to another federal agency, this LUC will be included in the DoD Form 1354, Transfer and Acceptance of Military Real Property. The receiving agency will be bound by the same environmental restrictions as the Navy. If the property is transferred to a non-Federal entity LUCs will consist of deed restrictions that prohibit the use of untreated groundwater for drinking.	The Air National Guard has acquired ownership and operational control of the two supply wells and the LUCs in place contain the same environmental restrictions as the Navy.

Table 2
VOC concentrations in Site 1 groundwater

DATE	01MW01S*/ 01MW01S-R		01MW01SO*/ 01MW01SO-R		01MW06S		01MWNW1 (SUPPLY WELL)		01MWNW2 (SUPPLY WELL)	
	TCE	PCE	TCE	PCE	TCE	PCE	TCE	PCE	TCE	PCE
2011	0.13 J	0.083 J	0.28 J	0.85	0.24 J	0.7	3.4	14	1.1	1.4
2009	0.11 J	0.59 J	0.5U	0.5U	0.32 J	0.94	3.4	20	0.91 ⁽²⁾	1.2
2000 ⁽¹⁾	--	--	--	--	--	--	9 J	39	1.6 J	3.6 J
1997	10U	6 J	1 J	10U	2 J	4 J	6 J	36	3 J	2 J
1991	3 J	32 B	--	--	5U	3 B	13⁽²⁾	53⁽²⁾	6 L⁽²⁾	4 J ⁽²⁾

All concentrations reported in units of micrograms per liter (ug/l)

Positive detections above Safe Drinking Water Act Maximum Contaminant Levels (MCLs) are bolded

* These wells were sealed to facilitate construction of the consolidated reserve center. Replacement wells have been installed and these wells are listed in the SAP for future Groundwater Monitoring. The replacement wells were sampled in 2011

⁽¹⁾ Highest concentration detected during packer testing

⁽²⁾ Highest concentration detected among field and field-duplicate samples

U = Undetected at listed reporting limit

J = Estimated value

B = Blanked value; detected concentration not significantly above detections in Quality Assurance/Quality Control samples

L = Reported concentration is biased low; actual concentration may be higher

5 Ongoing Activities

The Navy will continue to inform the EPA and PADEP of the post-ROD activities in accordance with the LUC RD and statutory Five-Year Reviews will be conducted to ensure the remedy continues to provide adequate protection of human health and the environment. A long-term monitoring plan has been approved by the EPA that specifies groundwater monitoring locations and frequency (Tetra Tech, 2010). Results will be compared to regulatory benchmarks. The LUCs will be maintained within the boundaries of the site indefinitely, or until all parties (Navy, EPA, PADEP) agree that groundwater contamination is at such levels to allow for unlimited use and unrestricted exposure.

6 Community Relations

The Navy and EPA provide information regarding the CERCLA activities at NAS JRB Willow Grove to the public through a community relations program, which includes a Restoration Advisory Board (RAB), public meetings, the Administrative Record File for the site, the information repository, and announcements published in local newspapers. The RAB has been apprised of all environmental activities related to the site.

In accordance with Sections 113 and 117 of CERCLA, the Navy provided a public comment period from April 16, 2008 through May 30, 2008 for the Site 1 OU 3 Proposed Remedial Action Plan (PRAP) detailing the preferred remedy for the site. A public meeting to present the PRAP was held on April 30, 2008 at the Horsham Township Public Library in Horsham, Pennsylvania. A public notice for this meeting and the availability of applicable documents was placed in *The Intelligencer* newspaper on April 16, 2008.

During the public comment period, no written questions or comments were received by the Navy, EPA, or PADEP. The questions and concerns raised at the public meeting were general inquiries of site conditions for information purposes only; no comments relative to the selected remedy were received from the public. A public notice announcing the finalization of the subsequent Interim ROD was placed in *The Intelligencer* on October 22, 2008.

