Draft Final
Demonstration of Remedial Actions Operating Properly and Successfully
Nosedocks/Apron 2
Former Griffiss Air Force Base
Rome, New York

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List of Abbreviations and Acronyms

AFB	Air Force Base
AFCEE	Air Force Center for Engineering and the Environment, formerly the Air Force Center for Environmental Excellence
AFRPA	Air Force Real Property Agency
Air Force	United States Air Force
AOC	Area of Concern
BFSA	Bulk Fuel Storage Area
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
DCE	dichloroethylene
DO	dissolved oxygen
DOC	dissolved organic carbon
EPA	(United States) Environmental Protection Agency
FFA	Federal Facility Agreement
FS	feasibility study
GLDC	Griffiss Local Development Corporation
LTM	long-term monitoring
LUC/IC	Land Use Control/Institutional Control
mg/L	micrograms per liter
MNA	Monitored natural attenuation
MTBE	methyl tert-butyl ether
µg/L	micrograms per liter
MW	monitoring well
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation

List of Abbreviations and Acronyms (cont.)

NYSDOH	New York State Department of Health
OBGW	on-base groundwater
OPS	operating properly and successfully
ORP	oxidation reduction potential
OWS	oil/water separator
Parsons	Parsons Infrastructure & Technology Group, Inc.
RAO	remedial action objective
RDWP	remedial design work plan
RI	remedial investigation
ROD	Record of Decision
SSVM	sub-slab vapor mitigation
SVOC	semivolatile organic compound
TCE	trichloroethene
USACE	United States Army Corps of Engineers
VC	vinyl chloride
VOC	volatile organic compound

1 Introduction

1.1 Purpose

The purpose of this report is to document that remedial actions addressing the chlorinated ethylene plume are "operating properly and successfully" (OPS) for the Nosedocks/Apron 2 Site at the former Griffiss Air Force Base (AFB). This OPS document is a precondition to the deed transfer of federally owned property, as required in Section 120(h)(3) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLA Section 120(h)(3) requires that deeds transferring property where hazardous substances had been stored, released or disposed of, shall contain a covenant warranting that: "all remedial action necessary to protect human health and the environment with respect to any [hazardous] substance remaining on the property has been taken before the date of such transfer." CERCLA Section 120(h)(3) was amended in October 1992 to add language stating that all necessary actions have been taken "if the construction and installation of an approved remedial design has been completed and the remedy has been demonstrated to the [United States Environmental Protection Agency (EPA)] Administrator to be operating properly and successfully."

A successful OPS demonstration to the EPA allows for the deeded transfer of property prior to all environmental cleanup objectives being accomplished. Demonstration of OPS is one facet of the deed transferring process for federally owned property. The petroleum plume comingled with the chlorinated ethylene plume at this site is being addressed separately under the New York State Department of Environmental Conservation (NYSDEC) Petroleum Spill Sites Program, and is not included as part of this OPS document.

1.2 OPS Definition

Operating properly and successfully involves two separate concepts. A remedial action is operating "properly" if it operates as designed. That same system is operating "successfully" when its operation indicates it can achieve the cleanup level or performance goals delineated in the record of decision (ROD) document, and its operation is protective of human health and the environment. The EPA guidance document on OPS (Interim, August 1996) indicates "thus, the EPA interprets the term 'operating properly and successfully' to mean that the remedial action is functioning in such a manner that it is expected to adequately protect human health and the environment when completed."

1.3 Applicability

Demonstration of OPS is made to the regional EPA Administrator, and is applicable when a federal agency is implementing an ongoing remedial action and desires to transfer the property before the remedial objectives are met. The property at this site has been transferred. Approval of the OPS Demonstration is required in order for the United States Air Force (Air Force) to execute the CERCLA covenant for the property that was transferred by an early transfer with the CERCLA covenant deferred.

2 Real Estate Issues

2.1 Property Proposed for Transfer

This OPS document is for the On-Base Groundwater (OBGW) Area of Concern (AOC; site identification designation SD-52) Nosedocks/Apron 2 site.

2.2 Institutional Controls/Deed Restrictions

The selected remedy for the Nosedocks/Apron 2 site includes the implementation of institutional controls in the form of deed restrictions to prevent exposure to contaminated groundwater. The restrictions will be maintained until the concentrations of hazardous substances in the groundwater are at such levels to allow for unrestricted use and exposure.

Land Use Control/Institutional Controls (LUC/ICs) have been included in the property transfer deeds as specified in the ROD. The Nosedocks/Apron 2 chlorinated plume site is located in three parcels, Parcel A2, Parcel F6B-6, and Parcel F12A (see Figure 2-1). All three parcels have been transferred and the LUC/ICs have been implemented as deed restrictions in the deeds for these properties.

The deed for Parcel F12A includes the following deed restrictions as specified by the ROD:

1. The grantee, its successors and assignees shall be prohibited from accessing or otherwise disturbing or causing exposure to subsurface soils or consuming or otherwise using or causing exposure to the underlying groundwater.

2. The grantee is prohibited from extraction, utilization, or consumption of any water from the aquifer below the surface of the ground unless the water has been tested and found to meet all applicable standards and such owner obtains the prior written approval from the New York State Department of Health (NYSDOH).

3. The grantee is prohibited from managing the aquifer in any way that could spread or exacerbate environmental contamination or open exposure pathways to humans or the environment.

4. Activities by the grantee and its successors and assignees shall not disturb the integrity or effectiveness of the grantor's actions to complete closure of the environmental sites.

The following deed restrictions have been incorporated into the deed for Parcels A2 and F6B-6:

- The Grantee shall not develop or use the portions of the property included in the SD-52, Nosedocks/Apron 2 Operable Unit AOC for residential housing, elementary and secondary schools, childcare facilities, and playgrounds will be prohibited unless prior written approval is received from the Air Force, EPA, and NYSDEC;

- The Grantee shall not extract, utilize, consume, or permit others to extract, utilize, or consume any water from the subsurface aquifer within the boundary of the site unless such owner or occupant obtains prior written approval from the NYSDOH;

- The Grantee shall not engage in, or allow others to engage in, activities that will disturb, move, damage, tamper with, interfere with any wells, operating remedial system, or infrastructure associated with such wells or remedial system located on the property or with the Grantor's operation, maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of any remedial action performed pursuant to CERCLA to address environmental contamination on the property.;

- The owner or occupant of this site will restrict access to and prohibit contact with subsurface soils and groundwater at or below the groundwater interface at this AOC until cleanup goals are achieved and have been confirmed through sample results as defined in the applicable Record of Decision(s) and pursuant the joint EPA/DOD guidance on Streamlined Site Closeout and NPL Deletion Process;

- With respect to risks that may be posed via indoor air contaminated by chemicals volatizing from the groundwater (vapor intrusion), the Grantee will covenant to conduct either (a) construction of new buildings within the Groundwater Restriction Area in a manner that would mitigate unacceptable risk under CERCLA and the NCP; or (b) an evaluation of the potential for unacceptable risk prior to the erection of any structure in the Groundwater Restriction Area. If an evaluation discloses unacceptable risk under CERCLA and the NCP, then the Grantee shall include mitigation of the vapor intrusion in the design/construction of the structure. Grantee shall provide any such evaluation to, and coordinate any such mitigation with the EPA and NYSDEC.

- The above restrictions will be maintained until the concentrations of hazardous substances in the groundwater are at levels which support unrestricted use and exposure, as determined by and in the coordination with, EPA, NYSDEC, and the Air Force. Prior written approval of EPA and NYSDEC shall be required to modify or terminate any of the land use restrictions set forth, or to

take any action that may disrupt the effectiveness of or alter or negate the need for institutional controls included in such restrictions.

- The environmental restrictive covenants set forth shall run with the land and may be enforced by Grantor or the State through the chain of title. The Grantee shall insert all of the environmental restrictive covenants in any legal instrument which conveys an interest in the property to another party, including, but not limited to deeds and leases.

The following deed restriction has also been incorporated into the deed for Parcel F6B-6:

- The slabs of Buildings 785 and 786 shall not be compromised without prior written approval of EPA, NYSDEC, and the Air Force.

2.3 CERCLA Covenant Deferral

Parcels FA2 and F6B-6 have been granted an early transfer under CERCLA 120(h)(3). Deferral of the CERCLA covenant for parcels FA2 and F6B-6 was approved by the EPA Region 2 Regional Administrator with the concurrence of the New York State Governor. Upon approval of the OPS demonstration, the CERCLA covenant will be executed by the Air Force and delivered as warranty to the transferee that all response actions necessary to protect human health and the environment have been taken.

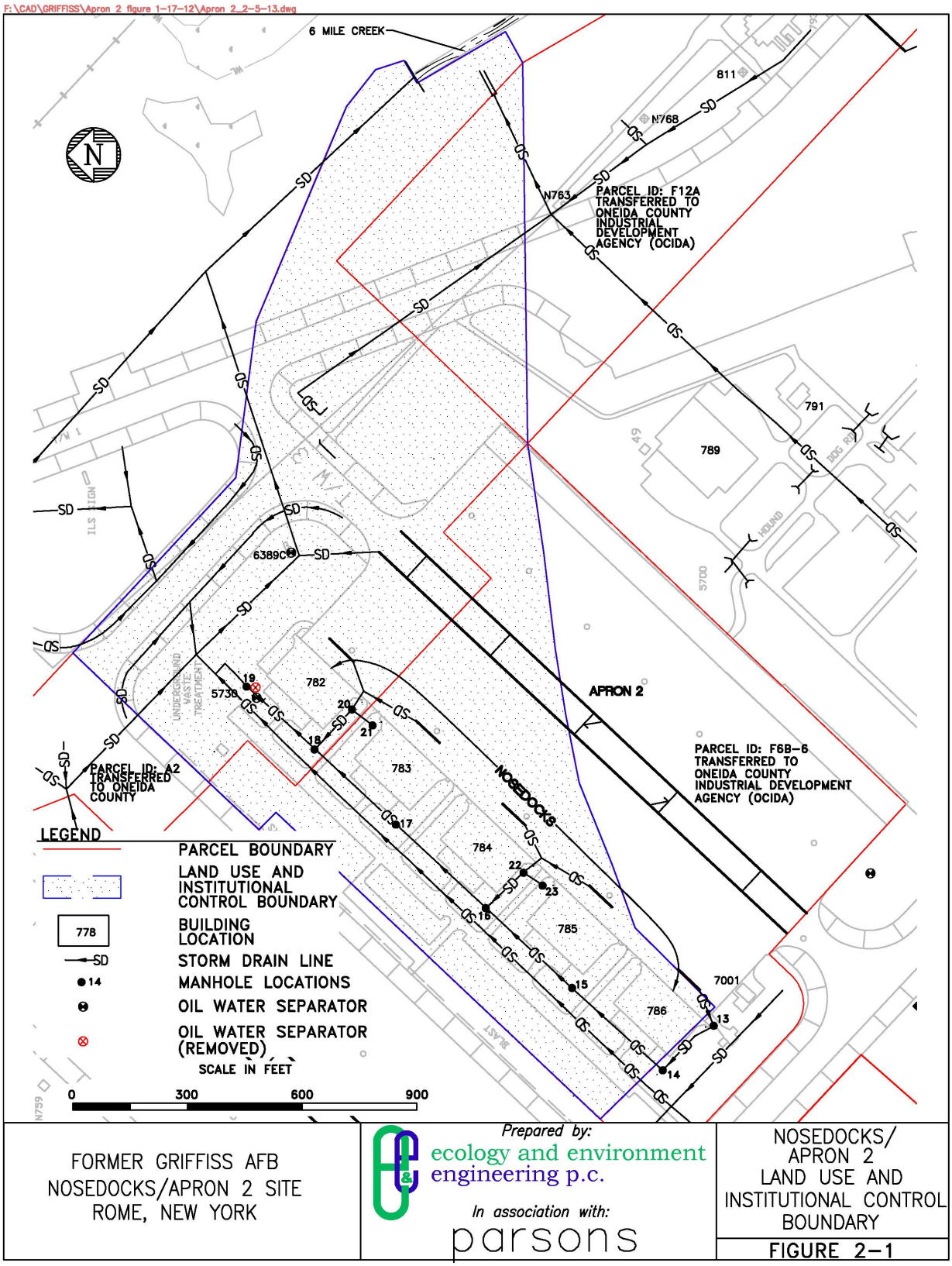


Figure 2-1 Nosedocks/Apron 2 Land Use and Institutional Control Boundary

3 Site Characterization Background

3.1 Site History

The Nosedocks/Apron 2 site (site identification designation SD-52) is located at the former Griffiss AFB in Rome, Oneida County, New York (see Figure 3-1). Pursuant to Section 105 of CERCLA, Griffiss AFB was included on the National Priorities List (NPL) on July 15, 1987. On August 21, 1990, the EPA, New York State Department of Environmental Conservation (NYSDEC), and Air Force Real Property Agency (AFRPA) entered into a Federal Facility Agreement (FFA) under Section 120 of CERCLA. On March 20, 2009, 2,800 acres of the 3,552 acres at the former Griffiss AFB were removed from the NPL. Nosedocks/Apron 2 remains on the NPL.

Apron 2, a former aircraft parking apron and refueling area, and the Nosedocks, buildings used as aircraft maintenance facilities, are located in the southeast portion of the former Griffiss AFB (see Figure 3-2). The apron is a relatively flat, 18-inch thick, steel reinforced concrete pad. The concrete paving is flanked by 50-foot-wide areas of asphalt paving on the northwest and southeast sides. The surrounding surface is unpaved lawn. The vicinity of the Nosedocks encompasses buildings 782, 783, 784, 785, and 786; two oil/water separators (OWS 5730 [removed in 2001] and OWS 6389-3); and several underground utilities (storm drains and sanitary sewers).

The five Nosedocks (Buildings 782 through 786) were used as aircraft maintenance buildings. Interior drains at each Nosedock received a variety of liquid wastes generated by maintenance activities, while exterior drains received drainage from the apron. The Nosedock Wash Waste system was installed in 1959 to receive wash wastes from the Apron 2 interior and exterior trench drains. The system collected drainage from the five Nosedocks and a wash rack that was set up in the corner of Building 786, and drained to Manhole 19, where the effluent was pumped to former OWS 5730. Currently, the Nosedock buildings house either private businesses or are vacant and all of the interior floor drains/trenches have been plugged by the United States Air Force (Air Force).

Surface soils (from 0 feet below ground surface [bgs] to approximately 20 feet bgs) consist of uniform brown, silty fine sand, with variable quantities of gravel and occasional clay. The soil appears to be fill material. The native material beneath the fill underneath the apron area consists of brown, silty, fine to coarse sand with variable quantities of gravel. Surface runoff in the vicinity of

Nosedocks 1 and 2 flows into storm drains by way of a large unpaved drainage swale that extends several hundred feet from the southwest to the northeast. The storm drains flow through OWS 6389-3 before discharging into Six Mile Creek.

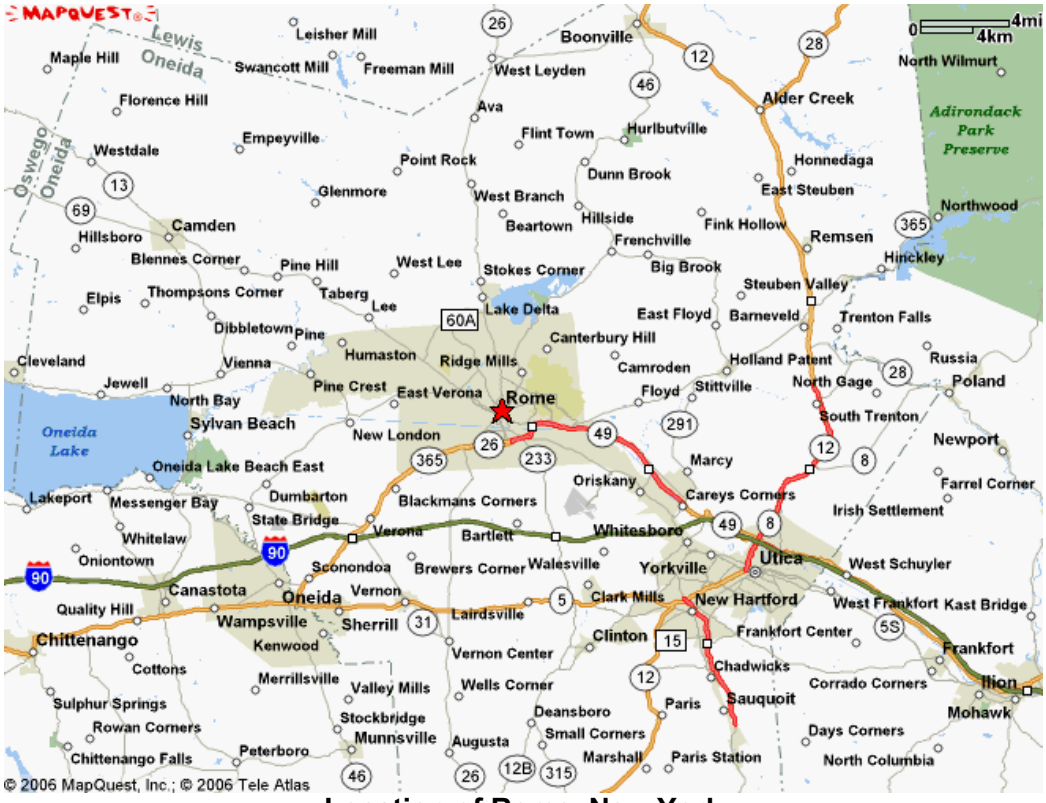
3.2 Characterization Results

Apron 2 is sloped toward the center of the site, where storm water collection drains channel runoff into trenches that discharge through an OWS and into the Six Mile Creek drainage area. The Nosedock buildings are surrounded by grassy areas with several asphalt parking areas and driveways. The topography across the Nosedocks/Apron 2 site is relatively flat.

Before 1950, the land in the Nosedocks area was part of a family farm. Two houses, a large barn, a hayfield, and a chicken coop were located at the Apron 2 site, and Six Mile Creek flowed through the site in an open channel. High-voltage power lines, including several 45-foot towers, cut through the southern portion of the site. The government procured the Nosedocks and Apron 2 property in the 1950s. After acquisition, the land was significantly altered to accommodate the large aircraft aprons (Apron 1 and Apron 2) and the Nosedocks. Six Mile Creek was diverted into an underground culvert, and the old channel was filled in. The high-voltage power lines in the area were rerouted (Law 1996). The main JP-4 fuel line for the refueling system at Apron 2 originated from the Bulk Fuel Storage Area (BFSA) located at the southern boundary of the base. The fuel line extended from the BFSA in generally a northwest direction onto the base, turned east along Brookley Road, passed above Three Mile Creek, turned north towards the Building 775 OBGW area, and branched off to Pumphouses 1 through 5.

The depth to groundwater ranges from 4 to 14.5 feet. Groundwater flow in the area of the Nosedocks is complicated because of the large surface pavements of Aprons 1 and 2. Massive construction has altered the natural hydrology in the area of the aprons and the activity has compacted the subsurface layers, leading to perched groundwater conditions in the area. In general, the groundwater flow direction is northeasterly.

The groundwater plume at the Nosedocks/Apron 2 site appears to extend from the northern vicinity of Building 786 east-northeast to Six Mile Creek. The suspected source area may be associated with the former Wash Waste System between Manholes 14 and 15. The manholes are upgradient of those locations where elevated concentrations of chlorinated ethylenes were detected. The remedial investigation (RI) documented that natural attenuation processes are ongoing. Continued groundwater monitoring following the RI for two years indicated that the plume was stable and that Six Mile Creek was not impacted.



Location of Rome, New York



Source: www.mapquest.com

Figure 3-1 Location of the Former Griffiss Air Force Base (Part of the Griffiss Business and Technology Park)

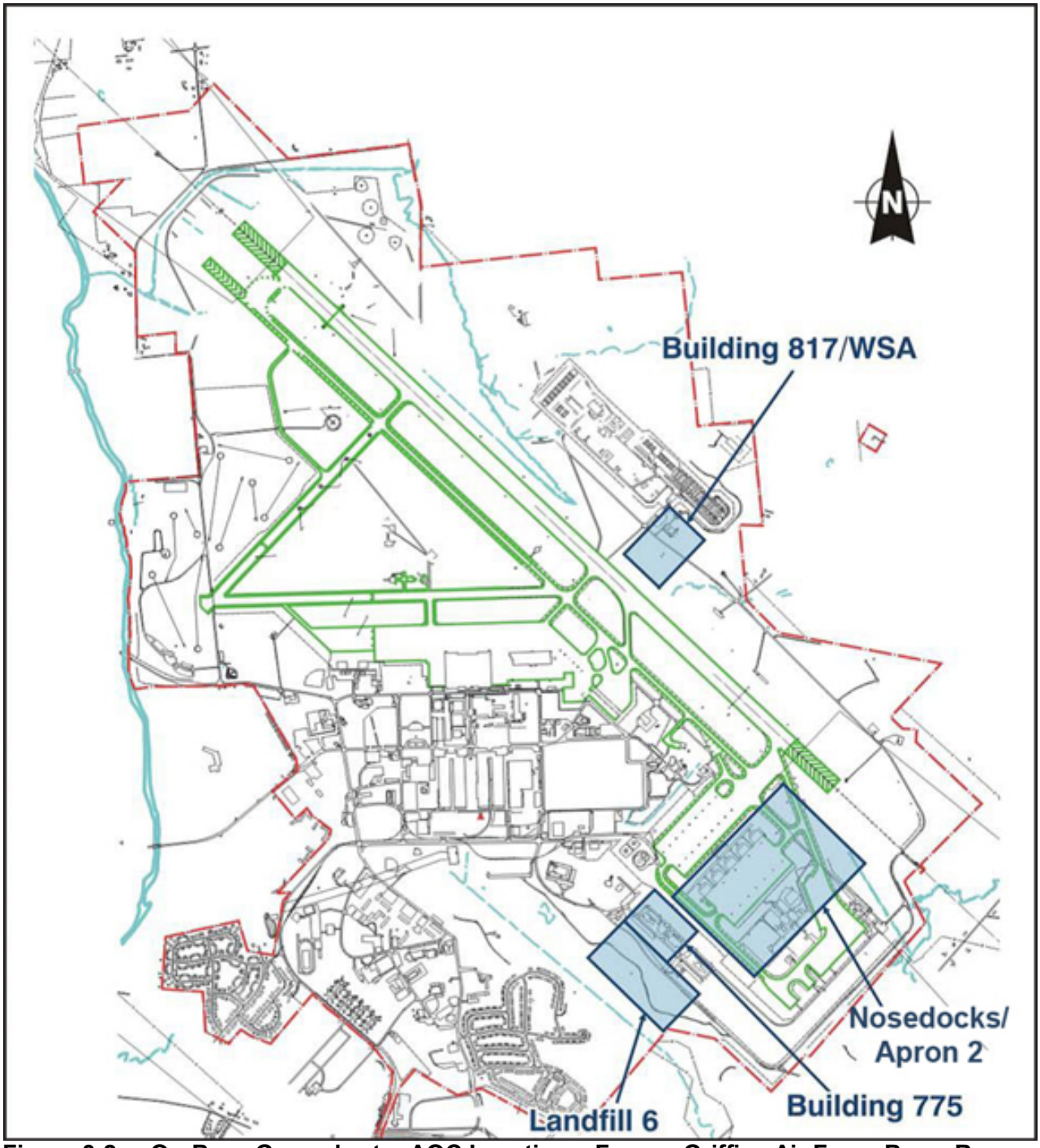


Figure 3-2 On-Base Groundwater AOC Locations, Former Griffiss Air Force Base, Rome, New York

Site Investigations

The following summarizes the site activities that led to the delineation of the Nosedocks/Apron 2 site chlorinated plume, including previous investigations, at Nosedocks 1 and 2.

Remedial Investigation – Nosedocks 1 and 2. In 1994, an RI was performed (Law 1996). The main objective of the RI was to investigate the nature and extent of environmental contamination from historical releases. The RI included a passive soil gas survey; collection of one waste oil sample from the OWS; collection of surface soil samples, and the installation and sampling of 24 soil borings and four new monitoring wells (MWs).

Groundwater and soil samples were collected from the north and northwest sides of Nosedocks 1 and 2 (Buildings 782 and 783) during this RI. Analytical results indicated the presence of 20 volatile organic compounds (VOCs), nine semivolatile organic compounds (SVOCs), six metals, and 11 pesticides. No chlorinated ethylenes were detected in soil samples. Thirteen VOCs and six metals exceeded the most stringent criteria at the time (see Table 3-1).

Supplemental Investigation – Nosedocks 1 and 2. In 1997, an SI was performed (E & E 1998) to address the data gaps and uncertainties identified in the RI. New monitoring wells were installed and existing wells were sampled during the SI. A groundwater sample collected at 782MW-6R2 indicated the presence of cis-1,2-dichloroethylene (cis-1,2-DCE) (37 micrograms per liter [µg/L]) and vinyl chloride (VC) (26 µg/L) above the most stringent criteria of 5 µg/L for cis-1,2-DCE and 2 µg/L for VC; no chlorinated ethylenes were reported above the detection limits in 782MW-2, -3R, or -5. The SI recommended that additional wells be installed to the east of Building 782 to characterize the extent of groundwater contamination.

2002 Remedial Investigation – Nosedocks/Apron 2 Site. In 2002, a second RI was performed for the Nosedocks/Apron 2 site (FPM Group Ltd. 2004). This RI included plume delineation and potential source area identification. This RI included:

- Drilling and vertically profiling 39 boreholes, including the collection of 110 Hydropunch samples;
- Installation of 28 new groundwater monitoring wells screened across the zone with the highest concentration of chlorinated ethylenes reported during the vertical profiling;
- Collection of groundwater samples from the 28 new wells and six existing wells for the analysis of VOCs and geochemical parameters to evaluate the extent of ongoing biodegradation across the contaminated plume; and

- Collection of surface water and groundwater seepage samples downgradient of the detected contamination to evaluate the plume transport off site.

Table 3-1 Compounds Exceeding Standards and Guidance Values
Nosedocks 1 and 2
Remedial Investigation Groundwater Samples (1994)

Compound	Range of Detected Concentrations or Maximum Concentration Detected	Frequency of Detection Above Most Stringent Criterion	Most Stringent Criterion
VOCs (µg/L)			
Acetone	3.4J – 66	1/4	50 [a]
Benzene	4.8 -410	3/4	1 [a]
sec-Butylbenzene	0.8 – 29	1/4	5 [a]
cis-1,2-Dichloroethene	0.4J – 12	1/4	5 [a]
Ethylbenzene	36 – 39	2/4	5 [a]
Hexachlorobutadiene	1.2	2/4	0.5 [a]
Isopropylbenzene	4.5 – 21	1/4	5 [a]
Naphthalene	17 – 28D	2/4	10 [b]
Toluene	0.8 – 1,400	1/4	5 [a]
1,2,4-Trimethylbenzene	62 – 530D	2/4	5 [a]
1,3,5-Trimethylbenzene	24 – 180D	2/4	5 [a]
m,p-Xylene	100D – 220	2/4	5 [a]
o-Xylene	4.2 – 130	1/4	5 [a]
Metals (µg/L)			
Aluminum	400	1/4	50 [d]
Arsenic	2.16J – 29	1/4	10 [c]
Iron	12,700 – 66,100	4/4	300 [a, d]
Manganese	2,960 – 9,210	4/4	50 [d]
Sodium	20,040 – 23,800	4/4	20,000 [a]
Thallium	0.7J	1/4	0.5 [b]

[a] NYSDEC Class GA groundwater standard, June 1998.
[b] NYSDEC Class GA groundwater guidance value, June 1998.
[c] EPA Federal primary maximum contaminant level.
[d] EPA Federal secondary maximum contaminant level.

Key:
D = Sample required dilution.
J = Estimated concentration.
µg/L = Micrograms per liter.

Four contaminants were detected at levels exceeding the most stringent criteria (NYSDEC Class GA Groundwater Quality Standards) from plume extent wells sampled in February 2002.

Trichloroethene (TCE) was reported in five wells ranging from 0.85 µg/L to 49.95 µg/L, and at levels exceeding the most stringent criteria (5 µg/L) in four wells. Cis-1,2-DCE, which was detected in eight wells ranging from 1.47 µg/L to

66 µg/L, and at levels exceeding the most stringent criteria (5 µg/L) in five wells. VC was detected in 13 wells ranging from 1.39 µg/L to 77.8 µg/L, and at levels exceeding the most stringent criteria (2 µg/L) in 11 wells. There were no chlorinated ethylene detections present at any surface water locations. Methyl tert-butyl ether (MTBE), which was not analyzed for during the 1994 RI, was reported in eight wells ranging from 9.59 µg/L to 251 µg/L, and at levels exceeding the NYSDEC Class GA Groundwater Quality Standard (10 µg/L) in five wells. MTBE was detected at 62.9 µg/L and 190 µg/L in two surface water samples. The MTBE detected in the groundwater and surface water is likely a constituent of the petroleum plume present at the Nosedocks/Apron 2 site, which is being addressed under the NYSDEC Petroleum Spill Sites Program.

Groundwater Study. Groundwater monitoring was performed quarterly at the 33 monitoring wells and four surface water locations from February 2003 to September 2004. The objectives of sampling the groundwater at the Nosedocks/Apron 2 site were to monitor for the presence of chlorinated ethylenes within and downgradient of the site, monitor plume attenuation, and characterize and delineate localized contamination.

Each monitoring well location was sampled and tested for chlorinated ethylenes, metals, natural attenuation parameters (chloride, nitrate, sulfate, sulfide, total alkalinity, and total organic carbon), and ferrous iron, which was measured in the field. Surface water samples were analyzed for VOCs.

Table 3-2 summarizes the results for chlorinated ethylenes in groundwater from February 2003 to September 2004. Four consecutive rounds of no exceedances for VOCs warranted either the removal of or a frequency change for that particular location. Based on the groundwater data, modifications included frequency changes from quarterly to semiannually at well locations 782VMW-77, -85, -86, and -100; monitoring wells 782VMW-82, -95, -98, and -99 were removed from the monitoring program.

The final RI (FPM Group Ltd. 2004) and final feasibility study (FS) (FPM Group Ltd. 2006) for the Nosedocks/Apron 2 site identify chlorinated ethylenes as the focus of further investigation/remediation for this site. Furthermore, metals sampling in groundwater performed in 2002 for risk assessment purposes detected elevated levels of iron, manganese, and sodium. As identified in the FS, elevated metals concentrations found at this site are naturally occurring while sodium is likely attributable to road deicing. Therefore, metals were not used as a basis for remediation.

Table 3-2 Chlorinated Ethylenes Detected in Groundwater
Nosedocks/Apron 2 Chlorinated Plume
Groundwater Monitoring (February 2003 through September 2004)

Compound	NYS Groundwater Standard	Range of Detection Feb. 2003	Range of Detection June 2003	Range of Detection Sept. 2003	Range of Detection Dec. 2003	Range of Detection April 2004	Range of Detection July 2004	Range of Detection Sept. 2004
Chlorinated Ethylenes (µg/L)								
TCE	5	0.21F - 39	3.3 – 32	0.22F - 26	0.28F - 21	0.21F - 32	0.2F - 25	0.27F - 29
cis-1,2-DCE	5	0.45F - 64	0.21F – 68	0.4F - 68	0.3F - 55	0.33F - 75	0.46F - 60	0.2F - 56
Trans-1,2-DCE	5	0.28F - 3.6	0.29F - 3.8	0.2F – 5.5	0.21F - 4.3	0.23F - 1.3	0.66F - 3.7	0.24F - 4.6
Vinyl Chloride	2	0.66F - 96	0.22F - 130J	0.35F - 120	0.34F - 97	0.46F - 130	0.34F - 62	0.25F - 80

Analytical concentrations presented in the table are for detected values only.

Key:
F = The analyte was detected above the minimum detection limit, but below the reporting level.
J = The analyte was positively identified, the quantitation is approximate.
µg/L = Micrograms per liter.

3.3 Previous Source Removal/Remedial Actions

The Air Force performed source removal activities at the former wash waste system to address the apparent source of the chloroethylene plume. The following summarizes previous source removal/remedial actions associated with the Nosedocks/Apron 2 site (FPM Group Ltd. 2006):

- In 1996, closure activities were performed on the wash waste system. The wash waste pipeline was flushed and closed and the pipeline was capped;
- In 1997, manholes 13 through 18 and 21 through 23 were removed and excavated;
- In 2001, OWS 5730-2, located north of Building 782, and 954 cubic yards of contaminated soils surrounding the area were removed; and
- Sub-slab vapor mitigation (SSVM) systems were installed and have been operating since May 2011 at Buildings 785 and 786 to address the soil vapor intrusion of chlorinated solvents associated with the Nosedocks/Apron 2 site.
- Additional remedial activities have occurred from 2001 through the present for the petroleum plume being addressed separately under the NYSDEC Petroleum Spills Program.

4 Demonstration of Operating Properly and Successfully

This section presents the process used to demonstrate that MNA is operating properly and successfully at the Nosedocks/Apron 2 site. The elements of this process include the identification of the remedial action objectives (RAOs) in the OBGW ROD; the components of the remedial design; a description of the remedial action construction; a summary of the environmental monitoring of the site; and a detailed evaluation of remedy performance including presentation of the performance monitoring data and an analysis and discussion for the demonstration of MNA operating properly and successfully at the site. This demonstration of OPS is in accordance with EPA's *Guidance for Evaluation of Federal Agency Demonstrations that Remedial Actions are Operating Properly and Successfully Under CERCLA Section 120(h)(3)* (http://www.epa.gov/fedfac/documents/896mm.htm).

4.1 Record of Decision

The OBGW ROD was issued in April 2009. The ROD was signed by the Air Force and the EPA with concurrence by NYSDEC.

The OBGW ROD presented the following RAOs to address existing and future potential threats posed by Apron 2 and contaminated groundwater migrating from the site:

1. Achieve the cleanup goals for the contaminants of concern (COCs), cis-1,2-DCE, TCE, and VC which are 5 µg/L, 5 µg/L, and 2 µg/L, respectively;

2. Prevent human exposure to groundwater through groundwater use restrictions until cleanup goals are achieved;

3. Prevent contaminated groundwater from the site from adversely impacting surface water (in Six Mile Creek), which is defined as surface water concentrations above performance indicators (NYSDEC Class GA Groundwater Quality Standard of 2 µg/L for VC); and

4. Prevent development and use of the property for residential housing, elementary and secondary schools, childcare facilities, and playgrounds.

The OBGW ROD selected monitored natural attenuation (MNA) as the remedy for the chlorinated ethylene plume near Apron 2. The petroleum-based plumes were not addressed by the OBGW ROD, and are addressed separately under the NYSDEC Petroleum Spills Program. The OBGW ROD indicates that biosparging was the anticipated recommended alternative for cleanup of the petroleum-related contamination northeast and northwest of Aprons 1 and 2.

The ROD does not specify the period for achieving the groundwater cleanup goals; however, the default response period was 30 years in the Final Groundwater Feasibility Study Nosedocks/Apron 2 Chlorinated Plume (FPM Group Ltd. 2006).

The ROD specified long-term monitoring (LTM), which includes:

- Using a groundwater monitoring network that is capable of tracking the plume, with provisions to revise and optimize the monitoring network as monitoring data is collected and reviewed by the Air Force, EPA, and NYSDEC;
- Quarterly sampling of VOCs in the first year to assess seasonal impacts, and semi-annually sampling thereafter;
- Sampling of surface water in Six Mile Creek to assess whether the concentrations of VC exceed 2 µg/L;
- Continued sampling until the concentrations of TCE, cis-1,2-DCE, and VC are below the NYSDEC Class GA Groundwater Quality Standards for four consecutive sampling events; and
- Performing five-year reviews to assess the performance of the selected remedy.

4.2 Remedial Design

Final Design of the Nosedocks/Apron 2 remedy was issued in February 2008. Details of the remedial design are presented in *Final Remedial Design Work Plan and 90% Design Drawings, Former Griffiss Air Force Base*, *Rome, New York* (EEEPC 2008*)*, and remedial actions are detailed in the *Remedial Action Work Plan On-Base Groundwater Remediation Former Griffiss Air Force Base, Rome, New York)* (Parsons 2008).

The only Nosedocks/Apron 2 remedy construction component relative to this OPS demonstration is the installation of three additional monitoring wells.

4.3 Remedial Action Construction

Monitoring Well Installation

On July 10, 2008, well 782VMW-121D was installed, with a total depth of 32 feet bgs, and well 782VMW-121 was installed to a depth of 26 feet bgs. The last

monitoring well installed was 782VMW-84D on July 11, which had a total depth of 56.5 feet bgs. The locations of wells 782VMW-84D, -121, and -121D were surveyed on December 17, 2008.

The monitoring wells were installed in accordance with the remedial design. Details about the monitoring well installation and drilling activities are provided in the Well Verification Checklist and Well Construction Checklist, and Drilling Methods Checklist (EEEPC 2011).

Well Development

Wells 782VMW-121, -121D, and -84D, were developed on July 24, July 25, and July 29, 2008, respectively. The well record and details of purging activities for 782VMW-121, -121D, and -84D are included in the *Final Interim Remedial Action Completion Report for Remedy-in-Place and Construction Complete for the On-Base Groundwater Area of Concern (SD-52) at the Former Griffiss Air Force Base, Appendix A Construction Completion Report, Appendix F Boring Logs and Well Development Records* (EEEPC 2011).

Post-Construction Site Restoration

Monitoring well installation activities were completed on July 14, 2008. The Final Inspection Checklist provided by Parsons Infrastructure & Technology Group, Inc. (Parsons; EEEPC 2011) notes that the areas around the new monitoring wells, 782VMW-121D, 782VMW-121, 782VMW-84D, were restored to pre-construction conditions. All cuttings from the new monitoring wells were containerized in drums and staged at the Landfill 6 decontamination area.

Final Inspections

Final inspections of the Nosedocks/Apron 2 site were made by personnel from Parsons, FPM Group, Ltd., and the United States Corps of Engineers (USACE) on August 6, 2008.

Deviations from the Remedial Design Work Plan

No significant deviations occurred.

4.4 Remedial Action Performance

4.4.1 Environmental Monitoring

Groundwater

The Spring 2011 Annual Performance Monitoring Report (FPM Group Ltd. 2011) provides groundwater LTM results through April 2011. September 2011 sampling data were also reviewed. A Performance Monitoring Sample Analysis Summary is provided in Table 4-1. LTM was conducted quarterly for the first year starting in September 2008 and semiannually

Table 4-1 Performance Monitoring Sample Analysis Summary, Nosedocks/Apron 2 Site

Sampling Locations	Screen Interval (feet mean sea level)	Sampling Rationale	Target Analytes/ EPA Method Numbers	First Year (Quarterly)	After First Year (semiannual)	Number of Samples[1]
AP2MW-3	432.41 - 446.97	Cross-gradient	• VOCs -8260B • Natural Attenuation Parameters: Nitrate, Chloride, Sulfate - SW9056, DOC - SM5310B, Total Alkalinity -SM2320B • Field Measurements: ORP, temperature, oxygen, pH, conductivity, turbidity, water levels, ferrous iron	√[2]	√[2]	18
782VMW-76	434.86 - 444.86	Downgradient within plume		√	√	
782VMW-78	436.26 - 446.26	Downgradient within plume		√	√	
782VMW-81	427.71 - 437.71	Downgradient within plume (source)		√	√	
782VMW-84	431.90 - 441.90	Downgradient within plume		√	√	
782VMW-84D	419.57 - 434.57	Potential vertical migration of plume		√	√[2]	
782VMW-93	437.79 - 447.79	Downgradient within plume		√	√	
782VMW-96	434.13 - 444.13	Downgradient within plume		√	-	
782VMW-98	442.06 - 452.06	Upgradient (source area)		√[3]	-	
782VMW-100	432.10- 447.10	Crossgradient		√	√	
782VMW-101	429.11 - 444.11	Downgradient within plume		√	√	
782VMW-105B	435.37 -450.37	Within plume (source area)		√	√	
782MW-10	443.79 -458.79	Downgradient within plume		√	√	
782VMW-121	433.06 - 448.06	Downgradient		√	√	
782VMW-121D	427.81 - 437.81	Potential vertical migration of plume		√	√	
Surface Water						
782SW-115	-	Potential contaminant receptor	• VOCs - SW8260B • Water levels			
782SW-118	-	Potential contaminant receptor				
782SW-119	-	Potential contaminant receptor				

Notes:

1 Please refer to the Field Sampling Plan for details concerning the number of quality assurance/quality control samples and their locations. At least one matrix spike/matrix spike duplicate and two field duplicates will be collected per SDG (Sample Delivery Group); one equipment blank per day and one ambient blank per day; one trip blank per cooler containing VOCs. Please refer to the Spring 2011 Quality Control Summary Report for which samples were actually collected.

2 Annual sampling only.

3 To be sampled during first performance sampling round only.

thereafter. The September 2010 to September 2011 monitoring network consisted of 13 monitoring wells (782VMW-76, -78, -81, -84, -84D, -93, -100, -101, -105B, -121, -121D, 782MW-10, and AP2MW-3) and three surface water locations along Six Mile Creek. Additionally, upgradient well 782VMW-98 was sampled in November 2006 and September 2008 and downgradient well 782VMW-96 was sampled from November 2006 to June 2009. The monitoring wells were gauged and sampled using the EPA low-flow sampling protocol, and purged groundwater was analyzed for dissolved oxygen (DO), oxidation-reduction potential (ORP), temperature, conductivity, and turbidity using field screening instrumentation. Samples were collected and submitted to a laboratory for analysis of VOCs (EPA Method 8260B); nitrate, sulfate, and chloride (EPA Method SW9056); dissolved organic carbon (DOC, Standard Method SM5310B); and total alkalinity (Standard Method SM2320B). Additionally, the samples were analyzed for ferrous iron in the field.

Per the final performance monitoring work plan (FPM Group Ltd. 2008), a sampling event occurred at the Nosedocks/Apron 2 Chlorinated Plume Site in spring 2012.

Surface Water

There are three surface water sampling locations at the Nosedocks/Apron 2 site as shown in Table 4-1. Surface water was collected using disposable plastic sampling bottles, while minimizing the disturbance of sediment. These samples were analyzed for VOCs (EPA Method SW8260B). Field parameters DO, ORP, and pH were also measured using field screening instrumentation.

Surface water sampling was conducted quarterly for the first year starting fall 2008 and semiannually thereafter.

4.4.2 Remedy Performance

The key to demonstrating OPS is the evaluation of remedy performance as it relates to applicable RAOs presented in the ROD. Baseline sampling was performed at the site in November 2006, and performance monitoring was conducted quarterly for the first year from September 2008 to September 2009, and semiannually from April 2010 to present. Prior to the baseline sampling in 2006, groundwater sampling was conducted in 2002 and quarterly groundwater monitoring was performed at the site from February 2003 through April 2005. The Air Force will complete long term monitoring (LTM) until the RAOs are met.

