2013 Annual Status Report
for the Boomsnub/Airco Superfund Site
Hazel Dell, Washington

Prepared for

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AFCEE	Air Force Center for Environmental Excellence
Boomsnub	Boomsnub Corporation
ALS	ALS Environmental
CD	Consent Decree
City	City of Vancouver
COV	Coefficient of variation
1,1-DCE	1,1-Dichloroethene
EA	EA Engineering, Science, and Technology, Inc.
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ft	Feet
IWS	In-well stripping
Linde	Linde LLC (formally known as BOC Gases)
MAROS	Monitoring and Remediation Optimization System
MRL	Method reporting limit
O&M	Operation and Maintenance
OU	Operable Unit
PDB	Passive diffusion bag
QASP	Quality Assurance and Sampling Plan
ROD	Record of Decision
SCADA	Supervisory Control and Data Acquisition
Site	Boomsnub/Airco Superfund Site
SVE	Soil vapor extraction
TCE	Trichloroethene
TOPPS	Toe-of-Plume Pilot Study
µg/L	Micrograms per liter
URS	URS Group, Inc.
VOC	Volatile organic compound

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EXECUTIVE SUMMARY

Introduction

This Annual Status Report summarizes information on activities that took place during 2013 at the Boomsnub/Airco Superfund Site (Site) in Hazel Dell, Washington. EA Engineering, Science, and Technology, Inc. (EA), under contract to Linde, LLC (Linde; formerly known as BOC Gases), is currently operating and maintaining a Site-wide groundwater extraction and treatment system and a volatile organic compound (VOC) source removal system. Work at the Site is currently conducted under a Consent Decree (CD) between the U.S. Environmental Protection Agency (EPA) and Linde (Docket No. CO7-5163FDB), which was entered by the court on 29 June 2007.

Site Background and Operating Objectives

In 1987, the Washington State Department of Ecology (Ecology) determined that a plume of chromium-contaminated groundwater was emanating from the Boomsnub Corporation (Boomsnub) manufacturing facility. In 1991, during cleanup activities at the Boomsnub facility, a second plume containing VOCs was detected and determined to be coming from the Linde industrial gas production facility, located east of the Boomsnub facility. The two contaminant plumes overlap and become commingled downgradient of the source areas.

The Site is divided into three operable units (OUs) to manage cleanup activities: OU-1 (Boomsnub Soil); OU-2 (Linde Soil); and OU-3 (Site-wide Groundwater). The primary VOC of concern is trichloroethene (TCE), which serves as an indicator of VOC presence at the Site. The operating objectives are to remove sources of VOCs and chromium that may be acting as the source to groundwater, remove VOCs and chromium from the groundwater, halt the off-property migration of VOCs and chromium in groundwater, and reduce contaminant migration into the deeper Troutdale aquifer which serves as the drinking water source for the area.

In 1994 and 2001 EPA conducted removal actions at OU-1 to remove the majority of the hexavalent chromium contaminated soils which were serving as a source for groundwater contamination.

The OU-2 selected remedial action was a combination of in-well stripping (IWS) and soil vapor extraction (SVE) systems to remove VOCs from both the soil and groundwater. The systems became operational in February 2004. The SVE system was operated to treat the vadose zone soil in OU-2 until 2008, when it was turned off with EPA approval. The IWS system was operated to treat groundwater in OU-2, until it was turned off with EPA approval on 9 August 2013. The IWS system will remain turned off for a period of two years, during which time groundwater samples will be collected from monitoring wells within the TCE source area to monitor for changes/rebound in VOC concentrations.

The OU-3 groundwater extraction and treatment system is designed to operate continuously with

minimal operator supervision. The treatment system is composed of an ion-exchange system to remove chromium from extracted groundwater; and a granular activated carbon air stripper system to remove TCE and other volatile contaminants from groundwater. The treatment facility is located on the Boomsnub property. Treated groundwater is discharged to an infiltration gallery located on the Linde property. The groundwater treatment system has been in operation since 1990.

In 2008, an investigation identified another plume of VOC contamination in groundwater north of the Boomsnub/Airco Plume (OU-3 plume), in the area around well AMW-18 (EA 2008). This offsite plume is referred to as the Northern Plume. A new monitoring well (AMW-64) was installed in February 2012, at the request of the EPA, to monitor the Northern Plume northwest of well AMW-17. The Northern Plume continues to be monitored along with the OU-3 plume to evaluate potential impacts to the Site and treatment system (EA 2012a). The source of this plume is unknown; however, it does not appear to be due to activities on the Boomsnub or Linde properties.

2013 OU-2 System Operations

The IWS system is operating within the performance standards established for the Site. Groundwater sampling and analyses were conducted to monitor the OU-2 systems in accordance with the EPA-approved Site Operation and Maintenance (O&M) Manual. Minimal periods of down time occurred due to maintenance and system alarms; the system was in operation more than 98 percent of the reporting period.

The IWS system was shut off on 9 August 2013, with EPA approval, since the system had reached asymptotic removal rates, and operation of the system was not effective at further removal of the TCE. The IWS system will remain turned off for a period of two years, during which time groundwater samples will be collected from monitoring wells within the TCE source area to monitor for possible contaminant rebound.

2013 OU-3 System Operations

During the 2013 reporting period, 66,799,512 gallons of groundwater were treated and discharged to the Linde infiltration gallery. Total flow was lower than in previous years because five extraction wells were shut-off, with EPA approval. The groundwater extraction and treatment system operated within the performance standards established for the Site. The system was in operation approximately 99 percent of the reporting period. Routine monitoring of the treatment system influent and effluent was conducted throughout the year and included monthly sampling and analysis of TCE, chromium, and pH. In addition, semiannual site-wide groundwater monitoring was conducted in Spring 2013 and Fall 2013.

Contaminant concentrations continue on an overall decreasing trend in Site wells. The mass of contaminants removed during the reporting period continued to decline compared to the 2012 reporting period. This is consistent with a continuing downward trend and is due to the decrease in groundwater concentrations in the average influent concentrations of chromium and TCE at

the Site. Note, however, that the influent chromium and TCE concentrations increased slightly during 2013, compared to 2012, presumably due to the shutdown of five extraction wells in the Church of God area, which extracted groundwater at concentrations near and below the Site cleanup levels. The shutdown of the five extraction wells in the Church of God area allows for a greater extraction and treatment volume of groundwater from areas of the site with higher TCE/chromium concentrations.

Annual Screening of Groundwater Monitoring Data

Annual screening of groundwater monitoring data is conducted for each alluvial aquifer monitoring and extraction well currently sampled. The data are used to determine what changes, if any, should be made to current system operations and the well sampling schedule. The Air Force Center for Environmental Excellence (AFCEE) Monitoring and Remediation Optimization System (MAROS), a computer program that was developed to optimize long-term groundwater monitoring, determine when to terminate groundwater treatment, and determine if concentrations in groundwater are statistically below the cleanup level, was used to evaluate the data.

Based on the results of the 2013 annual screening of the groundwater monitoring data, the following conclusions are made:

- No modifications to system operations are necessary at this time.
- Changes to sampling frequencies are recommended for 15 wells based on the results of the MAROS evaluation and on the qualitative review. Well sampling frequency recommendations for 2013 are provided in Table 2 and summarized in Table 3. Further description of the reason for the changes is provided in Table 4.

Status of Recommendations for 2013

In order to meet the operating objectives for OU-2 and OU-3, planned activities for 2013 were recommended in the 2012 Annual Status report. The status of these planned activities is summarized below:

- **IWS System Shutdown and Rebound Testing** – The IWS system has removed more than 95% of the mass of TCE in the source area since start-up; however, asymptotic removal rates have been reached and TCE concentrations have not been significantly reduced in recent years. A plan for IWS system shutdown was submitted to EPA on 25 June 2013 to address proposed shutdown of the system and continued groundwater monitoring at OU-2 (EA 2013e). EPA approved shutdown of the system and it was turned off on 9 August 2013. The IWS system will remain turned off for a period of two years, during which time groundwater samples will be collected from monitoring wells within the TCE source area to monitor for changes or potential rebound of VOC concentrations.
- **Well Sampling** – Wells were sampled in accordance with the updated sampling schedule.

- **Infrastructure Removal** – Selected infrastructure in the original Toe-of-Plume area was recommended for decommissioning because it is no longer needed for Site remediation or monitoring, and removal is desired to allow development of Parcel No. 144718-000 by the owner. Recommendations regarding infrastructure removal on the parcel were provided to EPA in a letter dated 21 August 2012; this work was not completed in 2013 because EPA approval was not received.
- ***In Situ* Treatments** – *In situ* treatments in the area of wells MW-35 and AMW-27, as described in the Work Plan for In Situ Treatment of Areas of Residual Contamination (EA 2012b) were not completed in 2013. EPA approval of the work plan has not yet been received and an Explanation of Significant Differences to the Record of Decision (ROD) has not yet been submitted by EPA.
- **Modify System Pumping Rates** – Following receipt of EPA approval, extraction system pumping rate modifications were implemented, as described in Groundwater Modeling Technical Memorandum No. 5 (EA 2013a). Extraction wells in the Church of God area (AMW-27, MW-25D, MW-26D, and MW-49), downgradient of the leading edge of the Plume, were shut off on 14 January 2013, and extraction well CPU-13 was shut off on 1 May 2013.
- **Easements and Access Agreements** – EA continued efforts toward obtaining easement agreements and restrictive covenants with neighboring property owners. EPA assistance has been requested with this.

Recommendations and Planned Activities for 2013

The following activities are planned for the 2014 reporting period:

- **Well Sampling** – Sample wells in accordance with the updated sampling schedule.
- **Infrastructure Removal** – Submit a revised proposal for removal of pipelines, vaults, and selected wells in the original Toe-of-Plume area to EPA. This infrastructure is no longer needed for Site remediation or monitoring, and is planned for removal to allow development of Parcel No. 144718-000 by the owner.
- ***In Situ* Treatments** – Following receipt of EPA approval of the work plan, and approval of an Explanation of Significant Differences, implement *in situ* treatments in the area of wells MW-35 and AMW-27, as described in the Work Plan for In Situ Treatment of Areas of Residual Contamination (EA 2012b).
- **IWS System Rebound Testing** – Continue to perform groundwater sampling in OU-2 to monitor for possible contaminant rebound.
- **Monitoring Well MW-38 –** The TCE concentration in groundwater samples from MW-38 increased rapidly between Fall 2012 and Fall 2013, indicating the apparent arrival of the Northern Plume at this well. If the results of sampling in 2014 confirm the presence of elevated TCE concentrations in groundwater samples from this well, it is

recommended that MW-38 be grouped with the Northern Plume wells in future data reporting and evaluation.