The PRAP, ROD, LUC RD, and Investigation reports are available to the public in the information repository for the Administrative Record maintained at:

Horsham Township Public Library
435 Babylon Road
Horsham, Pennsylvania 19044
Phone: (215) 443-2609

7 Certification Statement

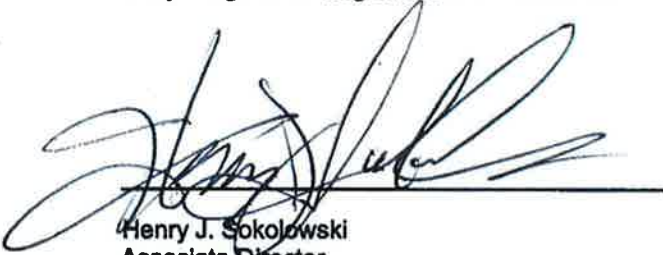
This IRACR Indicates that the Interim remedy is operational and functional in accordance with CERCLA, and memorializes the Response Complete at Site 1 – OU 3 (Groundwater) at NAS JRB Willow Grove, Pennsylvania, and meets the RAOs identified in the interim ROD.



Robert F. Lewandowski
BRAC Environmental Coordinator
Navy Program Management Office Northeast

12/15/2011

Date



Henry J. Sokolowski
Associate Director
Office of Federal Facilities Remediation and Site Assessment
United States Environmental Protection Agency

12/21/2011

Date

References

Air National Guard, 2010. Base General Plan, Willow Grove ARS, Pennsylvania. July.

DoD (Department of Defense) and United States Environmental Protection Agency (EPA), 2006. Joint Guidance Recommended Closeout and NPL Deletion Process for DoD Facilities.

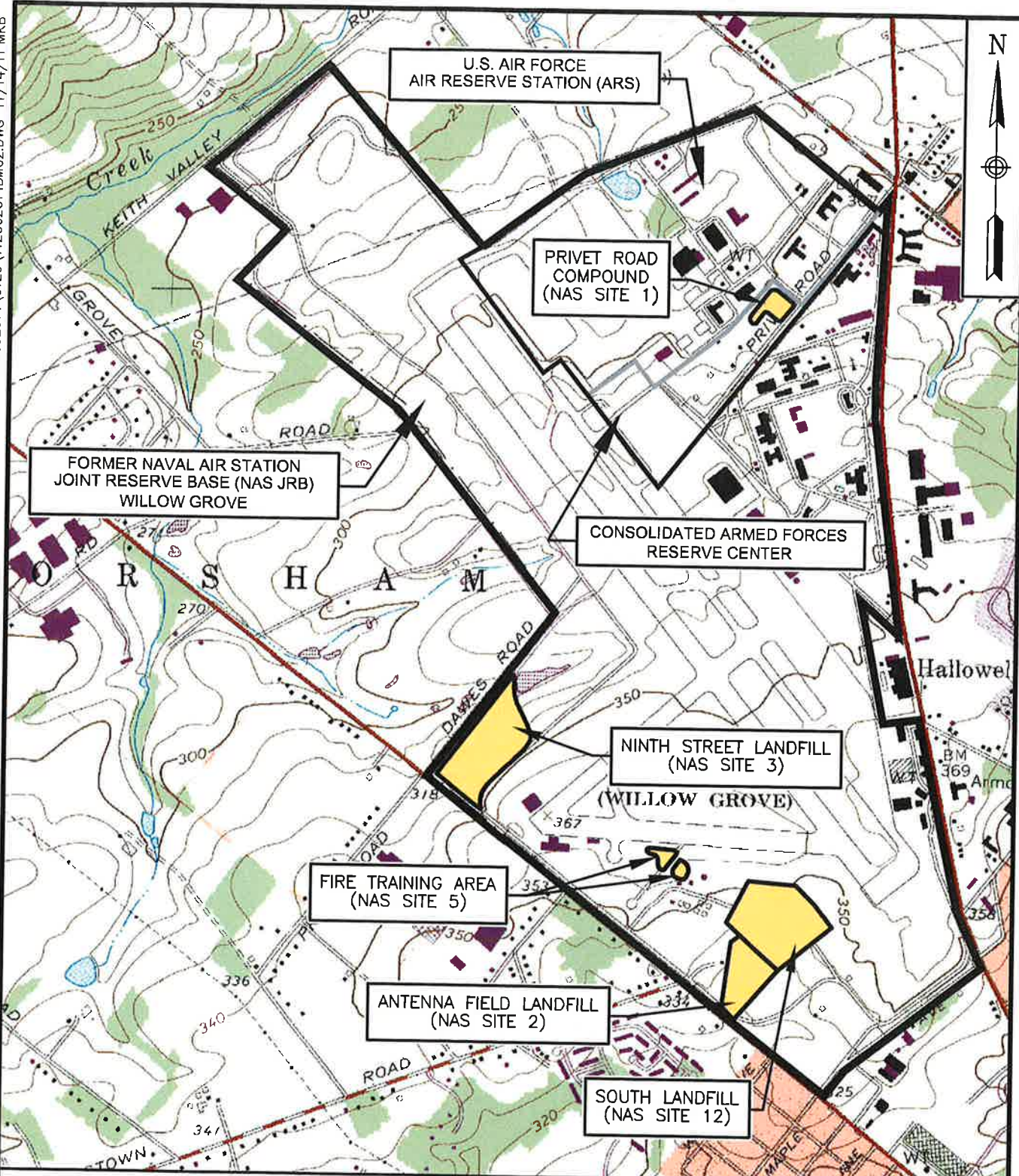
Tetra Tech (Tetra Tech NUS, Inc.), 2008. Record of Decision Site 1 Groundwater Operable Unit 3 (OU 3), Naval Air Station Joint Reserve Base Willow Grove, Pennsylvania. September.