4.4.2.1 Performance Monitoring Data

Groundwater

Table 4-2 presents the groundwater sampling results for cis-1,2-DCE, TCE, VC, and geochemical parameters from the monitoring wells at the Nosedocks/Apron 2 site. The table includes baseline sampling results collected in 2006-2007, the first four quarterly performance monitoring sampling round results and the previous semiannual sampling rounds.

Surface Water

Table 4-3 shows the surface water sampling results for TCE, cis-1,2-DCE, and VC at the Nosedocks/Apron 2 site.

4.4.2.2 Analysis and Discussion for Demonstration of Operating Properly and Successfully

The EPA's *Guidance for Evaluation of Federal Agency Demonstrations that Remedial Actions are Operating Properly and Successfully Under CERCLA Section 120(h)(3)* specifies core criteria which should be demonstrated, and other criteria to be considered, that should be demonstrated for OPS of natural attenuation groundwater remedies.

Core criteria which should be demonstrated:

- Construction of the source control portion of the remedy is complete (or the source has been removed) in accordance with the approved design;
- Monitoring information showing that natural attenuation is working. (Different categories of information are listed below. The amount of information required in each category is a site-specific determination based on the complexity of the site and the contaminant type.);
- Documentation that contaminant levels have been reduced as expected, the estimated rate of contaminant loss has been established, and the plume is stable or retreating;
- Identification of intermediate degradation products and any associated toxicity changes;
- Geochemical factors (e.g., changes in pH, electron acceptors, and alkalinity) associated with contaminant degradation indicate that remediation takes place;
- Laboratory assays of microbial parameters (e.g., microbial population, ability to degrade contaminants of concern);
- Appropriate institutional controls are in place;
- Modeling studies confirmed by field data indicate that attenuation of plume will attain cleanup objectives within the predicted time frame before contaminants reach human or environmental receptors; and
- The monitoring system has been completed in accordance with the approved design and is providing the data needed to evaluate the progress of natural attenuation.

Table 4-2 TCE, cis-1,2-DCE, and VC Results of Groundwater, Nosedocks/Apron 2 Site

Sample Location	Sample ID	Date of Collection	Sample Depth (feet TOIC)	Sample Elevation (feet AMSL)	Trichloroethene µg/L	cis-1,2-dichloroethylene µg/L	Vinyl Chloride µg/L	DOC (mg/L)	ORP (mV)	sulfate (mg/L)	nitrate (mg/L)	oxygen (mg/L)	pH (-)	ferrous iron (mg/L)	alkalinity (mg/L)	chloride (mg/L)
NYS Groundwater Standards					**5***	**5***	**2**	**-**	**-**	**250**	**10**	**-**	**-**	**-**	**-**	**250**
Reporting Limit					**1.0**	**1.0**	**1.0**	**-**	**-**	**1**	**1**	**-**	**-**	**-**	**10**	**1**
782VMW-76	782VMW-76	02/26/02	38	439.59	U	1.47	16.39	NS	-135	1.04	U	0.82	7	NS	321	38.77
	782VMW7638BA	02/04/03	38	439.59	U	1.6	13	NS	-53	33.2	0.081	5.08	7.15	3.1	250	32.2
	782M7620CA	06/27/03	38	439.59	U	1.4	19	NS	-121	U	U	1.16	6.66	2.8	301	36.7
	782M7620DA	09/17/03	38	439.59	U	2.0	18	NS	-148	7.6	U	0	6.94	2.5	327	26.1
	782M7638EA	12/10/03	38	439.59	U	1.7	23	NS	-124	7.0	U	1.81	7.28	4.6	410	33.9
	782M7638FA	04/01/04	38	439.59	U	1.2	16	NS	-51	U	0.18	1	7.07	0.0	303	27.8
	782M7638GA	07/01/04	38	439.59	U	1.8	16	NS	-107	U	0.095	0.4	7.16	1.5	332	33.5
	782M7638HA	09/22/04	38	439.59	U	1.6	16	NS	-115	U	U	1.91	6.75	2.6	330	33
	782M7638IA	12/28/04	38	439.59	U	1.6	17	NS	-95	U	U	1.27	8.1	1.2	304	36.6
	782M7638JA	04/05/05	38	439.59	U	0.89 F	8.2	NS	89	3 F	U	5.7	6.9	0.5	183	23
	782VM7638AA	11/15/06	38	439.59	U	0.990 F	10.3	1.6	-76	1.1	0.044 F	8.04	6.52	0	290	44
	782VM7638AB	09/24/08	38	439.59	U	0.630 F	7.54	4.6	-118	7	U	1.54	7	2	250	43
	782VM7638BB	12/31/08	38	439.59	U	U	U	7.4	256	63	4	3.96	6.95	NS	130	5.7
	782VM7638CA	04/15/09	38	439.59	U	0.670 F	7.73	5.5	-110	2	U	2.8	6.61	2.2	340	53
	782VM7638DA	06/16/09	38	439.59	U	1.02	15.1	2.3	-100	U	U	7.17	7.06	4	330	47
	782VM7638EB	09/21/09	38	439.59	U	0.910 F	13.0	2.7	-72	U	0.037 F	7.24	6.69	2	330	47
	782VM7638FB	04/19/10	38	439.59	U	0.990 F	10.0	3	-101	U	0.044 F	6.75	7.18	1.6	310	37
	782VM7638GA	09/28/10	38	439.59	U	0.960 F	10.6	2.2	-58	U	U	0	6	4	300	35
	782VM7638HA	04/05/11	38	439.59	U	0.970 F	8.05	4.2	-56	U	U	0	7.42	1.6	270	31
	782VM7638IA	09/14/11	38	439.59	U	0.990 F	9.56	2.5	-263	8.0	U	0	8.26	1.6	310	30
782VMW-78	782VMW-78	02/26/02	40	441.22	U	39.84	4.91	NS	-170	5.75	U	0.79	6.89	NS	247	57.01
	782VM7840BA	01/31/03	40	441.22	0.21 F	64	15	NS	-119	8.3	U	4.83	9.71	0.0	206	85.1
	782M7824CA	06/26/03	40	441.22	U	46	22	NS	-124	6.2	U	2.2	6.5	2.0	258	75.6
	782M7840DA	09/17/03	40	441.22	U	59	28	NS	-151	19.9	U	0	7.1	3.0	259	69
	782M7840EA	12/15/03	40	441.22	U	55	20	NS	-90	9.0	U	0	6.96	3.0	311	74.8
	782M7840FA	04/01/04	40	441.22	U	69	17	NS	-72	9.0	U	1.2	7.15	1.8	286	77.9
	782M7840GA	07/02/04	40	441.22	U	60	12	NS	-73	10.1	U	0.44	6.89	1.4	289	71.8
	782M7840HA	09/22/04	40	441.22	U	47	21	NS	-134	10.1	U	1.1	7.52	3.0	248	92.2
	782M7840IA	12/28/04	40	441.22	U	52 J	21	NS	-92	8.7	U	1.13	8.15	3.2	237	118
	782M7840JA	04/05/05	40	441.22	U	48 J	11	NS	-52	9.7	U	1.2	7.78	1.0	246	143
	782VM7840AA	11/14/06	40	441.22	U	38.1	14.0	1.6	-125	12	0.027 F ♦	0	6.93	2.4	270	170
	782VM7840AB	09/25/08	40	441.22	U	42.0	16.0	1.7	-144	8.2	U	1.63	7.02	1.8	260	24
	782VM7840BB	12/31/08	40	441.22	U	42.8	10.6	1.9	-56	7.9	U	1.39	5.91	NS	250	28
	782VM7840CA	03/26/09	40	441.22	U	39.6	6.50	2.0 B	-47	7.7	0.024 F	0	6.4	1	250	27
	782VM7840DA	06/16/09	40	441.22	U	45.9	6.78	2.5	-80	7.4	U	2.05	7.45	1.2	240	25
	782VM7840EB	09/21/09	40	441.22	U	46.3	10.5	1.8	-77	6.5	0.015 F	6.35	6.86	1.8	240	19
	782VM7840FB	04/19/10	40	441.22	U	43.4 J	9.42	2.2	-104	7	U	7.49	7.52	1.2	230	22
	782VM7840GA	09/28/10	40	441.22	U	46.0	7.60	1.9	-138	6.7	U	5	7.75	1	230	20
	782VM7840HA	04/06/11	40	441.22	U	56.9	8.8	2.5	-102	6.5	U	7.43	7.8	1.8	220	17
	782VMW7840IA	09/13/11	40	441.22	U	44.8	7.57	1.9	-161	5.5	U	0	7.43	1.1	230	12

Table 4-2 TCE, cis-1,2-DCE, and VC Results of Groundwater, Nosedocks/Apron 2 Site

Sample Location	Sample ID	Date of Collection	Sample Depth (feet TOIC)	Sample Elevation (feet AMSL)	Trichloroethene µg/L	cis-1,2-dichloroethylene µg/L	Vinyl Chloride µg/L	DOC (mg/L)	ORP (mV)	sulfate (mg/L)	nitrate (mg/L)	oxygen (mg/L)	pH (-)	ferrous iron (mg/L)	alkalinity (mg/L)	chloride (mg/L)
NYS Groundwater Standards					**5***	**5***	**2**	**-**	**-**	**250**	**10**	**-**	**-**	**-**	**-**	**250**
Reporting Limit					**1.0**	**1.0**	**1.0**	**-**	**-**	**1**	**1**	**-**	**-**	**-**	**10**	**1**
782VMW-81	782VMW-81	02/21/02	46	433.57	21.23	18.66	U	NS	-190	3.77	U	0.89	7.62	NS	210	62.18 R
	782VMW8146BA	01/30/03	46	433.57	11 M	27 M	10	NS	-35	3.9	U	1.43	7.66	1.4	188	100
	782M8121CA	06/26/03	46	433.57	14	28	15	NS	-106	8	U	1.36	7.07	0.5	217	55.7
	782M8146DA	09/16/03	46	433.57	15	23	14	NS	-161	6.6	U	0	7.21	1.2	224	73.8
	782M8146EA	12/12/03	46	433.57	17	26	16	NS	-135	11.4	U	0	8.01	0.8	298	80.3
	782M8146FA	03/31/04	46	433.57	14	22	9.2	NS	-111	7.1	U	0.8	7.51	4.1	272	67.3
	782M8146GA	07/01/04	46	433.57	12	18	7.2	NS	-113	7.7	U	1	7.41	0.6	261	63.7
	782M8146HA	09/22/04	46	433.57	13	21	12	NS	-140	9.5	U	0.91	7.83	1.6	228	64.2
	782M8146IA	12/29/04	46	433.57	12	18	8	NS	-65	7.2	U	1.71	7.89	1.2	225	61.8
	782M8146JA	04/05/05	46	433.57	9.8	16	8.5	NS	-91	6.3	U	1.16	7.96	0.0	226	56.6
	782VM8146AA	11/14/06	46	433.57	2.7	11.5	8.86	0.58 F	144	4.7	U	1.4	6.94	1	220	48
	782VM8146AB	09/24/08	46	433.57	3.49	14.0	5.68	1.7	-182	5	U	1.69	7.61	1	220	29
	782VM8146BB	12/30/08	46	433.57	4.81	18.4	6.67	0.84	-101	6.3	U	0.67	7.81	NS	230	26
	782VM8146CA	04/15/09	46	433.57	4.89	18.0	3.73	0.88 F	-50	6.7	0.036 F	2.71	6.38	1	200	24
	782VM8146DA	06/16/09	46	433.57	6.72	21.2	4.45	0.65 F	-50	7.2	0.022 F	2.84	7.56	0.1	210	21
	782VM8146EB	09/21/09	46	433.57	4.82	23.4	4.55	1.7	-61	7.3	0.024 F	6.44	7.22	0.8	210	18
	782VM8146FB	04/15/10	46	433.57	4.42	28.7	4.68	1.4	-83	8.5	0.035 F	0	8	0.4	210	20
	782VM8146GA	09/28/10	46	433.57	3.85	23.9	4.14	1.3	-131	8.5	U	4.92	7.81	0.8	220	17
	782VM8146HA	04/06/11	46	433.57	5.67	32.4	5.35	1.4	-95	7.7	U	8.32	7.8	0.8	220	16
	782VM8146IA	09/13/11	46	433.57	5.64	26.8	3.12	1.1	-141	7.1	U	0	7.55	0.5	230	16
782VMW-84	782VMW-84	02/21/02	36	440.08	U	2.67	56.75	NS	-133	0.41 F	0.14 F	0.46	7.09	NS	315	44.97
	782VMW8440BA	02/04/03	40	436.08	0.34 UJ	1.7	55	NS	-46	2.9	U	1.52	6.87	7.4	269	44
	782M8423CA	06/27/03	40	436.08	U	0.8 F	37	NS	-119	U	U	0.77	6.26	4.9	315	67.1
	782M8440DA	09/17/03	40	436.08	U	1.2	57	NS	-125	35.3	U	2.61	6.66	4.2	316	61
	782M8440EA	12/10/03	40	436.08	U	0.56 F	58	NS	-76	12.7	U	0	5.82	5.5	350	85.2
	782M8440FA	04/02/04	40	436.08	U	0.7 F	64	NS	-84	U	U	1.2	6.77	0.0	325	56.4
	782M8440GA	07/02/04	40	436.08	U	0.59 F	40	NS	-78	U	0.062	0.89	6.67	1.2	321	54.2
	782M8440HA	09/21/04	40	436.08	U	0.62 F	44	NS	-124	U	U	0.66	7.2	5.0	303	49.1
	782M8440IA	12/29/04	40	436.08	U	0.52 F	58 J	NS	-102	U	U	5.76	6.48	3.4	272	50.5
	782M8440JA	04/06/05	40	436.08	U	0.62 F	59 J	NS	-95	U	U	0.8	7.04	5.8	227	46.6
	782VM8440AA	11/15/06	40	436.08	U	0.460 F	31.7	5	-99	2.7	0.046 F	1.12	6.87	3	340	48
	782VM8440AB	09/26/08	40	436.08	U	0.420 F	32.3	5.8	-113	45	U	0.62	6.34	3.4	340	68
	782VM8440BB	12/31/08	40	436.08	U	U	U	0.64 F	136	0.76 F	0.19	9.84	6.36	NS	20	0.48 F
	782VM8440CA	03/26/09	40	436.08	U	0.460 F	39.8	5.6	-97	3.2	U	0	6	2	330	45
	782VM8440DA	06/17/09	40	436.08	U	0.560 F	42.2	5.3	-126	4.1	0.014 F	0	6.49	4.8	330	39
	782VM8440EB	09/23/09	40	436.08	U	0.500 F	39.4	4.9	-103	2.9	0.020 F	4.11	6.51	5.5	320	38
	782VM8440FB	04/19/10	40	436.08	U	0.560 F	39.5	5.2	-114	1.6	0.039 F	0	6.91	4.2	310	35
	782VM8440GA	09/29/10	40	436.08	U	0.410 F	37.3	4.4	-71	U	U	0	6.21	4.6	290	27
	782VM8440HA	04/05/11	40	436.08	U	0.730 F	44.6	4.8	-127	0.73 F	U	0	6.86	4.2	290	35
	782VM8440IA	09/13/11	40	436.08	U	0.580 F	32.9	4.6	-154	U	U	7.58	6.91	NS	290	27
782VMW-84D	782VM84D50AB	09/26/08	50	425.18	U	0.340 F	29.7	6	-114	7.4	U	0.51	6.5	3.6	350	50
	782VM8440BB	12/31/08	40	435.18	U	U	U	1.4	-33	5.4	0.14	8.22	9.3	NS	260	1.5
	782VM84D50CA	03/25/09	50	425.18	U	U	8.83	4.4	40	6.5	0.14	0.2	10.79	0	72	20
	782VM84D50DA	06/17/09	50	425.18	U	U	1.18	2.8	-3	14	0.016 F	0.66	11.14	0	48	1.4
	782VM84D50EB	09/23/09	50	425.18	U	0.110 F	12.8	4.2	-61	7.8	0.063 F	5.43	7.21	1.2	170	18
	782VM84D50FB	04/19/10	50	425.18	U	0.140 F	10.9	3.9	-74	4.2	0.18	0.84	7.26	0	180	19
	782VM84D50GA	09/28/10	50	425.18	U	0.350 F	28.7	4.8	-48	2	U	0	6.77	3.6	310	96
	782VM84D50IA	09/14/11	50	425.18	U	0.330 F	22.9	4.8	-146	U	U	0	7.03	3.6	290	150

Table 4-2 TCE, cis-1,2-DCE, and VC Results of Groundwater, Nosedocks/Apron 2 Site

Sample Location	Sample ID	Date of Collection	Sample Depth (feet TOIC)	Sample Elevation (feet AMSL)	Trichloroethene µg/L	cis-1,2-dichloroethylene µg/L	Vinyl Chloride µg/L	DOC (mg/L)	ORP (mV)	sulfate (mg/L)	nitrate (mg/L)	oxygen (mg/L)	pH (-)	ferrous iron (mg/L)	alkalinity (mg/L)	chloride (mg/L)
NYS Groundwater Standards					**5***	**5***	**2**	**-**	**-**	**250**	**10**	**-**	**-**	**-**	**-**	**250**
Reporting Limit					**1.0**	**1.0**	**1.0**	**-**	**-**	**1**	**1**	**-**	**-**	**-**	**10**	**1**
782VMW-93	782VMW-93	02/26/02	35	442.57	U	0.16 F	76.02	NS	-134	0.46 F	0.14 F	2.14	7.02	NS	309	26.57
	782VMW9335BA	02/03/03	35	442.57	U	U	88	NS	-63	10.5	U	0.92	7.16	4.5	241	27.7
	782M9321CA	06/27/03	35	442.57	U	U	110	NS	-126	U	U	1.08	6.54	3.0	307	25.8
	782M9335DA	09/17/03	35	442.57	U	U	100	NS	-131	32	U	0	6.84	3.5	317	24.8
	782M9335EA	12/10/03	35	442.57	U	U	97	NS	-115	5.7	0.12	1.2	7.12	1.4	388	28.1
	782M9335FA	04/01/04	35	442.57	U	U	60	NS	-32	U	0.26	5.2	7.33	0.0	174	18.7
	782M9335GA	07/01/04	35	442.57	U	U	62	NS	-83	1.9	0.52	1.9	6.54	2.0	261	19.1
	782M9335HA	09/22/04	35	442.57	U	U	80	NS	-106	U	U	1.32	6.6	3.8	321	27.9
	782M9335IA	12/28/04	35	442.57	U	U	50	NS	-84	U	0.33	1.03	8.12	2.8	208	21.2
	782M9335JA	04/06/05	35	442.57	U	U	9.8	NS	100	7.6	U	6.08	7.28	0.0	107	9.9
	782VM9335AA	11/15/06	35	442.57	U	U	54.6	2.7	-20	0.36 F	0.089 F	1.11	6.83	0.2	320	32
	782VM9335AB	09/26/08	35	442.57	U	U	17.2	120	-208	0.99 F	47	1.07	6.54	1.6	520	37
	782VM9335CA	04/15/09	35	442.57	U	U	35.1	11	-76	13	0.098 F	1.54	6.36	1	320	49
	782VM9335DA	06/16/09	35	442.57	U	U	62.6	2.9	-101	0.61 F	0.046 F	4.02	7.08	NS	330	56
	782VM9335EB	09/23/09	35	442.57	U	U	54.6	3.5	-104	U	0.018 F	1.76	7.56	3.2	360	53
	782VM9335FB	04/19/10	35	442.57	U	0.590 F	2.31	1.7	-130	U	U	0	7.82	0	250	140
	782VM9335GA	09/28/10	35	442.57	U	U	48.6	3.5	-57	U	U	0	6.93	ns	300	36
	782VM9335HA	04/05/11	35	442.57	U	U	45.9	6	-94	0.80 F	0.15 F	0	7.45	3	240	22
782VMW-96	782VMW-96	02/21/02	39	437.73	U	U	77.8	NS	-103	0.24 F	0.15 F	1.12	7.2	NS	310	29.83
	782VMW9637BA	02/06/03	37	439.73	0.85 UJ	U	96	NS	25	2.9	0.062	2.05	7.05	3.8	247	26.5
	782VM9638CA	06/26/03	37	439.73	U	U	130 J	NS	-113	U	U	1.7	6.99	3.2	312	28.5
	782M9637DA	09/18/03	37	439.73	U	U	120	NS	-123	12.4	U	0	6.88	2.5	300	31.9
	782M9637EA	12/10/03	37	439.73	U	U	72	NS	-79	5.7	U	0	5.91	3.0	386	36.2
	782M9637FA	04/01/04	37	439.73	U	U	130	NS	-61	U	0.1	1.5	6.95	1.2	329	36
	782M9637GA	07/01/04	37	439.73	U	U	95	NS	-59	U	0.15	1.46	6.65	0.8	321	37.8
	782M9637HA	09/21/04	37	439.73	U	U	96	NS	-104	U	0.12	0.94	7.33	4.0	283	38.1
	782M9637IA	12/28/04	37	439.73	U	U	96	NS	-94	U	U	0.79	8.12	2.2	304	47.1
	782M9637JA	04/06/05	37	439.73	U	U	130 J	NS	46	U	U	6.06	6.55	2.3	279	46.1
	782VM9637AA	11/14/06	37	439.73	U	U	68.2	2.5	124	0.17 F	0.035 F	3.39	7.28	1.5	320	54
	782VM9637AB	09/25/08	37	439.73	U	U	49.6	2.3	-129	U	0.041 F	4.23	6.98	1.8	320	42
	782VM9637BB	12/31/08	37	439.73	U	U	50.9	2.6	-69	0.2	0.068	0.9	6.6	NS	310	44
	782VM9637CA	03/26/09	37	439.73	U	U	46.6	3.4	-68	U	U	0	6.12	1.2	330	46
	782VM9637DA	06/17/09	37	439.73	U	U	28.3	2.6	-127	0.11 F	0.023 F	0	6.06	3.2	320	44
782VMW-98	782VMW-98	02/20/02	32	447.47	U	U	U	NS	79	10.83	1.48	3.12	7.24	NS	209	17.69
	782M9817CA	06/25/03	33	446.47	U	U	U	NS	24	6.6	0.8	6.95	6.89	0.4	210	34.1
	782M9829DA	09/16/03	33	446.47	U	U	U	NS	178	7.1	0.8	6.65	6.94	0.0	213	32.6
	782M9829EA	12/11/03	33	446.47	U	U	U	NS	219	11.4	0.81	3.49	7.28	0.0	268	35.2
	782M9829FA	03/31/04	33	446.47	U	U	U	NS	216	7.7	0.63	9.98	7.78	0.0	255	16.4
	782VM9829AA	11/14/06	29	450.47	U	U	U	0.26 F	161	5.1	0.33 F	5.32	6.55	0	200	4
	782VM9832AB	09/24/08	32	447.47	U	U	U	0.56 F	65	6.6	0.44	5.48	7.21	0	190	11

Table 4-2 TCE, cis-1,2-DCE, and VC Results of Groundwater, Nosedocks/Apron 2 Site

Sample Location	Sample ID	Date of Collection	Sample Depth (feet TOIC)	Sample Elevation (feet AMSL)	Trichloroethene µg/L	cis-1,2-dichloroethylene µg/L	Vinyl Chloride µg/L	DOC (mg/L)	ORP (mV)	sulfate (mg/L)	nitrate (mg/L)	oxygen (mg/L)	pH (-)	ferrous iron (mg/L)	alkalinity (mg/L)	chloride (mg/L)
NYS Groundwater Standards					**5***	**5***	**2**	**-**	**-**	**250**	**10**	**-**	**-**	**-**	**-**	**250**
Reporting Limit					**1.0**	**1.0**	**1.0**	**-**	**-**	**1**	**1**	**-**	**-**	**-**	**10**	**1**
782VMW-100	782VMW-100	02/25/02	18	461.47	U	U	U	NS	26	25.37 R	U	3.42	6.77	NS	174	2.19
	782VMW10025BA	02/07/03	25	454.47	U	U	U	NS	385	11.7	U	5.26	7.19	0.0	166	27.8
	782VM10023CA	06/25/03	25	459.94	U	U	U	NS	-20	5.7	U	5.4	7.29	0.0	238	U
	782M10025DA	09/19/03	25	459.94	U	U	U	NS	4	11	U	2.76	7.2	0.0	263	8.0
	782M10025EA	12/09/03	25	459.94	U	U	U	NS	61	52.5	U	2.42	6.62	0.0	272	26.2
	782M10025FA	03/31/04	25	459.94	U	U	U	NS	125	24.6	U	1.4	7.48	0.0	173	1.8
	782M10025HA	09/21/04	25	459.94	U	U	U	NS	20	2.6 F	U	0.75	7.08	0.0	177	4.8
	782M10025JA	04/06/05	25	459.94	U	U	U	NS	243	10.7	U	2.7	7.13	0.0	192	3.8
	782VM10025AB	09/26/08	25	459.94	U	U	U	4.2	38	11	1.8	1.43	6.35	0.2	280	5.2
	782VM10025BB	12/31/08	25	459.94	U	U	U	4	-16	16	U	2.19	8.15	NS	180	3.4
	782VM10025CA	03/25/09	25	459.94	U	U	U	2.5 B	0	15	U	0	6.92	0.6	150	2.2
	782VM10025DA	06/17/09	25	459.94	U	U	U	3.7	-51	6.1	U	0	7.18	0.8	230	1.5
	782VM10025EB	09/21/09	25	459.94	U	U	U	4.6	-102	16	0.015 F	1.61	7.62	1.6	300	1.8
	782VM10025FB	04/15/10	25	459.94	U	U	U	4.2	-78	7.4	U	0	7.52	0.8	190	3.5
	782VM10025GA	09/28/10	25	459.94	U	U	U	3.5	-57	10	U	5.01	7.51	1.8	300	3.5
	782VM10025HA	04/07/11	25	459.94	U	U	U	3	-32	21	U	0	7.53	0.6	150	2.3
	782VM10025IA	09/14/11	25	459.94	U	U	U	4.1	-52	15	U	0	7.00	1.6	300	4.5
782VMW-101	782VMW-101	02/28/02	18	435.95	U	0.14 F	2.11	NS	-131	0.74 F	0.13 F	0.42	6.83	NS	310	7.85
	782VM10118BA	01/30/03	18	435.95	U	U	0.8	NS	-70	1.2	U	2.7	7.85	3.0	190	3.8
	782VM10118CA	06/26/03	18	435.95	U	U	0.74 F	NS	-131	U	U	2.57	6.96	2.5	230	2.3
	782M10118DA	09/19/03	18	435.95	U	U	1.5	NS	-137	21.4	U	0	6.66	3.4	224	3.7
	782M10118EA	12/09/03	18	435.95	U	U	1.0	NS	-109	10.3	U	1.9	6.91	2.6	330	8.9
	782M10118FA	03/31/04	18	435.95	UM	U	0.95 F	NS	-45	U	U	2.2	6.54	4.0	308 M	5.9
	782M10118GA	07/02/04	18	435.95	U	U	0.76 F	NS	-97	U	U	0.1	6.82	3.8	260	0.43 F
	782M10118HA	09/21/04	18	435.95	U	U	0.85 F	NS	-125	U	U	0.63	6.79	4.4	218	5.4
	782M10118IA	12/29/04	18	435.95	U	U	2.1	NS	-98	U	U	0.99	8	4.0	235	6.4
	782M10118JA	04/06/05	18	435.95	U	U	4.2	NS	-69	U	U	1.08	7.22	3.8	230	5
	782VM10118AA	11/15/06	18	435.95	U	U	1.88	2.2	-131	3.9	0.021 F	5.99	6.95	4.2	260	4.3
	782VM10118AB	09/24/08	18	435.95	U	U	2.02	4.1	-89	150	0.037 F	1.36	5.76	3.8	310	21
	782VM10118BB	12/30/08	18	435.95	U	U	2.09	3.8 *	-49	140	U	1.41	6.65	NS	340	31
	782VM10118CA	03/26/09	18	435.95	U	U	1.85	3.9	-46	130	0.021 F *	0	5.36	1.6	320	25 *
	782VM10118DA	06/16/09	18	435.95	U	0.120 F	2.69	3.3	-76	140	U	0.48	7.09	1.8	320	17 ♦
	782VM10118EB	09/21/09	18	435.95	U	U	2.38	3.6 *	-89	120	U	2.19	7.86	2.9	320	28
	782VM10118FB	04/15/10	18	435.95	U	U	5.27	4.9 *	-99	210	U	0	6.9	4.1	320	38 *
	782VM10118GA	09/28/10	18	435.95	U	U	2.93	2.9	22	170	U	0	6.52	2.6	270	27 *
	782VM10118HB	04/06/11	18	435.95	U	U	5.77	4.2 J	-59	230	U	0	7.2	0.4	320 ♦	41 ♦
	782VM10118IA	09/14/11	18	435.95	U	U	0.810 F	2.2	-100	110	U	0	7.16	1.8	290	21

Table 4-2 TCE, cis-1,2-DCE, and VC Results of Groundwater, Nosedocks/Apron 2 Site

Sample Location	Sample ID	Date of Collection	Sample Depth (feet TOIC)	Sample Elevation (feet AMSL)	Trichloroethene µg/L	cis-1,2-dichloroethylene µg/L	Vinyl Chloride µg/L	DOC (mg/L)	ORP (mV)	sulfate (mg/L)	nitrate (mg/L)	oxygen (mg/L)	pH (-)	ferrous iron (mg/L)	alkalinity (mg/L)	chloride (mg/L)
NYS Groundwater Standards					**5***	**5***	**2**	**-**	**-**	**250**	**10**	**-**	**-**	**-**	**-**	**250**
Reporting Limit					**1.0**	**1.0**	**1.0**	**-**	**-**	**1**	**1**	**-**	**-**	**-**	**10**	**1**
782VMW-105B	782VMW-105B	2/21/2002	36	444.25	50.0	4.63	U	NS	3	12.98	0.68 F	0.69	7.45	NS	243	56.78
	782VMW105B36B	1/30/2003	36	444.25	39.0	2.6	U	NS	95	7.8	0.9	0.93	7.31	0.0	183	48.2
	782M105B19CA	6/26/2003	36	444.25	29.0	1.6	U	NS	50	14.5	0.7	1.15	6.62	0.0	259	30.6
	782M105B33DA	9/16/2003	36	444.25	26.0	3.7	U	NS	7	24.5	0.54	0	6.88	0.0	258	29.1
	782M105B33EA	12/11/2003	36	444.25	21.0	3.2	U	NS	5	17.9	0.44	1.95	7.76	0.0	625	26.5
	782M105B33FA	3/31/2004	36	444.25	28.0	6	U	NS	175	13.5	0.52	1	7.28	0.0	273	25.9
	782M105B33GA	7/1/2004	36	444.25	25.0	3.2	U	NS	18	13.7	0.56	0.12	6.83	0.8	246	25.3
	782M105B33HA	9/22/2004	36	444.25	29.0	2.9	U	NS	-74	14.5	0.66	0.63	7.78	0.0	240	24.2
	782M105B33IA	12/27/2004	36	444.25	33.0	3.2	U	NS	-14	13.8	1	0.7	7.69	0.2	229	32.4
	782M105B33JA	4/5/2005	36	444.25	13.0	4.1	U	NS	40	11.4	0.059	2.07	7.9	0.5	211	25.9
	782VM105B33AA	11/14/06	33	447.25	7.97	0.510 F	U	1.6	-22	9	0.32 F	0	7.01	0.5	250	12
	782VM105B33AB	09/24/08	33	447.25	23.9	1.36	U	2.4	-199	7	0.68	1.53	7.36	2	260	11
	782VM105B36BB	12/30/08	36	444.25	24.7	1.88 F	U	2.6 ♦	-145	6.8	0.39 ♦	0.78	7.49	NS	240	9.3
	782VM105B36CA	04/15/09	36	444.25	17.8	1.30 F	U	2.7 ♦	-138	5.2 ♦	0.17 ♦	0.34	6.5	2	190	6.7 ♦
	782VM105B36DA	06/17/09	36	444.25	7.20	0.720 F	U	3.3 ♦	-147	6.4 ♦	0.21 ♦	0	7.4	3.6	210 ♦	7.5 ♦
	782VM105B36EB	09/21/09	36	444.25	39.6	3.00	U	2.2	-152	9.5	0.33	5.56	7.18	2.5	250	7.5
	782VM105B36FB	04/15/10	36	444.25	34.8	4.70	U	2.6 J♦	-133	8.6 ♦	0.083 F ♦	0.93	7.68	2	190	4.9 ♦
	782VM105B36GA	09/29/10	36	444.25	29.6	4.83	U	2.0 J	-170	8.6 ♦	U	4.98	7.37	1.4	210	7.5
	782VM105B36HB	04/06/11	36	444.25	43.6 M	3.26 J	U	1.8 ♦	-120	8.5	U	8.11	7.43	3	230	11
	782VM105B36IB	09/13/11	36	444.25	24.3 ♦	2.83	U	11.8	-173	7.3	U	1.32	7.25	1.7	240	7
782MW-10	782MW-10	02/28/02	27	450.50	U	66	25.38	NS	-122	8.57	0.35 F	0.74	6.62	NS	289	34.38
	782MW1027BA	02/06/03	27	450.50	0.34 UJ	55	19	NS	-94	15.6	U	5.98	6.83	4.0	233	40.4
	782M1027CA	06/27/03	27	450.50	U	68	26	NS	-148	8.6	U	1.03	6.95	3.7	260	61.6
	782M1027DA	09/18/03	27	450.50	U	68	30	NS	-138	34.8	U	0	6.81	4.5	263	49.4
	782M1027EA	12/12/03	27	450.50	U	53	21	NS	-110	12.8	U	0	6.82	5.4	361	48.3
	782M1027FA	04/01/04	27	450.50	U	75	26	NS	-63	2	U	0.3	6.48	5.2	273	59.9
	782M1027GA	07/01/04	27	450.50	U	48	18	NS	-97	8.4	0.044 F	0	6.6	5.4	294	58
	782M1027HA	09/21/04	27	450.50	U	56	21	NS	-126	4.9 F	U	0.3	6.99	5.4	226	53.2
	782M1027IA	12/27/04	27	450.50	U	54	22	NS	-112	3.5 F	U	3.91	6.34	2.8	209	282
	782M1027	04/05/05	27	450.50	U	54 J	31	NS	-109	5.9	U	0.6	7.52	5.0	201	64.7
	782M1027AA	11/14/06	27	450.50	U	43.9	17.4	3.1	-109	4.9	U	0.93	6.97	5	270	110
	782M1027AB	09/24/08	27	450.50	U	23.0	10.8	5.1	-92	2.1	0.018 F	1.05	6.86	NS	270	16
	782M1027BB	12/31/08	27	450.50	U	23.9	13.0	5.3	159	1.2	0.46	1.99	6.25	NS	260	13
	782VM1027CA	03/26/09	27	450.50	U	16.6	10.2	5.5	-8	9.7	0.41	0	5.9	0	270	13
	782M1027DA	06/16/09	27	450.50	U	32.2	18.1	6.8	17	1.8	0.35	3.45	7.06	0.9	260	15
	782M1027EB	09/23/09	27	450.50	U	20.1	12.1	5.5	-18	1.3	0.12 B	1.48	7.26	0.8	280	9.2
	782M1027FB	04/19/10	27	450.50	U	12.7	7.22	10	-105	0.67 F	U	0	6.74	2.4	250	6.9
	782M1027GA	09/28/10	27	450.50	U	40.2	20.2	4.3	-97	2.1	U	0	7.01	1.6	240	16
	782M1027HA	04/05/11	27	450.50	U	40.0	20.1	19	-114	2.3	U	0	7.07	1.4	230	13
	782M1027IA	09/13/11	27	450.50	U	28.5	13.8	5.2	-166	1.2	U	8.32	6.9	3.2	240	11
782VMW-121	782M12116AB	09/25/08	16	443.87	U	U	22.5	4.5	-105	270	U	0.55	6.17	3	320	57
	782VM12116BB	12/31/08	16	443.87	U	U	24.4	4	-59	190	U	0.91	8.79	NS	320	57
	782MW12116CA	03/25/09	16	443.87	U	U	12.7	3.8	-33	110	0.17 F	1.59	6.89	1.8	330	39
	782VM12116DA	06/17/09	16	443.87	U	U	11.8	4.2	-54	180	U	0	6.67	1.4	340	47
	782VM12116EB	09/21/09	16	443.87	U	U	21.8	4.7	-88	120	0.059 F	1.97	7.53	3.2	320	51
	782VM12116FB	04/15/10	16	443.87	U	U	17.5	4.1	-81	260	U	0	6.98	1.8	290	34
	782VM12116GA	09/28/10	16	443.87	U	U	19.2	4.1	-100	290	U	4.68	7.65	1.8	290	40
	782VM12116HA	04/06/11	16	443.87	U	U	19.1	3.2	-13	330	U	0	7.05	2.3	270	35
	782VM12116IA	09/13/11	16	443.87	U	U	15.7	3.0	-118	210	U	0	6.98	2.5	320	37

Table 4-2 TCE, cis-1,2-DCE, and VC Results of Groundwater, Nosedocks/Apron 2 Site

Sample Location	Sample ID	Date of Collection	Sample Depth (feet TOIC)	Sample Elevation (feet AMSL)	Trichloroethene µg/L	cis-1,2-dichloroethylene µg/L	Vinyl Chloride µg/L	DOC (mg/L)	ORP (mV)	sulfate (mg/L)	nitrate (mg/L)	oxygen (mg/L)	pH (-)	ferrous iron (mg/L)	alkalinity (mg/L)	chloride (mg/L)
NYS Groundwater Standards					**5***	**5***	**2**	**-**	**-**	**250**	**10**	**-**	**-**	**-**	**-**	**250**
Reporting Limit					**1.0**	**1.0**	**1.0**	**-**	**-**	**1**	**1**	**-**	**-**	**-**	**10**	**1**
782VMW-121D	782M121D26AB	09/25/08	26	434.71	U	U	15.2	4.9	-95	32	U	0.87	6.01	2.8	360	61
	782VM121D26BB	12/31/08	26	434.71	U	U	18.1	5	-38	27	U	1.25	8.6	NS	350	56
	782VM121D26CA	03/25/09	26	434.71	U	U	12.9	4.6	-61	27	U	0.32	6.93	1.2	350	56
	782VM121D26DA	06/16/09	26	434.71	U	U	23.3	7.9	-95	25	U	0.64	7.24	2	360	53
	782VM121D26EB	09/21/09	26	434.71	U	U	18.5	5.4	-103	17	0.048 F	2.17	7.73	3	340	55
	782VM121D26FB	04/15/10	26	434.71	U	U	15.5	19	-96	79	U	0	6.92	4	350	48
	782VM121D26GA	09/28/10	26	434.71	U	U	18.0	4.9	-130	59	U	4.74	7.68	2.4	340	48
	782VM121D26HA	04/06/11	26	434.71	U	U	22.3	3.9	-76	170	U	0	7.13	1.2	330	45
	782VM121D26IA	09/14/11	26	434.71	U	0.120 F	16.1	3.9	-126	110	U	0	6.89	5.6	340	40
AP2MW-3	AP2MW-3	02/27/02	27	438.63	U	U	U	NS	-106	0.08 J	U	0.75	6.53	NS	360	22.14
	AP2M0327CA	06/27/03	27	438.63	U	U	U	NS	-139	U	U	1.25	6.91	8.0	331	25.2
	AP2M0327DA	09/19/03	27	438.63	U	U	U	NS	-135	7.7	U	2.81	6.82	4.4	290	26.9
	AP2M0327EA	12/09/03	27	438.63	U	U	U	NS	-121	21	U	1.17	6.89	2.2	418	36.6
	AP2M0327FA	03/31/04	27	438.63	U	U	U	NS	-35	U	U	0.3	6.66	3.8	274	39
	AP2M0327GA	07/02/04	27	438.63	U	U	U	NS	-78	2.6	0.038 F	0	6.51	5	328	39.7
	AP2M0327HA	09/21/04	27	438.63	U	U	U	NS	-92	U	U	0.41	6.33	2.2	293	42.6
	AP2M0327AB	09/26/08	27	438.63	U	U	U	6.1	-116	U	U	1.6	6.74	1.6	350	72
	AP2M0327EB	09/21/09	27	438.63	U	U	U	6.4	-101	U	U	1.79	7.6	3.8	360	75
	AP2M0327FB	04/15/10	27	438.63	U	U	U	6.7	-105	U	U	0	6.98	6	370	62
	AP2M0327GA	09/28/10	27	438.63	U	U	U	5.8	-9	U	U	0	6.57	3	370	68
	AP2M0327IA	09/14/11	27	438.63	U	U	U	6.2	-136	U	U	0	7.01	3.8	360	58

Notes:

F = Analyte was positively identified above the Method Detection Limit (=MDL), but the concentration is below the Reporting Limit (=RL).

M = Matrix effect is present.

U = The analyte was analyzed for, but not detected. The numerical value is at or below the MDL.

R = The result was rejected due to an inability to meet QA/QC criteria

NS = Not sampled

Exceedance of the NYS Groundwater Standards or Guidance Values.

* = The principal organic contaminant standard for groundwater of 5 µg/L applies to this COC.

♦ - Denotes higher nominal value of duplicate sample result or change in dilution.