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1. INTRODUCTION

This Annual Status Report summarizes information on activities that took place during 2013 at the Boomsnub/Airco Superfund Site (Site) in Hazel Dell, Washington. EA Engineering, Science, and Technology, Inc. (EA), under contract to Linde LLC (Linde; formerly known as BOC Gases), is currently operating and maintaining a Site-wide groundwater extraction and treatment system and a volatile organic compound (VOC) source removal system. Work at the Site is currently conducted under a Consent Decree (CD) between the U.S. Environmental Protection Agency (EPA) and Linde (Docket No. CO7-5163FDB), which was entered by the court on 29 June 2007 (EPA 2007a).

1.1 Background

The Site is located just north of the city limits of Vancouver, Washington, in the area depicted on Figure 1. It includes two adjacent facilities, the former Boomsnub Corporation (Boomsnub) chrome plating facility and the Linde industrial gas production facility. The Linde plant manufactures compressed and liquefied gas products including nitrogen, oxygen, and argon. The plant also stores and distributes other specialty gases such as hydrogen and helium. The facility was built by Air Liquide America Corporation in 1963 and has been in operation since 1964.

In 1987, the Washington State Department of Ecology (Ecology) determined that a plume of chromium-contaminated groundwater was emanating from the Boomsnub facility. While cleanup activities were being conducted at the Boomsnub facility, VOCs were detected in groundwater samples and were suspected to be coming from the Linde property. Linde began investigating the nature and extent of VOCs in 1991. In June 1994, EPA took over the role of lead regulatory agency from Ecology and in April 1995 the Site was placed on the National Priorities List. The primary constituents of concern at the Site are chromium and selected VOCs. The primary VOC of concern is trichloroethene (TCE), which serves as an indicator of VOC presence at the Site. The chromium and TCE groundwater contaminant plumes overlap and are commingled downgradient of the source areas. In the 1990s, the plumes were found to extend approximately 4,400 feet (ft) in a west-northwest direction from the sources.

The Site is divided into three operable units (OUs) to manage cleanup activities: OU-1 (Boomsnub Soil); OU-2 (Linde Soil); and OU-3 (Site-wide Groundwater). EPA conducted soil removal actions at OU-1 in 1994 and 2001 to remove the majority of the hexavalent chromium-contaminated soils serving as a source for groundwater contamination. Linde has conducted numerous site investigations, performed groundwater treatment, and conducted a removal action on their property at OU-2.

The highest concentrations of site contaminants have occurred in a shallow groundwater-bearing zone referred to as the alluvial aquifer. The alluvial aquifer is not used as a municipal water supply, although a limited number of private wells pump from this aquifer. TCE and chromium have been detected, although at considerably lower concentrations, in the deeper groundwater-bearing zone, the Troutdale aquifer. The Troutdale aquifer serves as a municipal water supply

for the city of Vancouver (City) and Clark County. Municipal water supply wells are not located in areas known to contain elevated concentrations of chemicals detected at the Site.

A groundwater extraction and treatment system is used to capture and treat Site groundwater. The groundwater extraction and treatment system has been operational since 1990 and was constructed along the axis of the chromium plume. Since 1990, the system has been modified, upgraded, and expanded several times to handle the VOCs and chromium, to increase pumping and treatment capacity, and to increase removal efficiency. The monitoring and extraction well network for the Site is presented on Figure 2.

Chromium is removed from the extracted groundwater using an ion-exchange system. VOCs are removed from the extracted groundwater using air stripping with granular activated carbon treatment of the off-gases. The treatment facility is located on the Boomsnub property. Treated groundwater is discharged to an infiltration gallery located on the Linde property. The infiltration gallery was constructed during September and October 2005 and began receiving water in February 2006 (EA 2006). Prior to the construction of the infiltration gallery, the treated groundwater was discharged to the City sanitary sewer system.

The Record of Decision (ROD) for the Site, dated February 2000, identified the remedy for OU-3 as continued groundwater extraction and treatment until groundwater cleanup levels are achieved throughout the groundwater plume (EPA 2000). The remediation goals include the reduction of total chromium in groundwater to 80 micrograms per liter (μg/L) and the reduction of TCE to 5 μg/L.

An Action Memorandum, dated September 2001, was issued by EPA identifying the requirements for remediation activities for OU-2 (EPA 2001). On 18 September 2002, Linde and EPA entered into an Administrative Order on Consent (EPA Docket Number CERCLA 10-2002-0052; EPA 2002), addressing the specific design, construction, and operational requirements for a Non-Time-Critical Removal Action for OU-2 to implement the requirements of the Action Memorandum.

On 1 April 2002, Linde assumed interim responsibility for the operation and maintenance (O&M) of the groundwater extraction and treatment system.

In October 2002, URS Group, Inc. (URS), working under contract to EPA and in cooperation with representatives from the EPA Environmental Services Assistance Team, conducted additional soil characterization activities on Boomsnub property around the groundwater extraction and treatment system building. The purpose of the work was to identify areas in the shallow soils (15 ft or less deep) with concentrations of chromium above the cleanup levels specified in the ROD. The results of the soil characterization activities were presented in the *Soil Characterization: Groundwater Treatment System Compound* report, finalized in April 2003 (URS 2003).

In September 2003, Linde began construction of the Non-Time Critical Removal Action at their facility to address the VOC source area (OU-2). The selected remedial action was a combination

of in-well stripping (IWS) and soil vapor extraction (SVE) systems to remove VOCs from both the groundwater and soil. The systems became operational in February 2004. The SVE system was operated to treat the vadose zone soil in OU-2 until 2008, when it was turned off with EPA approval. The IWS system was operated to treat groundwater in OU-2, until it was turned off with EPA approval on 9 August 2013. The IWS system will remain turned off for a period of two years, during which time groundwater samples will be collected from monitoring wells within the TCE source area to monitor for changes/rebound in VOC concentrations.

The Toe-of-Plume Pilot Study (TOPPS), an *in situ* treatment program, was performed in 2006 to treat an area of recalcitrant contamination. Chromium and TCE concentrations in the TOPPS monitoring wells have remained below the cleanup level since that time, indicating that the TOPPS treatment was effective.

In 2008, an investigation identified another plume of VOC contamination in groundwater north of the Boomsnub/Airco Plume (OU-3 plume), in the area around well AMW-18 (EA 2008). This offsite plume is referred to as the Northern Plume. A new monitoring well (AMW-64) was installed in February 2012, at the request of the EPA, to monitor the Northern Plume northwest of well AMW-18. The Northern Plume continues to be monitored, along with the OU-3 plume, to evaluate potential impacts to the Site and treatment system (EA 2012a). The source of this plume is unknown; however, it does not appear to be due to activities on the Boomsnub or Linde properties.

1.2 Purpose

The purpose of this report is to provide an overview of Site activities at OU-2 and OU-3. The reporting period is 1 January through 31 December 2013.

1.3 Operating Objectives

The operating objectives for OU-2, identified in the 2001 Action Memorandum (EPA 2001), include the following:

- Remove VOCs from the vadose zone that may be acting as the source to groundwater.
- Remove VOCs from groundwater on the western portion of the Linde property.
- Halt off-property migration of VOCs in groundwater.

The operating objectives for OU-3 are defined in the ROD (EPA 2000). Activities at the Site are designed to meet the following overall objectives:

- Reduce contaminant migration within the alluvial aquifer (expansion of the plumes).
- Continue mass removal activities designed to restore impacted groundwater to Site-specific cleanup levels.
- Reduce contaminant migration into the Troutdale aquifer by reducing contamination in the alluvial aquifer.

1.4 Organization of this Document

This report is divided into eight sections and three appendices:

- Section 1 provides the background, purpose, and operating objectives.
- Sections 2 and 3 present summaries of the system operations for OU-2 and OU-3, respectively.
- Section 4 discusses groundwater monitoring results and trends.
- Section 5 summarizes additional Site activities conducted during the reporting period.
- Section 6 presents the results of the annual screening of groundwater monitoring data to determine what changes, if any, should be made to current system operations and/or the well sampling schedule.
- Section 7 summarizes the status of recommended activities for 2013 and presents recommendations and planned activities for 2014.
- Section 8 lists the references cited in this document.

Information on chromium and TCE concentrations in groundwater is presented in Appendices A and B, respectively. The information is presented both by well groupings and by individual wells. Appendices A and B are organized in sections, as follows:

- Tables reporting chromium and TCE groundwater concentrations for the last four semiannual sampling events are provided in Appendices A-1 and B-1, respectively. Only wells sampled during the 2013 reporting period are included. For wells sampled on a biennial frequency, results from the previous biennial event are provided.
- Graphs showing chromium and TCE concentration trends by well grouping are presented in Appendices A-2 and B-2, respectively. Only wells sampled during the 2013 reporting period are included. These graphs allow a comparison of trends within geographical or hydrogeological groupings. They also allow immediate comparison of concentrations between wells in a grouping and the ability to identify potential outliers.
- Graphs showing chromium and TCE concentrations over time for individual wells are presented in Appendices A-3 and B-3, respectively. All wells in the active sampling program are included. Additional information obtained as part of the annual screening of groundwater monitoring data is included with each graph for alluvial aquifer wells. Data provided in the graphs for the alluvial aquifer wells have been consolidated and are presented as the geometric mean for each year.

Tables and outputs created during the annual evaluation of groundwater monitoring data using the Monitoring and Remediation Optimization System (MAROS) software (AFCEE 2012) are included in Appendix C. Appendix C-1 contains a table summarizing the MAROS results. Appendices C-2 and C-3 provide MAROS outputs for chromium and TCE, respectively.

2. OU-2 SYSTEM OPERATIONS

This section provides a summary of the OU-2 IWS system operations and monitoring conducted between 1 January and 31 December 2013. Groundwater sampling and analyses were conducted to monitor the OU-2 systems in accordance with the procedures in EA's EPA-approved *Operation and Maintenance Manual, Combined In-Well Stripping and Soil Vapor Extraction System* (EA 2004a). Locations of the OU-2 treatment and monitoring wells are shown on Figure 3.