Tetra Tech, 2009. Groundwater Monitoring Results Site 1 – Privet Road Compound, Naval Air Station Joint Reserve Base Willow Grove, Pennsylvania. November.

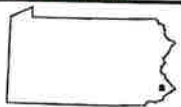
Tetra Tech, 2010. Site 1 – Privet Road Compound Groundwater Operable Unit 3 (OU 3) Remedial Design for Land Use Controls, Naval Air Station Joint Reserve Base Willow Grove, Pennsylvania. August.

Tetra Tech, 2011. Sampling and Analysis Plan for Site 1 Groundwater Monitoring, Naval Air Station Joint Reserve Base Willow Grove, Pennsylvania. July.

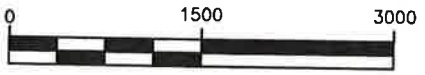
112G02014\0120\112G02014BM02.DWG 11/14/11 MKB



BASE MAP IS A PORTION OF THE AMBLER, PA U.S.G.S. 7.5 MINUTE QUADRANGLE MAP, DATED 1963, PHOTOREVISED IN 1983.



QUADRANGLE LOCATION



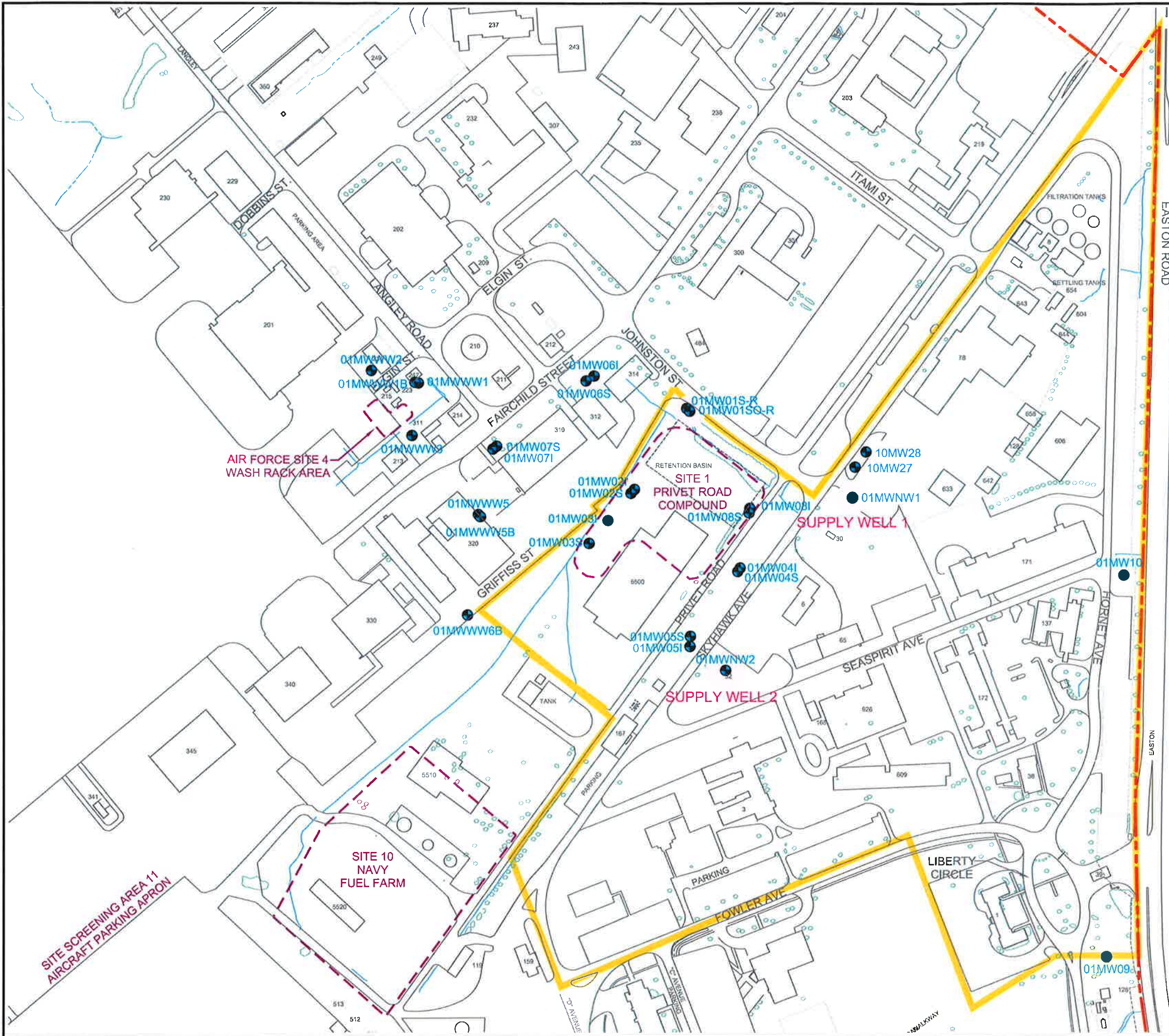
SCALE IN FEET



TETRA TECHNUS, INC.

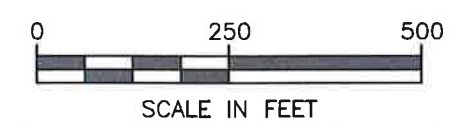
SITE LOCATION MAP NAS JRB WILLOW GROVE WILLOW GROVE, PENNSYLVANIA

SCALE AS NOTED	
FILE 112G02014BM02	
REV 0	DATE 12/14/11
FIGURE NUMBER FIGURE 1	



LEGEND

- MONITORING WELL LOCATION
- PERIODIC GROUNDWATER MONITORING WELL LOCATION
- BOUNDARY OF INSTITUTIONAL CONTROLS



**SITE LAYOUT AND
PROPOSED LAND USE CONTROL AREA
SITE 1 - PRIVET ROAD
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA**

FILE 112G02014GM01-2	SCALE AS NOTED
FIGURE NUMBER FIGURE 2	REV DATE 0 12/08/11