Key:

AMSL = Above mean sea level

TOIC = top of inner casing

VOC = volatile organic compound

Table 4-3 TCE, cis-1,2-DCE, and VC Results of Surface Water, Nosedocks/Apron 2 Site

Sample Location	Sample ID	Date of Collection	Sample Depth (feet)	Trichloroethene	cis-1,2-dichloroethylene	Vinyl Chloride
NYS Groundwater Standards				**5***	**5***	**2**
Reporting Limit				**1.0**	**1.0**	**1.0**
782SW-115	782SW11501AA	11/15/2006	1	0.140 F	U	U
	782SW11501AB	9/24/2008	1	U	U	U
	782SW11501BB	1/2/2009	1	0.110 F	U	U
	782SW11501CA	4/16/2009	1	U	U	U
	782SW11501DA	6/16/2009	1	U	0.120 F	U
	782SW11501EB	9/24/2009	1	0.130 F	U	U
	782SW11501FB	4/21/2010	1	U	U	U
	782SW11501GA	10/4/2010	1	0.110 F	U	U
	782SW11501HA	4/5/2011	1	U	U	U
	782SW11501IA	9/14/2011	1	0.180 F	U	U
782SW-118	782SW11801AA	11/15/2006	1	0.130 F	U	U
	782SW11801AB	9/24/2008	1	U	U	U
	782SW11801BB	1/2/2009	1	U	U	U
	782SW11801CA	4/16/2009	1	0.120 F	U	U
	782SW11801DA	6/16/2009	1	U	U	U
	782SW11801EB	9/24/2009	1	0.110 F	U	U
	782SW11801FB	4/21/2010	1	0.110 F	U	U
	782SW11801GA	10/4/2010	1	U	U	U
	782SW11801HA	4/5/2011	1	U	U	U
	782SW11801IA	9/14/2011	1	0.180 F	U	U

Table 4-3 TCE, cis-1,2-DCE, and VC Results of Surface Water, Nosedocks/Apron 2 Site

Sample Location	Sample ID	Date of Collection	Sample Depth (feet)	Trichloroethene	cis-1,2-dichloroethylene	Vinyl Chloride
NYS Groundwater Standards				**5***	**5***	**2**
Reporting Limit				**1.0**	**1.0**	**1.0**
782SW-119	782SW11901AA	11/15/2006	1	U	U	U
	782SW11901AB	9/24/2008	1	U	U	U
	782SW11901BB	1/2/2009	1	U	U	U
	782SW11901CA	4/16/2009	1	U	U	U
	782SW11901DA	6/16/2009	1	0.110 F	U	U
	782SW11901EB	9/24/2009	1	U	U	U
	782SW11901FB	4/21/2010	1	0.170 F	U	U
	782SW11901GA	10/4/2010	1	U	U	U
	782SW11901HA	4/5/2011	1	U	U	U
	782SW11901IA	9/14/2011	1	0.150 F	U	U

Notes:

F = Analyte was positively identified above the Method Detection Limit (=MDL), but the concentration is below the Reporting Limit (=RL).
U = The analyte was analyzed for, but not detected. The numerical value is at or below the MDL.

* = The principal organic contaminant standard for groundwater of 5 µg/L applies to this COC.
♦ = Denotes higher nominal value of duplicate sample result or change in dilution.

Key:

COC = contaminant of concern
VOC = volatile organic compound

Other Criteria to be considered:

- Potential for surface water impact; and
- Contaminant levels.

In addition to the Criteria from the EPA Guidance, the criteria listed below provide site-specific supporting evidence of MNA for the Apron 2 site:

- TCE levels at the source are decreasing;
- The absence of VC in the surface water samples of Six Mile Creek;
- The remedy will reach the remedial goals in a "reasonable timeframe"; and
- Analysis indicates a decrease in contaminant mass at the site.

The MNA remedial alternative at the Nosedocks/Apron 2 site is operating properly and successfully as demonstrated by an evaluation of the data against the criteria discussed in more detail below.

Source Removal

The identified source of the chlorinated ethylene plume at the Nosedocks/Apron 2 site was the former wash waste system for the Nosedocks. Closure activities were performed on the Wash Waste System and are documented in the FS. In 1997, manholes 13 through 18 and 21 through 23 were removed and excavated, and OWS 5730-2, along with 954 CY of contaminated soils surrounding the area, was removed in 2001 (FPM Group Ltd. 2006). SSVM is also being performed at Buildings 785 and 786 to address the soil vapor intrusion of chlorinated solvents associated with the Apron 2 site. The SSVM system is composed of two horizontal wells with a total combined screen length of 300 feet performing under a flow rate of 1 actual cubic foot per minute per foot of screen. Building 785 has one horizontal well with a screen length of 140 feet and Building 786 has one horizontal well with a screen length of 160 feet. The SSVM system at Buildings 785 and 786 has been in consistent operation since May 2011.

Geochemical Factors Associated with Contaminant Degradation

The adequacy of the groundwater chemistry is evaluated by examining the MNA parameters. TCE biodegrades by reductive dechlorination, where chlorine atoms are sequentially removed so that TCE degrades to DCE isomers, which degrade to VC. Reductive dechlorination occurs when TCE is used as an electron acceptor, not as substrate, in microbial reactions. Natural attenuation is feasible when the groundwater parameters are favorable, sufficient microbial substrate is available, and the concentrations of competing electron acceptors are low. TCE degrades once the preferential electron acceptors are reduced in groundwater, including DO, nitrate, ferric iron, and sulfate. Reductive dechlorination reactions are optimized under iron- and sulfate-reducing conditions. DCE and VC may also bioat-

tenuate through reductive dechlorination, or may be consumed as microbial substrate under aerobic conditions.

EPA provides MNA guidance in *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water* (EPA/600/R-98/128). The document states, "Reductive dechlorination has been demonstrated under nitrate- and iron-reducing conditions, but the most rapid biodegradation rates, affecting the widest range of chlorinated aliphatic hydrocarbons, occur under sulfate-reducing and methanogenic conditions." According to the guidance, there is a positive correlation between zones of microbial activity and increased alkalinity; and reductive dechlorination is associated with an increase in the concentration of chloride ions (EPA 1998). ORP is a measure of the relative tendency of a solution to accept or transfer electrons, and the pH levels affect the presence and activity of microbial populations in groundwater. The optimal ranges for ORP, sulfate, nitrate, oxygen, pH, and Iron (II) are presented in Table 4-4.

Table 4-4 Optimum Ranges for Geochemical Parameters

Parameter	Range	Interpretation
ORP	< 50 mV < -100 mV	Reductive pathway possible Reductive pathway likely
sulfate	< 20 mg/L	Competes at higher concentrations with reductive pathway
nitrate	< 1 mg/L	Competes at higher concentrations with reductive pathway
oxygen	< 0.5 mg/L	Tolerated, toxic to reductive pathway at higher concentrations
pH	5 to 9	Tolerated range
Iron (II)	> 1 mg/L	Reductive pathway possible

Source: Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water. EPA/600/R-98/128. September 1998.

Key:

mg/L = milligrams per liter
mV = millivolts
ORP = oxidation reduction potential

Geochemical factors associated with contaminant degradation at the site indicate that MNA is taking place. The observance of the high alkalinity and high chloride within the chloroethylene plume, relative to upgradient well 782VMW-98, indicates that microbial activity is occurring, which reduces COC concentrations across the site. Low sulfate (< 20 mg/L) concentrations observed in all but three wells throughout the network, low nitrate (< 1 mg/L), negative ORP levels, and neutral pH levels support this microbial activity and thus the MNA remedy.

Monitoring Information Showing that Natural Attenuation is Working and Identification of Intermediate Degradation Products

Groundwater data are evaluated to assess the stability of the plume and the adequacy of the groundwater chemistry to support natural attenuation of contaminants of concern, which are the first and second lines of evidence for MNA.

Figure 4-1 displays a comparison of the baseline TCE plume to the 2008, 2009, and 2010 TCE plumes, and Figure 4-2 presents the April 2011 and September 2011 TCE plumes. Figure 4-3 displays a comparison of the baseline cis-1,2-DCE plume to the 2008, 2009, and 2010 cis-1,2-DCE plumes, and Figure 4-4 presents the April 2011 and September 2011 cis-1,2-DCE plumes. Figure 4-5 displays a comparison of the baseline VC plume to the 2008, 2009, and 2010 VC plumes, and Figure 4-6 presents the April 2011 and September 2011 VC plumes.

Figures 4-7 through 4-18 show the concentration of three VOCs that exceed the NYS Class GA Groundwater Standards, total VOCs (sum of all three above referenced VOCs and all other chlorinated VOCs), and DOC concentrations for sampled wells over different times.

Statistical analyses were performed on the TCE, cis-1,2-DCE, and VC sampling data through September 2011 to assess trends in contaminant concentrations along the observed plume and evaluate the effectiveness of the remedy implemented at the site using the Air Force Center for Engineering and the Environment, formerly the Air Force Center for Environmental Excellence (AFCEE) Monitoring and Remediation Optimization System (MAROS) Software. Model input required by MAROS included analytical results for each well and sampling event, coordinates of each well, estimates of current plume geometry (e.g., length and width), aquifer characteristics (e.g., seepage velocity, porosity, and thickness) and the type of treatment implemented at the source location. Appendix A presents the MAROS Mann-Kendall Statistics and Spatial Moment Analysis Summaries.

The Mann-Kendall and Spatial Moment Analyses are the primary analyses used for evaluating the treatment effectiveness. Mann-Kendall is a common method for temporal trend evaluations, as it is a nonparametric analysis that accounts for the assumptions made for the plume geometry and aquifer characteristics and does not assume a statistical distribution (i.e., normal distribution) of the groundwater data. Most groundwater data are not distributed normally, due to the problem of left censoring (no values recorded below the detection limit) and the occasional very high concentration, orders of magnitude above the detection limit. Using this in conjunction with the Spatial Moment Analysis, one can assess plume stability and the effectiveness of monitored natural attenuation. Information on how MAROS calculates and reports trends can be found in Table 4-5 and AFCEE's MAROS Software Version 2.2 User's Guide (AFCEE 2006). The trends were also evaluated non-statistically for the period from November 2006 to September 2011.

Table 4-5 MAROS Mann-Kendall Analysis Decision Matrix

Mann-Kendall Statistic	Confidence in Trend	Concentration Trend
$S > 0$	> 95%	Increasing
$S > 0$	90 to 95%	Probably Increasing
$S > 0$	< 90%	No Trend
$S \leq 0$	< 90% and COV ≥ 1	No Trend
$S \leq 0$	< 90% and COV < 1	Stable

Table 4-5 MAROS Mann-Kendall Analysis Decision Matrix

Mann-Kendall Statistic	Confidence in Trend	Concentration Trend
S < 0	90 – 95%	Probably Decreasing
S < 0	95%	Decreasing

Source: Monitoring and Remediation Optimization System (MAROS) Software Version 2.2 User's Guide, HQ Air Force Center for Environmental Excellence, March 2006.

Key:

COV = Coefficient of Variation
S = Mann-Kendall Statistic

TCE Plume. The TCE plume is localized around the source area north of Building 786, and TCE was only detected in two wells, 782VMW-105B and -81, in the monitoring network, with the exception of a trace amount detected in 782VMW-78 in February 2003.

Mann-Kendall Statistics Summary. The Mann-Kendall statistic results provided by MAROS measure the trend in concentration over time. There were no detections of TCE in wells 782VMW-10, 782VMW-100, -101, -121, -121D, -76, -84, -84D, -93, -96, -98, and AP2MW-3. The results for 782VMW-105B indicate a 0.40 coefficient of variation, a Mann-Kendall statistic of -21, and a 74.0% confidence in the trend, resulting in a stable TCE concentration trend. The results for 782VMW-78 indicate a 0.52 coefficient of variation, a Mann-Kendall statistic of 58, and a 96.8% confidence, resulting in an increasing trend in TCE concentration. The results for 782VMW-81 indicate a 0.57 coefficient of variation, a Mann-Kendall statistic of -104, and a 100.0% confidence, resulting in a decreasing TCE concentration trend.

The only monitoring well that MAROS designates as having stable TCE concentrations is 782VMW-105B. Figure 4-12 shows variability in the TCE concentrations over the sampling periods. MAROS shows 782VMW-78 to have an increasing concentration trend. The only TCE detection at 782VMW-78 was a trace amount in February 2003. Therefore, the increasing trend result for this well is not valid, as all subsequent performance monitoring at that well has resulted in non-detections.

Spatial Moment Analysis. The Moment Analysis results provided by MAROS (see Appendix A) give the change in mass over time (zeroth moment), the change in the location of the center of mass over time (first moment), and the plume spread over time (second moment), all of which can be used to assess plume stability. Plume spread is a measure of the distribution of the contaminant about the center of the mass in the x and y directions, with the x axis representing the major migration direction and the y axis representing the minor migration direction. The trend in plume mass for the TCE plume indicates a 0.53 coefficient of variation, an S-statistic of -10, and a 60.6% confidence in the trend, resulting in the conclusion that there is a stable plume mass. The negative S-statistic suggests that TCE mass is decreasing; however, MAROS designates a stable trend because the confidence in the decreasing trend is not sufficiently high. The trend in the

distance from the source to the center of mass indicates a 0.10 coefficient of variation, an S-statistic of 2, and a 51.3% confidence, resulting in no trend. A no trend result indicates that there is no statistical trend in the data. Plume spread in the x direction (the major direction of plume migration) indicates a 0.29 coefficient of variation, an S statistic of 4, and a 53.8% confidence, resulting in no trend in the x direction. Plume spread in the y direction indicates a 0.43 coefficient of variation, an S statistic of -24, and a 77% confidence, resulting in a stable trend in the y direction**.**

Geochemical Factors. The reducing conditions are very favorable for the reductive dechlorination of the TCE plume, as indicated by the presence of cis-1,2-DCE and VC, the low ORP and presence of ferrous iron, and favorable pH and alkalinity. The concentrations of DOC generally range from 0.5 to 3.3 milligrams per liter (mg/L), which indicates that reductive dechlorination reactions may be substrate limited; however, high concentration of 11.8 mg/L of DOC was measured in 782VMW-105B in September 2011 (FPM Group Ltd. 2011), which is more favorable for bioattenuation.

cis-1,2-DCE Plume. The cis-1,2-DCE plume extends from the source area underneath Buildings 786, 785, 784, 783, and 782 and attenuates below the 5 µg/L groundwater standard west (upgradient of) collocated wells 782VMW-84 and -84D, which are located northeast of Apron 2. Sub-slab vapor mitigation is being performed separate from the MNA remedy at Buildings 785 and 786 to address the soil vapor intrusion of the chlorinated plume associated with the site.

Mann-Kendall Statistics Summary. There were no detections of DCE in wells 782VMW-100, -121, -96, -98, and AP2MW-3. The statistical results for all other wells can be found in Appendix A (MAROS Mann-Kendall Statistics Summary). Generally, the Mann-Kendall statistics reveal that four wells show decreasing or probably decreasing trends. Two of those four wells are located within the 5 µg/L contour (see Figure 4-2). One well shows a stable concentration trend and two wells show increasing or probably increasing trends. The only DCE detections at 782VMW-93 that resulted in a probably increasing trend in DCE concentration were trace amounts in February 2002 and April 2010. Well 782VMW-93 is located adjacent to the middle portion of the DCE plume, so trace detections are not unexpected at this monitoring well. The only DCE detections that resulted in the increasing trend at monitoring well 782VMW-101 were trace amounts of DCE in February 2002 and June 2009. The five rounds of performance monitoring at 782VMW-101 since June 2009 have resulted in non-detections. Therefore, the probably increasing to increasing trend results assigned by MAROS to cis-1,2-DCE concentrations in these two wells are not valid.

Spatial Moment Analysis. The change in plume mass analysis for the DCE plume indicates a 0.50 coefficient of variation, an S-statistic of -26, and a 75.7% confidence, resulting in a stable trend. The negative S-statistic suggests that DCE mass is decreasing; however, MAROS designates a stable trend because the confidence in the decreasing trend is not sufficiently high. The trend in the distance from the

source to the center of mass indicates a 0.06 coefficient of variation, an S-statistic of -28, and an 80.7% confidence, resulting in a stable trend. The plume spread in the x direction (the major direction of plume migration) indicates a 0.37 coefficient of variation, an S-statistic of -36, and an 87.0% confidence, resulting in a stable trend. The plume spread in the y direction (the minor migration direction) indicates a 0.33 coefficient of variation, an S statistic of -46, and a 92.7% confidence, resulting in a probably decreasing trend.

The Spatial Moment Analysis indicates that all moment trends are stable for DCE, except for plume spread in the y direction, where the second moment results indicate that the DCE plume spread in that direction has decreased.

Geochemical Factors. The reducing conditions appear favorable for the reductive dechlorination of the cis-1,2-DCE plume, as indicated by the attenuation of cis-1,2-DCE and generation of VC, the low ORP and presence of ferrous iron, and favorable pH and alkalinity. Because cis-1,2-DCE is less oxidized than TCE, the reductive dechlorination of cis-1,2-DCE generally requires stronger reducing conditions (i.e., lower ORP), which are present in source area well 782VMW-105B and downgradient well 782VMW-10. The concentrations of DOC appear to increase from a range of 0.5 to 3.3 mg/L near the source area in 782VMW-105B and -81 to a range of 4.3 to 19 mg/L in downgradient well 782MW-10. As noted in the Final Spring 2009 Quarterly Report for OBGW, the elevated DOC concentration (120 mg/L) in 782VMW-93 that occurred in September 2008 was due to landfarm seepage infiltration which changed water chemistry and contaminant levels in 782VMW-76 and 782VMW-93. Additionally, downgradient wells 782VMW-78 and 782MW-10 have low concentrations of benzene, which provides additional electron donors to enhance reductive dechlorination reactions.

VC Plume. The VC plume extends east from 782VMW-84 through 782VMW-121 and -121D to 782VMW-101, and is bracketed by 782VMW-100 to the north and AP2MW-3 to the south.

Mann-Kendall Statistics Summary. There were no detections of VC in wells 782VMW-100, -105B, -98, and AP2MW-3 and no trend was observed in 782VMW-121D and 782VMW-84D. Seven of the nine remaining wells show decreasing concentration trends. One well shows an increasing trend and one well has a stable trend (see Appendix A for full Mann-Kendall statistics).

Of the seven wells that show a decreasing concentration trend, six of those wells are located in the western portion of the plume, demonstrating that the plume is decreasing and generally attenuating.

The only monitoring wells that MAROS designates as having stable or increasing VC concentrations are 782VMW-101 and -121, respectively. Although the confidence in the 782VMW-121 trend is not sufficiently high to return a decreasing trend per the decision logic that MAROS uses, Figure 4-15 appears to show an

overall decreasing trend in concentration. An increasing trend at monitoring well 782VMW-101, located just outside of the leading edge of the VC plume, is not unexpected since it is in the direction of groundwater flow, and VC is produced as TCE and DCE break down. However, the VC concentrations at 782VMW-101 (fluctuating between about 0.8 and 5.8 ug/L) are of very low magnitude, and the most recent data point indicated a significant decrease.

A contingency alternative, such as a horizontal air sparging barrier (or other action agreed upon by the Air Force, EPA, and NYSDEC), will be implemented if surface water samples from Six Mile Creek contain elevated concentrations of VC (above the NYSDEC Class GA Groundwater Quality Standard of 2 µg/L for VC).

Spatial Moment Analysis. The plume mass analysis for the VC plume indicates a 0.60 coefficient of variation, an S-statistic of -90, and a 99.7% confidence, resulting in a decreasing trend. The trend in the distance from the source to the center of mass indicates a 0.04 coefficient of variation, an S-statistic of -8, and a 58.9% confidence, resulting in a stable trend. Plume spread in the x direction (the major direction of plume migration) indicates a 0.27 coefficient of variation, an S-statistic of 86, and a 99.8% confidence, resulting in an increasing trend. Plume spread in the y direction (the minor migration direction) indicates a 0.26 coefficient of variation, an S-statistic of -2, and a 51.3% confidence, resulting in a stable trend.

The Spatial Moment Analysis indicates that the mass of the VC plume is decreasing, which is consistent with the Mann-Kendall results. The distance from the source location to the center of the VC plume mass is stable. While the spread of the plume in the y direction is stable, the percentage of mass located downgradient of the center of mass, in the x direction, is increasing. This is consistent with the increasing VC trend determined for well 782MW-101. An increase in VC mass downgradient of the plume center of mass is not unexpected since VC is produced as TCE and DCE break down.

Geochemical Factors. Although VC can biodegrade by reductive dechlorination, VC is less oxidized than DCE, and requires stronger reducing conditions (i.e., lower ORP). The reductive dechlorination of VC generally requires sulfate-reducing or methanogenic conditions. The rate of reductive dechlorination can decrease when the concentration of sulfate is elevated (e.g., above 20 mg/L), but this process is not shut down and continues to occur. The concentrations of sulfate are generally below 10 mg/L in the monitoring network with the exception of 782VMW-121, -121D, and -101, which are closest to Six Mile Creek and have VC concentrations ranging from 0.81 to 24.4 µg/L. The concentrations of sulfate ranged from 110 to 330 mg/L in 782VMW-121 and from 110 to 230 mg/L (excluding a low outlier) in 782VMW-101. The higher sulfate concentrations near Six Mile Creek may slow the reductive dechlorination of VC, but may indicate the mixing of aerobic surface water and anaerobic groundwater. VC is preferentially biodegraded by aerobic microbes. Although the groundwater is more aerobic in 782VMW-121 and -101, the groundwater still was under strong, iron-

reducing conditions, which limits aerobic bacteria. VC will likely degrade aerobically as it contacts more aerobic water near the creek. In addition, VC can be oxidized under low-dissolved oxygen conditions, even when other anaerobic reduction processes, such as ferric iron reduction are evident, as discussed by Bradley and Chapelle (2011). In summary, the potential exists for VC degradation near Six Mile Creek via multiple pathways under a variety of geochemical conditions.

LUCs/ICs

Appropriate LUC/ICs are in place and are eliminating the potential exposure to groundwater and restricting activities that would adversely impact the remedy (see Sections 4.5 and 4.6).

Monitoring System

The monitoring system has been constructed in accordance with the approved design, and the performance monitoring, as described in Section 4.4.1, is providing the data needed to evaluate the progress of natural attenuation.

Surface Water

Surface water samples were collected from 782SW-115, -118, and -119, which are adjacent and approximately 250 and 400 feet downstream of well 782VMW-101. Several VOCs were detected in the surface water, including TCE and cis-1,2-DCE, which had infrequent, estimated quantities less than 0.18 µg/L between November 2006 and September 2011. The intermittent low level detections of these VOCs in surface water samples 782SW-115, -118, and -119 are believed to be related to the Apron 2 chlorinated plume and the Apron 2 petroleum plume. However, several detections were reported for COCs which were not related to either plume. Surface water samples located upgradient in the creek near site AOC9 had detections for chlorobenzene which likely accounts for the chlorobenzene detection in the surface water samples at the Apron 2 site. The remaining detections are believed to be stormwater runoff, as the creek received stormwater from the southern and eastern section of the former Griffiss AFB, which is considered an industrial watershed. Low level COC detections are not unexpected in an industrial watershed. All COC detections reported for the surface water samples regardless of source were well below the NYS Groundwater Standards.

Rate of Contaminant Loss

The rate of contaminant loss for TCE was estimated using first order kinetics and the sampling data for 782VMW-105B during the period February 2002 through September 2011. The April 2011 TCE concentration was not used in the calculation since there is a level of uncertainty in this result due to a matrix effect that was present during the analysis of that sample. This well was selected to establish the TCE attenuation rate because it had the highest detection of TCE, and the well is located at the center of the TCE plume. A trend line was fit to the data of the natural log of the TCE concentration versus decimal years using Microsoft Excel 2010. Based on the slope of the 782VMW-105B trend line, the estimated rate of

TCE attenuation is -0.039 µg/L per year, and the cleanup goal of 5 µg/L TCE is estimated to be reached in the year 2047.

The rate of contaminant loss for DCE was estimated using first order kinetics and the sampling data for 782MW-10 during the period February 2002 through September 2011. This well was selected to establish the DCE attenuation rate because it had the highest detection of DCE, and the well is located at the center of the leading edge of the DCE plume. A trend line that was fit to the data of the natural log of the DCE concentration versus decimal years using Microsoft Excel 2010, Based on the slope of the 782MW-10 trend line, the estimated rate of DCE attenuation is -0.128 µg/L per year, and the cleanup goal of 5 µg/L DCE is estimated to be reached in the year 2023.

The rate of contaminant loss for VC was estimated using first order kinetics and the sampling data for 782VMW-96 during the period February 2002 through June 2009. This well was selected to establish the VC attenuation rate because it had the highest detection of VC and it is located near the center of the VC plume. A trend line was fit to the data of the natural log of the VC concentration versus decimal years using Microsoft Excel 2010. Based on the slope of the 782VMW-96 trend line, the estimated rate of VC attenuation is -0.146 µg/L per year, and the cleanup goal of 2 µg/L VC is estimated to be reached in the year 2031.

The rate of contaminant loss for VC was also estimated using first order kinetics and the sampling data for 782VMW-93 during the period February 2002 through April 2011. This well was also selected since 782VMW-96 was removed from the groundwater monitoring network after June 2009, as it was designated for sampling in only the first year of performance monitoring out of redundancy due to its proximity to well 782VMW-93. A trend line was fit to the data of the natural log of the VC concentration versus decimal years using Microsoft Excel 2010. Based on the slope of the 782VMW-93 trend line, the estimated rate of VC attenuation is -0.153 µg/L per year, and the cleanup goal of 2 µg/L VC is estimated to be reached in the year 2027.

These estimated rates of contaminant loss, based on the existing plumes and sampling data, indicate that the remedy will reach the remedial goals in a reasonable timeframe. Graphs of the data that were used to estimate the rate, including confidence intervals, are included in Appendix B. The production of DCE and VC as a result of the biodegradation of the TCE plume may affect the estimated time to reach the DCE and VC cleanup goals.

Mass Reduction

Surfer v 10 (Golden Software 2011) was used to estimate the change in TCE, cis-1,2-DCE, and VC mass resulting from MNA at the Nosedocks/Apron 2 site for the February 2002 and September 2011 data sets. Using the methodology, assumptions, and limitations as presented in Appendix C, it was determined that TCE mass (in grams; g) decreased by 60%, DCE mass (g) increased by 26%, and VC mass (g) decreased by 67% from February 2002 to September 2011. The sum

of the masses of these three compounds decreased by 47%, from 14,634 g to 7,798 g. It was determined that total molar mass of these three compounds decreased by 52% from 206 moles in February 2002 to 98.4 moles in September 2011 (see Appendix C).

The trend charts in Figures 4-7 through 4-18 show an overall decreasing trend in total VOC results between 2002 and 2011, especially for wells with higher contamination levels (782VMW-105B, -10, -96 and -93).

4.5 Implementation of LUC/ICs

The Air Force is responsible for implementing, maintaining, monitoring, and enforcing the selected remedy, including institutional controls (FPM Group Ltd. 2012). Although the Air Force may later transfer these responsibilities to another party, the Air Force, both pre-transfer and post-transfer, shall retain ultimate responsibility for implementing, monitoring, and enforcing the selected remedy.

The ROD contains the following requirements for monitoring and enforcing the institutional controls:

Monitoring

Monitoring of the environmental use restrictions and controls will be conducted annually by the Air Force until the property encompassing the land use and institutional controls boundary is transferred and a report will be provided. Any such annual monitoring reports will be included in a separate report or as a section of another environmental report, if appropriate, and be provided to the EPA and NYSDEC. Upon the effective date of the property conveyance, the Air Force will place a requirement in the deed that the transferee or subsequent property owner(s) will conduct annual physical inspections of the Nosedocks/Apron 2 OBGW site to confirm continued compliance with all institutional controls objectives unless and until all institutional controls at the site are terminated and will provide to the Air Force, EPA, and NYSDEC an annual monitoring report. All annual monitoring reports will report on the status of institutional controls and how any institutional control deficiencies or inconsistent uses have been addressed, whether use restrictions and controls were communicated in the deed(s) for any property transferred in the reporting period, and whether use of the property encompassing the land use and institutional controls boundary has conformed to such restrictions and controls.

If a transferee fails to provide an annual monitoring report as described above to the Air Force, the Air Force will notify EPA and NYSDEC as soon as practicable. If EPA does not receive the annual monitoring report from the transferee (either itself or from NYSDEC), it will notify the Air Force as soon as practicable. Within 30 days of the report's due date, the Air Force will take steps to determine whether institutional controls are effective and remain in place and advise the regulators of its efforts. In any event, within 90 days of the report's due date, the Air Force shall determine the status of institutional controls and provide its written findings, with supporting evidence sufficient to confirm the reported status,

based on the use restrictions/institutional controls and site conditions, to EPA and NYSDEC unless either EPA or NYSDEC, in its sole discretion, acts to confirm the status of the institutional controls independently.

The institutional controls monitoring reports will be used in the preparation of the 5-Year Reviews to evaluate the effectiveness of the remedy. The continuation, modification, or elimination of the monitoring reports, and any changes to institutional controls monitoring frequencies, will be subject to EPA and NYSDEC approval. The 5-Year Review reports will be submitted to the regulatory agencies for review and comment.

Response to Violations

The Air Force will notify EPA and NYSDEC via e-mail or telephone as soon as practicable, but no later than 10 days after discovery of any activity that is inconsistent with the institutional control objectives or use restrictions, exposure assumptions, or any action that may interfere with the effectiveness of the institutional controls. Any violations that breach federal, state or local criminal or civil law will be reported to the appropriate civilian authorities, as required by law.

Enforcement

Any activity that is inconsistent with the institutional control objectives or use restriction or any action that may interfere with the effectiveness of institutional controls will be addressed by the Air Force as soon as practicable (but in no case more than 10 days) after the Air Force becomes aware of the violation. The Air Force will notify EPA and NYSDEC regarding how the breach has been addressed within 10 days of sending EPA and NYSDEC notification of the breach. The Air Force will exercise such rights as it retained under the transfer documents to direct that activities in violation of the controls be immediately halted. To the extent necessary, the Air Force will engage the services of the Department of Justice to enforce such rights.

4.6 Evaluation of LUC/ICs

Implementation of LUC/ICs that were included in the deed of the transferred parcel, as required by the ROD, was confirmed by an on-site inspection and by the LUC/IC confirmation form signed by W. Vernon Gray, Commissioner of Aviation, GIA, on September 23, 2011 (see Appendix D Apron 2 Inspection Form).

The LUC/IC portion of the remedy is operating properly and successfully as demonstrated by execution of the pre-transfer annual inspection program at property still under Air Force control, including completion of associated reports and inspection forms, to ensure that the LUC/ICs required by the ROD are being implemented.

LUCs are eliminating the potential exposure to groundwater and restricting activities that would adversely impact the remedy. The LUC/ICs remain protective of human health and the environment.

4.7 Protection of Human Health and the Environment

The remedy implemented at Apron 2 has reduced the risks posed to human health and the environment by eliminating, reducing, or controlling exposure to human and environmental receptors through the understanding and monitoring of natural attenuation processes and institutional controls. Specifically, this is accomplished through:

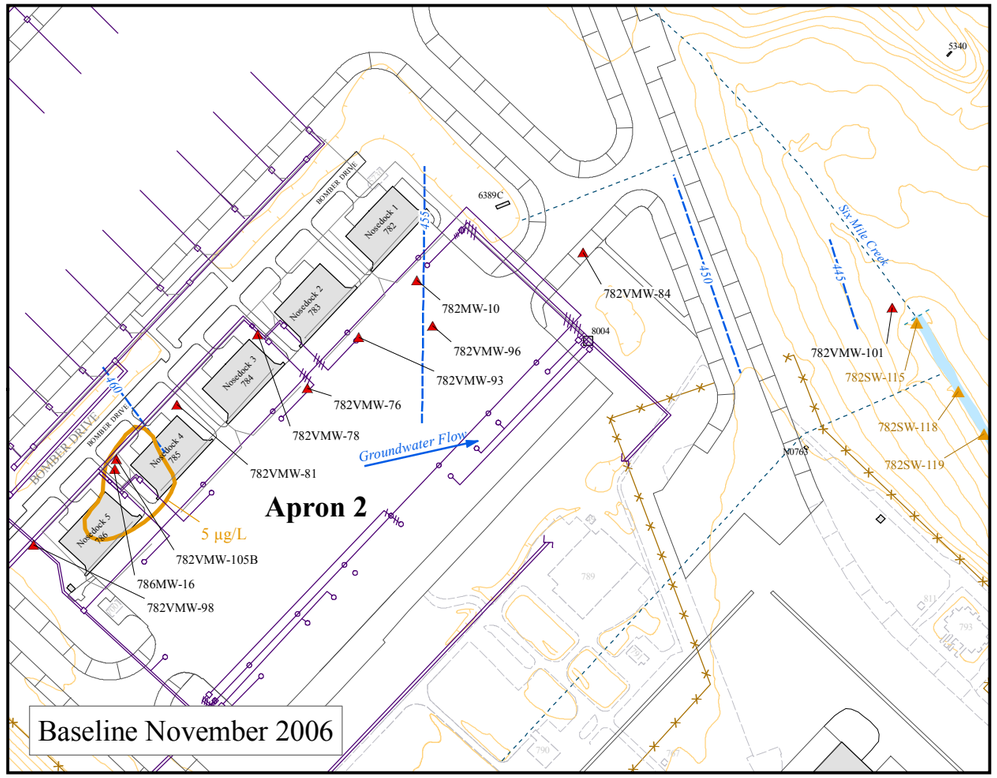
- Implementing institutional controls and deed restrictions within the plume area to prevent contact with contaminated groundwater; and
- Conducting long-term monitoring to ensure that the remedial action continues to operate properly and successfully.

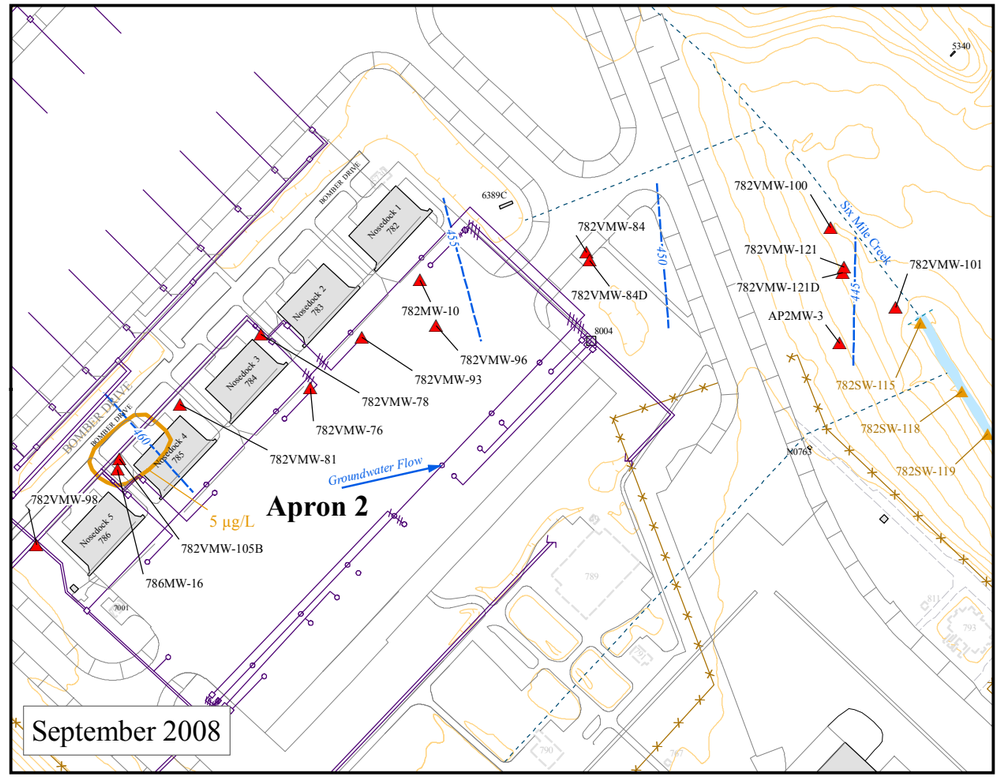
4.8 Enforceability

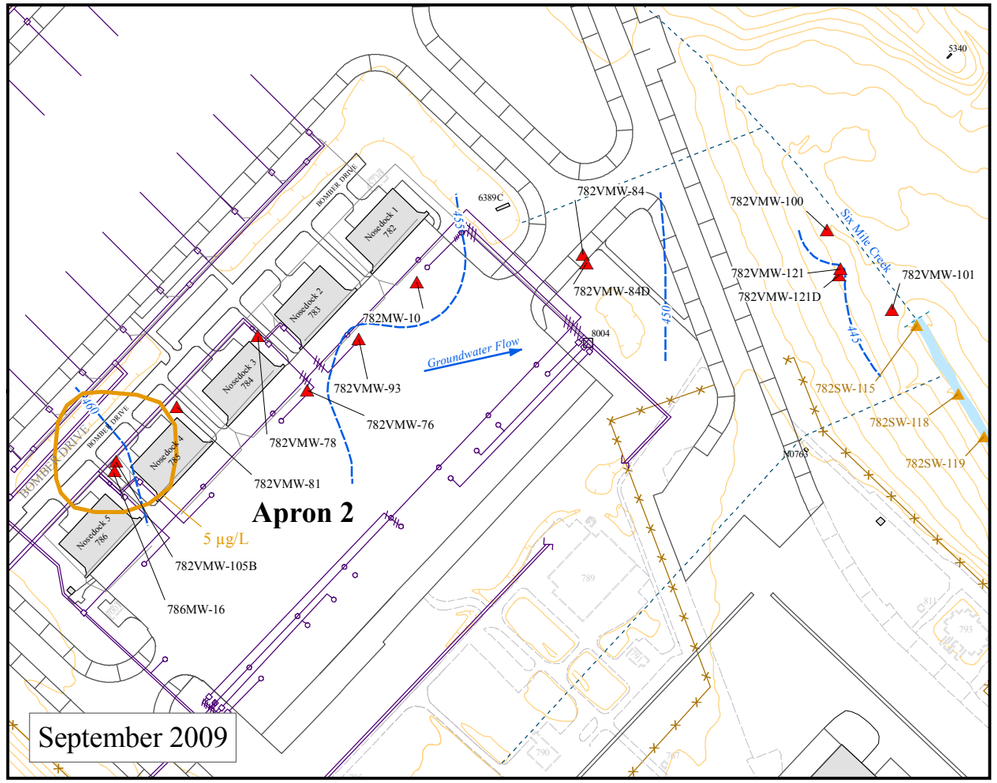
Griffiss AFB was placed on the NPL on July 15, 1987. On August 21, 1990, the EPA, NYSDEC, and the Air Force Base Closure Agency (currently AFRPA) entered into a FFA under Section 120 of CERCLA. On March 20, 2009, 2,800 acres of the 3,552 acres at the former Griffiss AFB were removed from the NPL (Nosedocks/Apron 2 remains on the NPL). Both the EPA and NYSDEC have been continuously involved in the enforcement of remedial actions undertaken at the former Griffiss AFB. The FFA provides the enforcement vehicle for continued action at the former Griffiss AFB, including all work associated with implementation and monitoring of remedial actions. Additionally, the OBGW ROD is a vehicle of enforceability in itself. These two documents provide sufficient enforcement avenues to ensure actions are continued as necessary to achieve the remediation objectives for Nosedocks/Apron 2.

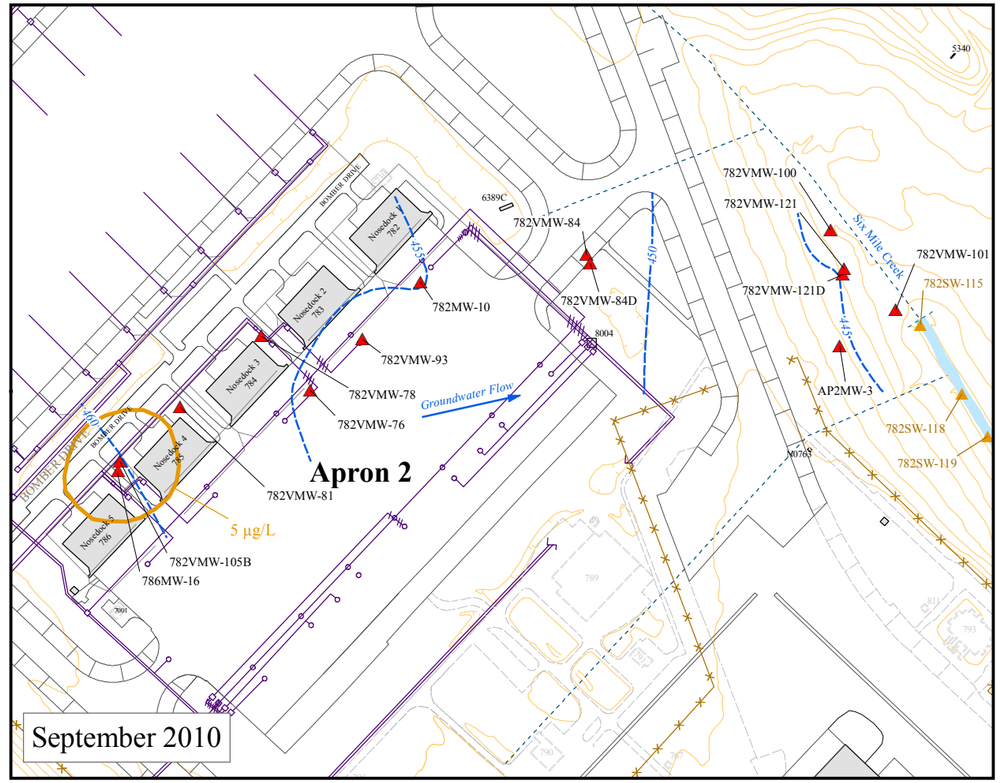
4.9 Technology Reliability and Uncertainty Analysis

MNA is widely used for the remediation of contaminated sites. MNA has the advantages of less generation or transfer of remediation wastes, less intrusive as few surface structures are required, and less cost. EPA research has contributed substantially to an improved understanding of MNA and its applications. MNA is frequently used in the Superfund, Resource Conservation and Recovery Act, and underground storage tank programs, which can minimize the effects of disturbance associated with other more active treatments, including vehicle movements associated with excavation and off-site disposal. Also MNA can be an approach that minimizes any health or other risks to persons by avoiding the need to disturb and potentially spread contamination. Long-term performance monitoring is an essential component to track the effectiveness of the MNA application.