2.1 IWS System Operations

The system is operating within the performance standards established for the Site. System operations were manually checked by the Site operator weekly to confirm that the IWS system was operating within the design parameters. In addition, the operator remotely verified IWS operations periodically using the Supervisory Control and Data Acquisition (SCADA) system. The SCADA system is programmed to notify the operator of system malfunctions. Information specific to the IWS system is presented in the Progress Reports (EA 2013d and EA 2013h) which are submitted on a semiannual basis.

Since startup, the IWS system has been running 24 hours per day, with the exception of downtime to perform routine maintenance activities. In addition, the IWS system was shut off June 28 through July 1 to protect blowers from overheating while air temperatures were in the mid-90s. The system was in operation more than 98 percent prior to the system shutdown on 9 August 2013, exceeding the 90 percent availability specified in the CD. Modifications and/or repairs that were made to the system during the reporting period are presented the Progress Reports (EA 2013d and EA 2013h).

The IWS system was shut off on 9 August 2013, with EPA approval, since the system had reached asymptotic removal rates, and operation of the system was not effective at further removal of the TCE. The IWS system will remain turned off for a period of two years, during which time groundwater samples will be collected from monitoring wells within the TCE source area to monitor for possible contaminant rebound. This sampling will be performed in accordance with the IWS System Shutdown Plan (EA 2013e).

2.2 IWS System Monitoring

To monitor the IWS System performance, groundwater samples were collected from OU-2 monitoring wells in Spring and Fall 2013. The samples were submitted to ALS Environmental (ALS) of Kelso, Washington and analyzed for VOCs using EPA Method 8260C.

During Fall 2013, groundwater samples from four of the 13 wells sampled had TCE concentrations above the cleanup level of 5 μg/L: AMW-1A, AMW-12A, AMW-53A, and MW-1A. Section 4.2.2.2 provides a discussion and presents the TCE data from OU-2 wells sampled during the 2013 reporting period.

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3. OU-3 SYSTEM OPERATIONS

This section provides a summary of OU-3 system operations, system performance, and plume monitoring conducted from 1 January to 31 December 2013. Groundwater sampling and analyses were conducted in accordance with the procedures in the EPA-approved Site Quality Assurance and Sampling Plan (QASP; EA 2004b), and subsequent EPA-approved QASP addenda.

3.1 System Operations

Routine system operation details are presented in the Progress Reports (EA 2013d and EA 2013h) submitted to EPA twice a year.

3.1.1 Groundwater Extraction System

The groundwater extraction and treatment system operated within the performance standards established for the Site. The extraction well pumping rates were recorded once a month during the reporting period. The recorded pumping rates are shown in Table 1.

3.1.2 Groundwater Treatment System

Routine monitoring of the treatment system influent and effluent was conducted throughout the year including monthly sampling and analysis of TCE, chromium, and pH. Treatment system components are briefly described in the following sections.

3.1.2.1 Ion-Exchange and Air Stripper Systems

Monthly influent and effluent sample concentrations were used to determine approximate chromium and TCE removal rates on a monthly basis. Based on this, the ion-exchange system had an annual average chromium removal rate of approximately 99 percent and the air stripper system an annual average VOC removal rate of approximately 98 percent.

3.1.2.2 Linde Infiltration Gallery

Treated groundwater from the Site treatment system is discharged back into the alluvial aquifer through an infiltration gallery. The infiltration gallery is located in the southeast corner of the Linde property and is designed to accept treated water at 160 gallons per minute. No modifications or significant repairs were made to the infiltration gallery during the reporting period.

TCE and chromium concentrations in effluent discharged to the infiltration gallery during 2013 were consistently below the maximum allowable effluent concentrations of 1.9 µg/L for TCE and 19.2 µg/L for chromium. Effluent monitoring results are provided in the Progress Reports (EA 2013d and EA 2013h).

3.2 System Performance

OU-3 system performance for 2013 is summarized in the following table. Additional details are provided in the Progress Reports.

OU-3 System Performance Summary, 2013				
Month	**Hours/Month**	**Hours of Operation/Month**	**Availability**	**Flow**
January	744	725.63	97.53%	5,958,265
February	672	671.2	99.88%	5,661,605
March	744	743.97	100.00%	6,208,823
April	720	720	100.00%	5,628,780
May	744	744	100.00%	5,485,618
June	720	719.90	99.99%	5,382,911
July	744	700.05	94.09%	5,184,018
August	744	735.65	98.88%	5,600,193
September	720	691.62	96.06%	5,215,883
October	744	743.07	99.87%	5,638,247
November	720	719.99	100.00%	5,349,028
December	744	744	100.00%	5,486,141
2013 Availability	**8760**	**8659.08**	**98.86%**	**66,799,512**

3.2.1 Water Treated

During the reporting period, 66,799,512 gallons of groundwater were treated and discharged to the Linde infiltration gallery. Total flow was lower than in previous years because five extraction wells were shut-off with EPA-approval during the reporting period, as discussed in Section 4.2.2.5.

3.2.2 System Availability

The treatment system was operational for 8659 hours, or approximately 99 percent of the reporting period, exceeding the 90 percent requirement of the CD. The percent availability includes actual minutes of operation and scheduled down time. Details are provided in the Progress Reports (EA 2013d and EA 2013h).

3.2.3 Mass Removal

The following table presents cumulative chromium and TCE removed in 2013, along with monthly influent data and flow.

OU-3 Chromium and TCE Removal Summary, 2013							
Date	Monthly Flow (Gallons)	Influent Chromium (µg/L)	Influent TCE (µg/L)	Monthly Chromium Removal (lbs)	Monthly TCE Removal (lbs)	Cumulative Chromium Removed (lbs)	Cumulative TCE Removed (lbs)
January	5,958,265	50.0	16.0	2.5	0.8	22,303.3	2,187.6
February	5,661,605	55.9	19.0	2.6	0.9	22,305.9	2,188.5
March	6,208,823	54.0	19.7	2.8	1.0	22,308.7	2,189.5
April	5,628,780	59.3	19.0	2.8	0.9	22,311.5	2,190.4
May	5,485,618	59.8	23.0	2.7	1.1	22,314.3	2,191.5
June	5,382,911	59.4	18.0	2.7	0.8	22,316.9	2,192.3
July	5,184,018	60.9	22.0	2.6	1.0	22,319.6	2,193.2
August	5,600,193	53.7	18.0	2.5	0.8	22,322.1	2,194.1
September	5,215,883	54.8	18.0	2.4	0.8	22,324.5	2,194.9
October	5,638,247	54.9	19.0	2.6	0.9	22,327.1	2,195.8
November	5,349,028	56.2	19.0	2.5	0.8	22,329.6	2,196.6
December	5,486,141	53.8	18.0	2.5	0.8	22,332.0	2,197.4

On the basis of measured influent and effluent concentrations and the total monthly treatment system flow, approximately 31 pounds of chromium and 11 pounds of TCE were removed by the groundwater extraction and treatment system during 2013. This brings the cumulative total mass of chromium and TCE removed to approximately 22,332 and 2,197 pounds, respectively, since initiating operations in 1990. The mass of contaminants removed during the reporting period continued to decline compared to the previous reporting period. This is generally due to the continuing downward trend in contaminant concentrations in Site groundwater, as reflected in the average influent concentrations of chromium and TCE at the Site over the years. Note, however, that the influent chromium and TCE concentrations increased slightly during 2013, compared to 2012, presumably due to the shutdown of five extraction wells in the Church of God area, which extracted groundwater at concentrations near and below the Site cleanup levels. The shutdown of the five extraction wells in the Church of God area allows for a greater extraction and treatment volume of groundwater from areas of the site with higher TCE/chromium concentrations.

Figure 4 shows the cumulative removal amounts for total chromium and TCE since June 1999. Figure 5 depicts the total chromium and TCE concentrations in the treatment system influent and effluent since 1999. Figure 6 provides an annual comparison of influent chromium and TCE concentrations over the past 13 years.

3.3 Plume Monitoring

3.3.1 Semiannual Site-wide Groundwater Monitoring

Semiannual Site-wide groundwater monitoring was conducted in Spring and Fall 2013, following EPA approval of the associated QASP addenda (EA 2013b and EA 2013g). The semiannual sampling events were conducted as planned and no significant issues or problems were encountered.

Groundwater samples were submitted to ALS of Kelso, Washington for analysis. The samples were analyzed for chromium using EPA Method 200.7 and/or VOCs using EPA Method 8260C. Groundwater monitoring results and concentration trends are discussed in Section 4. Note that quarterly monitoring of a very limited number of wells was also performed. Results of the quarterly monitoring are also provided in Section 4, where applicable.

3.3.2 Water Level Gauging Program

Depth-to-groundwater measurements were collected from monitoring and extraction wells at the Site during the Spring and Fall semiannual sampling events. Groundwater level data are collected to determine the groundwater flow direction and gradient. During both semiannual events in 2013, the measurements were made while the groundwater treatment system was actively pumping to assess groundwater flow under drawdown conditions.

Generalized groundwater elevation contour maps for the alluvial and Troutdale aquifers for the Fall 2013 water level gauging event are presented as Figures 7 and 8, respectively. The flow direction and horizontal gradient in both aquifers were similar to those observed previously. The alluvial aquifer groundwater elevations measured in Fall 2013 were generally about 2 ft lower than those measured in Spring 2013, reflecting the seasonal variation in rainfall. In the deeper, semiconfined Troutdale aquifer, the groundwater elevations measured in Fall 2013 were generally about 1 foot lower than those measured in Spring 2013.

The horizontal gradients for the alluvial and Troutdale aquifers were determined using data from the Fall 2013 water level gauging event. Because the groundwater extraction system was actively pumping during water level gauging, the vertical gradient could not be determined accurately. In the alluvial aquifer, the gradient across the Linde property was approximately 0.009 ft/ft; this area is impacted by the infiltration gallery. Downgradient, within the plume area, (using an average from just west of the Linde property to the toe of the plume) the gradient was approximately 0.005 ft/ft. The flow direction within the alluvial aquifer is generally to the west-northwest.

In the Troutdale aquifer, the average hydraulic gradient across the Site area was approximately 0.006 ft/ft. The flow direction in this aquifer is generally to the west-southwest.

Water level gauging and groundwater monitoring results indicate that hydraulic containment of the plumes has been maintained.

4. GROUNDWATER MONITORING RESULTS AND TRENDS

This section presents the concentration trends observed in groundwater since 1995, when EPA assumed regulatory responsibility for the Site, with a focus on data collected during 2013. More detailed presentations of the 2013 groundwater monitoring data are provided in the Spring and Fall Semiannual Groundwater Monitoring reports (EA 2013f and EA 2014).

Groundwater sampling and analyses were conducted to monitor the groundwater quality in extraction and monitoring wells in accordance with the procedures in the Site QASP (EA 2004b). Groundwater sampling and analysis of the OU-2 monitoring wells on the Linde property was conducted in accordance with the OU-2 O&M Manual (EA 2004a). Task-specific QASP addenda are prepared for each semiannual sampling event to be compliant with the schedule established in the Long-Term Monitoring Plan (EA 2007) and subsequent updates. The sampling schedule is reviewed and updated annually. The sampling schedule for 2013 was presented in the 2012 Annual Status Report (EA 2013c).

Table 3 presents the 2013 well sampling frequencies along with the recommended changes for 2014, based on the annual screening of groundwater monitoring data (see Section 6). Also included in Table 3 are well construction details, historic maximum concentrations of TCE and chromium in each well (using data from 1995 through 2013), and the most recent concentrations of TCE and chromium in each well.

4.1 Well Groupings

To facilitate analysis of contaminant concentrations across the Site, sampling data are grouped by aquifer and geographical location as follows:

- Alluvial aquifer wells
    - Upgradient wells
    - TCE Source wells (includes OU-2 monitoring wells)
    - Proximal wells
    - Intermediate wells
    - Church of God wells
    - Toe-of-Plume wells (including Sentinel and Other toe wells)
- Troutdale aquifer wells.

The aquifer and geographic well groupings are presented on Figure 9. All wells except those identified as Troutdale aquifer wells are screened within or slightly below the alluvial aquifer.

4.2 Groundwater Trends

4.2.1 Overview

Groundwater monitoring results indicate that the current pumping scheme is maintaining control of the plume and that overall concentrations for both chromium and TCE are on decreasing trends. The extent of impacted groundwater in the alluvial aquifer, as determined from groundwater sampling data obtained in 1995 and Fall 2013, is presented on Figure 10 for chromium and on Figure 11 for TCE (OU-3 plume). These figures illustrate that groundwater remedial actions have been effective in mass removal and in reducing the footprints of both the chromium and TCE plumes.

Chromium and TCE concentrations detected in groundwater during sampling in 2013 are presented in Appendices A-1 and B-1, respectively. The highest concentration of chromium during the 2013 reporting period was detected in the sample collected from well MW-4B (787 µg/L), located within the Proximal well group (in the chromium source area), during the Fall 2013 sampling event. The highest concentration of TCE was detected in the sample collected from Northern Plume well AMW-17 (240 µg/L) during the Spring 2013 event. The highest concentration of TCE detected within the OU-3 plume was in the groundwater sample from well MW-18E (120 µg/L) during the Fall 2013 event. Wells with 2013 groundwater sampling results exceeding the Site cleanup levels of 80 µg/L for chromium and 5 µg/L TCE are highlighted on Figures 12 and 13, respectively.

For this report, tables, figures, and graphs were used to assist in evaluating groundwater trends across the Site. Chromium and TCE concentration trends are presented in Appendices A and B, respectively. The information is presented both by well groupings and by individual wells. Data provided for the individual alluvial aquifer wells have been consolidated and are presented as the geometric mean for each year. Concentration trend charts for individual alluvial aquifer wells include additional statistical information obtained from the MAROS evaluation. This is discussed further in Section 6.

Specific information on trends observed within each well grouping is discussed in the following sections. Analytical results for 2013 are provided along with prior results for comparison purposes. In data summary tables presented in this report, analytical results shown in bold are above the Site-specific cleanup level of 5 µg/L for TCE and/or 80 µg/L for chromium. For duplicate samples, the higher of the two results is reported.

4.2.2 Alluvial Aquifer

4.2.2.1 Upgradient Wells

The Upgradient wells are located near the upgradient (eastern) Site boundary. Well AMW-8A was the only well sampled for TCE, and was sampled only during the Fall event; the TCE concentration was below the cleanup level. There were no wells sampled for chromium in this area.

4.2.2.2 TCE Source Wells

The TCE Source wells are located on the western half of the Linde property (Figure 9), in the vicinity of the TCE-impacted soil. These wells are typically sampled for TCE only, as part of the OU-2 monitoring program. Analytical results for these wells during the 2013 reporting period are presented in the following table.

TCE Source Well TCE Concentrations, in µg/L				
Well	**Spring 2012**	**Fall 2012**	**Spring 2013**	**Fall 2013**
AMW-1A	**5.7**	**44**	**9.9**	**22**
AMW-2A	**6.1**	**14**	**9.3**	3.8
AMW-2B	--	0.4 J	--	0.37 J
AMW-3A	--	0.48 J	--	0.44 J
AMW-12A	**27**	**33**	**29**	**26**
AMW-13A	--	0.17 J	--	0.17 J
AMW-19A	--	1.2	--	1.1
AMW-52A	--	0.5 U	--	0.1 J
AMW-53A	1.8	**12**	**5.3**	**13**
AMW-54A	--	1.8	--	1.8
AMW-55A	--	1.3	--	1.1
AMW-56A	--	2.7	--	2.4
MW-1A	**6.1**	**6.1**	**8.2**	**10**

Five wells had TCE concentrations above the cleanup level of 5 µg/L during the 2013 reporting period, all of which are "A" level wells. "A" level wells are the shallowest wells of a well cluster and are the most impacted wells in this area. TCE concentrations in these five wells continue to fluctuate. While there may be some correlation between lower water levels and increased TCE concentrations, this does not appear to be consistent. Historically, the TCE concentrations in wells in this area tend to fluctuate but are on an overall decreasing trend (Appendix B-2).

4.2.2.3 Proximal Wells

The Proximal wells are located west of the maintenance building (former machine shop) on the Boomsnub property and east of NE St. Johns Road (Figure 9). These wells are proximal to the chromium source. All four extraction wells in this group (MW-6B, MW-10B, MW-10C, and PW-1B) were actively pumping when they were sampled during both the Spring and Fall 2013 sampling events.

Chromium

During the reporting period, chromium concentrations were above the 80 µg/L cleanup level in groundwater samples collected from five wells, as presented in the following table.

Proximal Well Chromium Concentrations, in µg/L				
Well	**Spring 2012**	**Fall 2012**	**Spring 2013**	**Fall 2013**
MW-2A	--	**190**	**489**	**220**
MW-3A	--	75.4	54.5	72.1
MW-4A	--	**362**	**505**	**376**
MW-4B	--	**407**	**638**	**787**
MW-4BSHED	--	--	68.3	65.6
MW-6A	--	--	52.6	**133**
MW-6B	48.1	17.8	19.8	20.8
MW-10B	39.6	36.2	37.6	34.6
MW-10C	**116**	**93.6**	**96**	76.3
PW-1B	49.7	34.1	42.8	44.2

Groundwater samples from wells MW-4A and MW-4B continue to have some of the highest concentrations of chromium in groundwater at the Site.

The chromium concentration in well MW-6A increased from 52.6 µg/L in Spring 2013 to above the cleanup level in Fall 2013. This well has historically had large fluctuations in chromium concentrations. Chromium concentrations in groundwater from wells in this area continue to fluctuate, with an overall decreasing trend (Appendix A-2).

TCE

During the reporting period, TCE concentrations were below the 5 µg/L cleanup level in groundwater samples collected from two of the four wells sampled, as presented in the following table.

Proximal Well TCE Concentrations, in µg/L				
Well	**Spring 2012**	**Fall 2012**	**Spring 2013**	**Fall 2013**
MW-6B	4.2	**5.1**	**5.4**	4.4
MW-10B	**16**	**16**	**14**	**14**
MW-10C	2.5	3.0	2.6	2.6
PW-1B	2.6	3.1	3.0	2.6

TCE concentrations remained above the cleanup level in well MW-10B. In well MW-6B, the TCE concentration was above the cleanup level in Spring 2013, but below in Fall 2013; TCE concentrations in this well have been fluctuating above and below the cleanup level for several years. Historically, TCE concentrations in groundwater samples from this area have been on an overall decreasing trend (Appendix B-2).

4.2.2.4 Intermediate Wells

The Intermediate wells are located west of NE St. Johns Road, north and south of NE 78th Street (Figure 9). All five extraction wells in this area were actively pumping during both the Spring and Fall 2013 sampling events (MW-14C, MW-14E, MW-18D, MW-19D, and MW-20D).

Chromium

During the reporting period, chromium concentrations remained above the 80 µg/L cleanup level in groundwater samples collected from two wells (MW-18D and MW-19D), as presented in the following table.

Intermediate Well Chromium Concentrations, in µg/L				
Well	**Spring 2012**	**Fall 2012**	**Spring 2013**	**Fall 2013**
MW-14C	77.1	69.6	67.1	63.7
MW-14E	42.1	41.1	41.7	39.9
MW-18D	**109**	**107**	**106**	**96.6**
MW-19D	**113**	**102**	**99.2**	**94.8**
MW-20D	72.8	63.5	61.4	55
CPU-14	--	37.1	--	46.8

Chromium concentrations in groundwater samples from wells in this area remained relatively stable or decreased in comparison to previous sampling results. Historically, chromium concentrations in groundwater from wells in this area have been on a decreasing trend (Appendix A-2).

TCE

TCE concentrations exceeded the groundwater cleanup level of 5 µg/L in samples from 12 of the 14 wells sampled in this area (Appendix B-2). Sampling in this area included three monitoring wells (AMW-17, AMW-18, and AMW-64) which are impacted by the Northern Plume. Northern Plume wells are sampled on a quarterly basis to evaluate potential impacts to the Site and treatment system. TCE concentrations in Northern Plume wells AMW-18 and AMW-64 decreased during sampling in 2013 as shown in the following table. In well AMW-17, the TCE concentration peaked in Spring 2013 and has decreased since.