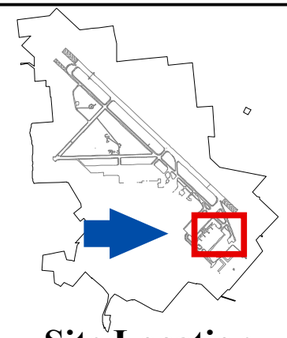












Site Location

Key to Features

- Surface Water Location
- Monitoring Well
- Groundwater Contour (ft. AMSL)
- Wash Waste System
- Pipeline
- Demolished Road/ Airfield
- Existing Road/ Airfield
- Fence
- Culvert
- Storm Drain
- Surface Water
- Topography (ft. AMSL)
- TCE Contour (5ug/L)
- Demolished Facility
- Existing Facility

0 150 300 600 900

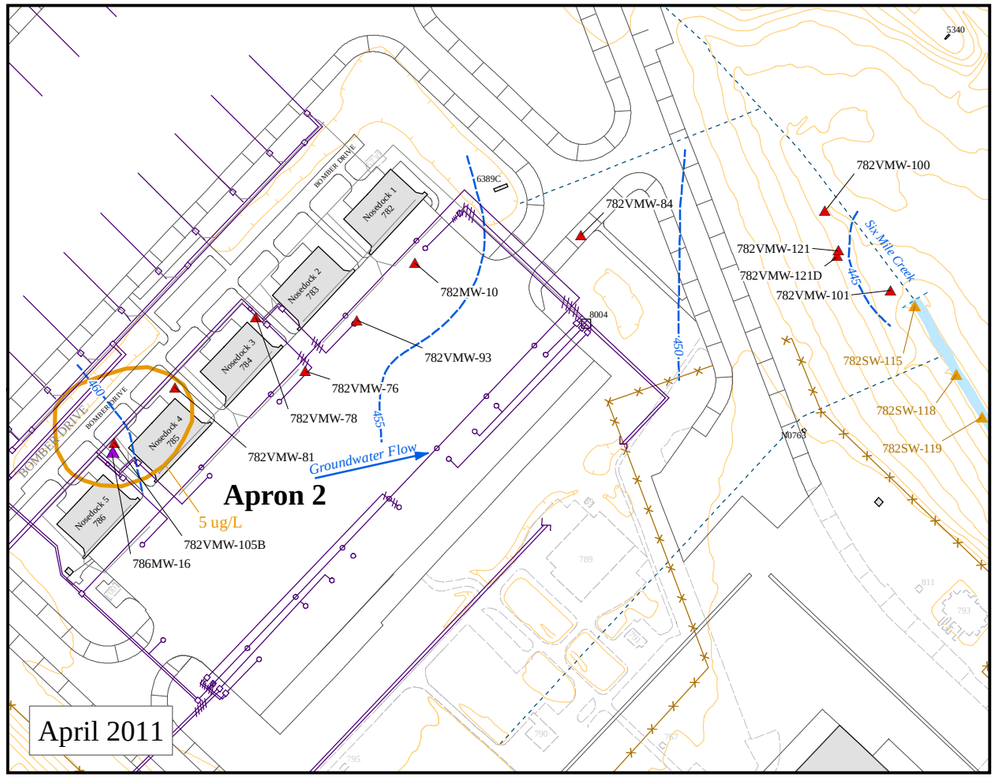
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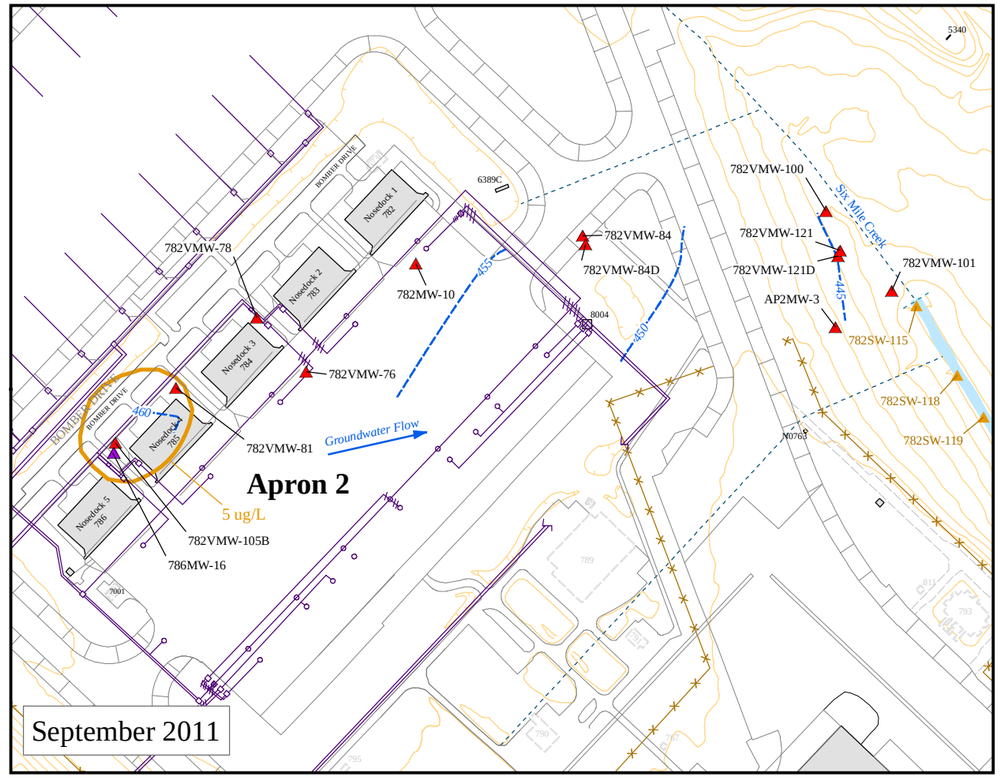
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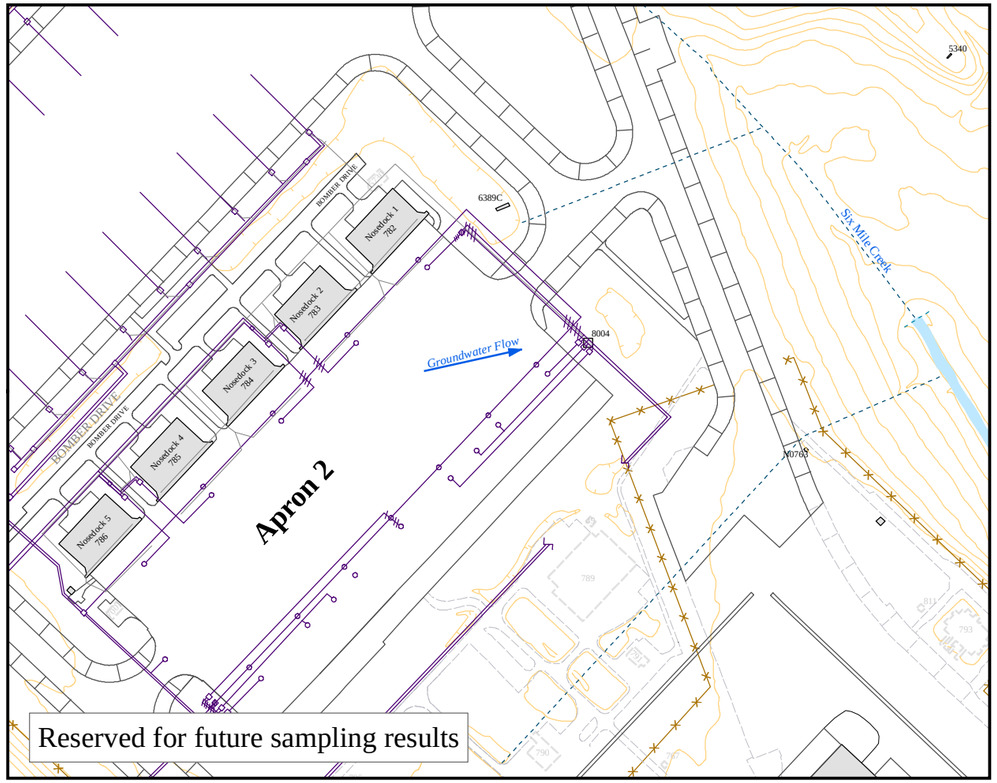
Figure 4-1
Nosedocks/Apron 2
TCE Plume

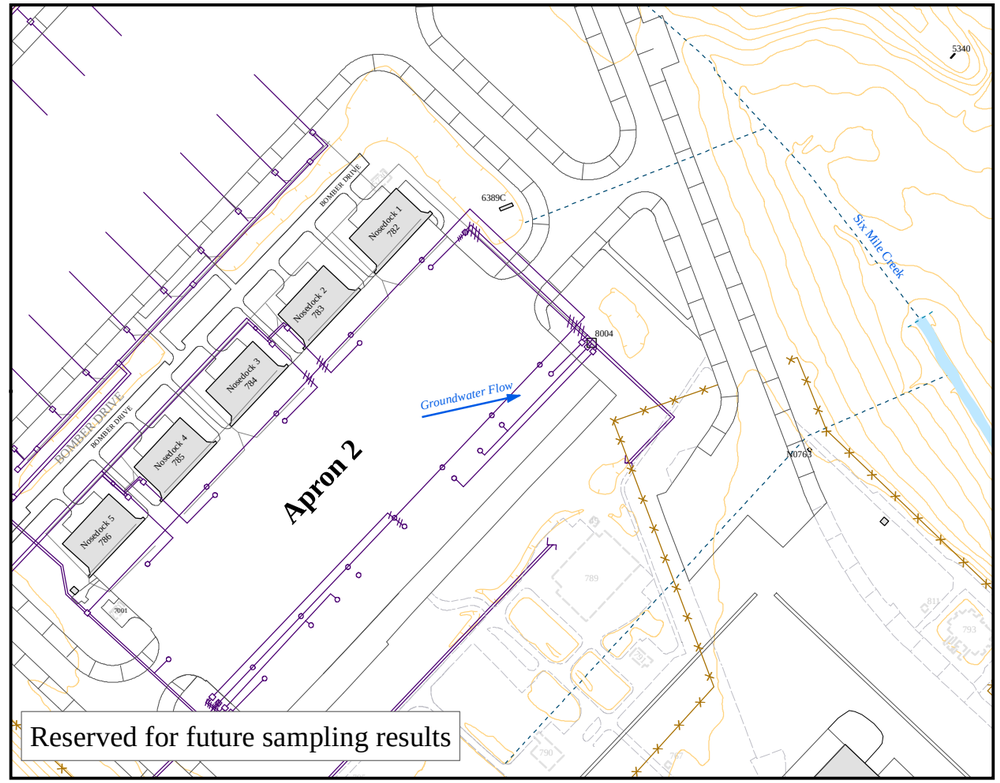
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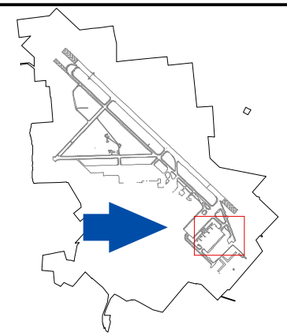












Site Location

Key to Features

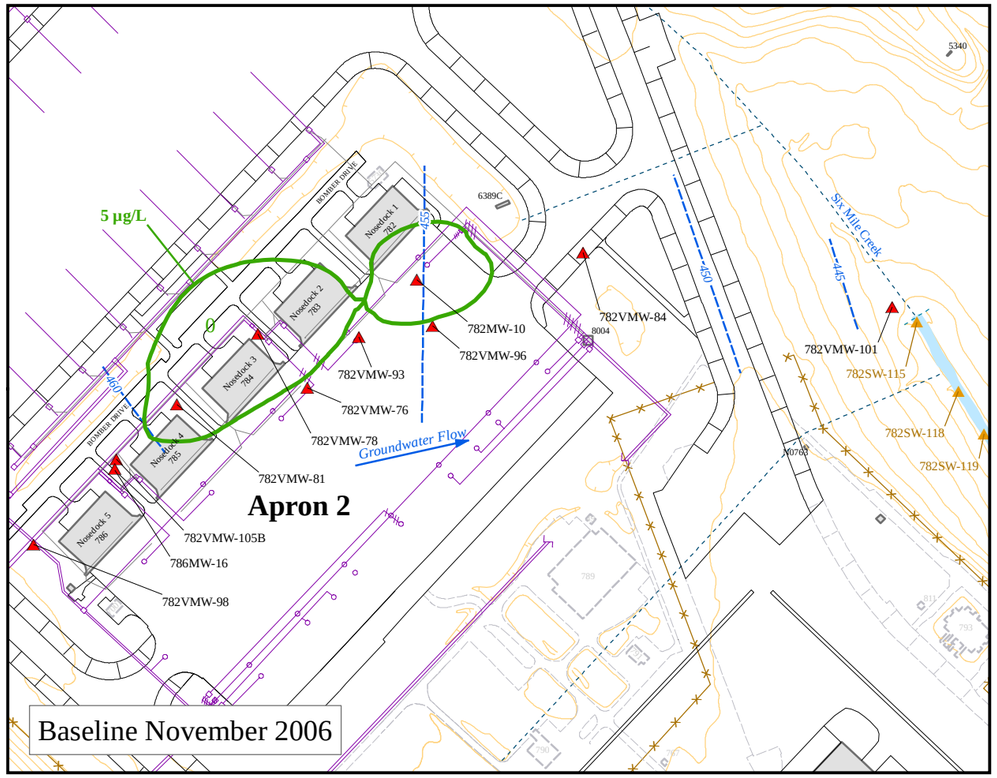
- Surface Water Location
- Monitoring Well
- Petroleum Monitoring Well
- Wash Waste System
- Pipeline
- Fence
- Groundwater Contour (ft. AMSL)
- Culvert
- Storm Drain
- Surface Water
- Demolished Road/ Airfield
- Existing Road/ Airfield
- Topography (ft. AMSL)
- TCE 5 ug/L
- Demolished Facility
- Existing Facility

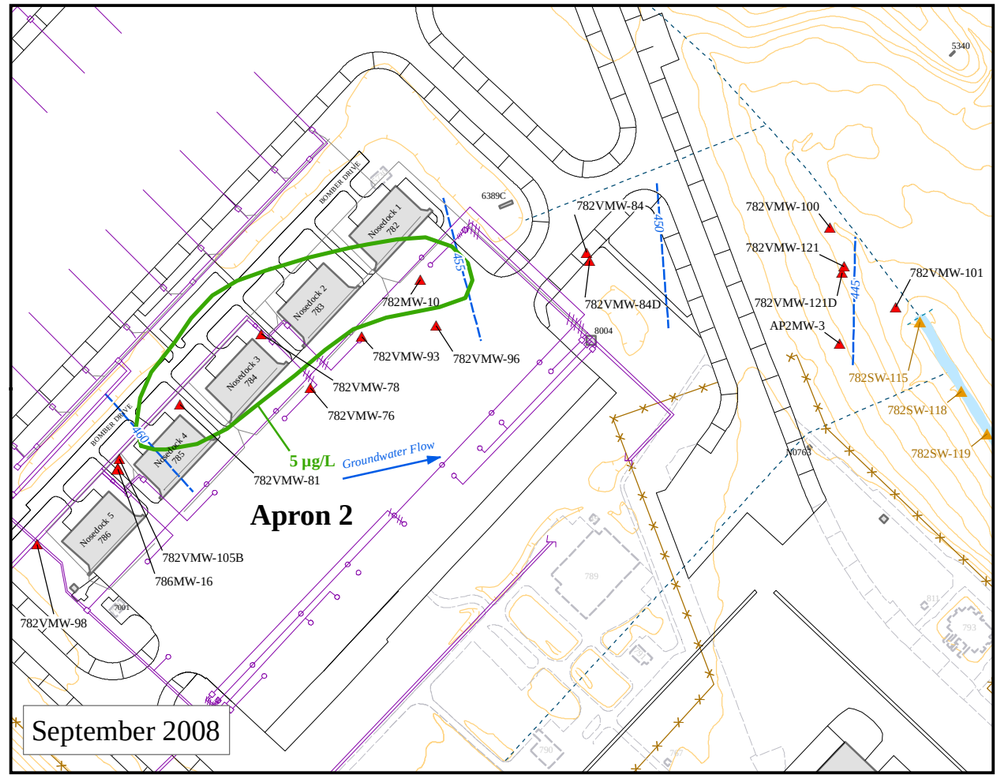
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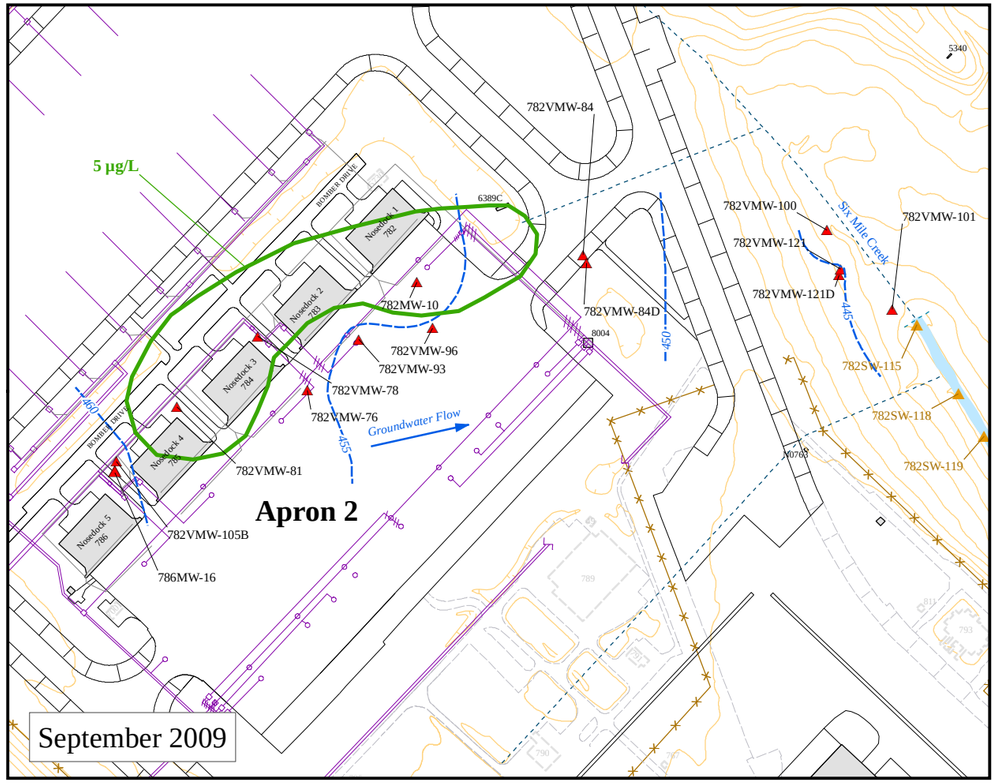
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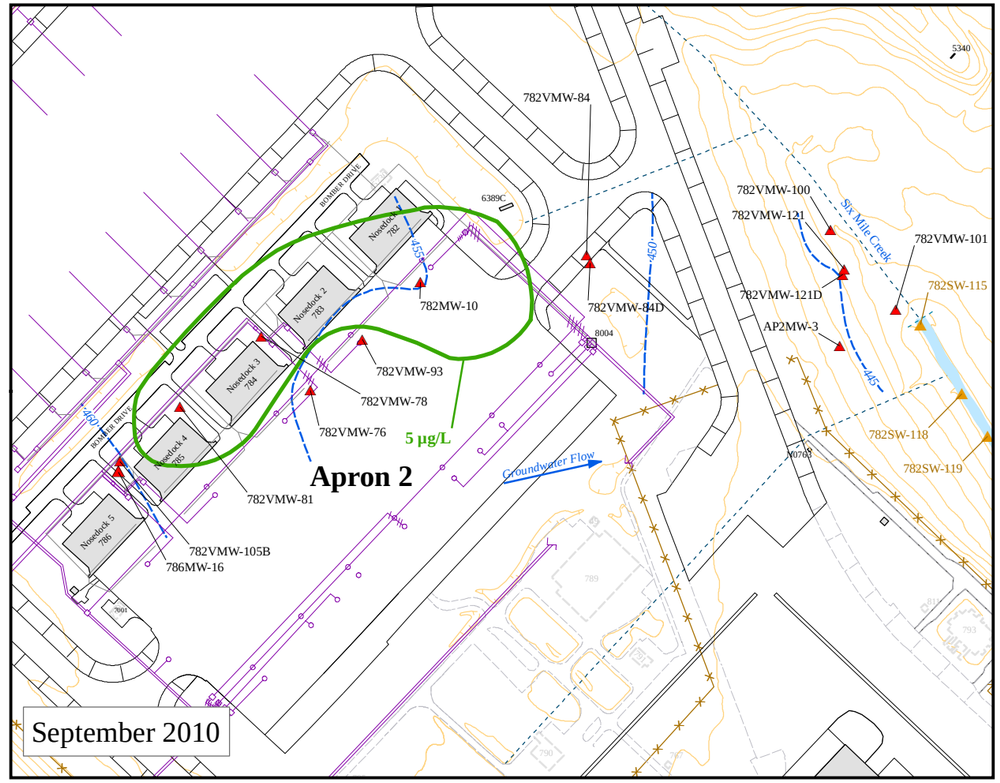
Figure 4-2
Nosedocks/Apron 2
TCE Plume 2011

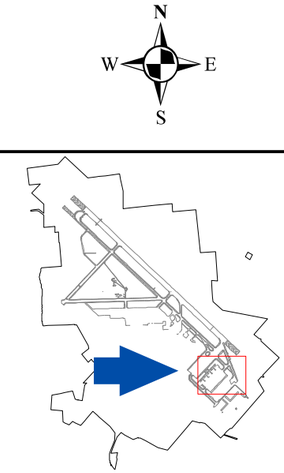
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Site Location

Key to Features

- Surface Water Location
- Monitoring Well
- Wash Waster System
- Pipeline
- Demolished Road/ Airfield
- Existing Road/ Airfield
- Fence
- Culvert
- Storm Drain
- Surface Water
- Topography (ft. AMSL)
- cis-1,2-DCE Contour (5 µg/L)
- Demolished Facility
- Existing Facility

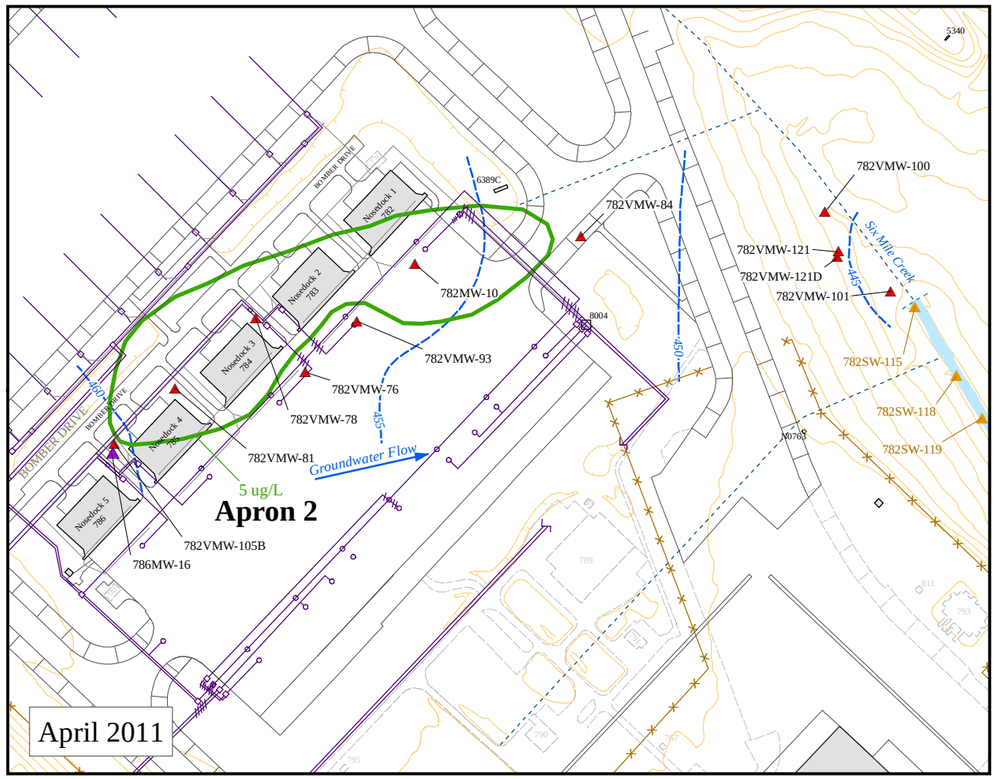
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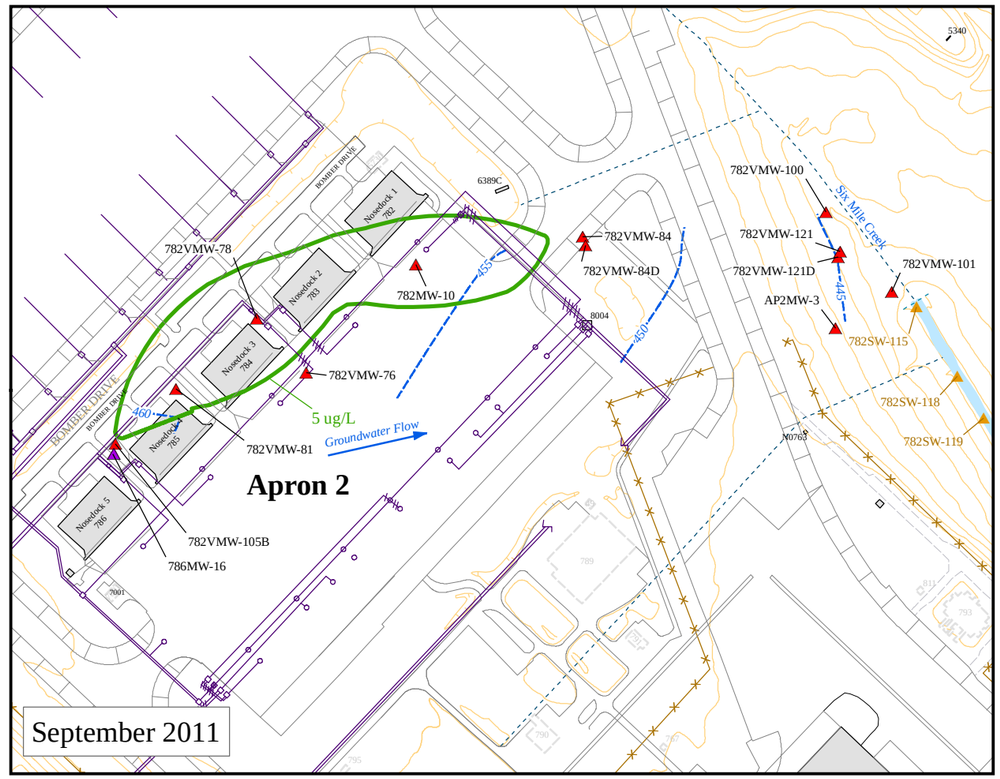
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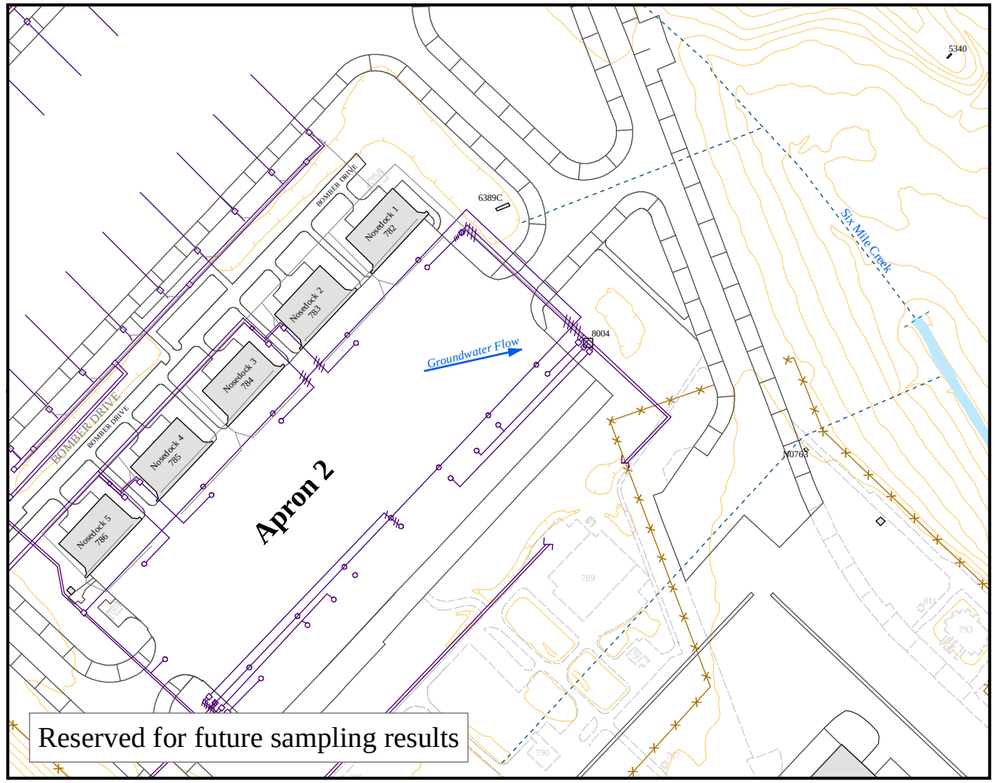
Figure 4-3
Nosedocks/Apron 2
cis-1, 2,-DCE Plume

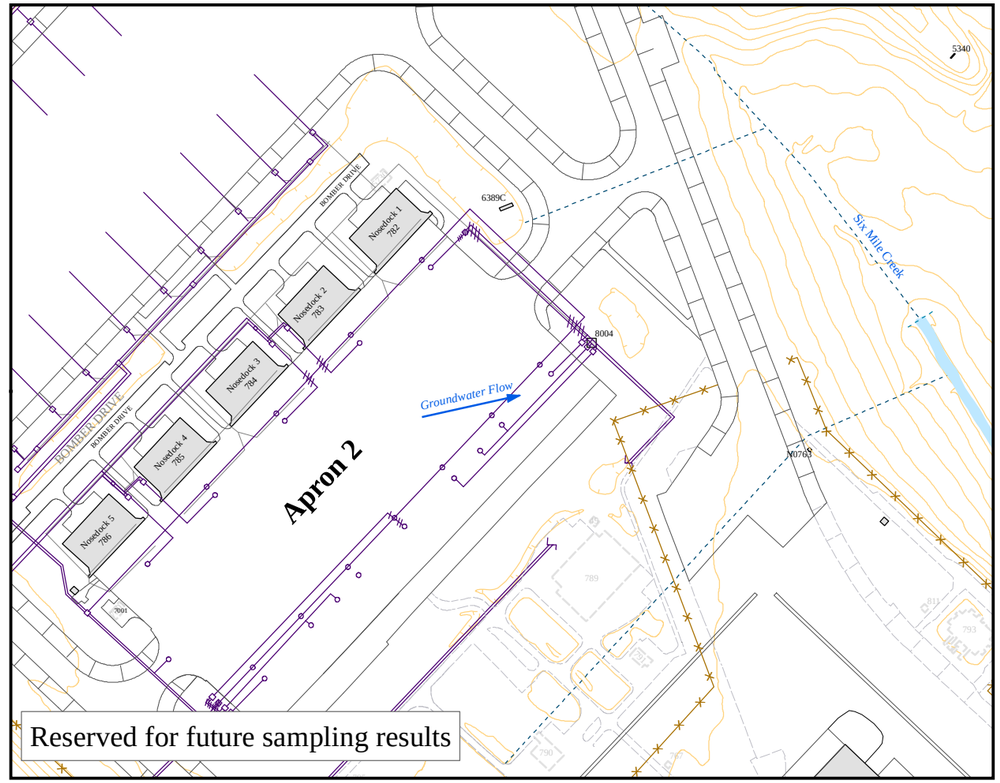
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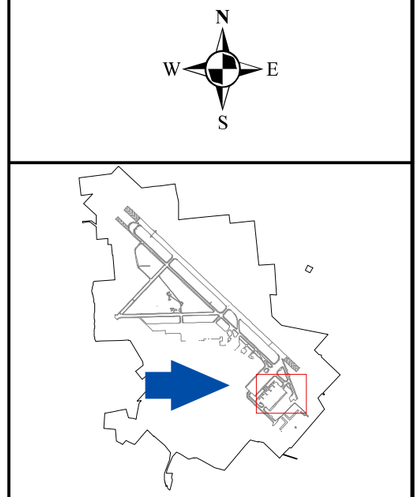
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Site Location

Key to Features

- Surface Water Location
- Monitoring Well
- Petroleum Monitoring Well
- Wash Waste System
- Pipeline
- Fence
- Culvert
- Storm Drain
- Surface Water
- Groundwater Contour (ft. AMSL)
- Demolished Road/ Airfield
- Existing Road/ Airfield
- Topography (ft. AMSL)
- cis-1, 2,-DCE (5 ug/L)
- Demolished Facility
- Existing Facility

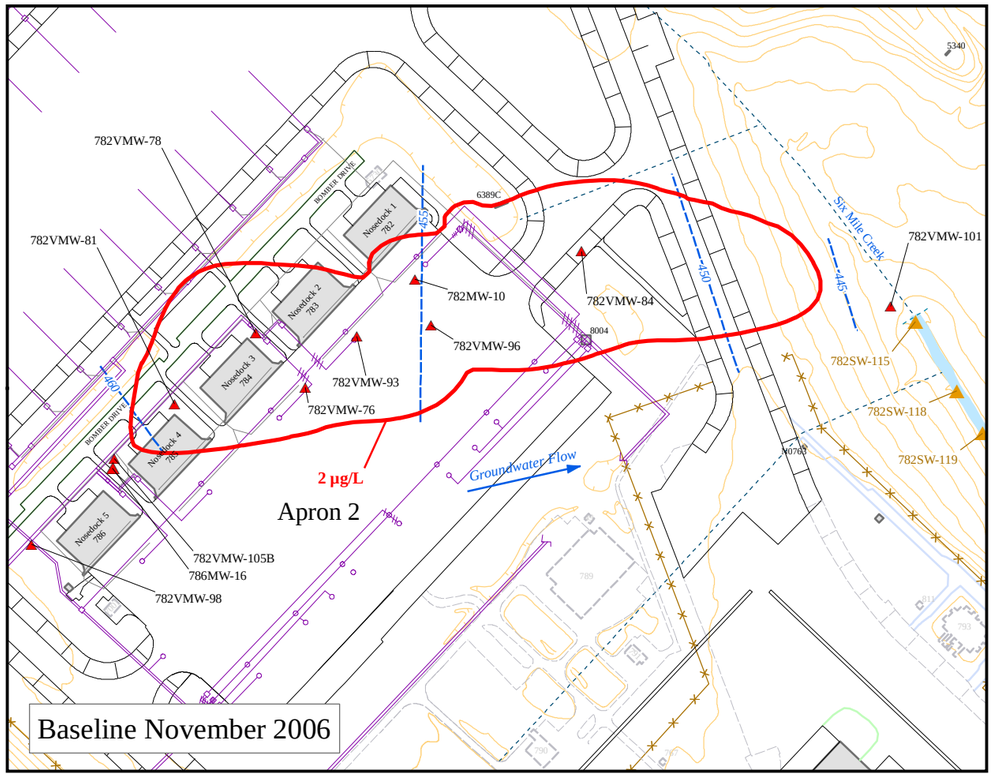
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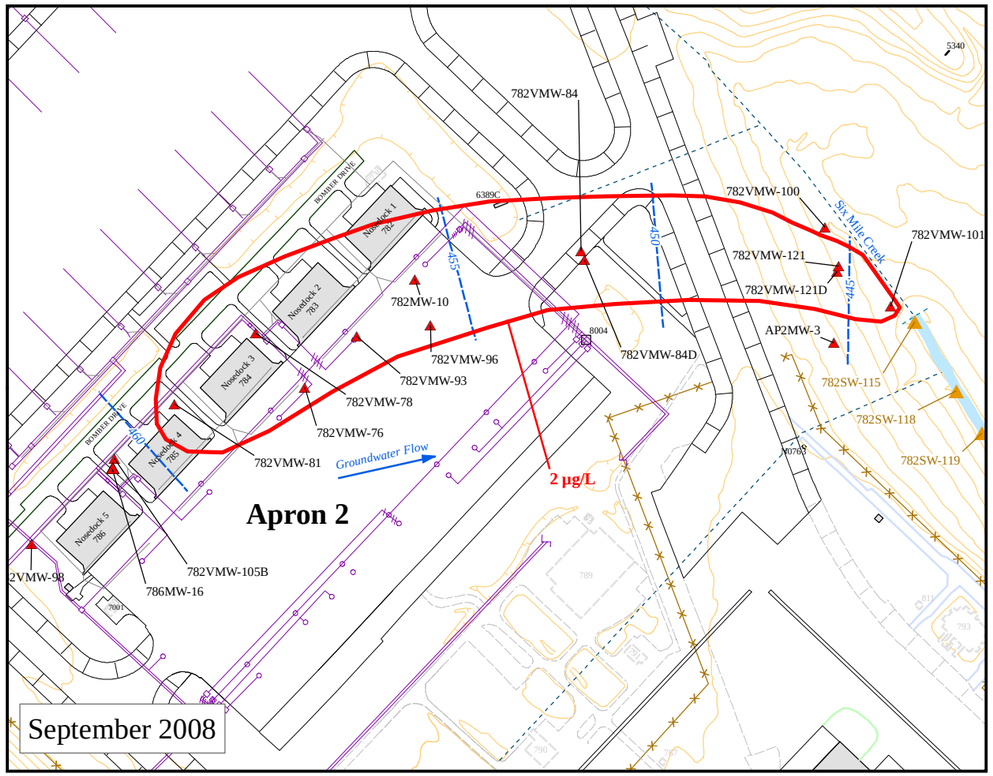
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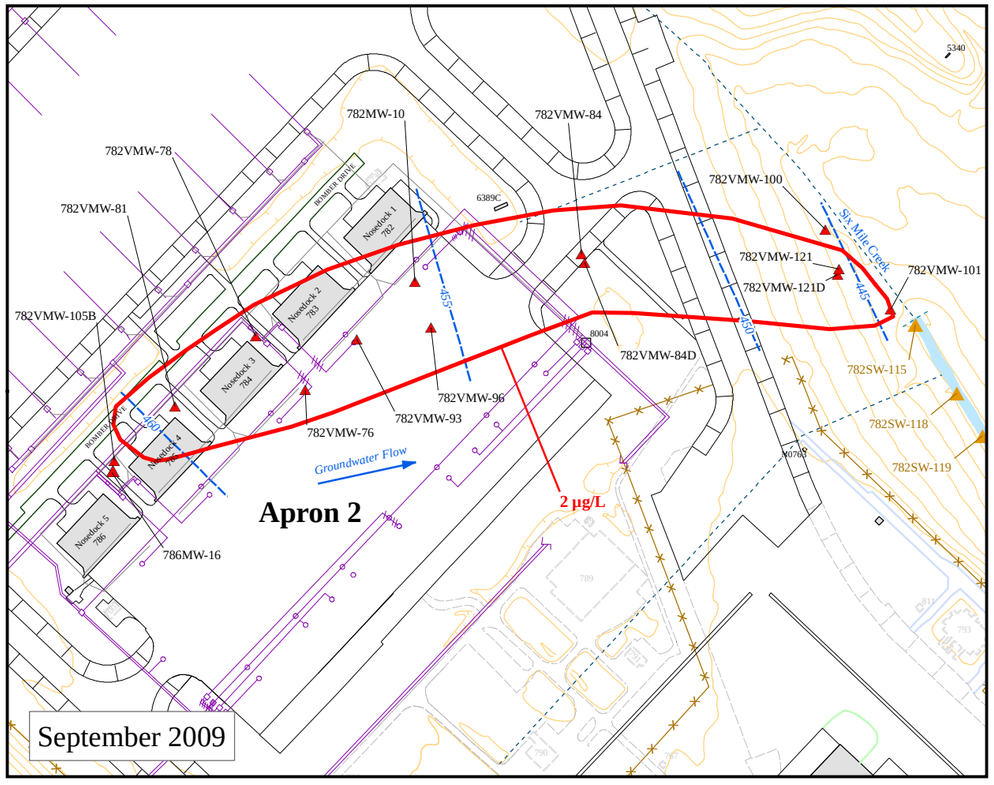
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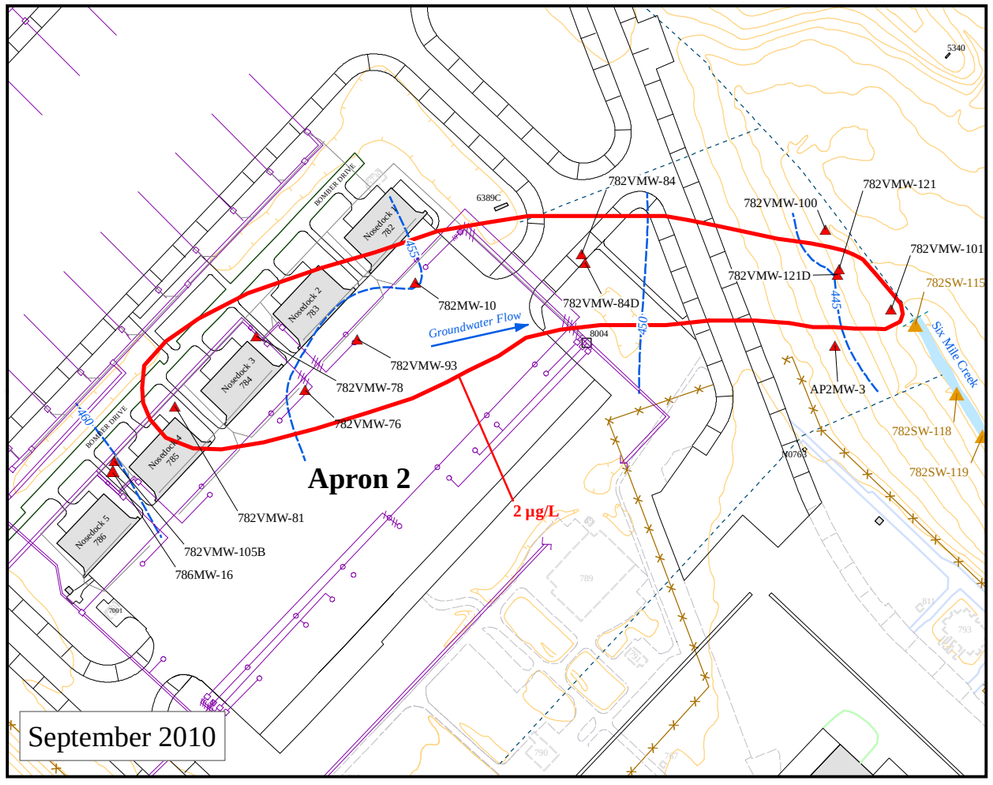
Figure 4-4
Nosedocks/Apron 2
cis-1, 2,-DCE Plume 2011

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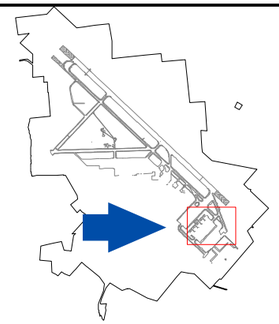








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Site Location

Key to Features

- Surface Water Location
- Monitoring Well
- Groundwater Contour (ft. AMSL)
- Wash Waste System
- Pipeline
- Demolished Road/ Airfield
- Existing Road/ Airfield
- Fence
- Culvert
- Storm Drain
- Surface Water
- Topography (ft. AMSL)
- VC Contour (2 µg/L)
- Demolished Facility
- Existing Facility