Intermediate Well TCE Concentrations, in µg/L – Northern Plume Wells						
Well	**Spring 2012**	**Fall 2012**	**Winter 2013**	**Spring 2013**	**Summer 2013**	**Fall 2013**
AMW-17	**160**	**210**	**210**	**240**	**230**	**180**
AMW-18	**52**	**39**	**48**	**44**	**36**	**34**
AMW-64	**160**	**110**	**110**	**94**	**84**	**75**

TCE concentrations in groundwater samples from two wells located downgradient of the Northern Plume increased. The TCE concentrations in well AMW-16 have increased slightly during the past several sampling events. However, the TCE concentration in well MW-38 increased significantly from 7.4 µg/L in Fall 2012 to 70 µg/L in Fall 2013. Previous concentrations detected in this well showed a decreasing trend (Appendix B-2). The sudden increase in TCE concentration in MW-38 appears to indicate the arrival of the Northern Plume at this well. Historically, TCE concentrations in groundwater samples from wells in this area have been on a decreasing trend, except where impacted by the Northern Plume (Appendix B-2). Additional discussion of the Northern Plume, including previous monitoring results, is provided in the Fall Semiannual Groundwater Sampling Report (EA 2014).

TCE concentrations in groundwater samples collected from the OU-3 plume generally remained relatively stable or decreased in comparison to previous sampling results as shown in the following table.

Intermediate Well TCE Concentrations, in µg/L				
Well	**Spring 2012**	**Fall 2012**	**Spring 2013**	**Fall 2013**
AMW-16	0.17 J	1.8	2.0	4.4
MW-14C	**11**	**19**	**14**	**12**
MW-14E	**72**	**67**	**75**	**74**
MW-15E	4.5	4.2	3.4	3.2
MW-18D	**47**	**49**	**42**	**41**
MW-18E	--	**170**	--	**120**
MW-19D	**30**	**34**	**27**	**29**
MW-20D	**47**	**45**	**44**	**39**
MW-38	--	**7.4**	--	**70**
CPU-14	--	**5.2**	--	**6.4**
PZ-39	**56**	**54**	**53**	**43**

4.2.2.5 Church of God Wells

The Church of God wells are located north of NE 78th Street between the west side of the Clark County sports field complex and the western Church of God property line (Figure 9). Two extraction wells in this area (MW-21D and MW-22D) were actively pumping during both the Spring and Fall 2013 sampling events. With EPA approval, other extraction wells in this area downgradient of the leading edge of the Plume (AMW-27, MW-25D, MW-26D, and MW-49), were shut off on 14 January 2013, and extraction well CPU-13 was shut off on 1 May 2013. Church of God wells sampled for chromium and TCE during 2013 are shown in the following tables. Note that former extraction well AMW-27 was sampled on a quarterly basis in 2013, following shutdown of the pump in this well.

Chromium

Chromium was not detected above the 80 µg/L cleanup level in any of the groundwater samples collected during 2013 from Church of God wells, as presented in the following table. Note that well AMW-27 was not sampled for chromium during Fall 2013 because this well was sampled using a passive diffusion bag (PDB) sampler, as approved by EPA.

Church of God Well Chromium Concentrations, in µg/L						
Well	**Spring 2012**	**Fall 2012**	**Winter 2013**	**Spring 2013**	**Summer 2013**	**Fall 2013**
AMW-27	--	--	3.9 J	4.8	15.8	--
MW-21D	6.7	12	--	9.3	--	8.8
MW-22D	28.5	25.4	--	22.8	--	23.3
MW-25D	3.4 J	2.7 J	--	3.3 J	--	3.9 J
MW-26D	6.6	11.7	--	38.6	--	7.0
MW-27D	--	12.9 UJ	--	--	--	18.9 UJ
MW-49	9.5	9.3	--	11.6	--	11.4
CPU-13	19.5	16.4	--	25.3	--	44.8

TCE

During the reporting period, TCE concentrations were above the 5 µg/L cleanup level in groundwater samples collected from two wells (AMW-27 and silt well AMW-61), as presented in the following table.

Church of God Well TCE Concentrations, in µg/L						
Well	**Spring 2012**	**Fall 2012**	**Winter 2013**	**Spring 2013**	**Summer 2013**	**Fall 2013**
AMW-27	**12**	**6.8**	**5.6**	5.0	4.9	**6.6**
AMW-61	--	**5.4**	**--**	2.4	**--**	**8.5**
MW-21D	**5.4**	**5.3**	--	4.3	--	3.5
MW-22D	**6.8**	**5.6**	--	4.5	--	3.7
MW-23D	--	1.4	--	--	--	1.2
MW-25D	1.3	1.3	--	2.6	--	3.0
MW-26D	0.76	0.84	--	2.1	--	0.46 J
MW-27D	--	0.89	--	--	--	1.1
MW-49	1.4	1.1	--	1.5	--	1.7
CPU-12	--	4.9	--	--	--	4.4
CPU-13	1.4	1.5	--	1.2	--	0.92

TCE concentrations in samples collected from wells AMW-27 and AMW-61 fluctuate but continue on a decreasing trend (Appendix B-2). Well AMW-27 was sampled in Winter, Spring, and Summer 2013 using a dedicated pump and the low-flow sampling technique. Due to the very large drawdowns encountered in this well, even using minimal flow rates, the sampling

technique was changed to use of PDBs, starting in Fall 2013. For the Fall 2013 event, two PDBs were deployed in well AMW-27, one extending from approximately 80 to 82 ft bgs and one from approximately 84 to 86 ft bgs. The TCE concentration in the shallower PDB was 5.7 µg/L and that in the deeper PDB was 6.6 µg/L. The higher TCE concentration has been used in the tables in this report to represent the well concentration. Note that TCE concentrations in samples collected from extraction wells MW-21D and MW-22D dropped below the cleanup level for the first time in Spring 2013 and remained below in Fall 2013. Historically, TCE concentrations in samples collected from wells in this area have been on an overall decreasing trend (Appendix B-2).

4.2.2.6 Toe-of-Plume Wells

The Toe-of Plume wells are located west of the Church of God building (Figure 9). These wells are divided into two groups for discussion purposes: Sentinel wells and Other Toe wells. The Sentinel wells are monitoring wells located at or beyond the historical leading edge of the chromium plume. No Sentinel wells were sampled during the reporting period. Other Toe wells are located west of the Church of God property and east of the Sentinel wells. One Other Toe well was sampled during the reporting period, as presented in the following table.

Toe-of-Plume Well Concentrations, in µg/L				
Well	**Spring 2012**	**Fall 2012**	**Spring 2013**	**Fall 2013**
Chromium				
MW-35	--	16.5 UJ	--	17.6
TCE				
MW-35	--	**5.4**	5.0	4.6

The chromium concentration in well MW-35 remains below the cleanup level. TCE concentrations in this well have been fluctuating above and below the cleanup level since 2004 (Appendix B-2).

4.2.3 Troutdale Aquifer Wells

The Troutdale aquifer serves as a municipal water supply for the City and Clark County. Groundwater samples were collected from three Troutdale aquifer wells, including the Bennett private well, during the 2013 reporting period.

Chromium
Chromium concentrations were below the 80 µg/L cleanup level in all three wells sampled, as presented in the following table. This is consistent with previous results (Appendix A-2).

Troutdale Aquifer Well Chromium Concentrations, in µg/L				
Well	**Spring 2012**	**Fall 2012**	**Spring 2013**	**Fall 2013**
AMW-24	--	8.8	--	6.6
BENNETT	5.0 U	5.0 U	4.0 U	4.0 U
MW-33	--	3.2 J	--	1.9 J

TCE

During the reporting period, TCE concentrations were above the 5 µg/L cleanup level in groundwater samples collected from two wells (AMW-24 and MW-33), as presented in the following table.

Troutdale Aquifer Well TCE Concentrations, in µg/L				
Well	**Spring 2012**	**Fall 2012**	**Spring 2013**	**Fall 2013**
AMW-24	--	**11**	--	**11**
BENNETT	3.8	**6.9**	3.1	4.6
MW-33	--	**11**	--	**11**

TCE concentrations in groundwater from wells AMW-24 and MW-33 have fluctuated somewhat but have consistently remained above the cleanup level. The TCE concentration in groundwater from the Bennett private well was below the cleanup level during 2013, but historically fluctuates above and below the cleanup level (Appendix B-2).

4.2.4 TCE as a VOC Indicator

In addition to chromium and TCE, groundwater samples were also analyzed for additional VOCs as listed in the ROD (EPA 2000). Of these additional parameters only 1,1-dichloroethene (1,1-DCE) exceeded the cleanup level of 1 µg/L during the reporting period.

TCE analytical results are used as a surrogate for the other VOCs in order to streamline data reporting. TCE continues to be an effective indicator of VOCs. In OU-2 and OU-3 wells where TCE concentrations are below the cleanup level, the associated VOCs have typically been below the cleanup level. Concentrations of 1,1-DCE above the cleanup level were only detected in wells where TCE was also detected at concentrations above the cleanup level, with one exception noted in Fall 2013. As shown in the following table, in well AMW-16, the concentration of 1,1-DCE (2.0 µg/L) was above the cleanup level of 1 µg/L but the concentration of TCE (4.4 µg/L) was below the cleanup level of 5 µg/L during Fall 2013. The table presents TCE and 1,1-DCE results from the Fall 2013 sampling event for wells where 1,1-DCE exceeded the cleanup level. Wells where only TCE concentrations exceeded the cleanup level are not included on the table. Note that the TCE and 1,1-DCE concentrations have increased slightly in groundwater samples from well AMW-16 over the past year. This well is located downgradient of the Northern Plume.

Wells with 1,1-DCE Concentrations Exceeding the Cleanup Level in Fall 2013			
Well Group	**Well**	**TCE (µg/L)**	**1,1-DCE (µg/L)**
Intermediate	AMW-16	4.4	**2.0**
	MW-14E	**74**	**3.4**
	MW-18E	**120**	**12**
	MW-19D	**29**	**1.5**
	MW-20D	**39**	**2.8**
	MW-38	**70**	**1.2**
	PZ-39	**43**	**4.1**
Troutdale	AMW-24	**11**	**1.6**
	MW-33	**11**	**1.5**
Cleanup or Guidance Level		5	1

5. OTHER ACTIVITIES

During the 2013 reporting period, the following additional activities were performed.

5.1 Access Agreements and Easements

EA, on behalf of Linde, continued pursuing access agreements and restrictive covenants for non-Linde owned properties, as required by Sections 25 and 26 of the CD (EPA 2007a). Further progress is pending EPA assistance to gain access agreements and restrictive covenants from non-responsive property owners.

5.2 Ion Exchange Issues

A biological growth has been causing frequent clogging of the influent filters in the treatment system. EA continues to investigate the source of this growth and ways to prevent it. At this time, management through frequent filter replacement has been a practical short term solution.