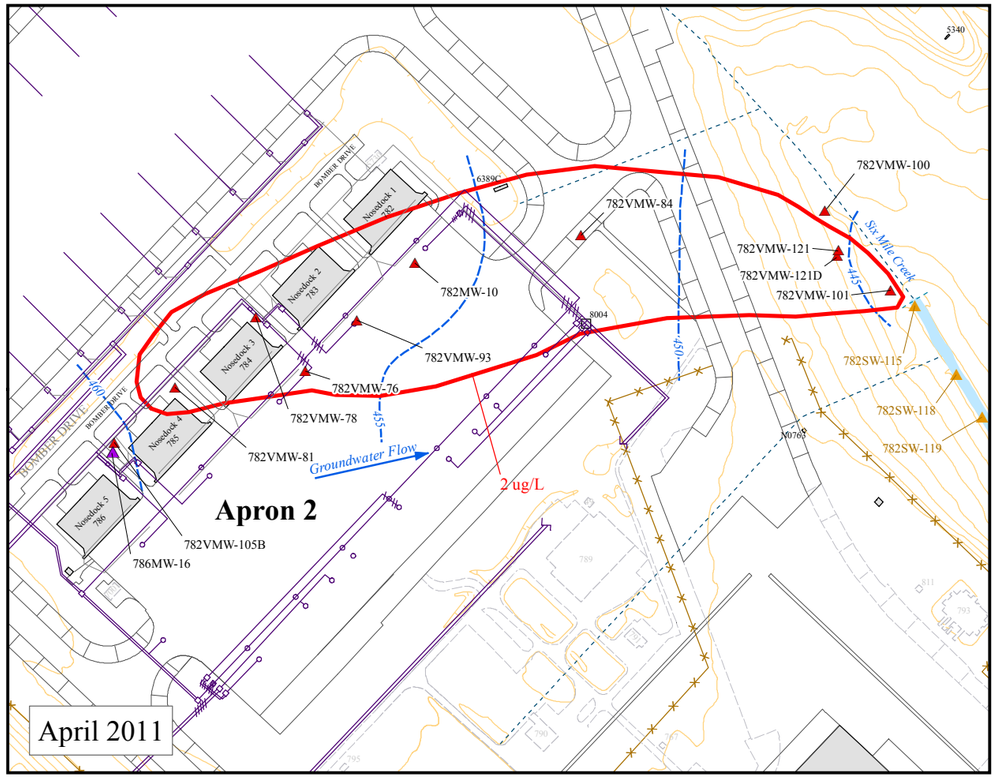
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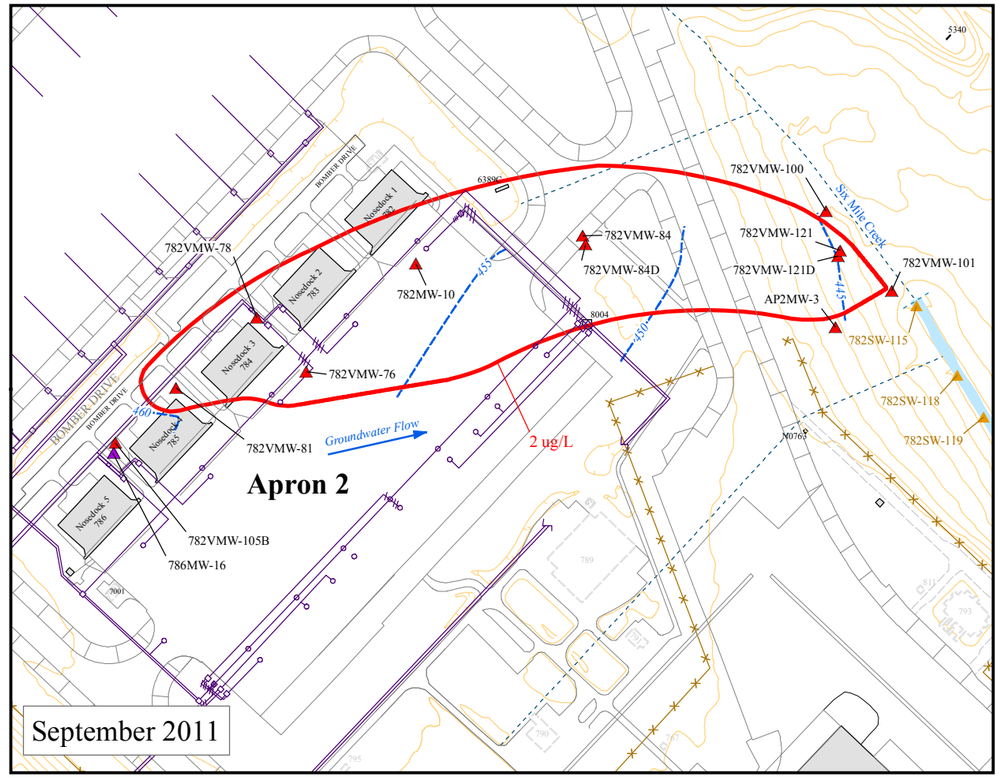
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GRIFFISS AIR FORCE BASE
ROME, NEW YORK

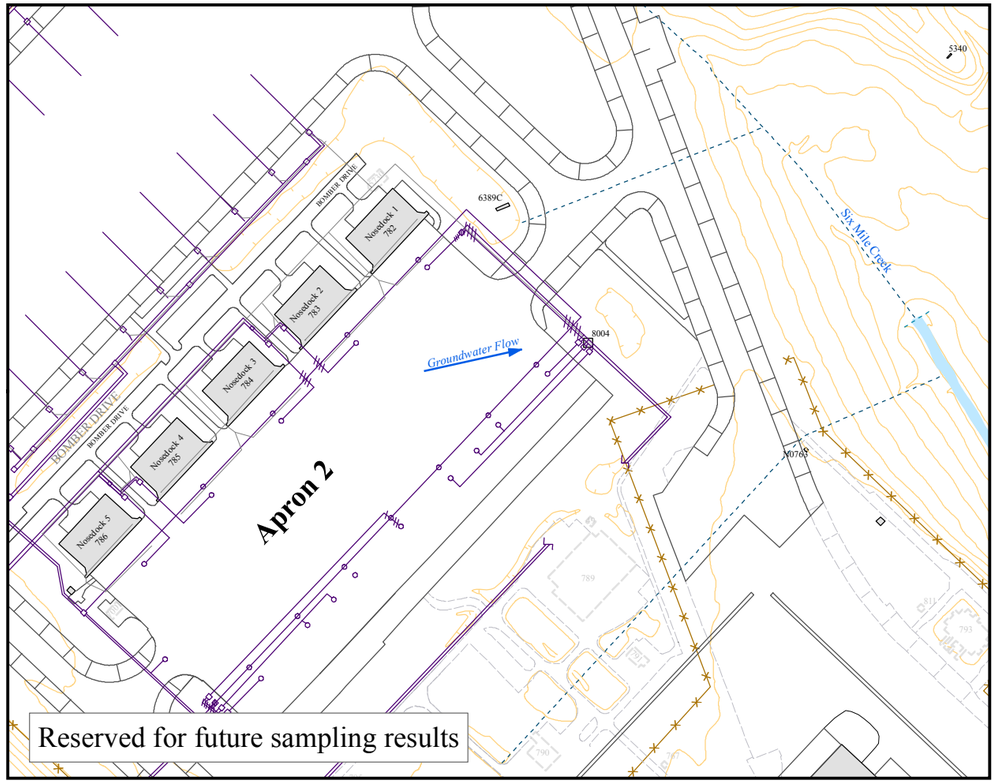
Figure 4-5
Nosedocks/Apron 2
VC Plume

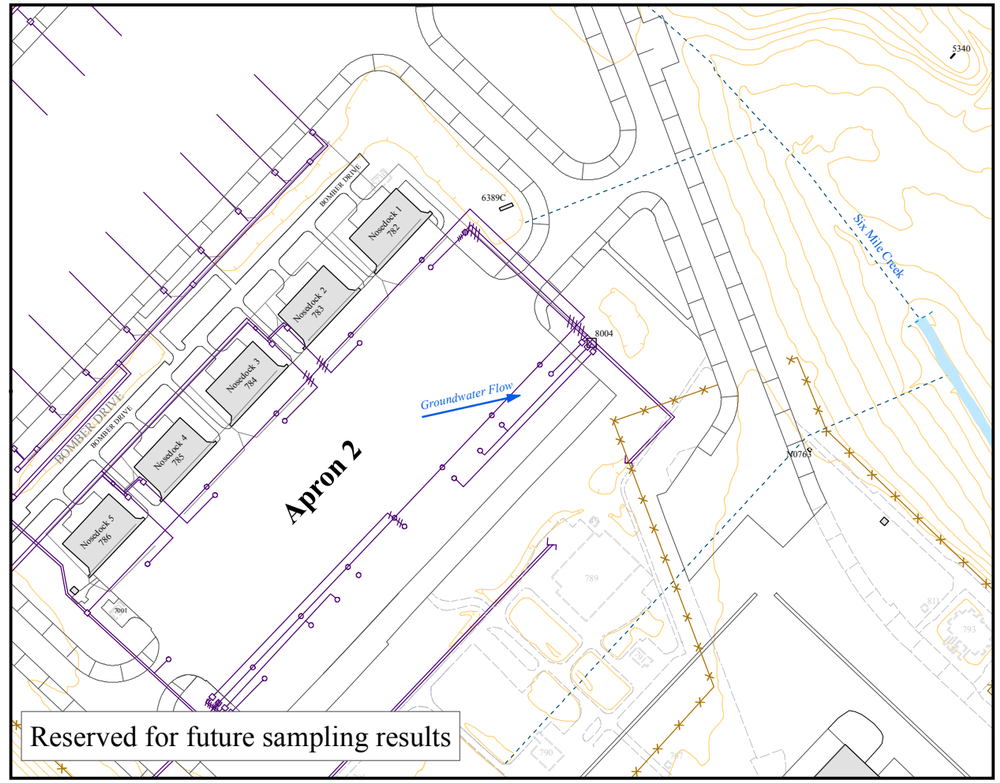
FPM group

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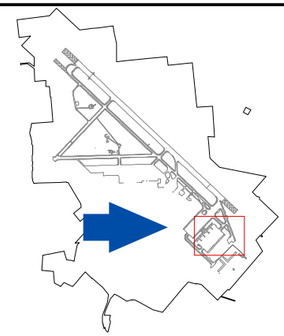












Site Location

Key to Features

- Surface Water Location
- Monitoring Well
- Petroleum Monitoring Well
- Wash Waste System
- Pipeline
- Fence
- Groundwater Contour (ft. AMSL)
- Culvert
- Storm Drain
- Surface Water
- Demolished Road/ Airfield
- Existing Road/ Airfield
- Topography (ft. AMSL)
- VC (2 ug/L)
- Demolished Facility
- Existing Facility

0 150 300 600 900
Feet

UNITED STATES AIR FORCE
GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 4-6
Nosedocks/Apron 2
VC Plume 2011

FPM group

Figure 4-7
782VMW-76 VOCs Trend

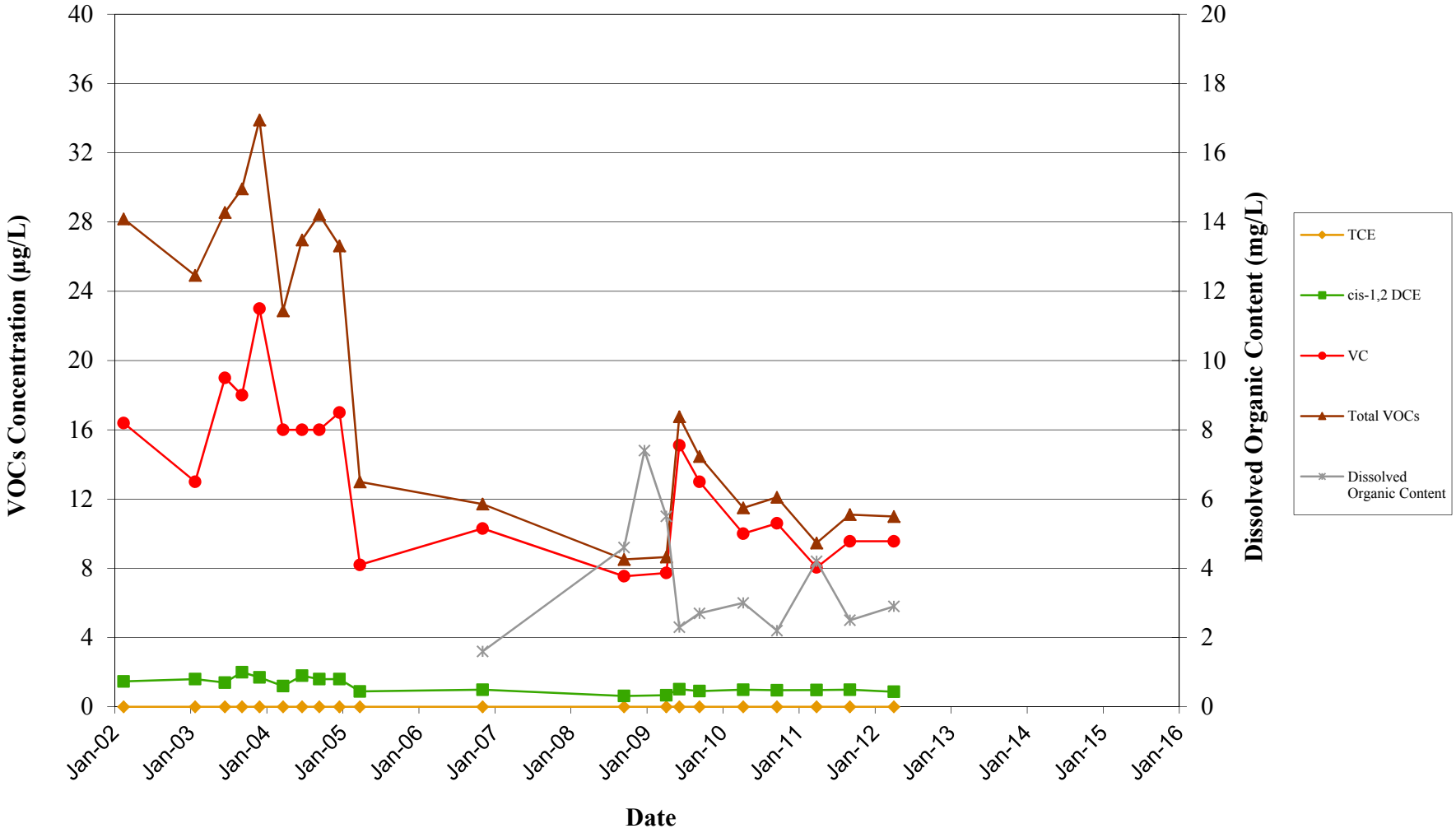


Figure 4-8
782VMW-78 VOCs Trend

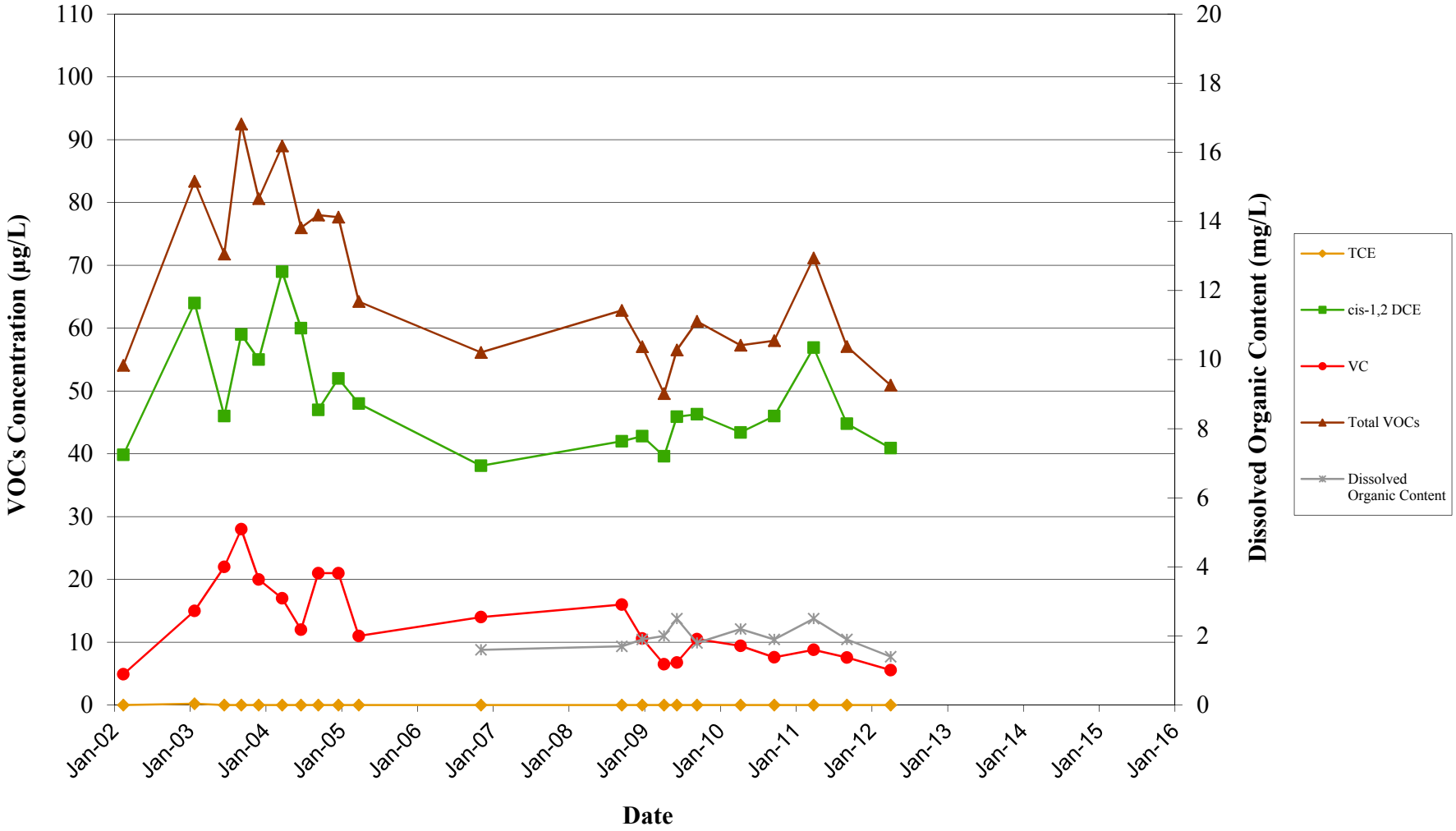


Figure 4-9
782VMW-81 VOCs Trend

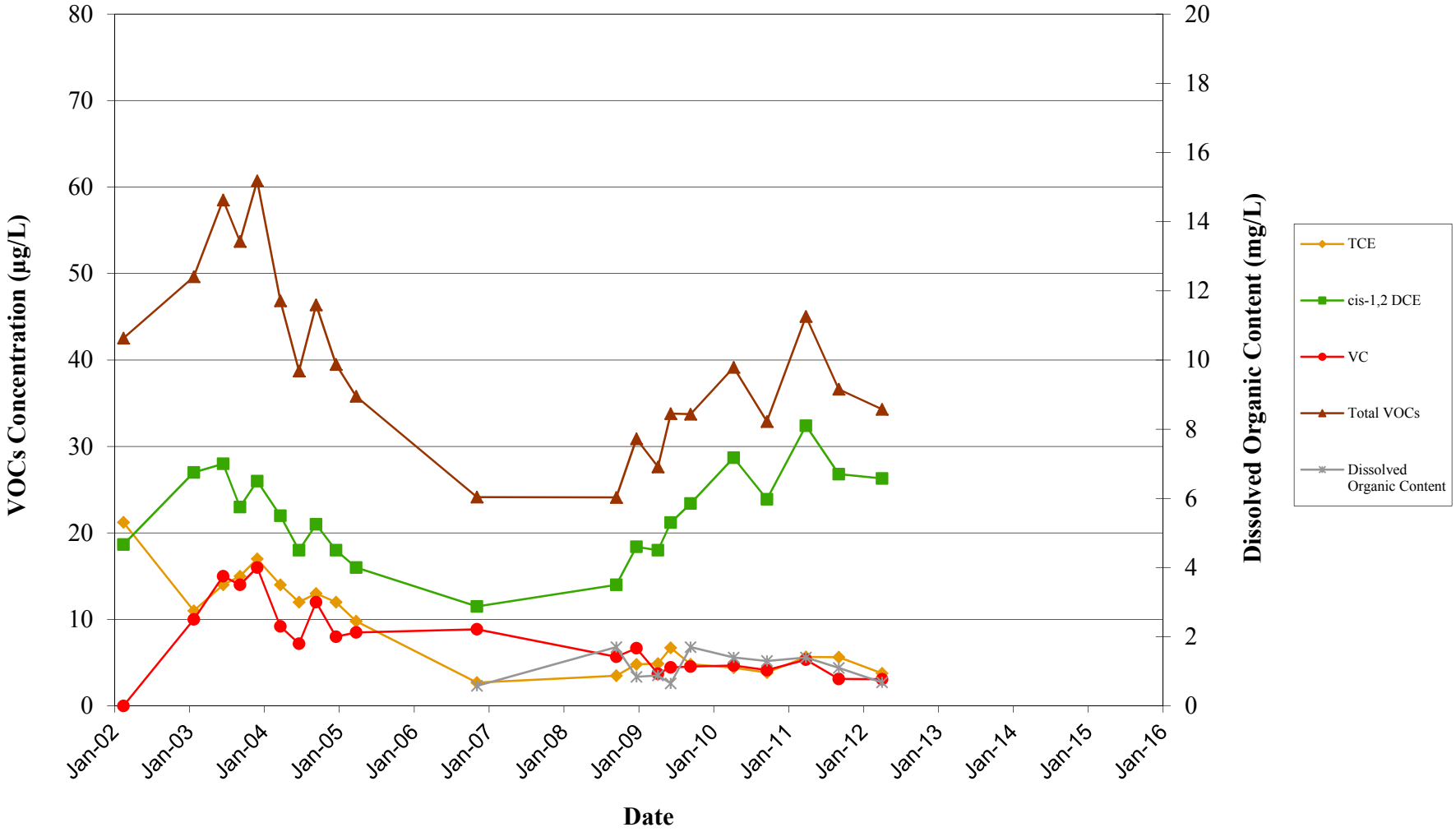


Figure 4-10
782VMW-84 VOCs Trend

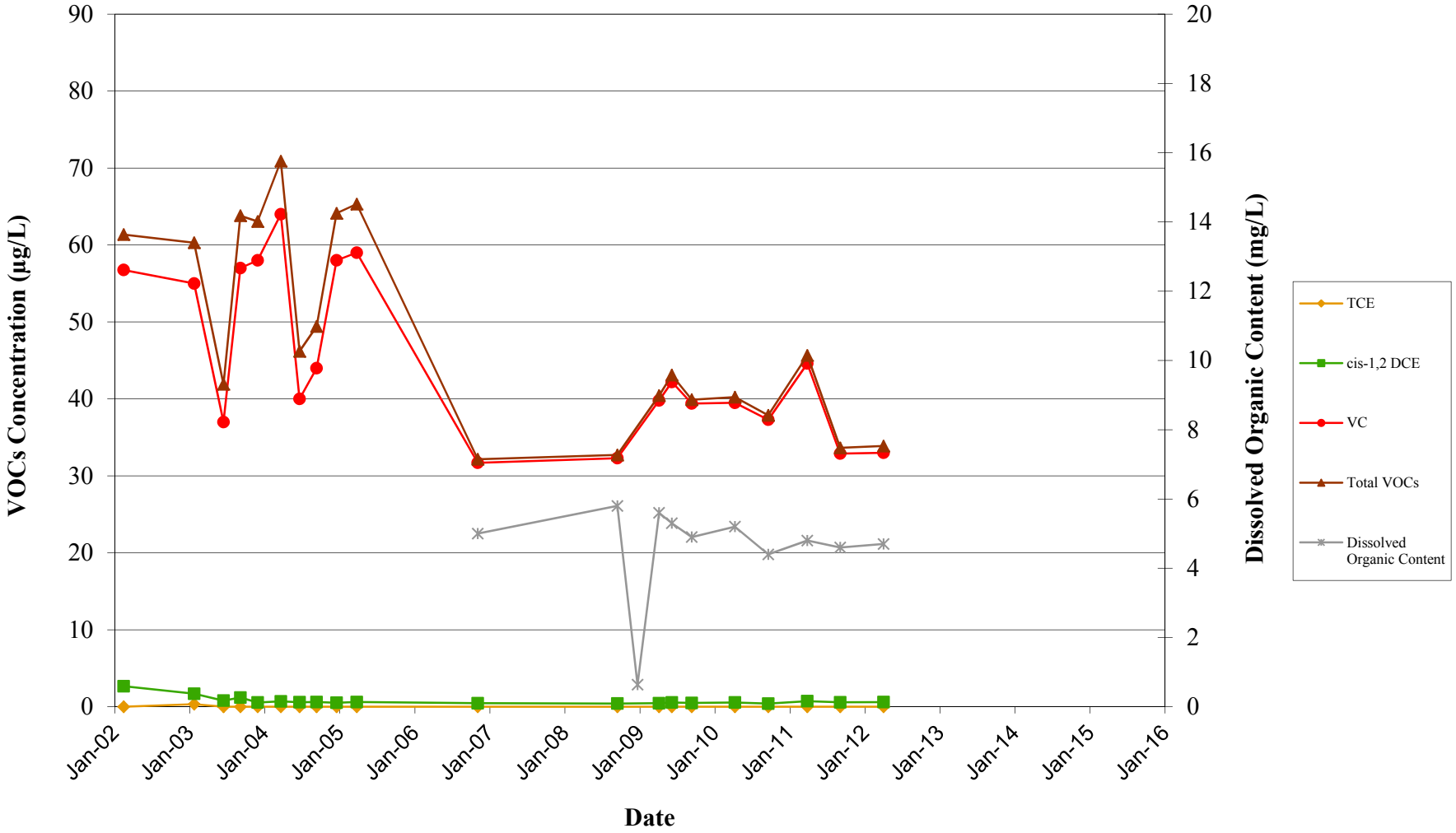


Figure 4-11
782VMW-93 VOCs Trend

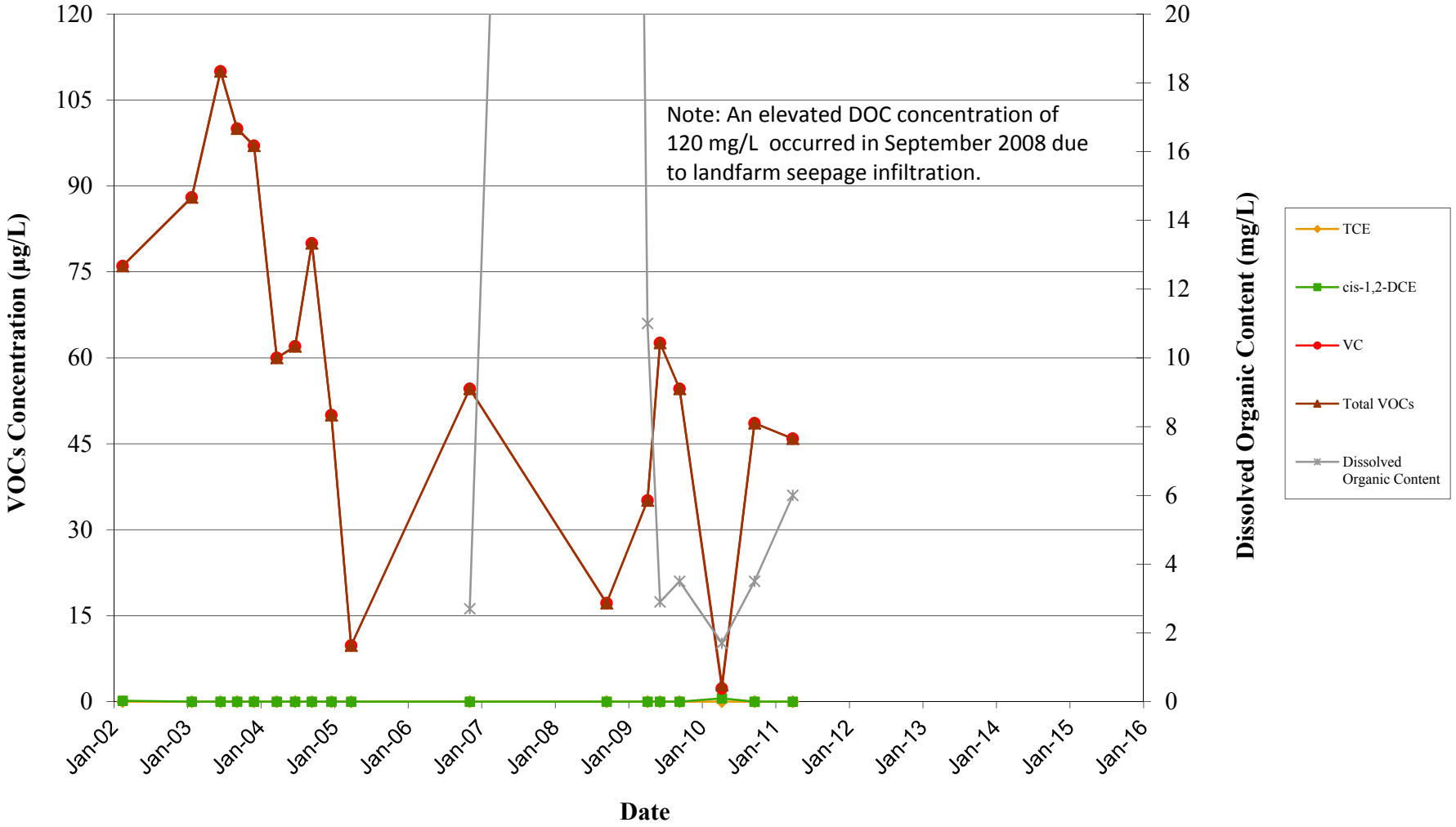


Figure 4-12
782VMW-101 VOCs Trend

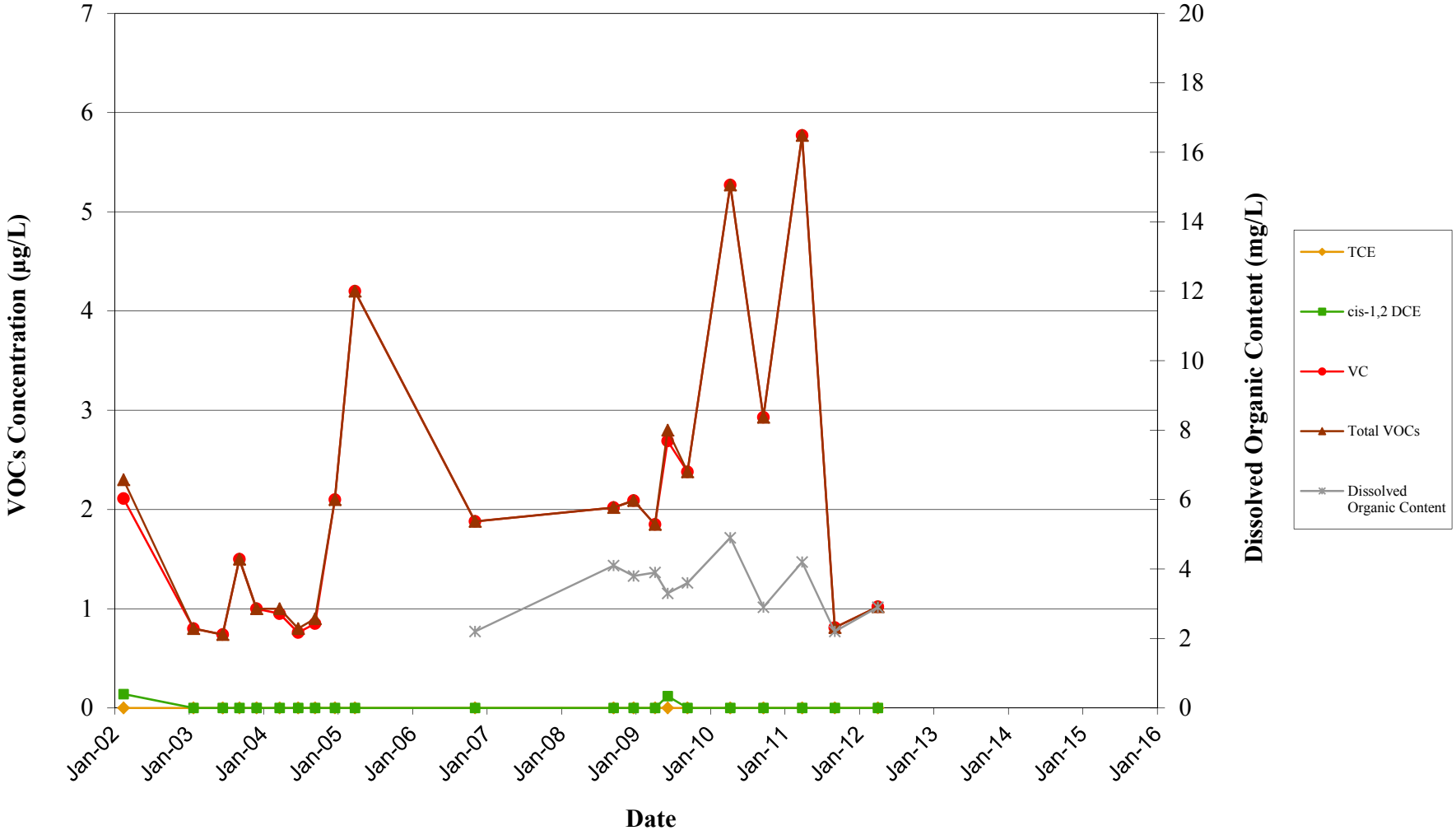


Figure 4-13
782VMW-105B VOCs Trend

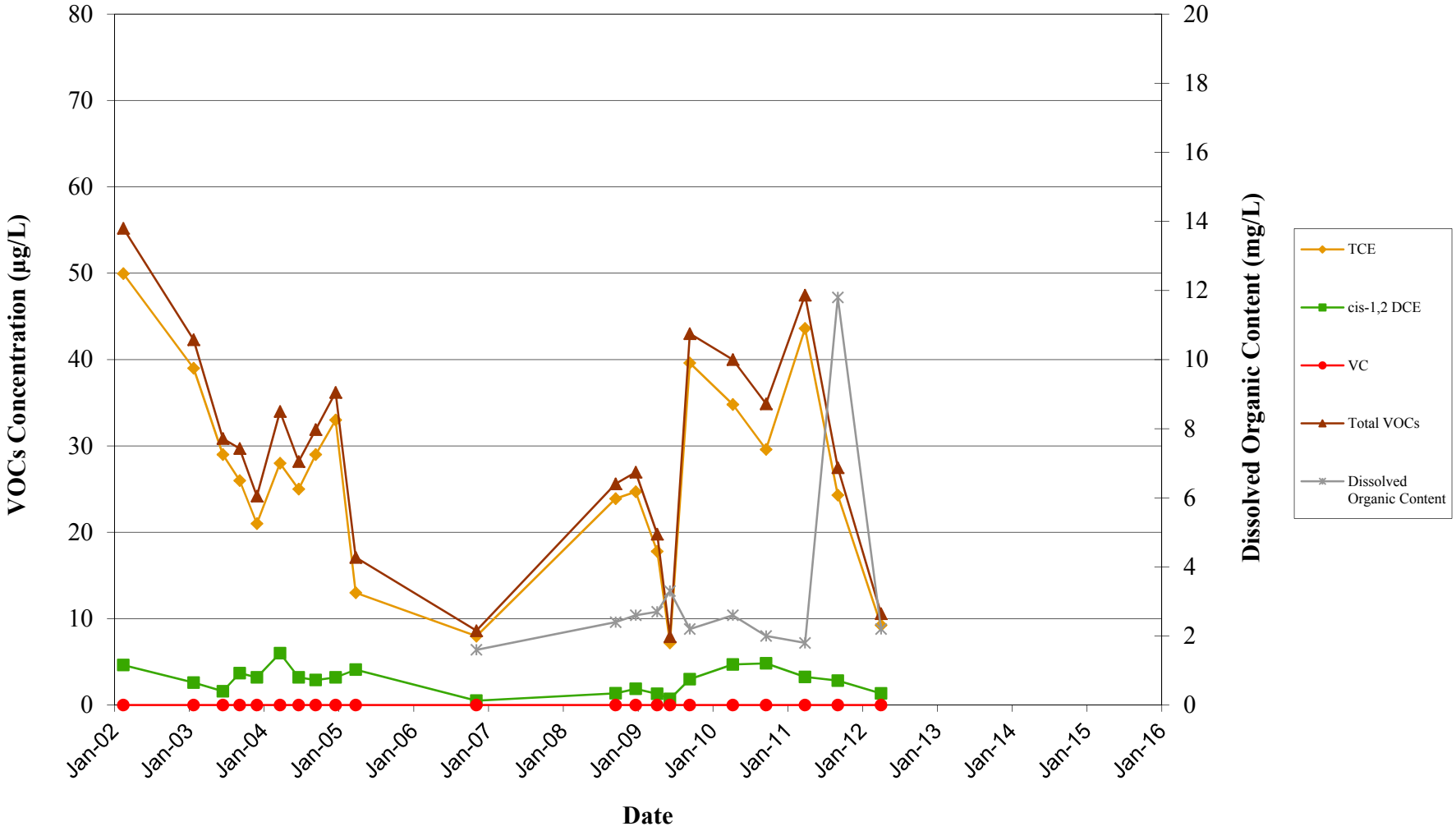


Figure 4-14
782MW-10 VOCs Trend

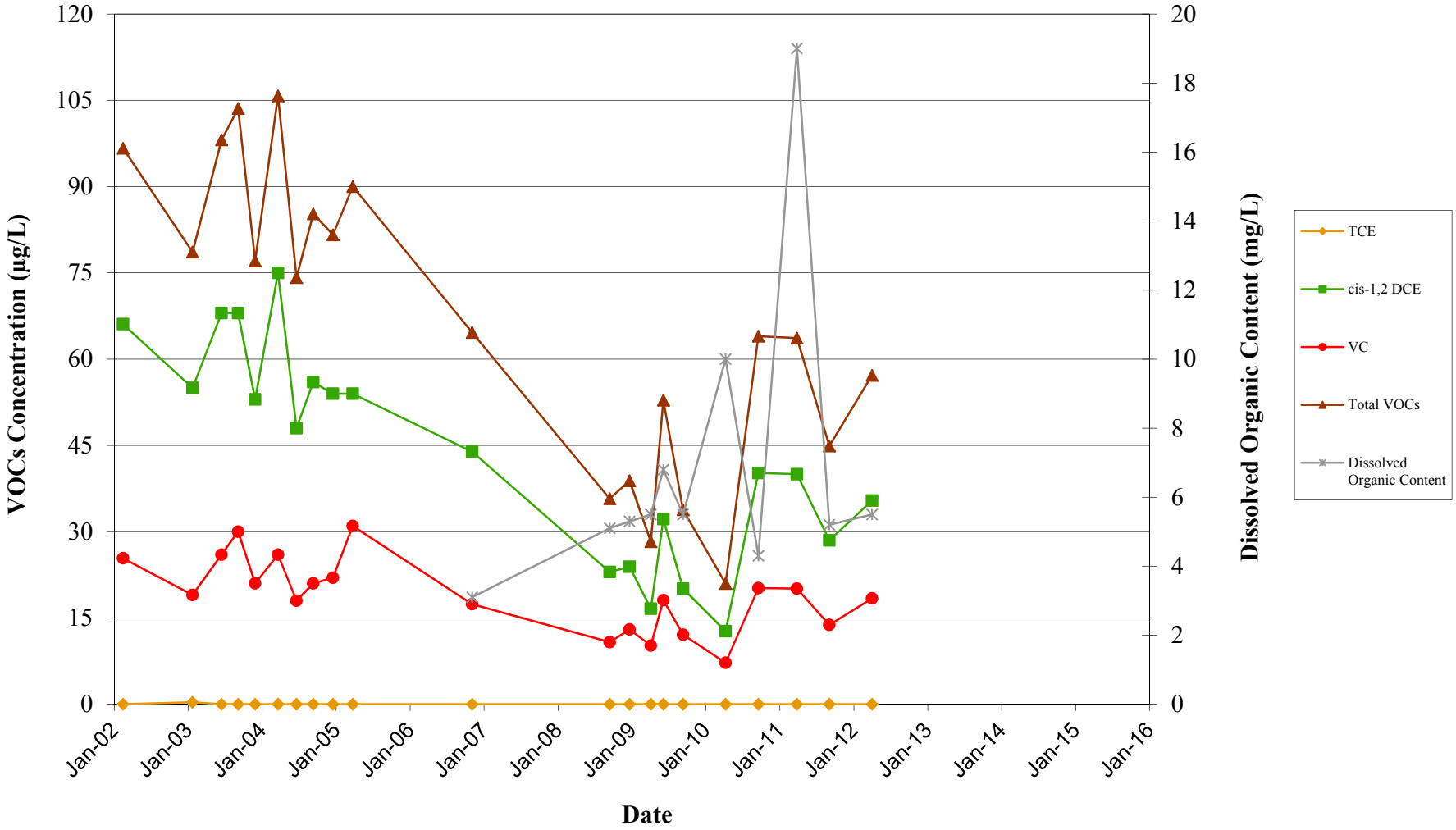


Figure 4-15
782VMW-121 VOCs Trend

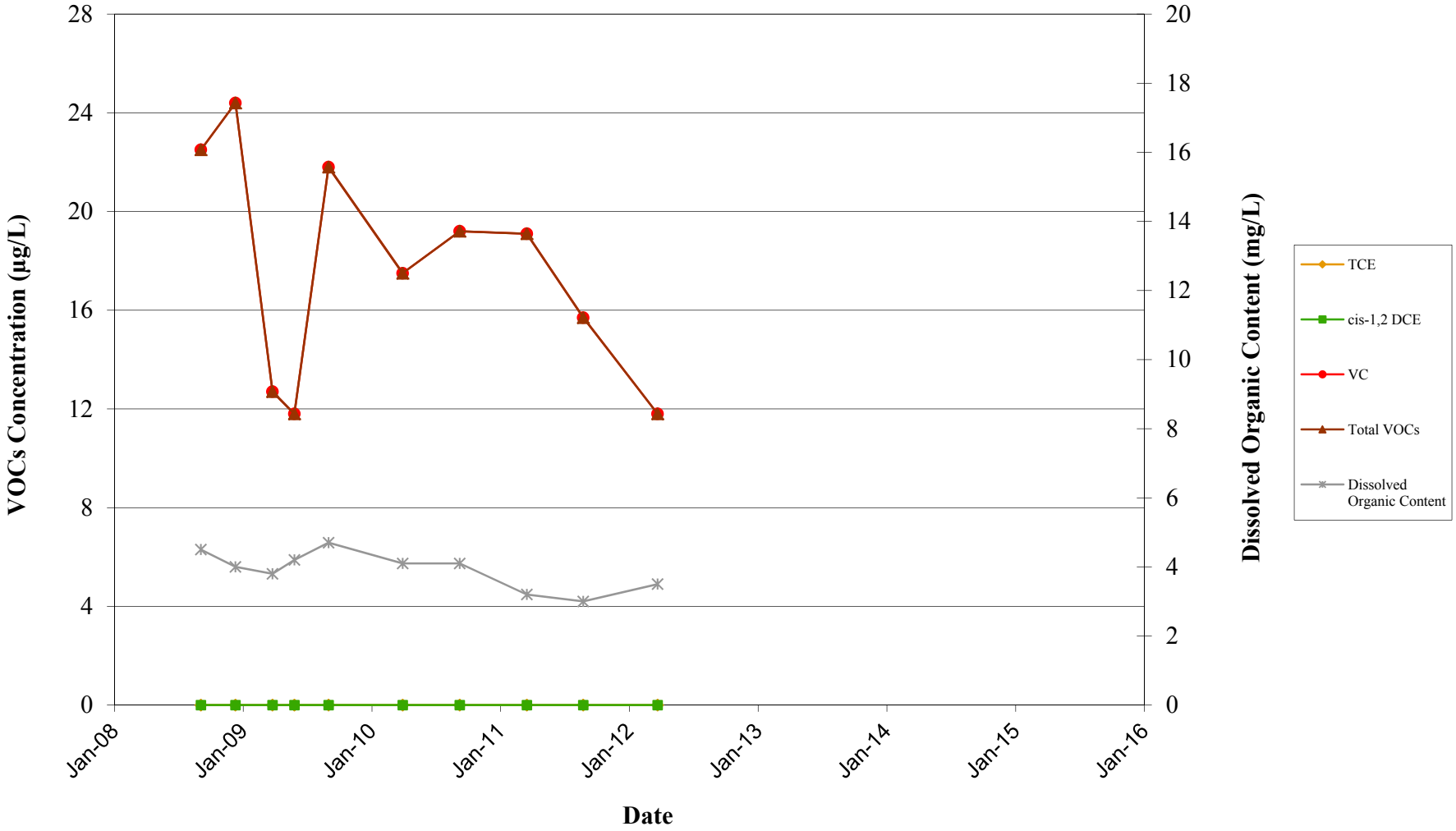


Figure 4-16
782VMW-121D VOCs Trend

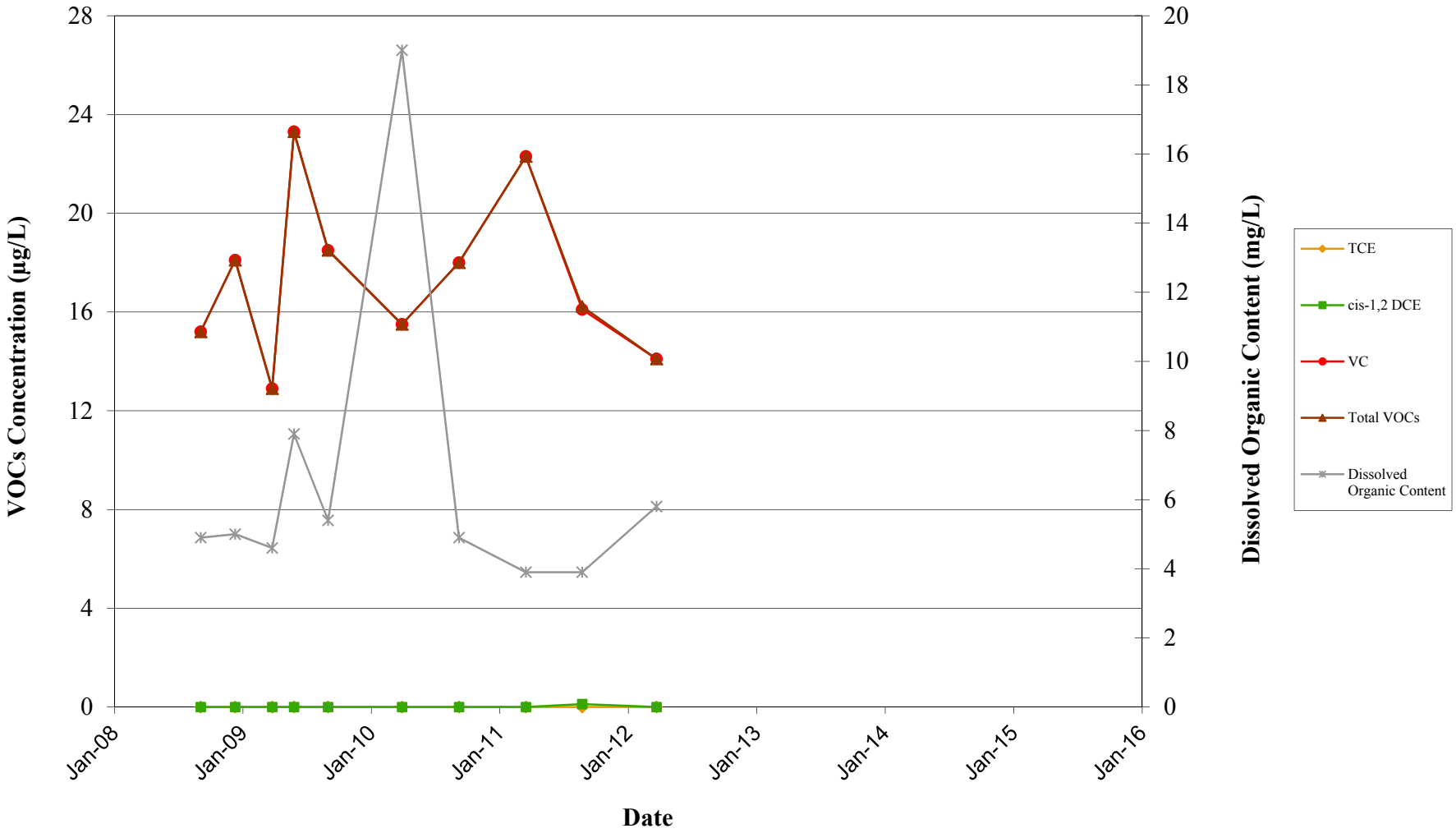


Figure 4-17
782VMW-84D VOCs Trend

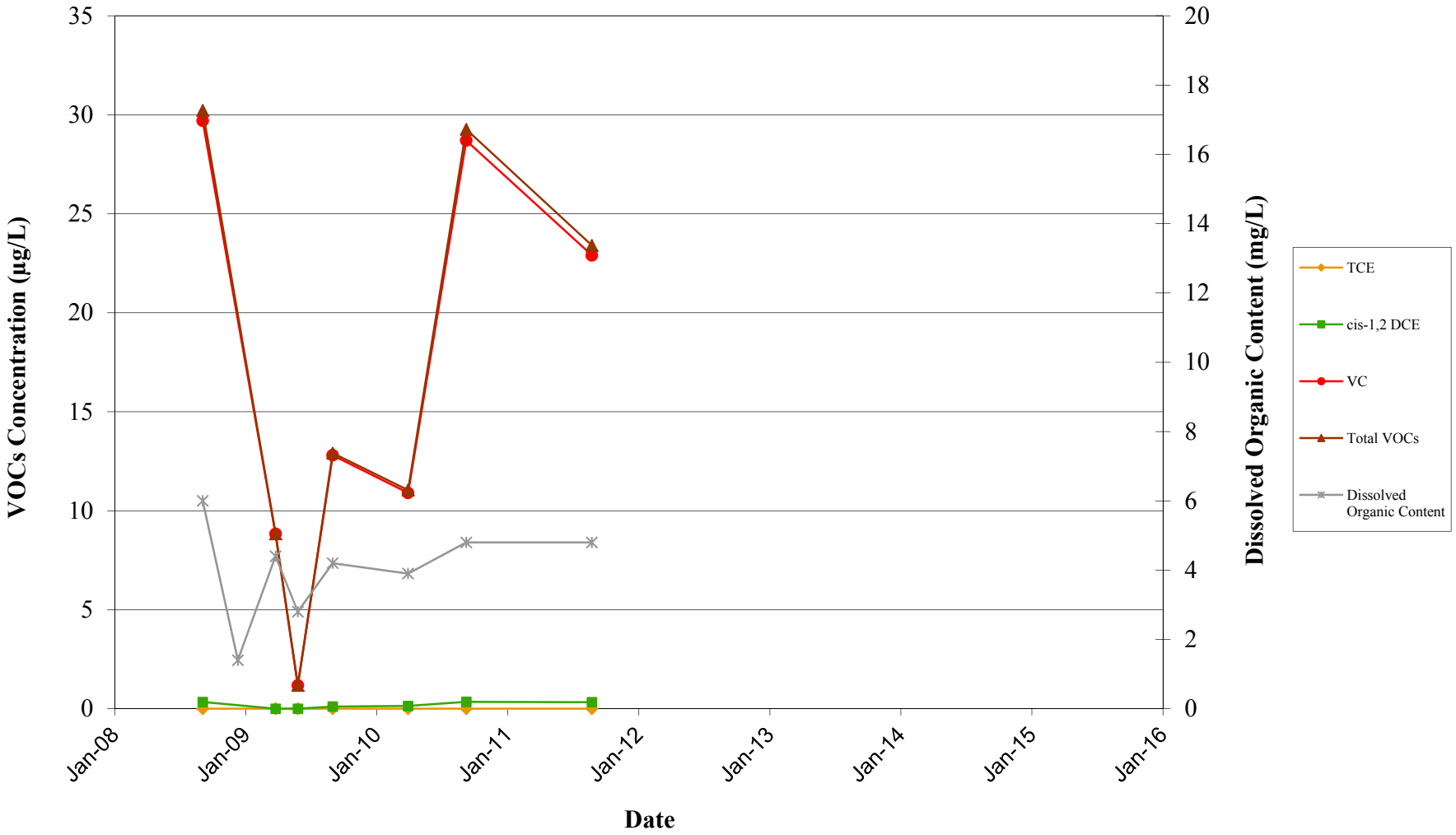
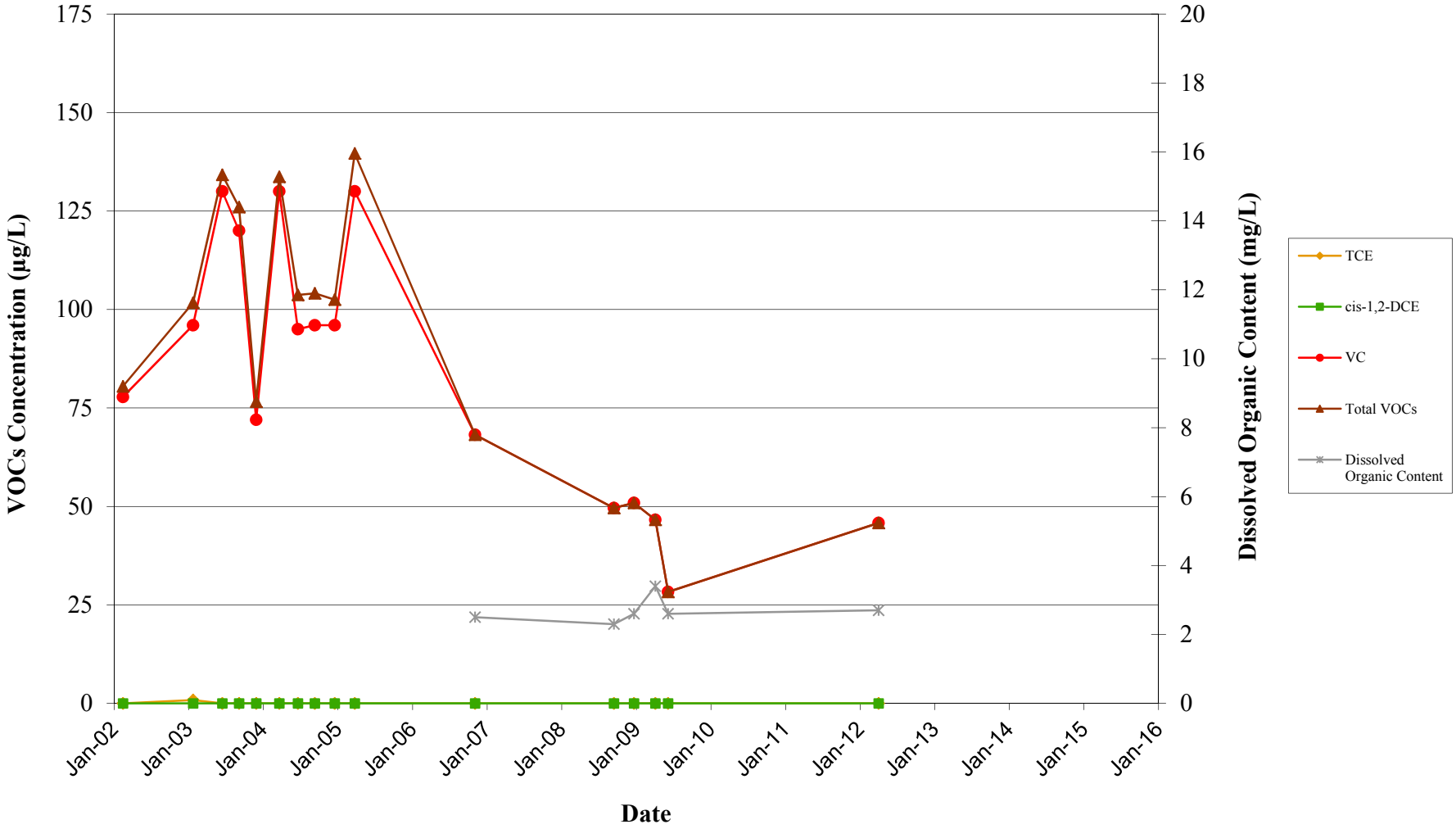


Figure 4-18
782VMW-96 VOCs Trend



5 Conclusions

The MNA remedial alternative at the Nosedocks/Apron 2 site is operating properly and successfully as demonstrated by the removal of the suspected source; the implementation of institutional controls; a monitoring system in place that is providing the data needed to evaluate the progress of natural attenuation; the presence of geochemical factors associated with TCE degradation; monitoring information showing that natural attenuation is working at the site; the presence of intermediate degradation products; the estimated rates of contaminant loss at the wells with the highest concentration indicating that the remedy will reach the remedial goals in a reasonable timeframe; and an estimated 47% decrease in total contaminant mass, or 52% decrease in molar mass, at the site. The LUC/IC portion of the remedy has been successful in ensuring that the LUC/ICs required by the ROD are being implemented, and Six Mile Creek does not appear to be adversely impacted by the chlorinated ethylene plume.

The MNA remedial alternative meets the RAOs established in the April 2009 ROD and appears to be protective of human health and the environment. Although there are some increasing and fluctuating trends in the concentrations of chlorinated ethylenes, the groundwater geochemistry remains favorable for the anaerobic bioattenuation of TCE and cis-1,2-DCE, which attenuate below groundwater standards and detection limits in the sandy, gravelly aquifer. The concentrations of VC attenuate from concentrations up to 45.9 µg/L under Apron 2 to concentrations ranging from non-detect to 16.1 µg/L in monitoring wells near Six Mile Creek. Lastly, VC has not been detected in any surface water samples.

Based upon the above information, the Air Force concludes the remedial actions implemented at the Nosedocks/Apron 2 site are operating properly and successfully consistent with the provisions of CERCLA, Section 120(h)(3)(B).

6 References

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A MAROS Statistics Summary

MAROS Mann-Kendall Statistics Summary

Project: Griffis APN 2
User Name: Jenkins
Location: Griffiss AFB
State: New York

Time Period: 10/1/1999 **to** 9/13/2011
Consolidation Period: No Time Consolidation
Consolidation Type: Median
Duplicate Consolidation: Average
ND Values: 1/2 Detection Limit
J Flag Values : Actual Value

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
cis-1,2-DICHLOROETHYLENE								
782MW-10	T	21	21	0.42	-110	100.0%	No	D
782VMW-100	T	15	0	0.14	-21	83.6%	Yes	ND
782VMW-101	T	20	2	0.39	54	95.7%	No	I
782VMW-105B	T	20	20	0.49	-13	65.0%	No	S
782VMW-121	T	8	0	0.19	3	59.4%	Yes	ND
782VMW-121D	T	9	1	0.35	13	89.0%	No	NT
782VMW-76	T	20	19	0.40	-80	99.5%	No	D
782VMW-78	T	20	20	0.18	-44	91.8%	No	PD
782VMW-81	T	20	20	0.25	15	67.3%	No	NT
782VMW-84	T	20	19	0.76	-87	99.8%	No	D
782VMW-84D	T	8	5	0.78	11	88.7%	No	NT
782VMW-93	T	18	2	1.29	41	93.4%	No	PI
782VMW-96	T	15	0	0.34	47	99.0%	Yes	ND
782VMW-98	S	5	0	0.06	4	75.8%	Yes	ND
AP2MW-3	T	10	0	0.87	-26	98.9%	Yes	ND
TRICHLOROETHYLENE (TCE)								
782MW-10	T	21	0	0.25	82	99.3%	Yes	ND
782VMW-100	T	15	0	0.20	-20	82.3%	Yes	ND
782VMW-101	T	20	0	0.26	77	99.4%	Yes	ND
782VMW-105B	T	20	20	0.40	-21	74.0%	No	S
782VMW-121	T	9	0	0.24	21	98.3%	Yes	ND
782VMW-121D	T	9	0	0.24	19	97.0%	Yes	ND
782VMW-76	T	20	0	0.26	77	99.4%	Yes	ND
782VMW-78	T	20	1	0.52	58	96.8%	No	I
782VMW-81	T	20	20	0.57	-104	100.0%	No	D
782VMW-84	T	20	0	0.28	77	99.4%	Yes	ND
782VMW-84D	T	8	0	0.25	8	80.1%	Yes	ND
782VMW-93	T	17	0	2.95	47	97.1%	Yes	ND
782VMW-96	T	15	0	0.35	36	95.9%	Yes	ND
782VMW-98	S	6	0	0.16	-5	76.5%	Yes	ND
AP2MW-3	T	11	0	0.96	-26	97.5%	Yes	ND
VINYL CHLORIDE								
782MW-10	T	21	21	0.37	-60	96.3%	No	D
782VMW-100	T	15	0	0.40	-31	93.0%	Yes	ND
782VMW-101	T	20	20	0.68	80	99.5%	No	I
782VMW-105B	T	20	0	0.96	84	99.7%	Yes	ND

Project: Griffis APN 2

User Name: Jenkins

Location: Griffiss AFB

State: New York

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
VINYL CHLORIDE								
782VMW-121	T	8	8	0.25	-6	72.6%	No	S
782VMW-121D	T	9	8	0.43	2	54.0%	No	NT
782VMW-76	T	20	19	0.41	-91	99.9%	No	D
782VMW-78	T	20	20	0.47	-89	99.8%	No	D
782VMW-81	T	20	19	0.56	-98	99.9%	No	D
782VMW-84	T	20	19	0.33	-55	96.0%	No	D
782VMW-84D	T	8	7	0.79	8	80.1%	No	NT
782VMW-93	T	18	18	0.52	-83	99.9%	No	D
782VMW-96	T	15	15	0.39	-49	99.2%	No	D
782VMW-98	S	6	0	0.52	5	76.5%	Yes	ND
AP2MW-3	T	11	0	0.95	-36	99.8%	Yes	ND

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A)- Due to insufficient Data (< 4 sampling events); Source/Tail (S/T) ; Non-detect (ND)

The Number of Samples and Number of Detects shown above are post-consolidation values.

MAROS Spatial Moment Analysis Summary

Project: Griffiss Apn 2

Location: Griffiss AFB

User Name: Jenkins

State: New York

	0th Moment	1st Moment (Center of Mass)			2nd Moment (Spread)		
Effective Date	Estimated Mass (Kg)	Xc (ft)	Yc (ft)	Source Distance (ft)	Sigma XX (sq ft)	Sigma YY (sq ft)	Number of Wells
cis-1,2-DICHLOROETHYLENE							
10/1/1999	0.0E+00						1
2/26/2002	3.0E-01	1,137,224	1,174,506	1,026	107,489	13,541	9
2/4/2003	2.9E-01	1,137,153	1,174,490	958	87,278	11,456	9
6/25/2003	3.8E-01	1,137,376	1,174,500	1,154	209,792	15,019	11
9/16/2003	4.5E-01	1,137,345	1,174,477	1,116	223,567	21,720	12
12/9/2003	4.1E-01	1,137,320	1,174,469	1,089	208,224	20,335	12
3/31/2004	4.1E-01	1,137,330	1,174,478	1,103	217,438	21,743	12
7/1/2004	4.2E-01	1,137,340	1,174,474	1,110	152,968	11,142	10
9/21/2004	3.9E-01	1,137,364	1,174,489	1,138	193,999	14,439	11
12/28/2004	2.5E-01	1,137,153	1,174,487	956	83,766	11,106	9
4/5/2005	2.2E-01	1,137,197	1,174,499	1,000	119,537	13,589	10
11/14/2006	1.7E-01	1,137,173	1,174,489	974	92,414	14,861	10
6/25/2008	0.0E+00						1
9/24/2008	1.0E-01	1,137,348	1,174,485	1,122	211,250	27,107	14
12/30/2008	1.2E-01	1,137,219	1,174,527	1,033	86,723	9,310	12
3/25/2009	1.7E-01	1,137,174	1,174,495	978	102,408	11,741	13
6/16/2009	2.4E-01	1,137,200	1,174,515	1,010	91,975	11,371	13
9/21/2009	2.2E-01	1,137,177	1,174,482	973	116,446	11,443	13
4/15/2010	2.8E-01	1,137,190	1,174,494	991	105,989	12,495	12
9/14/2010	2.6E-01	1,137,226	1,174,494	1,021	139,872	13,445	13
4/5/2011	2.9E-01	1,137,226	1,174,502	1,025	143,087	12,520	11
9/13/2011	3.9E-01	1,137,244	1,174,530	1,056	96,564	9,737	11
TRICHLOROETHYLENE (TCE)							
10/1/1999	0.0E+00						1
2/26/2002	5.7E-02	1,137,170	1,174,397	924	153,356	8,367	9
2/4/2003	4.9E-02	1,137,207	1,174,410	962	156,395	9,199	9
6/25/2003	8.9E-02	1,137,479	1,174,435	1,218	363,363	31,912	12
9/16/2003	9.4E-02	1,137,504	1,174,440	1,244	360,754	32,262	12
12/9/2003	9.3E-02	1,137,512	1,174,442	1,251	358,850	32,210	12
3/31/2004	9.4E-02	1,137,503	1,174,440	1,242	361,319	32,330	12
7/1/2004	1.3E-01	1,137,499	1,174,430	1,235	151,206	10,191	10
9/21/2004	1.2E-01	1,137,539	1,174,448	1,279	215,284	16,505	11
12/28/2004	4.5E-02	1,137,213	1,174,407	966	163,310	9,464	9
4/5/2005	3.6E-02	1,137,305	1,174,437	1,061	239,325	16,591	10
11/14/2006	2.5E-02	1,137,181	1,174,383	926	206,308	21,734	10
9/24/2008	3.3E-02	1,137,198	1,174,389	944	298,706	26,490	14
12/30/2008	3.9E-02	1,137,336	1,174,442	1,092	224,573	15,680	12
3/25/2009	4.0E-02	1,137,342	1,174,460	1,105	209,259	16,788	13

Project: Griffiss Apn 2

Location: Griffiss AFB

User Name: Jenkins

State: New York

	0th Moment	1st Moment (Center of Mass)			2nd Moment (Spread)		
Effective Date	Estimated Mass (kg)	Xc (ft)	Yc (ft)	Source Distance (ft)	Sigma XX (sq ft)	Sigma YY (sq ft)	Number of Wells
TRICHLOROETHYLENE (TCE)							
6/16/2009	3.2E-02	1,137,386	1,174,465	1,147	268,832	19,928	13
9/21/2009	5.9E-02	1,137,368	1,174,427	1,114	229,978	14,816	13
4/15/2010	5.7E-02	1,137,379	1,174,432	1,126	231,724	15,410	13
9/14/2010	5.6E-02	1,137,408	1,174,438	1,155	237,048	16,186	13
4/5/2011	6.5E-02	1,137,356	1,174,441	1,109	218,200	14,893	11
9/13/2011	5.3E-02	1,137,358	1,174,429	1,105	230,954	14,781	12
VINYL CHLORIDE							
10/1/1999	0.0E+00						1
2/26/2002	2.6E+00	1,137,761	1,174,638	1,560	109,247	5,868	9
2/4/2003	2.5E+00	1,137,662	1,174,625	1,465	135,779	7,388	9
6/25/2003	4.3E+00	1,137,703	1,174,594	1,488	134,097	10,621	12
9/16/2003	4.8E+00	1,137,728	1,174,599	1,513	134,922	10,519	12
12/9/2003	4.2E+00	1,137,723	1,174,591	1,505	142,217	11,592	12
3/31/2004	4.6E+00	1,137,775	1,174,605	1,558	123,535	10,527	12
7/1/2004	3.6E+00	1,137,781	1,174,606	1,564	125,245	6,750	10
9/21/2004	3.6E+00	1,137,730	1,174,608	1,519	137,105	7,461	11
12/28/2004	2.9E+00	1,137,718	1,174,627	1,516	137,117	7,336	9
4/5/2005	3.1E+00	1,137,852	1,174,651	1,647	117,766	6,663	10
11/14/2006	2.3E+00	1,137,689	1,174,612	1,483	138,589	10,709	10
9/24/2008	1.6E+00	1,137,733	1,174,617	1,525	207,550	15,541	15
12/30/2008	4.0E-01	1,137,792	1,174,620	1,580	197,962	9,930	12
3/25/2009	1.6E+00	1,137,751	1,174,629	1,547	160,365	9,649	13
6/16/2009	1.7E+00	1,137,654	1,174,609	1,451	151,744	9,835	13
9/21/2009	1.2E+00	1,137,602	1,174,616	1,407	182,682	9,159	12
4/15/2010	6.2E-01	1,137,733	1,174,610	1,522	272,153	12,985	13
9/14/2010	1.2E+00	1,137,549	1,174,621	1,363	100,492	7,789	13
4/5/2011	2.2E+00	1,137,815	1,174,639	1,608	169,493	6,290	11
9/13/2011	9.2E-01	1,137,705	1,174,625	1,503	204,329	8,786	12

Project: Griffiss Apn 2

Location: Griffiss AFB

User Name: Jenkins

State: New York

Moment Type	Constituent	Coefficient of Variation	Mann-Kendall S Statistic	Confidence in Trend	Moment Trend
Zeroth Moment: Mass					
	cis-1,2-DICHLOROETHYLENE	0.50	-26	75.7%	S
	TRICHLOROETHYLENE (TCE)	0.53	-10	60.6%	S
	VINYL CHLORIDE	0.60	-90	99.7%	D
1st Moment: Distance to Source					
	cis-1,2-DICHLOROETHYLENE	0.06	-28	80.7%	S
	TRICHLOROETHYLENE (TCE)	0.10	2	51.3%	NT
	VINYL CHLORIDE	0.04	-8	58.9%	S
2nd Moment: Sigma XX					
	cis-1,2-DICHLOROETHYLENE	0.37	-36	87.0%	S
	TRICHLOROETHYLENE (TCE)	0.29	4	53.8%	NT
	VINYL CHLORIDE	0.27	86	99.8%	I
2nd Moment: Sigma YY					
	cis-1,2-DICHLOROETHYLENE	0.33	-46	92.7%	PD
	TRICHLOROETHYLENE (TCE)	0.43	-24	77.0%	S
	VINYL CHLORIDE	0.26	-2	51.3%	S

Note: The following assumptions were applied for the calculation of the Zeroth Moment:

Porosity: 0.35 **Saturated Thickness:** Uniform: 30 ft

Mann-Kendall Trend test performed on all sample events for each constituent. Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A)-Due to insufficient Data (< 4 sampling events).

Note: The Sigma XX and Sigma YY components are estimated using the given field coordinate system and then rotated to align with the estimated groundwater flow direction. Moments are not calculated for sample events with less than 6 wells.

Site Information

TxtVariableName	TxtValue
COCone	cis-1,2-DICHLOROETHYLENE
COCtwo	TRICHLOROETHYLENE (TCE)
COCthree	VINYL CHLORIDE
COCfour	
COCfive	
Location	Griffiss AFB
State	New York
SourceTreatment	In-situ Biodegradation
PlumeType	Chlorinated Solvent

Plume Properties

NumVariableName	NumValue	Units
CurrentPlumeLength	2350	feet
DistancetoProperty	2400	feet
DistancetoReceptor	2400	feet
GWFluctuations	1	feet
NAPLPresent	2	feet
PlumeLength	2350	feet
PlumeWidth	440	feet
SeepageVelocity	106 [1]	feet/second
TDistancetoProperty	50	feet
TDistancetoReceptor	50	feet

[1] (FPM 2004)

Event Definitions

SampleDate	Sample Event	EffectiveDate	StartDate	EndDate
10/01/1999	Sample Event 1	10/01/1999	10/01/1999	10/01/1999
02/26/2002	Sample Event 2	02/26/2002	02/26/2002	02/26/2002
02/04/2003	Sample Event 3	02/04/2003	02/04/2003	02/04/2003
06/25/2003	Sample Event 4	06/25/2003	06/25/2003	06/25/2003
06/27/2003	Sample Event 4	06/25/2003	06/27/2003	06/27/2003
09/16/2003	Sample Event 5	09/16/2003	09/16/2003	09/16/2003
12/09/2003	Sample Event 6	12/09/2003	12/09/2003	12/09/2003
03/31/2004	Sample Event 7	03/31/2004	03/31/2004	03/31/2004
07/01/2004	Sample Event 8	07/01/2004	07/01/2004	07/01/2004
09/21/2004	Sample Event 9	09/21/2004	09/21/2004	09/21/2004
12/28/2004	Sample Event 10	12/28/2004	12/28/2004	12/28/2004
04/05/2005	Sample Event 11	04/05/2005	04/05/2005	04/05/2005
11/14/2006	Sample Event 12	11/14/2006	11/14/2006	11/14/2006
11/15/2006	Sample Event 12	11/14/2006	11/15/2006	11/15/2006
06/25/2008	Sample Event 13	06/25/2008	06/25/2008	06/25/2008
09/24/2008	Sample Event 14	09/24/2008	09/24/2008	09/24/2008
09/25/2008	Sample Event 14	09/24/2008	09/25/2008	09/25/2008
09/26/2008	Sample Event 14	09/24/2008	09/26/2008	09/26/2008
11/15/2008	Sample Event 15	11/15/2008	11/15/2008	11/15/2008
12/30/2008	Sample Event 16	12/30/2008	12/30/2008	12/30/2008
12/31/2008	Sample Event 16	12/30/2008	12/31/2008	12/31/2008
03/25/2009	Sample Event 17	03/25/2009	03/25/2009	03/25/2009
03/26/2009	Sample Event 17	03/25/2009	03/26/2009	03/26/2009
04/15/2009	Sample Event 17	03/25/2009	04/15/2009	04/15/2009
06/16/2009	Sample Event 18	06/16/2009	06/16/2009	06/16/2009
06/17/2009	Sample Event 18	06/16/2009	06/17/2009	06/17/2009
09/21/2009	Sample Event 19	09/21/2009	09/21/2009	09/21/2009
09/23/2009	Sample Event 19	09/21/2009	09/23/2009	09/23/2009
09/26/2009	Sample Event 19	09/21/2009	09/26/2009	09/26/2009
04/15/2010	Sample Event 20	04/15/2010	04/15/2010	04/15/2010
04/19/2010	Sample Event 20	04/15/2010	04/19/2010	04/19/2010
09/14/2010	Sample Event 21	09/14/2010	09/14/2010	09/14/2010
09/21/2010	Sample Event 21	09/14/2010	09/21/2010	09/21/2010
09/28/2010	Sample Event 21	09/14/2010	09/28/2010	09/28/2010
09/29/2010	Sample Event 21	09/14/2010	09/29/2010	09/29/2010
04/05/2011	Sample Event 22	04/05/2011	04/05/2011	04/05/2011
04/06/2011	Sample Event 22	04/05/2011	04/06/2011	04/06/2011
04/07/2011	Sample Event 22	04/05/2011	04/07/2011	04/07/2011
09/13/2011	Sample Event 23	09/13/2011	09/13/2011	09/13/2011
09/14/2011	Sample Event 23	09/13/2011	09/14/2011	09/14/2011

Tail Source Well Definitions

WellName	WellTypeLetter	WellType
782MW-10	T	2
782VMW-100	T	2
782VMW-101	T	2
782VMW-105B	T	2
782VMW-121	T	2
782VMW-121D	T	2
782VMW-76	T	2
782VMW-78	T	2
782VMW-81	T	2
782VMW-84	T	2
782VMW-84D	T	2
782VMW-93	T	2
782VMW-96	T	2
782VMW-98	S	1
AP2MW-3	T	2

COC Data

WellName	XCoord	YCoord	Constituent	SampleDate	Result(mg/L)	ResultNumber(mg/L)	DetLim	Flags	ConstType
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	01-Oct-99	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	01-Oct-99	4.15000019711442E-02	0.041500002	0.0001		ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	01-Oct-99	7.80000037048012E-03	0.0078	0.0001		ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	26-Feb-02	6.60900031391066E-02	0.066090003	0.0001		ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	26-Feb-02	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	26-Feb-02	2.53800012054853E-02	0.025380001	0.0001		ORG
782VMW-100	1138716	1174895	cis-1,2-DICHLOROETHYLENE	25-Jun-03	ND	0	0.00014	ND	ORG
782VMW-100	1138716	1174895	TRICHLOROETHYLENE (TCE)	25-Jun-03	ND	0	0.00016	ND	ORG
782VMW-100	1138716	1174895	VINYL CHLORIDE	25-Jun-03	ND	0	0.00019	ND	ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	26-Feb-02	1.40000006649643E-04	0.00014	0.0001	TR	ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	26-Feb-02	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	26-Feb-02	2.11000010021962E-03	0.00211	0.0001		ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	26-Feb-02	4.99500023724977E-02	0.049950002	0.0001		ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	26-Feb-02	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	26-Feb-02	4.6300002199132E-03	0.00463	0.0001		ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	26-Feb-02	1.47000006982125E-03	0.00147	0.0001		ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	26-Feb-02	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	26-Feb-02	1.63900007784832E-02	0.016390001	0.0001		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	26-Feb-02	ND	0	0.0001	ND	ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	26-Feb-02	3.98400018922985E-02	0.039840002	0.0001		ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	26-Feb-02	4.91000023321249E-03	0.00491	0.0001		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	26-Feb-02	1.86600008863024E-02	0.018660001	0.0001		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	26-Feb-02	2.12300010083709E-02	0.021230001	0.0001		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	26-Feb-02	ND	0	0.0001	ND	ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	26-Feb-02	2.67000012681819E-03	0.00267	0.0001		ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	26-Feb-02	5.67500026954804E-02	0.056750003	0.0001		ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	26-Feb-02	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	26-Feb-02	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	26-Feb-02	1.60000007599592E-04	0.00016	0.0001	TR	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	26-Feb-02	7.60200036107562E-02	0.076020004	0.0001		ORG
782VMW-96	1137546	1174604	VINYL CHLORIDE	26-Feb-02	7.78000036953017E-02	0.077800004	0.0001		ORG
782VMW-96	1137546	1174604	TRICHLOROETHYLENE (TCE)	26-Feb-02	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	cis-1,2-DICHLOROETHYLENE	26-Feb-02	ND	0	0.0001	ND	ORG
782VMW-98	1136360	1173953	TRICHLOROETHYLENE (TCE)	25-Jun-03	ND	0	0.00016	ND	ORG
782VMW-98	1136360	1173953	cis-1,2-DICHLOROETHYLENE	16-Sep-03	ND	0	0.00014	ND	ORG
782VMW-98	1136360	1173953	VINYL CHLORIDE	25-Jun-03	ND	0	0.00019	ND	ORG
AP2MW-3	1138744	1174551	cis-1,2-DICHLOROETHYLENE	27-Jun-03	ND	0	0.011000001	ND	ORG
AP2MW-3	1138744	1174551	VINYL CHLORIDE	27-Jun-03	ND	0	0.015000001	ND	ORG
AP2MW-3	1138744	1174551	TRICHLOROETHYLENE (TCE)	27-Jun-03	ND	0	0.013000001	ND	ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	04-Feb-03	5.50000026123598E-02	0.055000003	0.0001		ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	04-Feb-03	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	04-Feb-03	1.90000009024516E-02	0.019000001	0.0001		ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	04-Feb-03	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	04-Feb-03	8.00000037997961E-04	0.0008	0.0001	TR	ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	04-Feb-03	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	04-Feb-03	3.90000018524006E-02	0.039000002	0.0001		ORG

COC Data

WellName	XCoord	YCoord	Constituent	SampleDate	Result(mg/L)	ResultNumber(mg/L)	DetLim	Flags	ConstType
782VMW-105B	1136605	1174208	VINYL CHLORIDE	04-Feb-03	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	04-Feb-03	2.60000012349337E-03	0.0026	0.0001		ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	04-Feb-03	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	04-Feb-03	1.30000006174669E-02	0.013000001	0.0001		ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	04-Feb-03	1.60000007599592E-03	0.0016	0.0001		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	04-Feb-03	2.1E-04	0.00021	0.0001	TR	ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	04-Feb-03	1.50000007124618E-02	0.015000001	0.0001		ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	04-Feb-03	6.40000030398369E-02	0.064000003	0.0001		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	04-Feb-03	1.00000004749745E-02	0.01	0.0001		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	04-Feb-03	2.70000012824312E-02	0.027000001	0.0001		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	04-Feb-03	0.011000000522472	0.011000001	0.0001		ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	04-Feb-03	ND	0	0.0001	ND	ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	04-Feb-03	1.70000008074567E-03	0.0017	0.0001		ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	04-Feb-03	5.50000026123598E-02	0.055000003	0.0001		ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	04-Feb-03	8.80000041797757E-02	0.088000004	0.0001		ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	04-Feb-03	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	04-Feb-03	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	TRICHLOROETHYLENE (TCE)	04-Feb-03	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	VINYL CHLORIDE	04-Feb-03	9.60000045597553E-02	0.096000005	0.0001		ORG
782VMW-96	1137546	1174604	cis-1,2-DICHLOROETHYLENE	04-Feb-03	ND	0	0.0001	ND	ORG
AP2MW-3	1138744	1174551	TRICHLOROETHYLENE (TCE)	27-Jun-03	ND	0	0.0065	ND	ORG
AP2MW-3	1138744	1174551	VINYL CHLORIDE	27-Jun-03	ND	0	0.0077	ND	ORG
AP2MW-3	1138744	1174551	cis-1,2-DICHLOROETHYLENE	27-Jun-03	ND	0	0.0057	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	27-Jun-03	2.60000012349337E-02	0.026000001	0.0001		ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	27-Jun-03	6.80000032298267E-02	0.068000003	0.0001		ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	27-Jun-03	ND	0	0.0001	ND	ORG
782VMW-100	1138716	1174895	cis-1,2-DICHLOROETHYLENE	16-Sep-03	ND	0	0.00014	ND	ORG
782VMW-100	1138716	1174895	TRICHLOROETHYLENE (TCE)	16-Sep-03	ND	0	0.00016	ND	ORG
782VMW-100	1138716	1174895	VINYL CHLORIDE	16-Sep-03	ND	0	0.00019	ND	ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	27-Jun-03	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	27-Jun-03	7.40000035148114E-04	0.00074	0.0001	TR	ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	27-Jun-03	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	27-Jun-03	2.90000013774261E-02	0.029000001	0.0001		ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	27-Jun-03	1.60000007599592E-03	0.0016	0.0001		ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	27-Jun-03	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	27-Jun-03	1.90000009024516E-02	0.019000001	0.0001		ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	27-Jun-03	1.40000006649643E-03	0.0014	0.0001		ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	27-Jun-03	ND	0	0.0001	ND	ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	27-Jun-03	ND	0	0.0001	ND	ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	27-Jun-03	4.60000021848828E-02	0.046000002	0.0001		ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	27-Jun-03	2.20000010449439E-02	0.022000001	0.0001		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	27-Jun-03	2.80000013299286E-02	0.028000001	0.0001		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	27-Jun-03	1.40000006649643E-02	0.014000001	0.0001		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	27-Jun-03	1.50000007124618E-02	0.015000001	0.0001		ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	27-Jun-03	ND	0	0.0001	ND	ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	27-Jun-03	8.00000037997961E-04	0.0008	0.0001		ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	27-Jun-03	3.70000017574057E-02	0.037000002	0.0001		ORG

COC Data

WellName	XCoord	YCoord	Constituent	SampleDate	Result(mg/L)	ResultNumber(mg/L)	DetLim	Flags	ConstType
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	27-Jun-03	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	27-Jun-03	0.11000000522472	0.110000005	0.0001		ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	27-Jun-03	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	TRICHLOROETHYLENE (TCE)	27-Jun-03	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	cis-1,2-DICHLOROETHYLENE	27-Jun-03	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	VINYL CHLORIDE	27-Jun-03	0.130000006174669	0.130000006	0.0001		ORG
AP2MW-3	1138744	1174551	cis-1,2-DICHLOROETHYLENE	16-Sep-03	ND	0	0.011000001	ND	ORG
AP2MW-3	1138744	1174551	VINYL CHLORIDE	16-Sep-03	ND	0	0.015000001	ND	ORG
AP2MW-3	1138744	1174551	TRICHLOROETHYLENE (TCE)	16-Sep-03	ND	0	0.013000001	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	16-Sep-03	3.00000014249235E-02	0.030000001	0.0001		ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	16-Sep-03	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	16-Sep-03	6.80000032298267E-02	0.068000003	0.0001		ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	16-Sep-03	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	16-Sep-03	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	16-Sep-03	1.50000007124618E-03	0.0015	0.0001		ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	16-Sep-03	2.60000012349337E-02	0.026000001	0.0001		ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	16-Sep-03	3.70000017574057E-03	0.0037	0.0001		ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	16-Sep-03	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	16-Sep-03	1.80000008549541E-02	0.018000001	0.0001		ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	16-Sep-03	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	16-Sep-03	2.0000000949949E-03	0.002	0.0001		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	16-Sep-03	ND	0	0.0001	ND	ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	16-Sep-03	2.80000013299286E-02	0.028000001	0.0001		ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	16-Sep-03	5.90000028023496E-02	0.059000003	0.0001		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	16-Sep-03	2.30000010924414E-02	0.023000001	0.0001		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	16-Sep-03	1.40000006649643E-02	0.014000001	0.0001		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	16-Sep-03	1.50000007124618E-02	0.015000001	0.0001		ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	16-Sep-03	5.70000027073547E-02	0.057000003	0.0001		ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	16-Sep-03	1.20000005699694E-03	0.0012	0.0001		ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	16-Sep-03	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	16-Sep-03	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	16-Sep-03	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	16-Sep-03	0.100000004749745	0.100000005	0.0001		ORG
782VMW-96	1137546	1174604	VINYL CHLORIDE	16-Sep-03	0.120000005699694	0.120000006	0.0001		ORG
782VMW-96	1137546	1174604	cis-1,2-DICHLOROETHYLENE	16-Sep-03	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	TRICHLOROETHYLENE (TCE)	16-Sep-03	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	09-Dec-03	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	09-Dec-03	5.30000025173649E-02	0.053000003	0.0001		ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	09-Dec-03	2.10000009974465E-02	0.021000001	0.0001		ORG
782VMW-100	1138716	1174895	TRICHLOROETHYLENE (TCE)	09-Dec-03	ND	0	0.00016	ND	ORG
782VMW-100	1138716	1174895	VINYL CHLORIDE	09-Dec-03	ND	0	0.00019	ND	ORG
782VMW-100	1138716	1174895	cis-1,2-DICHLOROETHYLENE	09-Dec-03	ND	0	0.00014	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	09-Dec-03	1.00000004749745E-03	0.001	0.0001		ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	09-Dec-03	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	09-Dec-03	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	09-Dec-03	2.10000009974465E-02	0.021000001	0.0001		ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	09-Dec-03	3.20000015199184E-03	0.0032	0.0001		ORG