5.2.1 Sustainability Practices

Linde and EA have a commitment to sustainable practices. In the office and in the field, attempts are made to reduce, reuse, and recycle whenever possible. In addition, the following monitoring and O&M activities are in place:

- Using passive PDBs or dedicated pumps for groundwater sampling wherever possible to eliminate the use of disposable tubing and decontamination solutions.
- Using the infiltration gallery to discharge treated groundwater from the OU-3 treatment system back into the alluvial aquifer instead of the sanitary sewer, eliminating the processing of millions of gallons per year of clean water through the City sewage treatment plant.
- Upgrading the groundwater treatment system to minimize energy usage by using variable frequency drives and smaller pumps, optimizing water flow to minimize head loss, removing redundant tanks (and pumps), and replacing air stripper packing.

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6. ANNUAL SCREENING OF GROUNDWATER MONITORING DATA

This section summarizes the sixth annual screening of groundwater monitoring data for the Site, conducted in accordance with the revised Draft Closure Plan (EA 2009). The annual screening evaluates data collected at the Site since 1995 (the year the Site was placed on the National Priorities List) for each alluvial aquifer monitoring and extraction well in the current sampling program. The data are used to determine what changes, if any, should be made to active system operations and the well sampling schedule.

A combination of quantitative and qualitative evaluations of the Site data was used to derive the recommendations for the annual screening. The Air Force Center for Engineering and the Environment (AFCEE) MAROS version 3.0 was used for the quantitative evaluation for alluvial aquifer wells. MAROS is a computer program developed to optimize long-term groundwater monitoring (AFCEE 2012). Using statistical analyses, MAROS makes recommendations on sampling frequencies and determines if groundwater concentrations are statistically below cleanup levels. The qualitative evaluation consisted of professional judgment based on Site experience. The quantitative and qualitative evaluations do not always reach the same conclusions. When this occurs, professional judgment takes priority. The annual screening evaluations were based on TCE and chromium concentrations in groundwater.

Annual screening recommendations fall into four categories:

- Redundancy: Determines if a well provides duplicate data or unique data on a constituent (TCE and/or chromium) that cannot be seen in other wells.
- System Operations: Determines if modifications to operations are necessary to achieve concentrations below cleanup levels.
- Termination: Determines whether concentrations of constituents detected in groundwater samples from wells are statistically below cleanup levels. Aids in the decision to terminate treatment and/or discontinue monitoring.
- Sampling Frequency: Determines sampling frequencies for wells that require continued monitoring.

Factors used in the quantitative evaluation are presented in the 2013 MAROS Results Summary Table (Table C-1). In the table, wells are presented by well groupings (as presented in Section 4.1) to demonstrate what is happening in specific areas of the plume. Note that wells designated for no further sampling in the 2012 Annual Report, or prior, are not included in this evaluation. Statistical summaries for each alluvial aquifer well are included in Appendices A-3 (chromium) and B-3 (TCE). Additional outputs created by MAROS during the evaluation are included in Appendix C.

The following sections describe how the four categories are evaluated, and also include the results of the evaluation for each category.

6.1 Redundancy

Monitoring of a well may be discontinued based on the redundancy analysis in MAROS. This analysis evaluates whether or not a well provides unique information and recommends elimination of wells that do not provide unique information. If MAROS indicates a well is statistically redundant for both TCE and chromium, it may be eliminated from future monitoring because there will be no statistically significant loss of information.

The MAROS redundancy analysis is based on the Delaunay method. "The well redundancy analysis using the Delaunay method is designed to select the minimum number of sampling locations based on the spatial analysis of the relative importance of each sampling location in the monitoring network. The approach allows elimination of sampling locations that have little impact on the historical characterization of a contaminant plume" (EPA 2007b).

The slope factor determines the relative importance of a sample location. The slope factor is the standardized difference between the concentration measured at a location and the concentration estimated for that location based on concentrations at nearby wells. The magnitude of slope factors ranged from 0 to 1, with 0 meaning the concentration at a location can be exactly estimated by the surrounding wells (EPA 2007b).

The following wells were identified as redundant during the analysis: MW-6B for TCE, MW-9B for TCE, MW-14C for TCE, MW-19D for TCE and chromium, CPU-13 for chromium, and MW-22D for TCE (Table C-1). Wells MW-6B, MW-14C, MW-19D, and MW-22D are active extraction wells; therefore, they will continue to be monitored on a semiannual basis for both TCE and chromium. Well CPU-13 is an inactive extraction well which was turned off in mid-2013; therefore, it will continue to be monitored on a semiannual basis for at least one year following shutdown. TCE concentrations have only recently decreased to concentrations below the Site-specific cleanup level in well MW-9B; therefore, that well will continue to be sampled on a biennial basis for now.

6.2 System Operations

If contaminant concentration trends in a well are increasing or fluctuating above and below cleanup levels, modifications to the extraction system operations may be necessary. Trend analysis was conducted using MAROS and graphs of contaminant concentrations. Professional judgment was used to determine if continued operations are anticipated to bring the well into compliance with cleanup levels or if modifications to system operations are necessary.

MAROS uses the Mann-Kendall nonparametric evaluation to determine the concentration trend (Mann-Kendall trend) for each well. The Mann-Kendall evaluation is considered to be an efficient way to evaluate concentration trends because it handles data variation well and it does not assume the data fits into a specific distribution (EPA 2007b). Some wells will not have sufficient data for the Mann-Kendall evaluation to output a trend and MAROS will indicate that the well concentration has no trend.

In some cases where the Mann-Kendall trend indicates an increasing or a possibly increasing concentration trend, the trend is due to data outliers or different detection limits and may not be a true representation of the trend. For these wells, a qualitative evaluation of the trend graphs was used to determine if any action needed to be taken.

The Mann-Kendall trends for TCE and chromium are presented in Table C-1. For wells with Mann-Kendall trends that were increasing or possibly increasing, graphs of the data were reviewed. In some cases, the increasing or possibly increasing trends were due to recently reported "J" flagged (estimated) concentrations, between the method detection limit and the method reporting limit (MRL). MAROS interprets these results as higher than "U" flagged concentrations, or concentrations reported below the MRL. For example, MAROS would interpret a result of 0.32 J (estimated) µg/L as higher than 0.5 U (not detected) µg/L. In a few cases, contaminant concentrations have fluctuated somewhat over time, or have increased slightly but remain below the cleanup level.

Increasing trends are indicated for the following wells and constituents: TCE in AMW-7A, chromium in MW-1A, and TCE in AMW-18. In infiltration gallery monitoring well AMW-7A, TCE concentrations increased to detectable levels following initial disposal of treated groundwater in this area in 2006; however, the concentrations have not increased since that time. In chromium background well MW-1A (located near the upgradient boundary of the chromium source area), chromium concentrations have fluctuated somewhat; however, overall concentrations are not currently increasing. In Northern Plume monitoring well AMW-18, TCE concentrations increased during 2006-2008 as the offsite plume reached this well, but have been decreasing since that time. TCE contamination in well AMW-18 is related to the Northern Plume and is separate from the OU-3 plume (EA 2011). No system modifications are recommended based on the trend results for these three monitoring wells.

6.3 Termination

"Termination", in this annual screening process, refers to the termination (shutdown) of an extraction well or the discontinuation of monitoring of a well. The MAROS Data Sufficiency module uses the sequential T-test to determine if contaminants in groundwater are statistically below cleanup levels (AFCEE 2012). This aids in the decision to terminate treatment and/or discontinue monitoring.

The sequential T-test outputs two "cleanup statuses" per well, one for data with a normal distribution and one for a lognormal distribution. The coefficient of variation (COV) was used to determine which distribution best represents the data collected from each well. The COV is a measure of the variation of data points from the mean. If the COV was less than 1.00, the data showed little scatter and the normal distribution results were used. If the COV was greater than 1.00, the lognormal distribution results were used.

The sequential T-test classifies wells as Attained, Not Attained, Continue Sampling, or Insufficient Data. "Attained indicates the mean concentration is significantly below the cleanup goal, and has achieved the TargetLevel" (AFCEE 2012). The *TargetLevel* default value is

0.8 times the cleanup goal. MAROS recommends continuing sampling for wells that need more data to be considered attained and statistically below cleanup levels. The sequential T-test was not conducted on wells with insufficient data due to their small sample size (less than four samples or four years' worth of data). Since data have been consolidated annually in order for MAROS to handle the data, the sample size indicated in Table C-1 corresponds with the number of years sampled.

Attained means that contaminant concentrations in a specific well are statistically below the cleanup level, as determined by the MAROS evaluation. Note that the MAROS definition of attainment does not correspond to EPA's definition of attainment. Once the MAROS evaluation indicates that a well and constituent are "attained", that well and constituent are typically recommended for no further sampling.

The cleanup status, shown on Table C-1, was used to determine if the contaminant concentration was statistically below cleanup levels. With the exception of TCE Source wells, only wells that were classified as attained for both chromium and TCE were considered statistically below cleanup levels based on the MAROS definition. TCE Source wells only need to be statistically below cleanup levels for TCE, since the area is upgradient of the chromium plume and not monitored for chromium.

For extraction wells that are actively pumping when MAROS indicates cleanup has been achieved for TCE and chromium, pumping may be terminated. Monitoring will continue at these wells to ensure that cleanup levels are maintained as the well returns to equilibrium.

For some monitoring wells, the most recent MAROS evaluation concluded that TCE and/or chromium concentrations are statistically below the cleanup level and no further sampling is required. These wells are indicated on Tables 2 and C-1. Wells for which previous MAROS evaluations concluded that TCE and/or chromium concentrations were statistically below the cleanup level, and which were previously designated for no further sampling, are also listed in Table 5.

Wells in the Sentinel Toe well grouping are monitoring wells located at or beyond the historical leading edge of the chromium plume and are a part of the Toe-of-Plume wells. Chromium concentrations in groundwater samples collected from the Sentinel Toe well grouping have remained consistently below the cleanup level. TCE has never been detected in the Sentinel Toe well grouping. The 2008 MAROS analysis determined that groundwater samples from wells in the Sentinel Toe well group had attained (per the MAROS definition) the chromium and TCE cleanup levels. With EPA approval, this area of the plume is no longer monitored. The "Other Toe of Plume" area is now the most downgradient plume area being monitored.