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WellName	XCoord	YCoord	Constituent	SampleDate	Result(mg/L)	ResultNumber(mg/L)	DetLim	Flags	ConstType
782VMW-105B	1136605	1174208	VINYL CHLORIDE	09-Dec-03	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	09-Dec-03	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	09-Dec-03	2.30000010924414E-02	0.023000001	0.0001		ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	09-Dec-03	1.70000008074567E-03	0.0017	0.0001		ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	09-Dec-03	5.50000026123598E-02	0.055000003	0.0001		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	09-Dec-03	ND	0	0.0001	ND	ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	09-Dec-03	0.020000000949949	0.020000001	0.0001		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	09-Dec-03	1.60000007599592E-02	0.016000001	0.0001		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	09-Dec-03	2.60000012349337E-02	0.026000001	0.0001		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	09-Dec-03	1.70000008074567E-02	0.017000001	0.0001		ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	09-Dec-03	ND	0	0.0001	ND	ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	09-Dec-03	5.80000027548522E-02	0.058000003	0.0001		ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	09-Dec-03	5.60000026598573E-04	0.00056	0.0001	TR	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	09-Dec-03	9.70000046072528E-02	0.097000005	0.0001		ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	09-Dec-03	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	09-Dec-03	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	cis-1,2-DICHLOROETHYLENE	09-Dec-03	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	VINYL CHLORIDE	09-Dec-03	7.20000034198165E-02	0.072000003	0.0001		ORG
782VMW-96	1137546	1174604	TRICHLOROETHYLENE (TCE)	09-Dec-03	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	31-Mar-04	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	31-Mar-04	7.50000035623088E-02	0.075000004	0.0001		ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	31-Mar-04	2.60000012349337E-02	0.026000001	0.0001		ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	31-Mar-04	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	31-Mar-04	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	31-Mar-04	9.50000045122579E-04	0.00095	0.0001		ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	31-Mar-04	6.00000028498471E-03	0.006	0.0001		ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	31-Mar-04	2.80000013299286E-02	0.028000001	0.0001		ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	31-Mar-04	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	31-Mar-04	1.60000007599592E-02	0.016000001	0.0001		ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	31-Mar-04	1.20000005699694E-03	0.0012	0.0001		ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	31-Mar-04	ND	0	0.0001	ND	ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	31-Mar-04	ND	0	0.0001	ND	ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	31-Mar-04	6.90000032773241E-02	0.069000003	0.0001		ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	31-Mar-04	1.70000008074567E-02	0.017000001	0.0001		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	31-Mar-04	1.40000006649643E-02	0.014000001	0.0001		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	31-Mar-04	9.20000043697655E-03	0.0092	0.0001		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	31-Mar-04	2.20000010449439E-02	0.022000001	0.0001		ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	31-Mar-04	ND	0	0.0001	ND	ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	31-Mar-04	6.40000030398369E-02	0.064000003	0.0001		ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	31-Mar-04	7.00000033248216E-04	0.0007	0.0001	TR	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	31-Mar-04	6.00000028498471E-02	0.060000003	0.0001		ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	31-Mar-04	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	31-Mar-04	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	cis-1,2-DICHLOROETHYLENE	31-Mar-04	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	TRICHLOROETHYLENE (TCE)	31-Mar-04	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	VINYL CHLORIDE	31-Mar-04	0.130000006174669	0.130000006	0.0001		ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	01-Jul-04	1.80000008549541E-02	0.018000001	0.0001		ORG

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WellName	XCoord	YCoord	Constituent	SampleDate	Result(mg/L)	ResultNumber(mg/L)	DetLim	Flags	ConstType
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	01-Jul-04	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	01-Jul-04	4.80000022798777E-02	0.048000002	0.0001		ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	01-Jul-04	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	01-Jul-04	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	01-Jul-04	7.60000036098063E-04	0.00076	0.0001		ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	01-Jul-04	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	01-Jul-04	2.50000011874363E-02	0.025000001	0.0001		ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	01-Jul-04	3.20000015199184E-03	0.0032	0.0001		ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	01-Jul-04	1.80000008549541E-03	0.0018	0.0001		ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	01-Jul-04	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	01-Jul-04	1.60000007599592E-02	0.016000001	0.0001		ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	01-Jul-04	1.20000005699694E-02	0.012000001	0.0001		ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	01-Jul-04	6.00000028498471E-02	0.060000003	0.0001		ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	21-Sep-04	2.10000009974465E-02	0.021000001	0.0001		ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	21-Sep-04	4.70000022323802E-02	0.047000002	0.0001		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	01-Jul-04	ND	0	0.0001	ND	ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	01-Jul-04	1.20000005699694E-02	0.012000001	0.0001		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	01-Jul-04	7.20000034198165E-03	0.0072	0.0001		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	01-Jul-04	1.80000008549541E-02	0.018000001	0.0001		ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	01-Jul-04	ND	0	0.0001	ND	ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	01-Jul-04	4.00000018998981E-02	0.040000002	0.0001		ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	01-Jul-04	5.90000028023496E-04	0.00059	0.0001	TR	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	01-Jul-04	0.062000002944842	0.062000003	0.0001		ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	01-Jul-04	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	01-Jul-04	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	VINYL CHLORIDE	01-Jul-04	9.50000045122579E-02	0.095000005	0.0001		ORG
782VMW-96	1137546	1174604	TRICHLOROETHYLENE (TCE)	01-Jul-04	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	cis-1,2-DICHLOROETHYLENE	01-Jul-04	ND	0	0.0001	ND	ORG
782VMW-98	1136360	1173953	VINYL CHLORIDE	16-Sep-03	ND	0	0.00019	ND	ORG
782VMW-98	1136360	1173953	cis-1,2-DICHLOROETHYLENE	09-Dec-03	ND	0	0.00014	ND	ORG
782VMW-98	1136360	1173953	TRICHLOROETHYLENE (TCE)	16-Sep-03	ND	0	0.00016	ND	ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	21-Sep-04	5.60000026598573E-02	0.056000003	0.0001		ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	21-Sep-04	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	21-Sep-04	2.10000009974465E-02	0.021000001	0.0001		ORG
782VMW-100	1138716	1174895	TRICHLOROETHYLENE (TCE)	31-Mar-04	ND	0	0.00016	ND	ORG
782VMW-100	1138716	1174895	VINYL CHLORIDE	31-Mar-04	ND	0	0.00019	ND	ORG
782VMW-100	1138716	1174895	cis-1,2-DICHLOROETHYLENE	31-Mar-04	ND	0	0.00014	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	21-Sep-04	8.50000040372834E-04	0.00085	0.0001		ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	21-Sep-04	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	21-Sep-04	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	28-Dec-04	2.10000009974465E-03	0.0021	0.0001		ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	28-Dec-04	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	21-Sep-04	2.90000013774261E-02	0.029000001	0.0001		ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	21-Sep-04	2.90000013774261E-03	0.0029	0.0001		ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	28-Dec-04	3.30000015674159E-02	0.033000002	0.0001		ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	21-Sep-04	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	28-Dec-04	3.20000015199184E-03	0.0032	0.0001		ORG

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WellName	XCoord	YCoord	Constituent	SampleDate	Result(mg/L)	ResultNumber(mg/L)	DetLim	Flags	ConstType
782VMW-105B	1136605	1174208	VINYL CHLORIDE	28-Dec-04	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	05-Apr-05	4.10000019473955E-03	0.0041	0.0001		ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	05-Apr-05	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	14-Nov-06	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	14-Nov-06	5.100000242237E-04	0.00051	0.0001	TR	ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	24-Sep-08	ND	0	0.0005	ND	ORG
782VMW-121	1138757	1174778	cis-1,2-DICHLOROETHYLENE	25-Sep-08	ND	0	0.00016	ND	ORG
782VMW-121	1138757	1174778	VINYL CHLORIDE	25-Sep-08	2.25000010686927E-02	0.022500001	0.0005		ORG
782VMW-121	1138757	1174778	TRICHLOROETHYLENE (TCE)	25-Sep-08	ND	0	0.0001	ND	ORG
782VMW-121D	1138753	1174762	VINYL CHLORIDE	25-Sep-08	1.52000007219613E-02	0.015200001	0.0005		ORG
782VMW-121D	1138753	1174762	cis-1,2-DICHLOROETHYLENE	25-Sep-08	ND	0	0.00016	ND	ORG
782VMW-121D	1138753	1174762	TRICHLOROETHYLENE (TCE)	25-Sep-08	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	21-Sep-04	1.60000007599592E-03	0.0016	0.0001		ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	21-Sep-04	1.60000007599592E-02	0.016000001	0.0001		ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	21-Sep-04	ND	0	0.0001	ND	ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	21-Sep-04	ND	0	0.0001	ND	ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	28-Dec-04	ND	0	0.0001	ND	ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	28-Dec-04	5.20000024698675E-02	0.052000002	0.0001		ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	28-Dec-04	2.10000009974465E-02	0.021000001	0.0001		ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	05-Apr-05	4.80000022798777E-02	0.048000002	0.0001		ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	05-Apr-05	0.011000000522472	0.011000001	0.0001		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	21-Sep-04	2.10000009974465E-02	0.021000001	0.0001		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	21-Sep-04	1.30000006174669E-02	0.013000001	0.0001		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	21-Sep-04	1.20000005699694E-02	0.012000001	0.0001		ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	21-Sep-04	4.40000020898879E-02	0.044000002	0.0001		ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	21-Sep-04	6.2000002944842E-04	0.00062	0.0001	TR	ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	21-Sep-04	ND	0	0.0001	ND	ORG
782VMW-84D	1138002	1174797	TRICHLOROETHYLENE (TCE)	26-Sep-08	ND	0	0.0001	ND	ORG
782VMW-84D	1138002	1174797	cis-1,2-DICHLOROETHYLENE	26-Sep-08	3.40000016149133E-04	0.00034	0.00016	TR	ORG
782VMW-84D	1138002	1174797	VINYL CHLORIDE	26-Sep-08	2.97000014106743E-02	0.029700001	0.0005		ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	21-Sep-04	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	21-Sep-04	8.00000037997961E-02	0.080000004	0.0001		ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	28-Dec-04	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	21-Sep-04	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	28-Dec-04	5.00000023748726E-02	0.050000002	0.0001		ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	28-Dec-04	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	cis-1,2-DICHLOROETHYLENE	21-Sep-04	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	TRICHLOROETHYLENE (TCE)	21-Sep-04	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	cis-1,2-DICHLOROETHYLENE	28-Dec-04	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	VINYL CHLORIDE	21-Sep-04	9.60000045597553E-02	0.096000005	0.0001		ORG
782VMW-96	1137546	1174604	TRICHLOROETHYLENE (TCE)	28-Dec-04	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	VINYL CHLORIDE	28-Dec-04	9.60000045597553E-02	0.096000005	0.0001		ORG
782VMW-98	1136360	1173953	cis-1,2-DICHLOROETHYLENE	09-Dec-03	ND	0	0.00014	ND	ORG
782VMW-98	1136360	1173953	TRICHLOROETHYLENE (TCE)	09-Dec-03	ND	0	0.00016	ND	ORG
782VMW-98	1136360	1173953	VINYL CHLORIDE	09-Dec-03	ND	0	0.00019	ND	ORG
AP2MW-3	1138744	1174551	VINYL CHLORIDE	09-Dec-03	ND	0	0.015000001	ND	ORG
AP2MW-3	1138744	1174551	cis-1,2-DICHLOROETHYLENE	09-Dec-03	ND	0	0.011000001	ND	ORG

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WellName	XCoord	YCoord	Constituent	SampleDate	Result(mg/L)	ResultNumber(mg/L)	DetLim	Flags	ConstType
AP2MW-3	1138744	1174551	cis-1,2-DICHLOROETHYLENE	31-Mar-04	ND	0	0.011000001	ND	ORG
AP2MW-3	1138744	1174551	VINYL CHLORIDE	31-Mar-04	ND	0	0.015000001	ND	ORG
AP2MW-3	1138744	1174551	TRICHLOROETHYLENE (TCE)	09-Dec-03	ND	0	0.013000001	ND	ORG
AP2MW-3	1138744	1174551	TRICHLOROETHYLENE (TCE)	31-Mar-04	ND	0	0.013000001	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	28-Dec-04	2.20000010449439E-02	0.022000001	0.0001		ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	28-Dec-04	5.40000025648624E-02	0.054000003	0.0001		ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	28-Dec-04	ND	0	0.0001	ND	ORG
782VMW-100	1138716	1174895	VINYL CHLORIDE	21-Sep-04	ND	0	0.00019	ND	ORG
782VMW-100	1138716	1174895	TRICHLOROETHYLENE (TCE)	21-Sep-04	ND	0	0.00016	ND	ORG
782VMW-100	1138716	1174895	cis-1,2-DICHLOROETHYLENE	21-Sep-04	ND	0	0.00014	ND	ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	05-Apr-05	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	15-Nov-06	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	05-Apr-05	4.2000001994893E-03	0.0042	0.0001		ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	15-Nov-06	1.88000008929521E-03	0.00188	0.0001		ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	28-Dec-04	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	24-Sep-08	1.36000006459653E-03	0.00136	0.00016		ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	05-Apr-05	1.30000006174669E-02	0.013000001	0.0001		ORG
782VMW-121	1138757	1174778	TRICHLOROETHYLENE (TCE)	31-Dec-08	ND	0	0.0001	ND	ORG
782VMW-121	1138757	1174778	VINYL CHLORIDE	31-Dec-08	2.44000011589378E-02	0.024400001	0.00033		ORG
782VMW-121	1138757	1174778	cis-1,2-DICHLOROETHYLENE	31-Dec-08	ND	0	0.0001	ND	ORG
782VMW-121D	1138753	1174762	VINYL CHLORIDE	31-Dec-08	1.81000008597039E-02	0.018100001	0.00033		ORG
782VMW-121D	1138753	1174762	cis-1,2-DICHLOROETHYLENE	31-Dec-08	ND	0	0.0001	ND	ORG
782VMW-121D	1138753	1174762	TRICHLOROETHYLENE (TCE)	31-Dec-08	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	28-Dec-04	1.60000007599592E-03	0.0016	0.0001		ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	28-Dec-04	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	28-Dec-04	1.70000008074567E-02	0.017000001	0.0001		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	05-Apr-05	ND	0	0.0001	ND	ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	14-Nov-06	0.014	0.014	0.0001		ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	14-Nov-06	3.81000018096529E-02	0.038100002	0.0001		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	28-Dec-04	1.20000005699694E-02	0.012000001	0.0001		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	28-Dec-04	1.80000008549541E-02	0.018000001	0.0001		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	28-Dec-04	8.00000037997961E-03	0.008	0.0001		ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	28-Dec-04	ND	0	0.0001	ND	ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	28-Dec-04	5.80000027548522E-02	0.058000003	0.0001		ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	28-Dec-04	5.20000024698675E-04	0.00052	0.0001	TR	ORG
782VMW-84D	1138002	1174797	TRICHLOROETHYLENE (TCE)	31-Dec-08	ND	0	0.0001	ND	ORG
782VMW-84D	1138002	1174797	cis-1,2-DICHLOROETHYLENE	31-Dec-08	ND	0	0.0001	ND	ORG
782VMW-84D	1138002	1174797	VINYL CHLORIDE	31-Dec-08	ND	0	0.00033	ND	ORG
782VMW-96	1137546	1174604	cis-1,2-DICHLOROETHYLENE	05-Apr-05	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	VINYL CHLORIDE	05-Apr-05	0.130000006174669	0.130000006	0.0001		ORG
782VMW-96	1137546	1174604	TRICHLOROETHYLENE (TCE)	05-Apr-05	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	05-Apr-05	0.031000001472421	0.031000001	0.0001		ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	05-Apr-05	5.40000025648624E-02	0.054000003	0.0001		ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	05-Apr-05	ND	0	0.0001	ND	ORG
782VMW-100	1138716	1174895	VINYL CHLORIDE	05-Apr-05	ND	0	0.00019	ND	ORG
782VMW-100	1138716	1174895	TRICHLOROETHYLENE (TCE)	05-Apr-05	ND	0	0.00016	ND	ORG
782VMW-100	1138716	1174895	cis-1,2-DICHLOROETHYLENE	05-Apr-05	ND	0	0.00014	ND	ORG

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WellName	XCoord	YCoord	Constituent	SampleDate	Result(mg/L)	ResultNumber(mg/L)	DetLim	Flags	ConstType
782VMW-101	1138911	1174658	VINYL CHLORIDE	24-Sep-08	0.00202	0.00202	0.0005		ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	05-Apr-05	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	24-Sep-08	ND	0	0.00016	ND	ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	30-Dec-08	ND	0	0.00066	ND	ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	30-Dec-08	1.88000008929521E-03	0.00188	0.0002	TR	ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	14-Nov-06	7.97000037855469E-03	0.00797	0.0001		ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	15-Apr-09	ND	0	0.00066	ND	ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	15-Apr-09	0.0013	0.0013	0.0002	TR	ORG
782VMW-121	1138757	1174778	TRICHLOROETHYLENE (TCE)	25-Mar-09	ND	0	0.0001	ND	ORG
782VMW-121	1138757	1174778	cis-1,2-DICHLOROETHYLENE	25-Mar-09	ND	0	0.0001	ND	ORG
782VMW-121	1138757	1174778	VINYL CHLORIDE	25-Mar-09	1.27000006032176E-02	0.012700001	0.00033		ORG
782VMW-121D	1138753	1174762	VINYL CHLORIDE	25-Mar-09	1.29000006127171E-02	0.012900001	0.00033		ORG
782VMW-121D	1138753	1174762	cis-1,2-DICHLOROETHYLENE	25-Mar-09	ND	0	0.0001	ND	ORG
782VMW-121D	1138753	1174762	TRICHLOROETHYLENE (TCE)	25-Mar-09	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	05-Apr-05	8.90000042272732E-04	0.00089	0.0001	TR	ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	05-Apr-05	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	05-Apr-05	8.2000003894791E-03	0.0082	0.0001		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	14-Nov-06	ND	0	0.0001	ND	ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	05-Apr-05	9.80000046547502E-03	0.0098	0.0001		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	05-Apr-05	8.50000040372834E-03	0.0085	0.0001		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	05-Apr-05	1.60000007599592E-02	0.016000001	0.0001		ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	05-Apr-05	5.90000028023496E-02	0.059000003	0.0001		ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	05-Apr-05	ND	0	0.0001	ND	ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	05-Apr-05	6.2000002944842E-04	0.00062	0.0001	TR	ORG
782VMW-84D	1138002	1174797	VINYL CHLORIDE	25-Mar-09	8.83000041940249E-03	0.00883	0.00033		ORG
782VMW-84D	1138002	1174797	cis-1,2-DICHLOROETHYLENE	25-Mar-09	ND	0	0.0001	ND	ORG
782VMW-84D	1138002	1174797	TRICHLOROETHYLENE (TCE)	25-Mar-09	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	05-Apr-05	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	05-Apr-05	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	05-Apr-05	9.80000046547502E-03	0.0098	0.0001		ORG
782VMW-96	1137546	1174604	TRICHLOROETHYLENE (TCE)	14-Nov-06	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	VINYL CHLORIDE	14-Nov-06	6.82000032393262E-02	0.068200003	7.6E-05		ORG
782VMW-96	1137546	1174604	cis-1,2-DICHLOROETHYLENE	14-Nov-06	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	14-Nov-06	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	14-Nov-06	1.74000008264557E-02	0.017400001	0.0001		ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	14-Nov-06	4.39000020851381E-02	0.043900002	0.0001		ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	15-Nov-06	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	30-Dec-08	2.09000009926967E-03	0.00209	0.00033		ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	30-Dec-08	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	24-Sep-08	2.39000011351891E-02	0.023900001	0.0001		ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	15-Nov-06	9.90000047022477E-04	0.00099	3.2E-05	TR	ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	15-Nov-06	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	15-Nov-06	1.03000004892237E-02	0.0103	0.0001		ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	25-Sep-08	0.016	0.016	0.001		ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	25-Jun-08	0.042000001994893	0.042000002	0.00032		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	25-Sep-08	ND	0	0.0001	ND	ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	14-Nov-06	2.70000012824312E-03	0.0027	0.0001		ORG

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WellName	XCoord	YCoord	Constituent	SampleDate	Result(mg/L)	ResultNumber(mg/L)	DetLim	Flags	ConstType
782VMW-81	1136785	1174370	VINYL CHLORIDE	14-Nov-06	8.86000042082742E-03	0.00886	3.8E-05		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	14-Nov-06	1.15000005462207E-02	0.011500001	3.2E-05		ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	15-Nov-06	4.60000021848828E-04	0.00046	6.4E-05	TR	ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	15-Nov-06	3.17000015056692E-02	0.031700002	0.0001		ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	15-Nov-06	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	15-Nov-06	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	14-Nov-06	ND	0	6.4E-05	ND	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	15-Nov-06	5.46000025933608E-02	0.054600003	0.0001		ORG
782VMW-96	1137546	1174604	VINYL CHLORIDE	25-Sep-08	0.0496	0.0496	0.0005		ORG
782VMW-96	1137546	1174604	TRICHLOROETHYLENE (TCE)	25-Sep-08	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	24-Sep-08	1.08000005129725E-02	0.010800001	0.0005		ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	24-Sep-08	2.30000010924414E-02	0.023000001	0.00016		ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	24-Sep-08	ND	0	0.0001	ND	ORG
782VMW-100	1138716	1174895	cis-1,2-DICHLOROETHYLENE	26-Sep-08	ND	0	0.00016	ND	ORG
782VMW-100	1138716	1174895	VINYL CHLORIDE	26-Sep-08	ND	0	0.0005	ND	ORG
782VMW-100	1138716	1174895	TRICHLOROETHYLENE (TCE)	26-Sep-08	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	24-Sep-08	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	26-Mar-09	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	30-Dec-08	0.024700001173187	0.024700001	0.0002		ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	17-Jun-09	ND	0	0.00066	ND	ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	17-Jun-09	7.20000034198165E-04	0.00072	0.0002	TR	ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	24-Sep-08	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	24-Sep-08	7.54000035813078E-03	0.00754	0.0005		ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	24-Sep-08	6.30000029923394E-04	0.00063	0.00016	TR	ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	24-Sep-08	3.49000016576611E-03	0.00349	0.0001		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	24-Sep-08	5.68000026978552E-03	0.00568	0.0005		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	24-Sep-08	1.40000006649643E-02	0.014000001	0.00016		ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	26-Sep-08	3.23000015341677E-02	0.032300002	0.0005		ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	26-Sep-08	ND	0	0.0001	ND	ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	26-Sep-08	4.2000001994893E-04	0.00042	0.00016	TR	ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	31-Dec-08	ND	0	0.00033	ND	ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	26-Sep-08	ND	0	0.00016	ND	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	26-Sep-08	1.72000008169562E-02	0.017200001	0.0005		ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	26-Sep-09	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	cis-1,2-DICHLOROETHYLENE	25-Sep-08	ND	0	0.00016	ND	ORG
782VMW-100	1138716	1174895	cis-1,2-DICHLOROETHYLENE	31-Dec-08	ND	0	0.0001	ND	ORG
782VMW-100	1138716	1174895	VINYL CHLORIDE	31-Dec-08	ND	0	0.00033	ND	ORG
782VMW-100	1138716	1174895	TRICHLOROETHYLENE (TCE)	31-Dec-08	ND	0	0.0001	ND	ORG
782VMW-98	1136360	1173953	VINYL CHLORIDE	09-Dec-03	ND	0	0.00019	ND	ORG
782VMW-98	1136360	1173953	TRICHLOROETHYLENE (TCE)	09-Dec-03	ND	0	0.00016	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	31-Dec-08	1.30000006174669E-02	0.013000001	0.00033		ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	31-Dec-08	2.39000011351891E-02	0.023900001	0.0001		ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	31-Dec-08	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	26-Mar-09	1.85000008787028E-03	0.00185	0.00033		ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	30-Dec-08	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	15-Apr-09	1.78000008454546E-02	0.017800001	0.0002		ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	31-Dec-08	ND	0	0.0001	ND	ORG

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WellName	XCoord	YCoord	Constituent	SampleDate	Result(mg/L)	ResultNumber(mg/L)	DetLim	Flags	ConstType
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	31-Dec-08	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	31-Dec-08	ND	0	0.00033	ND	ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	31-Dec-08	4.28000020328909E-02	0.042800002	0.0002		ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	31-Dec-08	0.0106	0.0106	0.00066		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	31-Dec-08	ND	0	0.0002	ND	ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	30-Dec-08	0.006670000316808	0.00667	0.00033		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	30-Dec-08	4.81000022846274E-03	0.00481	0.0001		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	30-Dec-08	1.84000008739531E-02	0.018400001	0.0001		ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	26-Mar-09	3.98000018903986E-02	0.039800002	0.00033		ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	31-Dec-08	ND	0	0.0001	ND	ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	31-Dec-08	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	15-Apr-09	3.51000016671605E-02	0.035100002	0.00033		ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	15-Apr-09	ND	0	0.005	ND	ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	15-Apr-09	ND	0	0.0001	ND	ORG
782VMW-96	1137546	1174604	TRICHLOROETHYLENE (TCE)	31-Dec-08	ND	0	0.0002	ND	ORG
782VMW-96	1137546	1174604	cis-1,2-DICHLOROETHYLENE	31-Dec-08	ND	0	0.0002	ND	ORG
782VMW-96	1137546	1174604	VINYL CHLORIDE	31-Dec-08	5.09000024176203E-02	0.050900002	0.00066		ORG
AP2MW-3	1138744	1174551	VINYL CHLORIDE	01-Jul-04	ND	0	0.015000001	ND	ORG
AP2MW-3	1138744	1174551	cis-1,2-DICHLOROETHYLENE	01-Jul-04	ND	0	0.011000001	ND	ORG
AP2MW-3	1138744	1174551	cis-1,2-DICHLOROETHYLENE	21-Sep-04	ND	0	0.0071	ND	ORG
AP2MW-3	1138744	1174551	VINYL CHLORIDE	21-Sep-04	ND	0	0.0097	ND	ORG
AP2MW-3	1138744	1174551	TRICHLOROETHYLENE (TCE)	01-Jul-04	ND	0	0.013000001	ND	ORG
AP2MW-3	1138744	1174551	TRICHLOROETHYLENE (TCE)	21-Sep-04	ND	0	0.0081	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	26-Mar-09	0.010200000484474	0.0102	0.00033		ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	26-Mar-09	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	26-Mar-09	1.66000007884577E-02	0.016600001	0.0001		ORG
782VMW-100	1138716	1174895	VINYL CHLORIDE	25-Mar-09	ND	0	0.00033	ND	ORG
782VMW-100	1138716	1174895	cis-1,2-DICHLOROETHYLENE	25-Mar-09	ND	0	0.0001	ND	ORG
782VMW-100	1138716	1174895	TRICHLOROETHYLENE (TCE)	25-Mar-09	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	16-Jun-09	1.20000005699694E-04	0.00012	0.0001	TR	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	16-Jun-09	2.69000012776814E-03	0.00269	0.00033		ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	26-Mar-09	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	15-Apr-09	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	15-Apr-09	7.7300003671553E-03	0.00773	0.00033		ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	15-Apr-09	6.70000031823292E-04	0.00067	0.0001	TR	ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	26-Mar-09	3.96000018808991E-02	0.039600002	0.0002		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	26-Mar-09	ND	0	0.0002	ND	ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	26-Mar-09	6.50000030873343E-03	0.0065	0.00066		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	15-Apr-09	3.73000017716549E-03	0.00373	0.00033		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	15-Apr-09	4.89000023226254E-03	0.00489	0.0001		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	15-Apr-09	1.80000008549541E-02	0.018000001	0.0001		ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	26-Mar-09	4.60000021848828E-04	0.00046	0.0001	TR	ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	17-Jun-09	0.0422	0.0422	0.00033		ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	26-Mar-09	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	16-Jun-09	ND	0	0.0005	ND	ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	16-Jun-09	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	16-Jun-09	0.0626	0.0626	0.00033		ORG

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WellName	XCoord	YCoord	Constituent	SampleDate	Result(mg/L)	ResultNumber(mg/L)	DetLim	Flags	ConstType
782VMW-96	1137546	1174604	cis-1,2-DICHLOROETHYLENE	26-Mar-09	ND	0	0.0002	ND	ORG
782VMW-96	1137546	1174604	VINYL CHLORIDE	26-Mar-09	4.66000022133812E-02	0.046600002	0.00066		ORG
782VMW-96	1137546	1174604	TRICHLOROETHYLENE (TCE)	26-Mar-09	ND	0	0.0002	ND	ORG
782VMW-98	1136360	1173953	cis-1,2-DICHLOROETHYLENE	31-Mar-04	ND	0	0.00014	ND	ORG
782VMW-98	1136360	1173953	VINYL CHLORIDE	31-Mar-04	ND	0	0.00019	ND	ORG
782VMW-98	1136360	1173953	TRICHLOROETHYLENE (TCE)	31-Mar-04	ND	0	0.00016	ND	ORG
AP2MW-3	1138744	1174551	TRICHLOROETHYLENE (TCE)	26-Sep-08	ND	0	0.0001	ND	ORG
AP2MW-3	1138744	1174551	cis-1,2-DICHLOROETHYLENE	26-Sep-08	ND	0	0.00016	ND	ORG
AP2MW-3	1138744	1174551	VINYL CHLORIDE	24-Sep-08	ND	0	0.0005	ND	ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	16-Jun-09	ND	0	0.0001	ND	ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	16-Jun-09	3.22000015294179E-02	0.032200002	0.0001		ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	16-Jun-09	1.81000008597039E-02	0.018100001	0.00033		ORG
782VMW-100	1138716	1174895	VINYL CHLORIDE	17-Jun-09	ND	0	0.00033	ND	ORG
782VMW-100	1138716	1174895	cis-1,2-DICHLOROETHYLENE	17-Jun-09	ND	0	0.0001	ND	ORG
782VMW-100	1138716	1174895	TRICHLOROETHYLENE (TCE)	17-Jun-09	ND	0	0.0001	ND	ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	16-Jun-09	ND	0	0.0001	ND	ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	17-Jun-09	0.0072	0.0072	0.0002		ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	16-Jun-09	ND	0	0.0001	ND	ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	16-Jun-09	1.0200000484474E-03	0.00102	0.0001		ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	16-Jun-09	1.51000007172115E-02	0.015100001	0.00033		ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	16-Jun-09	0.045900002180133	0.045900002	0.0002		ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	16-Jun-09	6.78000032203272E-03	0.00678	0.00066		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	16-Jun-09	ND	0	0.0002	ND	ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	16-Jun-09	0.021200001006946	0.021200001	0.0001		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	16-Jun-09	4.45000021136366E-03	0.00445	0.00033		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	16-Jun-09	6.72000031918287E-03	0.00672	0.0001		ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	17-Jun-09	ND	0	0.0001	ND	ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	17-Jun-09	0.00056	0.00056	0.0002	TR	ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	23-Sep-09	ND	0	0.0001	ND	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	23-Sep-09	0.0546	0.0546	0.00165		ORG
782VMW-96	1137546	1174604	TRICHLOROETHYLENE (TCE)	17-Jun-09	ND	0	0.0002	ND	ORG
782VMW-96	1137546	1174604	cis-1,2-DICHLOROETHYLENE	17-Jun-09	ND	0	0.0002	ND	ORG
782VMW-96	1137546	1174604	VINYL CHLORIDE	17-Jun-09	2.83000013441779E-02	0.028300001	0.00066		ORG
782VMW-98	1136360	1173953	cis-1,2-DICHLOROETHYLENE	14-Nov-06	ND	0	0.00014	ND	ORG
782VMW-98	1136360	1173953	cis-1,2-DICHLOROETHYLENE	24-Sep-08	ND	0	0.00016	ND	ORG
782VMW-98	1136360	1173953	VINYL CHLORIDE	14-Nov-06	ND	0	0.00019	ND	ORG
782VMW-98	1136360	1173953	TRICHLOROETHYLENE (TCE)	14-Nov-06	ND	0	0.00016	ND	ORG
782VMW-98	1136360	1173953	TRICHLOROETHYLENE (TCE)	24-Sep-08	ND	0	0.0001	ND	ORG
782VMW-98	1136360	1173953	VINYL CHLORIDE	24-Sep-08	ND	0	0.0005	ND	ORG
782VMW-100	1138716	1174895	cis-1,2-DICHLOROETHYLENE	21-Sep-09	ND	0	0.00014	ND	ORG
782VMW-100	1138716	1174895	TRICHLOROETHYLENE (TCE)	21-Sep-09	ND	0	0.00016	ND	ORG
782VMW-100	1138716	1174895	VINYL CHLORIDE	21-Sep-09	ND	0	0.00019	ND	ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	21-Sep-09	ND	0	0.00014	ND	ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	21-Sep-09	ND	0	0.00016	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	21-Sep-09	0.00238	0.00238	0.00019		ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	21-Sep-09	0.003	0.003	0.00016		ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	21-Sep-09	0.0396	0.0396	0.00019		ORG

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WellName	XCoord	YCoord	Constituent	SampleDate	Result(mg/L)	ResultNumber(mg/L)	DetLim	Flags	ConstType
782VMW-105B	1136605	1174208	VINYL CHLORIDE	21-Sep-09	ND	0	0.00014	ND	ORG
782VMW-121	1138757	1174778	cis-1,2-DICHLOROETHYLENE	17-Jun-09	ND	0	0.00014	ND	ORG
782VMW-121	1138757	1174778	TRICHLOROETHYLENE (TCE)	17-Jun-09	ND	0	0.00016	ND	ORG
782VMW-121	1138757	1174778	VINYL CHLORIDE	17-Jun-09	0.0118	0.0118	0.00019		ORG
782VMW-121D	1138753	1174762	cis-1,2-DICHLOROETHYLENE	16-Jun-09	ND	0	0.00011	ND	ORG
782VMW-121D	1138753	1174762	TRICHLOROETHYLENE (TCE)	16-Jun-09	ND	0	0.00016	ND	ORG
782VMW-121D	1138753	1174762	VINYL CHLORIDE	16-Jun-09	0.0233	0.0233	0.00019		ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	21-Sep-09	0.00091	0.00091	0.00014	TR	ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	21-Sep-09	ND	0	0.00016	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	21-Sep-09	0.013	0.013	0.00019		ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	21-Sep-09	0.0463	0.0463	0.00014		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	21-Sep-09	ND	0	0.00016	ND	ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	21-Sep-09	0.0105	0.0105	0.00019		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	21-Sep-09	0.0234	0.0234	0.00014		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	21-Sep-09	0.00482	0.00482	0.00016		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	21-Sep-09	0.00455	0.00455	0.00019		ORG
AP2MW-3	1138744	1174551	cis-1,2-DICHLOROETHYLENE	21-Sep-09	ND	0	0.00011	ND	ORG
AP2MW-3	1138744	1174551	TRICHLOROETHYLENE (TCE)	21-Sep-09	ND	0	0.00016	ND	ORG
AP2MW-3	1138744	1174551	VINYL CHLORIDE	21-Sep-09	ND	0	0.00019	ND	ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	23-Sep-09	0.0201	0.0201	0.00014		ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	23-Sep-09	ND	0	0.00016	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	23-Sep-09	0.0121	0.0121	0.00019		ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	23-Sep-09	0.0005	0.0005	0.00014	TR	ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	23-Sep-09	ND	0	0.00016	ND	ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	23-Sep-09	0.0394	0.0394	0.00019		ORG
782VMW-84D	1138002	1174797	cis-1,2-DICHLOROETHYLENE	17-Jun-09	ND	0	0.0001	ND	ORG
782VMW-84D	1138002	1174797	TRICHLOROETHYLENE (TCE)	17-Jun-09	ND	0	0.00016	ND	ORG
782VMW-84D	1138002	1174797	VINYL CHLORIDE	17-Jun-09	0.0018	0.0018	0.00019		ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	23-Sep-09	ND	0	0.00014	ND	ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	19-Apr-10	ND	0	0.00016	ND	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	19-Apr-10	0.00231	0.00231	0.00019		ORG
782VMW-100	1138716	1174895	cis-1,2-DICHLOROETHYLENE	15-Apr-10	ND	0	0.00014	ND	ORG
782VMW-100	1138716	1174895	TRICHLOROETHYLENE (TCE)	15-Apr-10	ND	0	0.00016	ND	ORG
782VMW-100	1138716	1174895	VINYL CHLORIDE	15-Apr-10	ND	0	0.00019	ND	ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	15-Apr-10	ND	0	0.00014	ND	ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	15-Apr-10	ND	0	0.00016	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	15-Apr-10	0.00527	0.00527	0.00019		ORG
782VMW-121	1138757	1174778	TRICHLOROETHYLENE (TCE)	21-Sep-09	ND	0	0.00014	ND	ORG
782VMW-121	1138757	1174778	VINYL CHLORIDE	21-Sep-10	0.0218	0.0218	0.00016		ORG
782VMW-121	1138757	1174778	cis-1,2-DICHLOROETHYLENE	21-Sep-09	ND	0	0.00019	ND	ORG
782VMW-121D	1138753	1174762	cis-1,2-DICHLOROETHYLENE	21-Sep-09	ND	0	0.00011	ND	ORG
782VMW-121D	1138753	1174762	TRICHLOROETHYLENE (TCE)	21-Sep-09	ND	0	0.00016	ND	ORG
782VMW-121D	1138753	1174762	VINYL CHLORIDE	21-Sep-09	0.0185	0.0185	0.00019		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	15-Apr-10	0.0287	0.0287	0.00014		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	15-Apr-10	0.00442	0.00442	0.00016		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	15-Apr-10	0.00468	0.00468	0.00019		ORG
AP2MW-3	1138744	1174551	cis-1,2-DICHLOROETHYLENE	15-Apr-10	ND	0	0.00011	ND	ORG

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WellName	XCoord	YCoord	Constituent	SampleDate	Result(mg/L)	ResultNumber(mg/L)	DetLim	Flags	ConstType
AP2MW-3	1138744	1174551	TRICHLOROETHYLENE (TCE)	15-Apr-10	ND	0	0.00016	ND	ORG
AP2MW-3	1138744	1174551	VINYL CHLORIDE	15-Apr-10	ND	0	0.00019	ND	ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	19-Apr-10	0.0127	0.0127	0.00014		ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	19-Apr-10	ND	0	0.00016	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	19-Apr-10	0.00722	0.00722	0.00019		ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	15-Apr-10	0.0047	0.0047	0.00014		ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	15-Apr-10	0.0348	0.0348	0.00016		ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	15-Apr-10	ND	0	0.00019	ND	ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	19-Apr-10	0.00099	0.00099	0.00014	TR	ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	19-Apr-10	ND	0	0.00016	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	19-Apr-10	0.01	0.01	0.00019		ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	19-Apr-10	0.0434	0.0434	0.00014		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	19-Apr-10	ND	0	0.00016	ND	ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	19-Apr-10	0.00942	0.00942	0.00019		ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	19-Apr-10	0.00056	0.00056	0.00014	TR	ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	19-Apr-10	ND	0	0.00016	ND	ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	19-Apr-10	0.0395	0.0395	0.00019		ORG
782VMW-84D	1138002	1174797	cis-1,2-DICHLOROETHYLENE	23-Sep-09	0.00011	0.00011	0.0001	TR	ORG
782VMW-84D	1138002	1174797	TRICHLOROETHYLENE (TCE)	23-Sep-09	ND	0	0.00016	ND	ORG
782VMW-84D	1138002	1174797	VINYL CHLORIDE	23-Sep-09	0.0128	0.0128	0.00019		ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	19-Apr-10	0.00059	0.00059	0.00014	TR	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	28-Sep-10	0.0486	0.0486	0.00019		ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	28-Sep-10	0.0402	0.0402	0.00014		ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	28-Sep-10	ND	0	0.00016	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	28-Sep-10	0.0202	0.0202	0.00019		ORG
782VMW-100	1138716	1174895	cis-1,2-DICHLOROETHYLENE	28-Sep-10	ND	0	0.00014	ND	ORG
782VMW-100	1138716	1174895	TRICHLOROETHYLENE (TCE)	28-Sep-10	ND	0	0.00016	ND	ORG
782VMW-100	1138716	1174895	VINYL CHLORIDE	28-Sep-10	ND	0	0.00019	ND	ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	28-Sep-10	ND	0	0.00014	ND	ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	28-Sep-10	ND	0	0.00016	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	28-Sep-10	0.00293	0.00293	0.00019		ORG
782VMW-121	1138757	1174778	cis-1,2-DICHLOROETHYLENE	15-Apr-09	ND	0	0.00014	ND	ORG
782VMW-121	1138757	1174778	TRICHLOROETHYLENE (TCE)	15-Apr-10	ND	0	0.00016	ND	ORG
782VMW-121	1138757	1174778	VINYL CHLORIDE	15-Apr-10	0.0175	0.0175	0.00019		ORG
782VMW-121D	1138753	1174762	cis-1,2-DICHLOROETHYLENE	15-Apr-10	ND	0	0.00011	ND	ORG
782VMW-121D	1138753	1174762	TRICHLOROETHYLENE (TCE)	15-Apr-10	ND	0	0.00016	ND	ORG
782VMW-121D	1138753	1174762	VINYL CHLORIDE	15-Apr-10	0.0155	0.0155	0.00019		ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	28-Sep-10	0.00096	0.00096	0.00014	TR	ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	28-Sep-10	ND	0	0.00016	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	28-Sep-10	0.0106	0.0106	0.00019		ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	28-Sep-10	0.046	0.046	0.00014		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	28-Sep-10	ND	0	0.00016	ND	ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	28-Sep-10	0.0076	0.0076	0.00019		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	28-Sep-10	0.0239	0.0239	0.00014		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	28-Sep-10	0.00385	0.00385	0.00016		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	28-Sep-10	0.00414	0.00414	0.00019		ORG
782VMW-84D	1138002	1174797	cis-1,2-DICHLOROETHYLENE	19-Apr-10	0.00014	0.00014	0.0001	TR	ORG