Although MAROS recommended no further sampling for the four infiltration gallery monitoring wells (AMW-6A, AMW-7A, AMW-10A, and AMW-11A), these wells will continue to be sampled to monitor potential impacts of the use of the infiltration gallery. Additionally, although MAROS recommended no further sampling for Toe-of-Plume wells AMW-63 and MW-41, these wells will continue to be sampled at the request of EPA.

6.4 Sampling Frequency

As part of the Annual Screening, the current sampling frequency for each well is evaluated and, if appropriate, revised. When proposing a revised sampling frequency for a well, the following factors are considered: the current sampling frequency, the MAROS recommended sampling frequency, the use of the well at the Site, and whether the constituents of concern are statistically below the cleanup levels. These factors are presented in the Wells and Recommended Sampling Frequencies Table (Table 2).

For wells with groundwater concentrations statistically below cleanup levels for TCE and/or chromium, sampling will be discontinued for TCE and/or chromium unless the qualitative analysis identifies a need for data from the well. For wells that are not identified for discontinuing sampling, MAROS uses a Modified Cost Effective Sampling Method to propose sampling frequencies for individual wells (AFCEE 2012). The resulting frequencies are "based on the magnitude, direction, and uncertainty of its concentration trends" (EPA 2007b). The recommendations made by MAROS are considered preliminary since they are the lowest frequencies needed to provide the adequate amount of data to reach statistical cleanup and may not correspond with the monitoring objectives for that well. For example, if MAROS recommends annual sampling, but the well is used to monitor treatment system performance, sampling may be conducted more frequently until the treatment is complete. In some cases, MAROS may recommend more sampling than is necessary for the Site objectives.

A number of Site monitoring wells are part of a well cluster. Well clusters may include wells with designations of A, B, C, D, and E. These alphabetical designations represent different well screen depths. In each well cluster, typically the most impacted well is sampled the most frequently. In some well clusters, this means that chromium is sampled more frequently in one well while TCE is sampled more frequently in another well. In a few cases, one of the wells in a cluster is an extraction well and is sampled according to the schedule for extraction wells. Following many years of sampling well cluster wells, the most impacted wells have typically remained the same. Sampling of wells screened at less impacted depths in a cluster does not provide any additional data of use in site decision making; therefore, those wells may be recommended for no further sampling.

Table 2 shows the current (2013) sampling frequency for each well, along with the MAROS recommended sampling frequency. These were evaluated for each well and sampling frequency recommendations for 2014 were determined using professional judgment. Recommended changes to the sampling frequencies (2014 recommendations) are included in Table 2 and summarized in Table 3. More detailed descriptions of the reasoning behind the recommended changes are provided in Table 4.

Since the OU-3 groundwater pump and treat system treats the alluvial aquifer and not the Troutdale aquifer, the MAROS analysis was not performed on Troutdale wells. A qualitative analysis was completed to re-evaluate the sampling frequencies for the Troutdale wells. No changes in sampling frequency were recommended for these wells. General information for Troutdale aquifer wells is provided in Table 2.

Wells designated for no further sampling as of the previous (2012) Annual Report have been removed from the MAROS evaluation tables and sampling frequency tables. These wells, along with a brief description of the basis for their removal from sampling, are listed in Table 5.

Wells designated for no further sampling as of this report are included in the MAROS evaluation tables and the sample frequency table (Table 2), and are further described in Table 5. Wells for which one of the parameters (chromium or VOCs) is being sampled but the other has been discontinued, are also listed in the MAROS evaluation tables and the sample frequency table, as well as in Table 5.

TCE and chromium concentrations continue to decrease at the Site (excluding wells impacted by TCE from the offsite Northern Plume). The most important data continue to be those from the active remediation areas, including the OU-3 extraction wells and wells in the OU-2 source removal area. These data are critical to decision making at the site. Frequent sampling of wells with no detectable TCE or chromium, or with TCE and chromium concentrations consistently below the cleanup levels, does not aid in decision making. If increases in contaminant concentrations are noted in a sampled well, additional samples may be collected from nearby wells. Wells recommended for no further sampling will still be available for future sampling, if needed.

Most of the recommended changes to monitoring frequencies for 2014 apply to wells in two areas; Proximal wells and Church-of-God wells (Table 2). The sampling frequency for six Proximal wells, located in the chromium source area, was increased during 2013 at the request of EPA (for chromium only). Now that the requested one year of additional monitoring has been completed, the sampling frequency for these wells is recommended to revert to 2012 levels. In the Church-of-God area, several inactive extraction wells were sampled on a relatively frequent basis during 2013 to monitor for potential contaminant rebound following extraction pump shut down. Now that one year of monitoring for potential rebound has been completed, the recommended sampling frequencies are being decreased.

6.5 Annual Well Screening Conclusions and Recommendations

Based on the results of the annual screening of groundwater monitoring data through 2013, the following conclusions are made:

- No modifications to system operations are necessary at this time.
- Changes to sampling frequencies are recommended for 15 wells based on the results of the MAROS evaluation and on the qualitative review. Well sampling frequency recommendations for 2013 are provided in Table 2 and summarized in Table 3. Further description of the reason for the changes is provided in Table 4.

7. RECOMMENDATIONS AND PLANNED ACTIVITIES

The following sections summarize activities conducted during the 2013 reporting period, as well as recommendations and planned activities for 2014.

7.1 Status of Previous Recommendations From 2013

In order to meet the operating objectives for OU-2 and OU-3, planned activities for 2013 were recommended in the 2012 Annual Status report. The status of those planned activities is summarized below:

- **IWS System Shutdown and Rebound Testing** – The IWS system has removed more than 95% of the mass of TCE since start-up; however, asymptotic removal rates have been reached and TCE concentrations have not been significantly reduced in recent years. A plan for IWS system shutdown was submitted to EPA on 25 June 2013 to address proposed shutdown of the system and continued groundwater monitoring at OU-2 (EA 2013e). EPA approved shutdown of the system and it was turned off on 9 August 2013. The IWS system will remain turned off for a period of two years, during which time groundwater samples will be collected from monitoring wells within the TCE source area to monitor for changes or potential rebound of VOC concentrations.
- **Well Sampling** – Wells were sampled in accordance with the updated sampling schedule.
- **Infrastructure Removal** – Selected infrastructure in the original Toe-of-Plume area was recommended for decommissioning because it is no longer needed for Site remediation or monitoring, and removal is desired to allow development of Parcel No. 144718-000 by the owner. Recommendations regarding infrastructure removal on the parcel were provided to EPA in a letter dated 21 August 2012. EPA provided verbal comments on the plan, including their objection to some of the proposed well decommissioning; therefore, the work was not completed.
- ***In Situ* Treatments** – *In situ* treatments in the area of wells MW-35 and AMW-27, as described in the Work Plan for In Situ Treatment of Areas of Residual Contamination (EA 2012b) were not completed in 2013. EPA approval of the work plan has not yet been received and an Explanation of Significant Differences to the ROD has not yet been submitted by EPA.
- **Modify System Pumping Rates** – Following receipt of EPA approval, extraction system pumping rate modifications were implemented, as described in Groundwater Modeling Technical Memorandum No. 5 (EA 2013a). Extraction wells in the Church of God area (AMW-27, MW-25D, MW-26D, and MW-49), downgradient of the leading edge of the Plume, were shut off on 14 January 2013, and extraction well CPU-13 was shut off on 1 May 2013.

- **Easements and Access Agreements** – EA continued efforts toward obtaining easement agreements and restrictive covenants with neighboring property owners. EPA assistance has been requested with this.

7.2 Recommendations and Planned Activities for 2014

The following activities are planned for the 2014 reporting period:

- **Well Sampling** – Sample wells in accordance with the updated sampling schedule.
- **Infrastructure Removal** – Submit a revised proposal for removal of selected infrastructure in the original Toe-of-Plume area to EPA. This infrastructure is no longer needed for Site remediation or monitoring, and is planned for removal to allow development of Parcel No. 144718-000 by the owner.
- ***In Situ* Treatments** – Following receipt of EPA approval of the work plan, and approval of an Explanation of Significant Differences, implement *in situ* treatments in the area of wells MW-35 and AMW-27, as described in the Work Plan for In Situ Treatment of Areas of Residual Contamination (EA 2012b).
- **IWS System Rebound Testing** – Continue to perform groundwater sampling in OU-2 to monitor for possible contaminant rebound.
- **Monitoring Well MW-38 –** The TCE concentration in groundwater samples from MW-38 increased rapidly between Fall 2012 and Fall 2013, indicating the apparent arrival of the Northern Plume at this well. If the results of sampling in 2014 confirm the presence of elevated TCE concentrations in groundwater samples from this well, it is recommended that MW-38 be grouped with the Northern Plume wells in future data reporting and evaluation.
- **Easement Agreements and Restrictive Covenants –** Continue to request EPA assistance with obtaining the required agreements with non-responsive property owners. EA will continue efforts to obtain agreements as opportunities arise.