COC Data

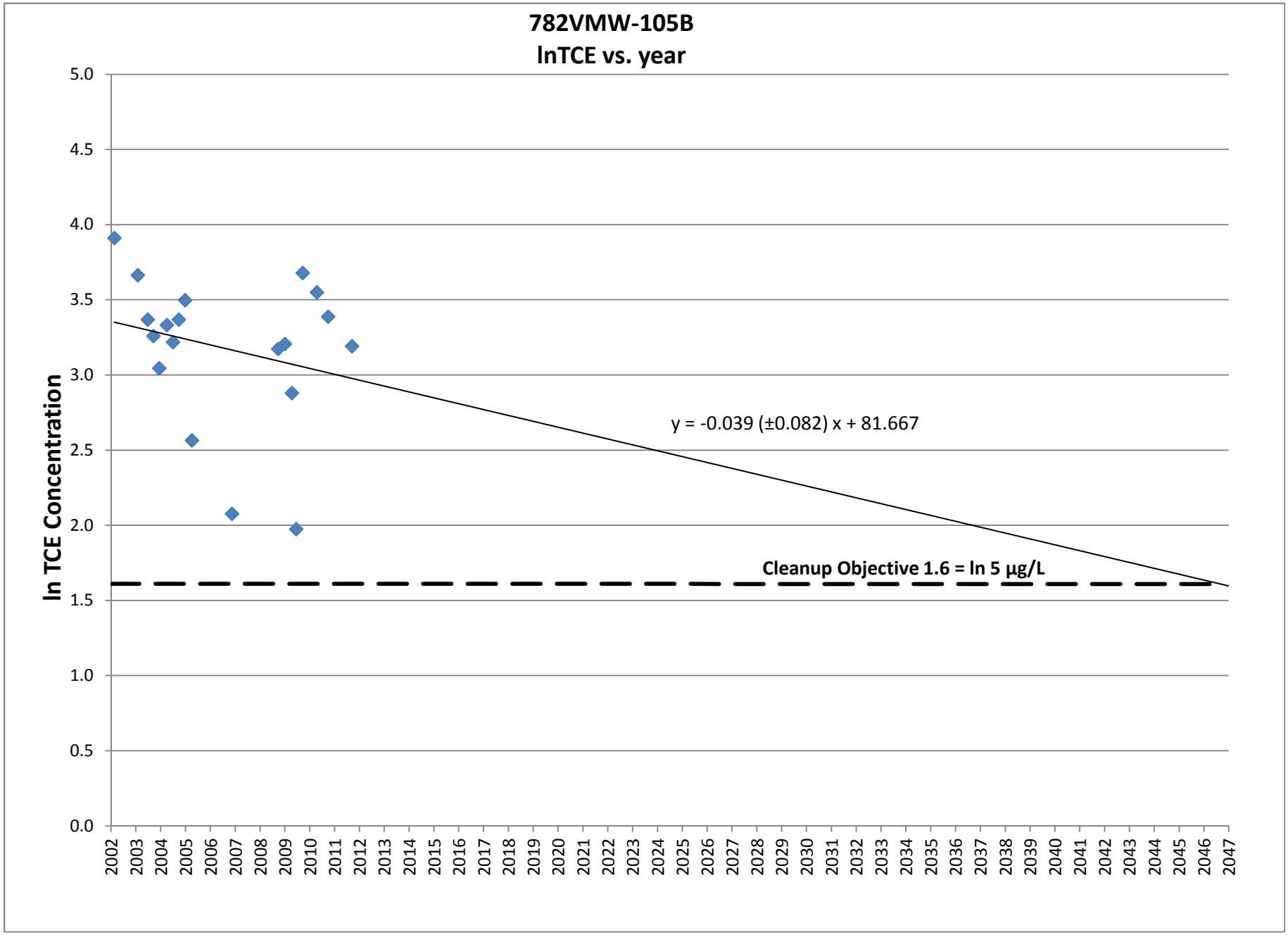
WellName	XCoord	YCoord	Constituent	SampleDate	Result(mg/L)	ResultNumber(mg/L)	DetLim	Flags	ConstType
782VMW-84D	1138002	1174797	TRICHLOROETHYLENE (TCE)	19-Apr-10	ND	0	0.00016	ND	ORG
782VMW-93	1137325	1174570	VINYL CHLORIDE	05-Apr-11	0.0459	0.0459	0.00014		ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	28-Sep-10	ND	0	0.00016	ND	ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	28-Sep-10	ND	0	0.00019	ND	ORG
AP2MW-3	1138744	1174551	VINYL CHLORIDE	28-Sep-10	ND	0	0.00011	ND	ORG
AP2MW-3	1138744	1174551	cis-1,2-DICHLOROETHYLENE	28-Sep-10	ND	0	0.00016	ND	ORG
AP2MW-3	1138744	1174551	TRICHLOROETHYLENE (TCE)	28-Sep-10	ND	0	0.00019	ND	ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	29-Sep-10	ND	0	0.00014	ND	ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	29-Sep-10	0.00483	0.00483	0.00016		ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	29-Sep-10	0.0296	0.0296	0.00019		ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	29-Sep-10	0.0373	0.0373	0.00014		ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	29-Sep-10	0.00041	0.00041	0.00016	TR	ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	29-Sep-10	ND	0	0.00019	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	05-Apr-11	0.0201	0.0201	0.00014		ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	05-Apr-11	0.04	0.04	0.00016		ORG
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	05-Apr-11	ND	0	0.00019	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	05-Apr-11	0.00805	0.00805	0.00014		ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	05-Apr-11	0.00097	0.00097	0.00016	TR	ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	05-Apr-11	ND	0	0.00019	ND	ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	05-Apr-11	0.0446	0.0446	0.00014		ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	05-Apr-11	0.00073	0.00073	0.00016	TR	ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	05-Apr-11	ND	0	0.00019	ND	ORG
782VMW-93	1137325	1174570	cis-1,2-DICHLOROETHYLENE	05-Apr-11	ND	0	0.00016	ND	ORG
782VMW-93	1137325	1174570	TRICHLOROETHYLENE (TCE)	05-Apr-11	ND	0	0.00019	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	06-Apr-11	0.00577	0.00577	0.00014		ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	06-Apr-11	ND	0	0.00016	ND	ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	06-Apr-11	ND	0	0.00019	ND	ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	06-Apr-11	ND	0	0.00014	ND	ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	06-Apr-11	0.00326	0.00326	0.00016		ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	06-Apr-11	0.0436	0.0436	0.00019		ORG
782VMW-121	1138757	1174778	VINYL CHLORIDE	28-Sep-10	0.0192	0.0192	0.00014		ORG
782VMW-121	1138757	1174778	cis-1,2-DICHLOROETHYLENE	28-Sep-10	ND	0	0.00016	ND	ORG
782VMW-121	1138757	1174778	TRICHLOROETHYLENE (TCE)	28-Sep-10	ND	0	0.00019	ND	ORG
782VMW-121D	1138753	1174762	VINYL CHLORIDE	28-Sep-10	ND	0	0.00011	ND	ORG
782VMW-121D	1138753	1174762	cis-1,2-DICHLOROETHYLENE	28-Sep-10	ND	0	0.00016	ND	ORG
782VMW-121D	1138753	1174762	TRICHLOROETHYLENE (TCE)	28-Sep-10	ND	0	0.00019	ND	ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	06-Apr-11	0.00878	0.00878	0.00014		ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	06-Apr-11	0.0569	0.0569	0.00016		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	06-Apr-11	ND	0	0.00019	ND	ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	06-Apr-11	0.00535	0.00535	0.00014		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	06-Apr-11	0.0324	0.0324	0.00016		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	06-Apr-11	0.00567	0.00567	0.00019		ORG
782VMW-100	1138716	1174895	VINYL CHLORIDE	07-Apr-11	ND	0	0.00014	ND	ORG
782VMW-100	1138716	1174895	cis-1,2-DICHLOROETHYLENE	07-Apr-11	ND	0	0.00016	ND	ORG
782VMW-100	1138716	1174895	TRICHLOROETHYLENE (TCE)	07-Apr-11	ND	0	0.00019	ND	ORG
782VMW-84D	1138002	1174797	VINYL CHLORIDE	19-Apr-10	0.0109	0.0109	0.00019		ORG
782MW-10	1137498	1174740	cis-1,2-DICHLOROETHYLENE	13-Sep-11	0.0285	0.0285	0.00014		ORG

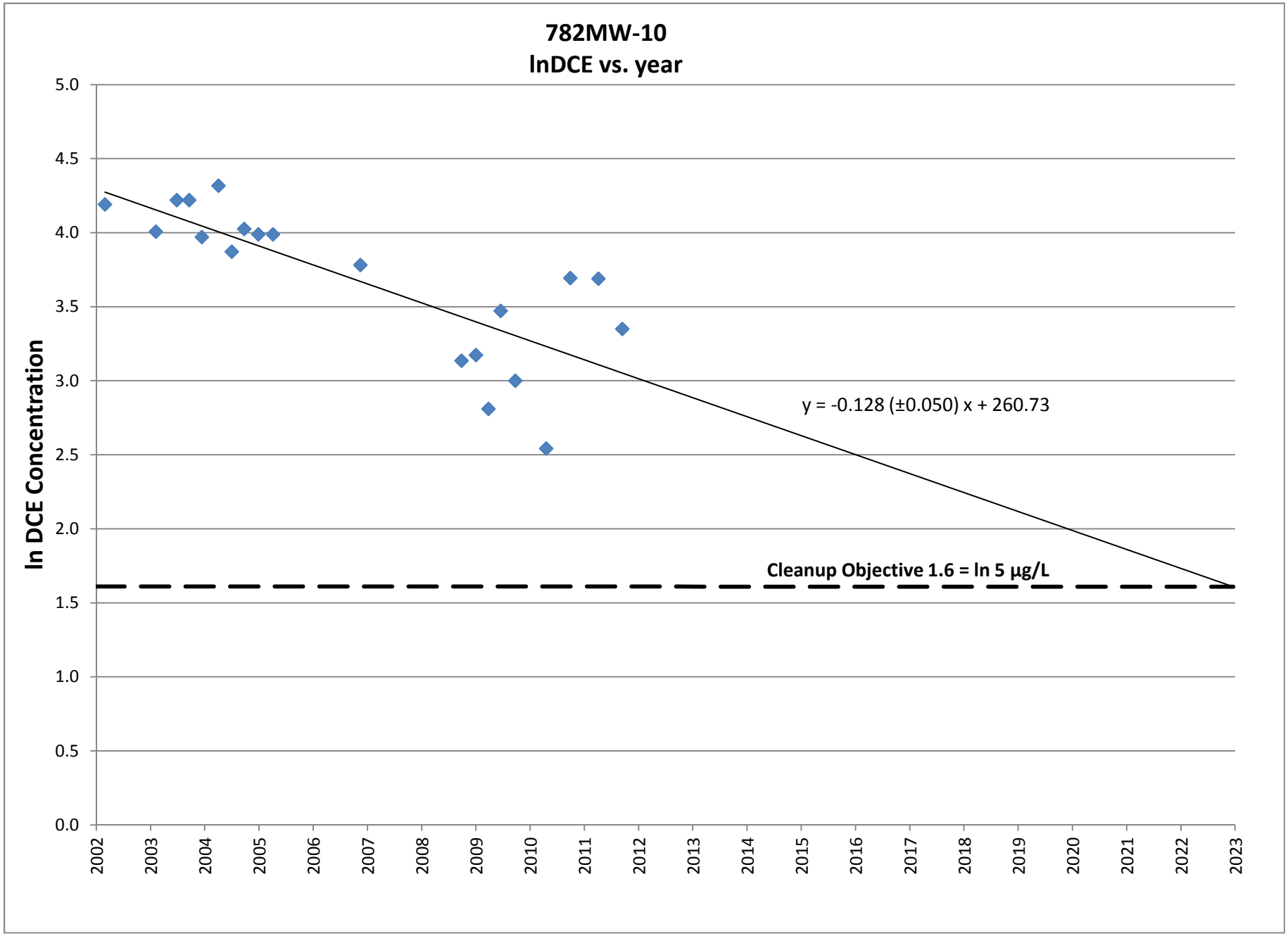
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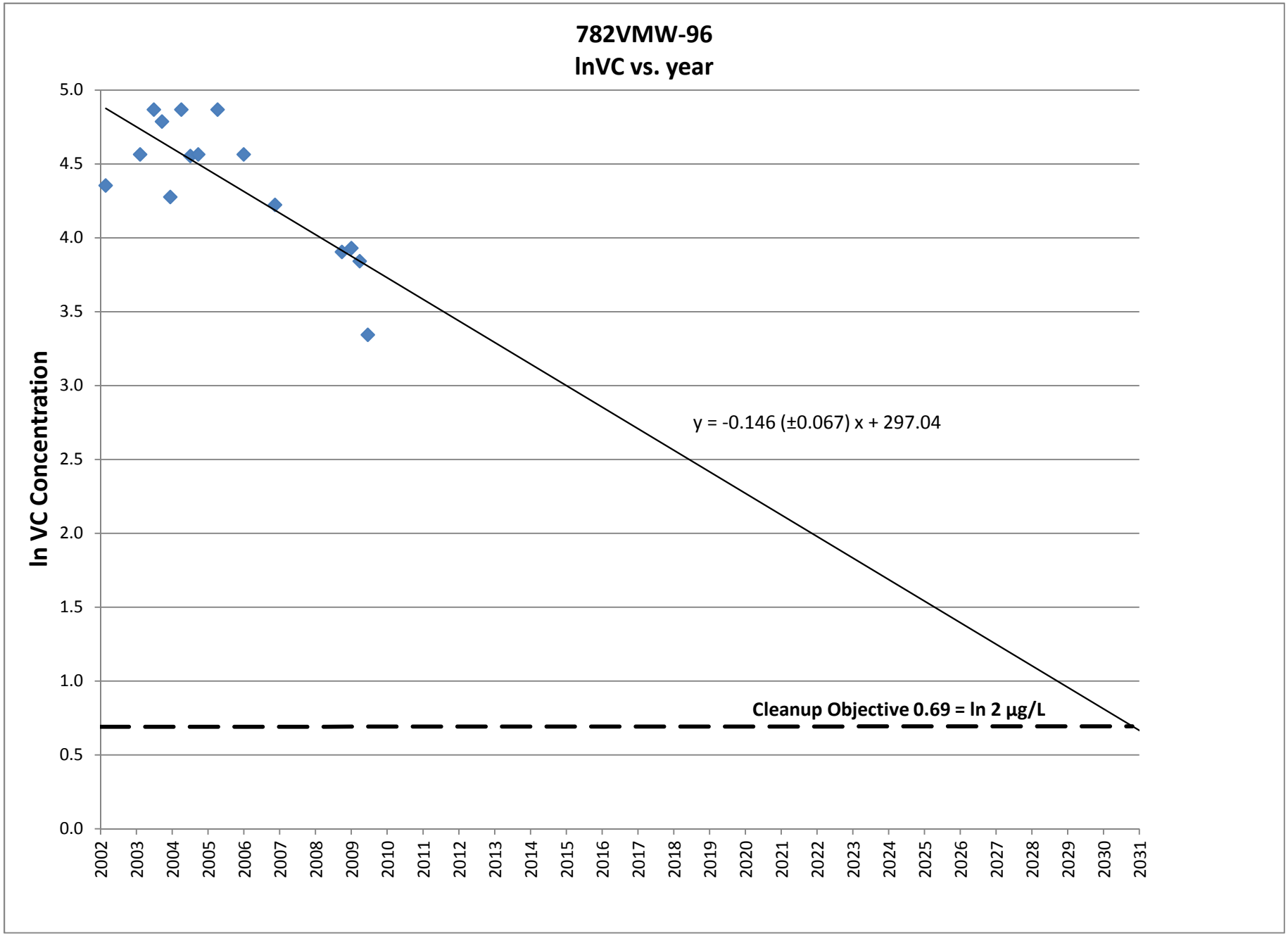
WellName	XCoord	YCoord	Constituent	SampleDate	Result(mg/L)	ResultNumber(mg/L)	DetLim	Flags	ConstType
782MW-10	1137498	1174740	TRICHLOROETHYLENE (TCE)	13-Sep-11	ND	0	0.00016	ND	ORG
782MW-10	1137498	1174740	VINYL CHLORIDE	13-Sep-11	0.0138	0.0138	0.00019		ORG
782VMW-105B	1136605	1174208	cis-1,2-DICHLOROETHYLENE	13-Sep-11	0.00283	0.00283	0.00014		ORG
782VMW-105B	1136605	1174208	TRICHLOROETHYLENE (TCE)	13-Sep-11	0.0243	0.0243	0.00016		ORG
782VMW-105B	1136605	1174208	VINYL CHLORIDE	13-Sep-11	ND	0	0.00019	ND	ORG
782VMW-121	1138757	1174778	cis-1,2-DICHLOROETHYLENE	06-Apr-11	ND	0	0.00014	ND	ORG
782VMW-121	1138757	1174778	TRICHLOROETHYLENE (TCE)	06-Apr-11	ND	0	0.00016	ND	ORG
782VMW-121	1138757	1174778	VINYL CHLORIDE	06-Apr-11	0.0191	0.0191	0.00019		ORG
782VMW-78	1137026	1174579	cis-1,2-DICHLOROETHYLENE	13-Sep-11	0.0448	0.0448	0.00014		ORG
782VMW-78	1137026	1174579	TRICHLOROETHYLENE (TCE)	13-Sep-11	ND	0	0.00016	ND	ORG
782VMW-78	1137026	1174579	VINYL CHLORIDE	13-Sep-11	0.00757	0.00757	0.00019		ORG
782VMW-81	1136785	1174370	cis-1,2-DICHLOROETHYLENE	13-Sep-11	0.0268	0.0268	0.00014		ORG
782VMW-81	1136785	1174370	TRICHLOROETHYLENE (TCE)	13-Sep-11	0.00564	0.00564	0.00016		ORG
782VMW-81	1136785	1174370	VINYL CHLORIDE	13-Sep-11	0.00312	0.00312	0.00019		ORG
782VMW-84	1137984	1174816	cis-1,2-DICHLOROETHYLENE	13-Sep-11	0.00058	0.00058	0.00014	TR	ORG
782VMW-84	1137984	1174816	TRICHLOROETHYLENE (TCE)	13-Sep-11	ND	0	0.00016	ND	ORG
782VMW-84	1137984	1174816	VINYL CHLORIDE	13-Sep-11	0.0329	0.0329	0.00019		ORG
782VMW-100	1138716	1174895	cis-1,2-DICHLOROETHYLENE	14-Sep-11	ND	0	0.00014	ND	ORG
782VMW-100	1138716	1174895	TRICHLOROETHYLENE (TCE)	14-Sep-11	ND	0	0.00016	ND	ORG
782VMW-100	1138716	1174895	VINYL CHLORIDE	14-Sep-11	ND	0	0.00019	ND	ORG
782VMW-101	1138911	1174658	cis-1,2-DICHLOROETHYLENE	14-Sep-11	ND	0	0.00014	ND	ORG
782VMW-101	1138911	1174658	TRICHLOROETHYLENE (TCE)	14-Sep-11	ND	0	0.00016	ND	ORG
782VMW-101	1138911	1174658	VINYL CHLORIDE	14-Sep-11	0.00081	0.00081	0.00019	TR	ORG
782VMW-121D	1138753	1174762	cis-1,2-DICHLOROETHYLENE	06-Apr-11	ND	0	0.00011	ND	ORG
782VMW-121D	1138753	1174762	TRICHLOROETHYLENE (TCE)	06-Apr-11	ND	0	0.00016	ND	ORG
782VMW-121D	1138753	1174762	VINYL CHLORIDE	06-Apr-11	0.0223	0.0223	0.00019		ORG
782VMW-76	1137172	1174418	cis-1,2-DICHLOROETHYLENE	14-Sep-11	0.00099	0.00099	0.00014	TR	ORG
782VMW-76	1137172	1174418	TRICHLOROETHYLENE (TCE)	14-Sep-11	ND	0	0.00016	ND	ORG
782VMW-76	1137172	1174418	VINYL CHLORIDE	14-Sep-11	0.00956	0.00956	0.00019		ORG
782VMW-84D	1138002	1174797	cis-1,2-DICHLOROETHYLENE	28-Sep-10	0.00035	0.00035	0.00014	TR	ORG
782VMW-84D	1138002	1174797	TRICHLOROETHYLENE (TCE)	28-Sep-10	ND	0	0.00016	ND	ORG
782VMW-84D	1138002	1174797	VINYL CHLORIDE	28-Sep-10	0.0287	0.0287	0.00019		ORG
AP2MW-3	1138744	1174551	cis-1,2-DICHLOROETHYLENE	14-Sep-10	ND	0	0.00011	ND	ORG
AP2MW-3	1138744	1174551	TRICHLOROETHYLENE (TCE)	14-Sep-11	ND	0	0.00016	ND	ORG
AP2MW-3	1138744	1174551	VINYL CHLORIDE	14-Sep-11	ND	0	0.00019	ND	ORG
782VMW-121	1138757	1174778	VINYL CHLORIDE	13-Sep-11	0.0157	0.0157	0.00019		ORG
782VMW-121	1138757	1174778	cis-1,2-DICHLOROETHYLENE	13-Sep-11	ND	0	0.00014	ND	ORG
782VMW-121	1138757	1174778	TRICHLOROETHYLENE (TCE)	13-Sep-11	ND	0	0.00016	ND	ORG
782VMW-121D	1138753	1174762	cis-1,2-DICHLOROETHYLENE	14-Sep-11	0.00012	0.00012	0.00011	TR	ORG
782VMW-121D	1138753	1174762	TRICHLOROETHYLENE (TCE)	14-Sep-11	ND	0	0.00016	ND	ORG
782VMW-121D	1138753	1174762	VINYL CHLORIDE	14-Sep-11	0.0161	0.0161	0.00019		ORG
782VMW-84D	1138002	1174797	cis-1,2-DICHLOROETHYLENE	14-Sep-11	0.00033	0.00033	0.00014	TR	ORG
782VMW-84D	1138002	1174797	TRICHLOROETHYLENE (TCE)	14-Sep-11	ND	0	0.0001	ND	ORG
782VMW-84D	1138002	1174797	VINYL CHLORIDE	14-Sep-11	0.0229	0.0229	0.00033		ORG

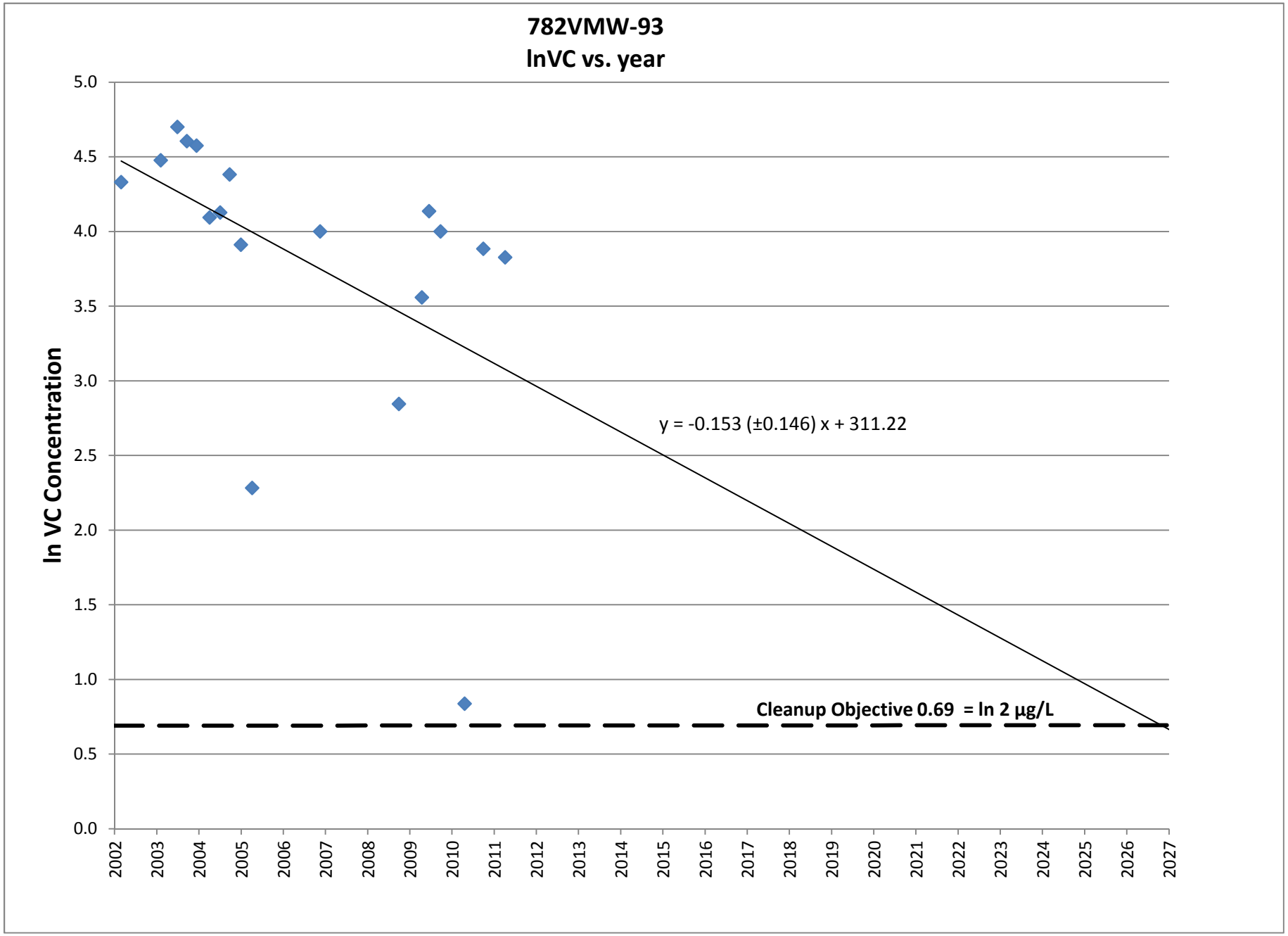
B Contaminant Loss Graphs

Contaminant	Monitoring Well	Estimated Rate of Loss	95% Confidence Interval for Rate of Loss	Estimated Year of Cleanup
TCE	782MW-105B	-0.039 µg/L per year	± 0.082 µg/L	2047
DCE	782MW-10	-0.128 µg/L per year	± 0.050 µg/L	2023
VC	782VMW-96	-0.146 µg/L per year	± 0.067 µg/L	2031
VC	782VMW-93	-0.153 µg/L per year	± 0.146 µg/L	2027


782VMW-105B
lnTCE vs. year
ln TCE Concentration
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
y = -0.039 (±0.082) x + 81.667
Cleanup Objective 1.6 = ln 5 µg/L
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040
2041
2042
2043
2044
2045
2046
2047


782MW-10
lnDCE vs. year
ln DCE Concentration
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
y = -0.128 (±0.050) x + 260.73
Cleanup Objective 1.6 = ln 5 µg/L


782VMW-96
lnVC vs. year
ln VC Concentration
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
y = -0.146 (±0.067) x + 297.04
Cleanup Objective 0.69 = ln 2 µg/L
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031


782VMW-93
lnVC vs. year
ln VC Concentration
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
2002
2003
2004
2005
2006
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2011
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2018
2019
2020
2021
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2023
2024
2025
2026
2027
y = -0.153 (±0.146) x + 311.22
Cleanup Objective 0.69 = ln 2 µg/L

C Mass Reduction Summary

MEMORANDUM

SUBJECT: Mass Reduction Estimation

This memorandum was prepared to support the Operating Properly and Successfully (OPS) report for the Nosedocks/Apron 2 site at the former Griffiss Air Force Base. This memorandum documents the calculations that were performed to estimate the change in mass resulting from monitored natural attenuation (MNA) at the site. For this analysis, groundwater contaminant concentrations for trichloroethene (TCE), cis-1,2-dichloroethylene (DCE) and vinyl chloride (VC) from the February 2002 and September 2011 sampling events were compared.

Methodology

To estimate the change in mass at the site, the following methodology was used:

- Surfer v 10 (Golden Software 2011) was used to generate uniform grid files of concentrations of TCE, DCE, and VC for the February 2002 and September 2011 data sets. The Kriging method of data interpolation was used to create the grid files for all datasets.

- Surfer was then used to generate a "Grid-Volume" report using a concentration of 0 micrograms per liter (µg/L) as the baseline. This results in the calculation of a "Cut Volume" that actually represents the concentration (in µg/L) multiplied by the planar area (square feet [ft^2]) of the concentrations that exceed 0 µg/L. The resulting values, with units of $\mu g*ft^2*L^{-1}$ is presented in Table 1.

- The calculated "Cut Volume" was multiplied by the plume thickness (ft), total porosity, and appropriate conversion factors to calculate a total mass in grams (g). Table 1 summarizes the calculations described here. In terms of change in mass, TCE was found to have reduced by 60%, DCE increased by 26%, and VC decreased by 67%. The sum of the mass of these three compounds reduced by 47%.

- Because the process of reductive dechlorination progresses from TCE to DCE to VC by removing chlorine atoms from each molecule, a better estimate of the change that has occurred is reflected by the change in total molar mass of these three compounds. Therefore, the molar mass of each compound was calculated using the total mass, molecular weights, and appropriate conversion factors, and the total molar mass was calculated based on the February 2002 and September 2011 concentrations. Table 1 summarizes the results of this evaluation. The total molar mass of TCE, DCE, and VC decreased by 52% from February 2002 to September 2011.

Assumptions

1. A value of 0 µg/L was used for non-detect results.

2. The minimum and maximum extent of the well locations (northing and easting) was used as the boundary of the grid file generated in Surfer; that is, data interpolation beyond the boundaries of the wells was not performed.
3. The plume thickness and porosity were assumed not to have changed with time, resulting in no net effect on the % mass reduction.

Limitations

1. The monitoring well locations at the site are arranged in a generally linear pattern and there were many non-detect values in the data (set to 0 µg/L). As a result, gridding with Surfer probably doesn't create a realistic picture of the contaminant distribution. However, because the same assumptions were used for both datasets (February 2002 and September 2011), the relative change in the mass between the two dates can be and was determined.
2. Due to the lack of nested wells that could identify changes in plume distribution with depth, it was assumed that the planar area of the plume extends the full thickness of the aquifer and that the aquifer/plume thickness has not changed with time. Aquifer porosity was also assumed to be constant. Therefore, the determination of the relative change in mass and molar mass was not affected by either the plume thickness or porosity. If the three-dimensional shape of the dissolved-phase contaminant plume has changed with time, then actual plume thickness would affect the mass calculation. For example, if the plume was becoming "thinner" with time as contaminant concentrations near the top and bottom of the plume decreased, then this would result in a decrease in mass with time of a larger magnitude than was calculated.

Conclusions

1. In terms of change in contaminant mass, TCE decreased by 60%, DCE increased by 26%, and VC decreased by 67% from February 2002 to September 2011. The sum of the masses of these three compounds decreased by 47%.
2. In terms of molar mass, it was determined that total molar mass of these three compounds decreased by 52% from February 2002 to September 2011.

Table 1: Evaluation of mass reduction at the Nosedocks/Apron 2 site, Griffis Air Force Base, Rome, New York.

	Unit		TCE	DCE	VC	Total (TCE, DCE, VC)
February 2002 Sampling Event						
Concentration*Area[1]	µg*ft^2/L		6233337	14396603	48270620	
Aquifer Thickness[2]	ft		30	30	30	
Porosity[2]			0.25	0.25	0.25	
Conversion factor 1	L/ft^3		28.32	28.32	28.32	
Conversion factor 2	g/ug		1E-06	1E-06	1E-06	
Mass	g		**1324**	**3058**	**10253**	**14634**
Molecular Weight	g/mol		131.4	96.94	62.5	
Molar Mass	mol		**10.1**	**31.5**	**164**	**206**
September 2011 Sampling Event						
Concentration*Area[1]	µg*ft^2/L		2505866	18149792	16060186	
Aquifer Thickness[2]	ft		30	30	30	
Porosity[2]			0.25	0.25	0.25	
Conversion factor 1	L/ft^3		28.32	28.32	28.32	
Conversion factor 2	g/ug		1E-06	1E-06	1E-06	
Mass	g		**532**	**3855**	**3411**	**7798**
Molecular Weight	g/mol		131.4	96.94	62.5	
Molar Mass	mol		**4.1**	**39.8**	**54.6**	**98.4**
Net Change						
Change in Mass	%		60%	-26%	67%	47%
Change in Molar Mass	%		**60%**	**-26%**	**67%**	**52%**

Notes

1. Concentration * Area was estimated using Surfer 10.
2. Aquifer Thickness and porosity information was obtained from the 2004 Final Remedial Investigation Report (April 2004).

Grid Volume Computations

Mon Apr 23 14:54:36 2012

Upper Surface

Grid File Name:	C:\Users\wattr\Documents\My PC Projects\Griffiss\Feb 2002 DCE.grd
Grid Size:	27 rows x 100 columns
X Minimum:	1136605.09
X Maximum:	1138910.74
X Spacing:	23.289393939393
Y Minimum:	1174207.49
Y Maximum:	1174821.59
Y Spacing:	23.619230769234
Z Minimum:	-20.504307915682
Z Maximum:	65.191453833159

Lower Surface

Level Surface defined by Z = 0

Volumes

Z Scale Factor: 1

Total Volumes by:

Trapezoidal Rule:	6685786.3241325
Simpson's Rule:	6683419.0570331
Simpson's 3/8 Rule:	6684097.4050297

Cut & Fill Volumes

Positive Volume [Cut]:	14396603.109338
Negative Volume [Fill]:	7709692.6962382
Net Volume [Cut-Fill]:	6686910.4131001

Areas

Planar Areas

Positive Planar Area [Cut]:	603983.35005766
Negative Planar Area [Fill]:	811916.31494249

Blanked Planar Area:	0
Total Planar Area:	1415899.6650002

Surface Areas

Positive Surface Area [Cut]:	610011.13001246
Negative Surface Area [Fill]:	812786.11214408

Grid Volume Computations

Mon Apr 23 14:49:19 2012

Upper Surface

Grid File Name:	C:\Users\wattr\Documents\My PC Projects\Griffiss\Feb 2002 TCE.grd
Grid Size:	27 rows x 100 columns
X Minimum:	1136605.09
X Maximum:	1138910.74
X Spacing:	23.289393939393
Y Minimum:	1174207.49
Y Maximum:	1174821.59
Y Spacing:	23.619230769234
Z Minimum:	-1.0425906750324
Z Maximum:	49.900000000017

Lower Surface

Level Surface defined by Z = 0

Volumes

Z Scale Factor:	1

Total Volumes by:

Trapezoidal Rule:	6166080.4246183
Simpson's Rule:	6162257.7522547
Simpson's 3/8 Rule:	6162242.6998686

Cut & Fill Volumes

Positive Volume [Cut]:	6233337.1595233
Negative Volume [Fill]:	68508.879203499
Net Volume [Cut-Fill]:	6164828.2803198

Areas

Planar Areas

Positive Planar Area [Cut]:	1176705.3833756
Negative Planar Area [Fill]:	239194.28162456

Blanked Planar Area:	0
Total Planar Area:	1415899.6650002

Surface Areas

Positive Surface Area [Cut]:	1177554.2584911
Negative Surface Area [Fill]:	239198.84865085

Grid Volume Computations

Mon Apr 23 15:00:05 2012

Upper Surface

Grid File Name:	C:\Users\wattr\Documents\My PC Projects\Griffiss\Feb 2002 VC.grd
Grid Size:	27 rows x 100 columns
X Minimum:	1136605.09
X Maximum:	1138910.74
X Spacing:	23.289393939393
Y Minimum:	1174207.49
Y Maximum:	1174821.59
Y Spacing:	23.619230769234
Z Minimum:	-3.2457773300867
Z Maximum:	77.624192118454

Lower Surface

Level Surface defined by Z = 0

Volumes

Z Scale Factor: 1

Total Volumes by:

Trapezoidal Rule:	48094306.042846
Simpson's Rule:	48100182.395596
Simpson's 3/8 Rule:	48099762.946795

Cut & Fill Volumes

Positive Volume [Cut]:	48270620.612285
Negative Volume [Fill]:	176004.06051325
Net Volume [Cut-Fill]:	48094616.551772

Areas

Planar Areas

Positive Planar Area [Cut]:	1302721.7995236
Negative Planar Area [Fill]:	113177.86547653

Blanked Planar Area:	0
Total Planar Area:	1415899.6650002

Surface Areas

Positive Surface Area [Cut]:	1309263.6686156
Negative Surface Area [Fill]:	113192.36848465

Grid Volume Computations

Mon Apr 23 15:09:19 2012

Upper Surface

Grid File Name:	C:\Users\wattr\Documents\My PC Projects\Griffiss\September 2011 DCE.grd
Grid Size:	31 rows x 100 columns
X Minimum:	1136605.09
X Maximum:	1138910.74
X Spacing:	23.289393939393
Y Minimum:	1174207.49
Y Maximum:	1174894.76
Y Spacing:	22.909000000001
Z Minimum:	-4.5388096773434
Z Maximum:	44.848444116245

Lower Surface

Level Surface defined by Z = 0

Volumes

Z Scale Factor:	1

Total Volumes by:

Trapezoidal Rule:	17070976.34479
Simpson's Rule:	17073188.91052
Simpson's 3/8 Rule:	17073965.908182

Cut & Fill Volumes

Positive Volume [Cut]:	18149792.499057
Negative Volume [Fill]:	1077413.52598
Net Volume [Cut-Fill]:	17072378.973077

Areas

Planar Areas

Positive Planar Area [Cut]:	973754.00504007

Negative Planar Area [Fill]:	610850.07045991
Blanked Planar Area:	0
Total Planar Area:	1584604.0755

Surface Areas

Positive Surface Area [Cut]:	976053.87853605
Negative Surface Area [Fill]:	610895.73902512

Grid Volume Computations

Mon Apr 23 15:07:35 2012

Upper Surface

Grid File Name:	C:\Users\wattr\Documents\My PC Projects\Griffiss\September 2011 TCE.grd
Grid Size:	31 rows x 100 columns
X Minimum:	1136605.09
X Maximum:	1138910.74
X Spacing:	23.289393939393
Y Minimum:	1174207.49
Y Maximum:	1174894.76
Y Spacing:	22.909000000001
Z Minimum:	-0.56823938912781
Z Maximum:	24.300000007941

Lower Surface

Level Surface defined by Z = 0

Volumes

Z Scale Factor: 1

Total Volumes by:

Trapezoidal Rule:	2456433.0236223
Simpson's Rule:	2454196.82178
Simpson's 3/8 Rule:	2454103.5356758

Cut & Fill Volumes

Positive Volume [Cut]:	2505866.3584201
Negative Volume [Fill]:	50122.675905204
Net Volume [Cut-Fill]:	2455743.6825149

Areas

Planar Areas

Positive Planar Area [Cut]:	1213917.610123

Negative Planar Area [Fill]:	370686.46537694
Blanked Planar Area:	0
Total Planar Area:	1584604.0755

Surface Areas

Positive Surface Area [Cut]:	1214127.4958416
Negative Surface Area [Fill]:	370687.62300844

Grid Volume Computations

Mon Apr 23 15:09:44 2012

Upper Surface

Grid File Name:	C:\Users\wattr\Documents\My PC Projects\Griffiss\September 2011 VC.grd
Grid Size:	31 rows x 100 columns
X Minimum:	1136605.09
X Maximum:	1138910.74
X Spacing:	23.289393939393
Y Minimum:	1174207.49
Y Maximum:	1174894.76
Y Spacing:	22.909000000001
Z Minimum:	-2.1904178325718
Z Maximum:	31.956317955619

Lower Surface

Level Surface defined by Z = 0

Volumes

Z Scale Factor: 1

Total Volumes by:

Trapezoidal Rule:	15988268.208549
Simpson's Rule:	15990805.973398
Simpson's 3/8 Rule:	15989678.397852

Cut & Fill Volumes

Positive Volume [Cut]:	16060186.505387
Negative Volume [Fill]:	71869.511590628
Net Volume [Cut-Fill]:	15988316.993796

Areas

Planar Areas

Positive Planar Area [Cut]:	1519018.270172
Negative Planar Area [Fill]:	65585.805327989

Blanked Planar Area:	0
Total Planar Area:	1584604.0755

Surface Areas

Positive Surface Area [Cut]:	1519707.3466799
Negative Surface Area [Fill]:	65591.388828235

D Apron 2 Inspection Form

SITE:

APRON 2

1. On-Site Inspection

Inspected by:	Mark Grifasi
Date:	8/16/2011

Site Condition:

Concrete and grassy area. Planes are parked on apron along with 18 wheeler trailers. Nosedocks at the apron are used for plane maintenance and storage.

LUC/ICs:

ID	LUC/ICs	Valid	Not Valid
APRON2-01	Soil/Groundwater Intrusive Work - Prior Approval	X	
APRON2-02	Soil/Groundwater Intrusive Work - Prior Approval	X	
APRON2-03	Soil/Groundwater Intrusive Work - Prior Approval	X	
APRON2-04	Soil/Groundwater Intrusive Work - Prior Approval	X	
APRON2-05	Soil/Groundwater Intrusive Work - Prior Approval	X	
APRON2-06	Soil/Groundwater Intrusive Work - Prior Approval	X	
APRON2-07	Groundwater Consumption - Prior Approval	X	
APRON2-08	Adverse Aquifer Use Prohibited	X	
APRON2-09	Land-use Restriction - Protect Remedial Operations	X	
APRON2-10	Groundwater Intrusive Work-Prior Approval	X	
APRON2-11	Groundwater Consumption - Prior Approval	X	
APRON2-12	Adverse Aquifer Use Prohibited	X	
APRON2-13	Land-Use Restriction-Protect Remedial Operations	X	
APRON2-14	Groundwater Intrusive Work - Prior Approval	X	
SD-52APRON2-01	Soil/Groundwater Intrusive Work - Prior Approval	X	
SD-52APRON2-02	Groundwater Well Installation Restriction	X	
SD-52APRON2-03	Land-use Restriction - Protect Remedial Operations	X	

Comments:

None

Photos:





2. Owner/Occupant Confirmation

Conducted

Owner/Occupant	Date	Valid	Not Valid
W. Vernon Gray, GAI	9/23/2011	X	