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FIGURES

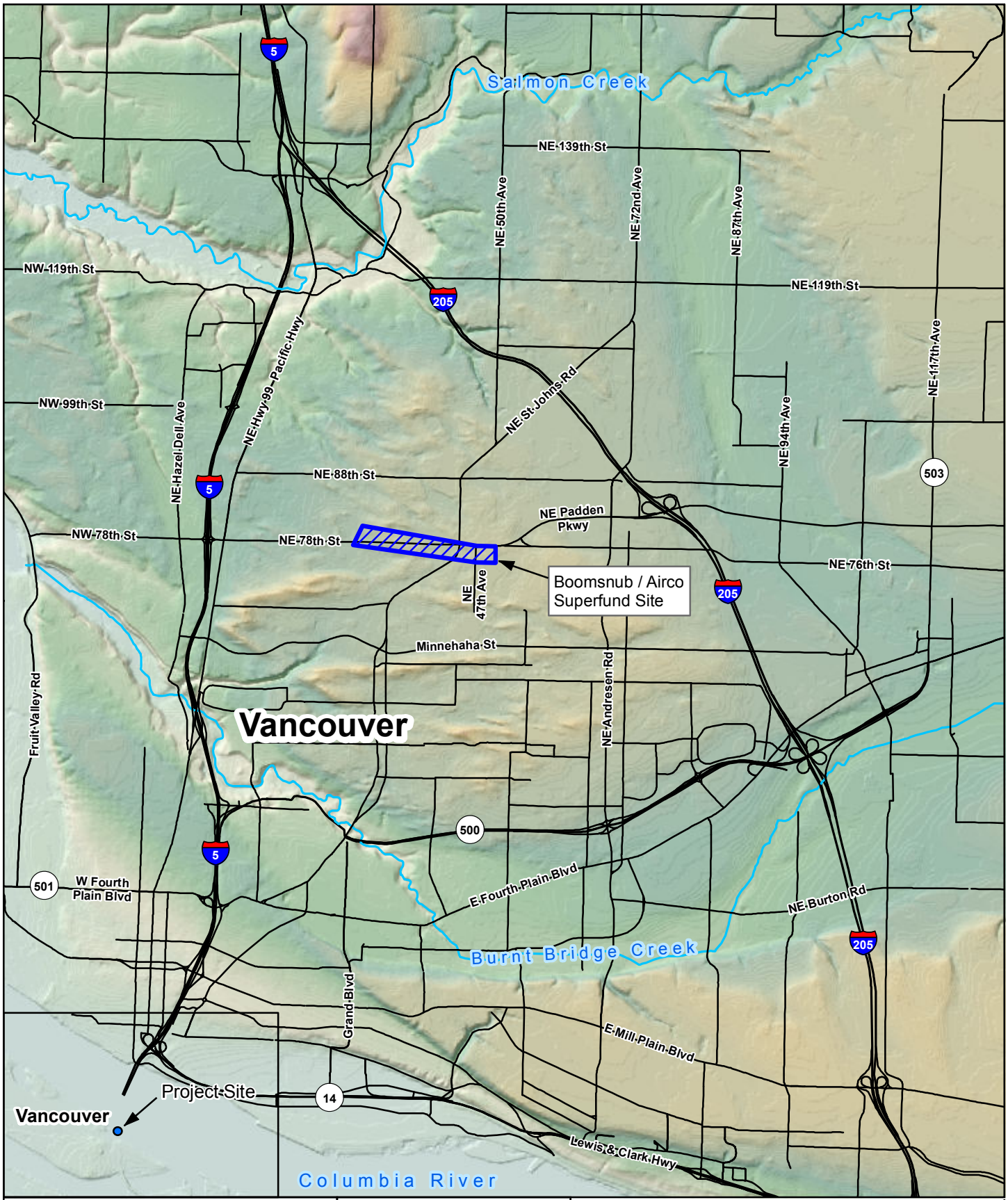

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FIGURE 1
SITE LOCATION MAP

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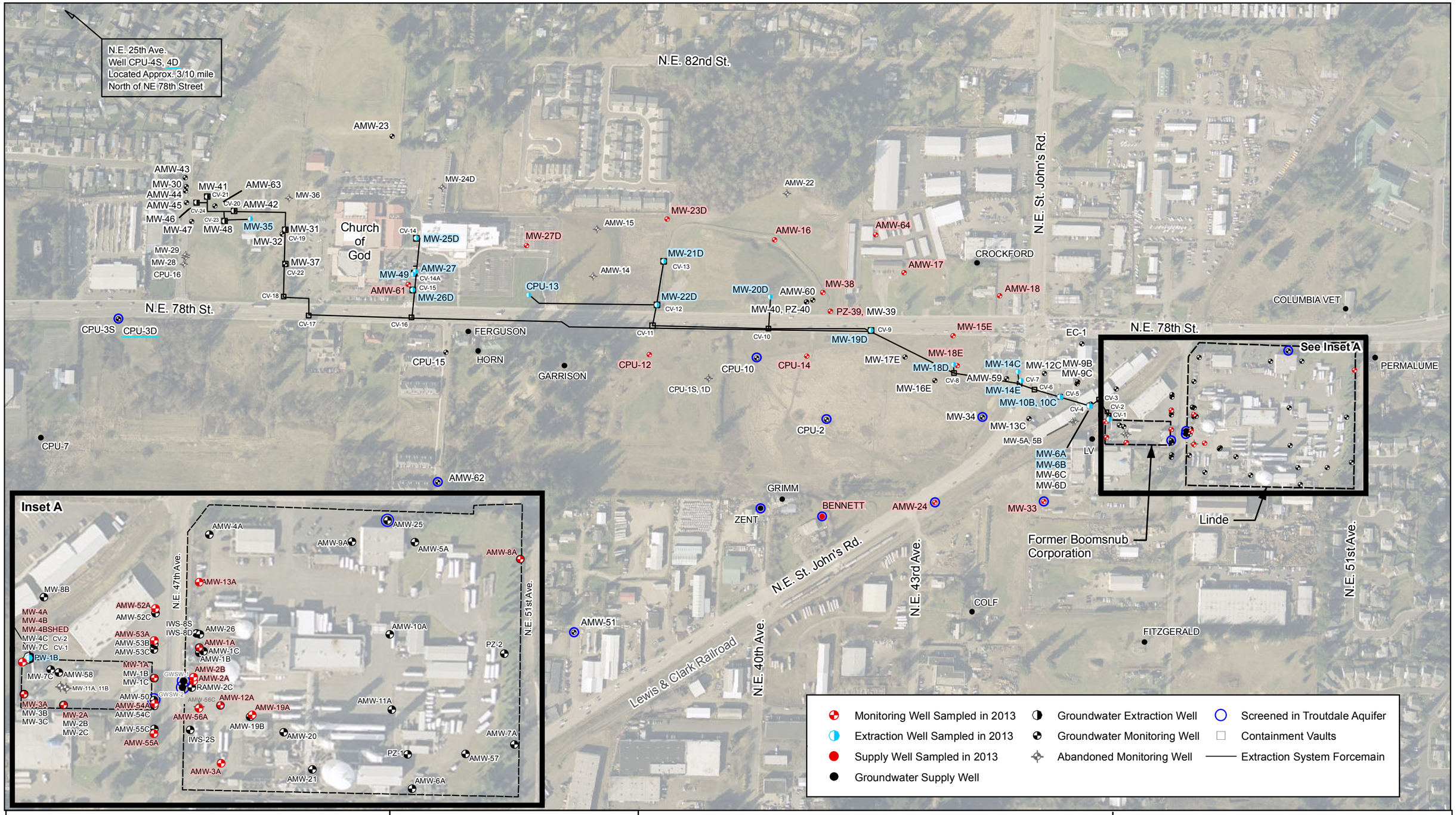

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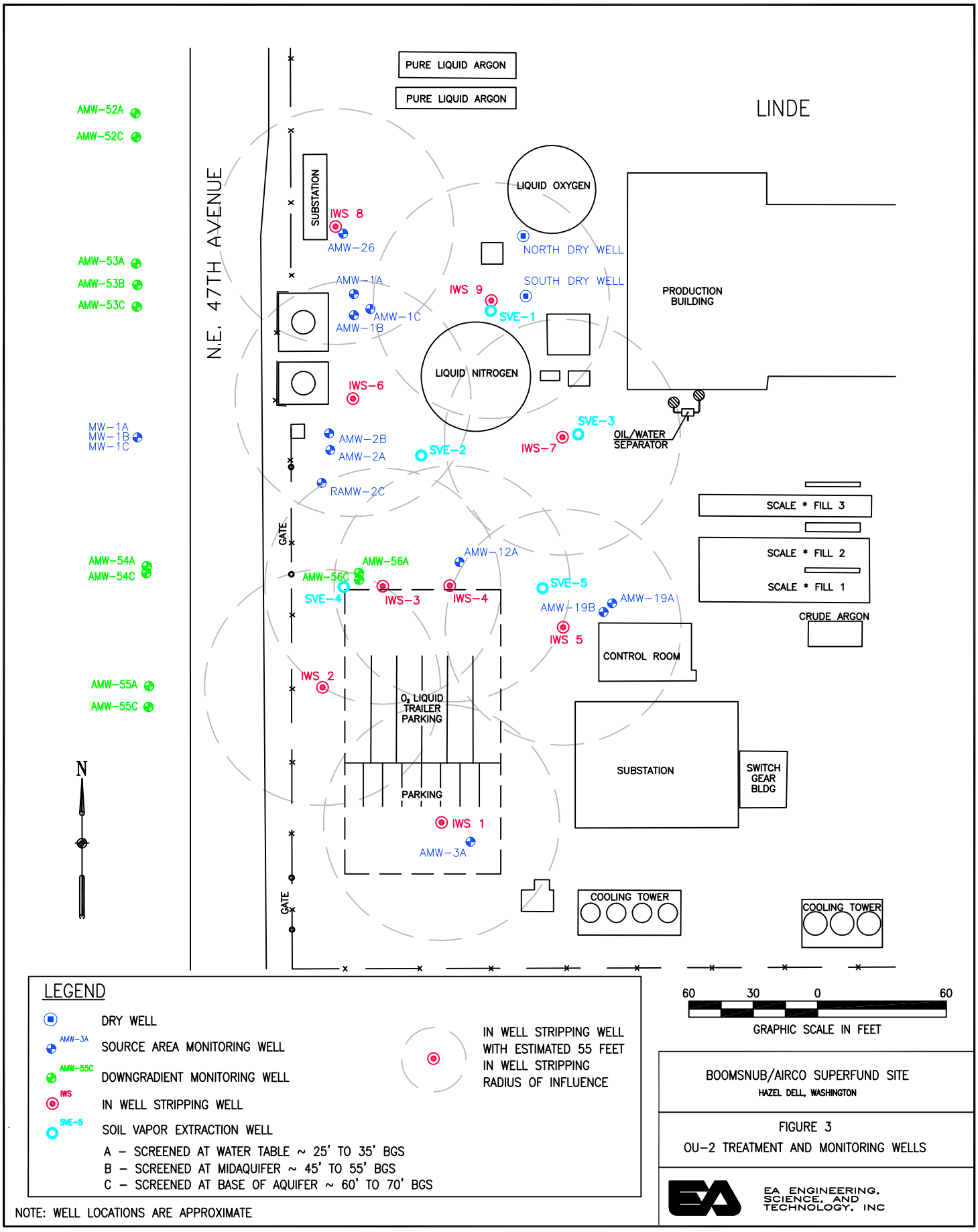
File Name: Fig_2_Monitoring_and_Extraction_Well_Network.mxd

FIGURE 2
MONITORING AND EXTRACTION WELL NETWORK



NOTE: WELL LOCATIONS ARE APPROXIMATE

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FIGURE 3
OU-2 TREATMENT AND MONITORING WELLS

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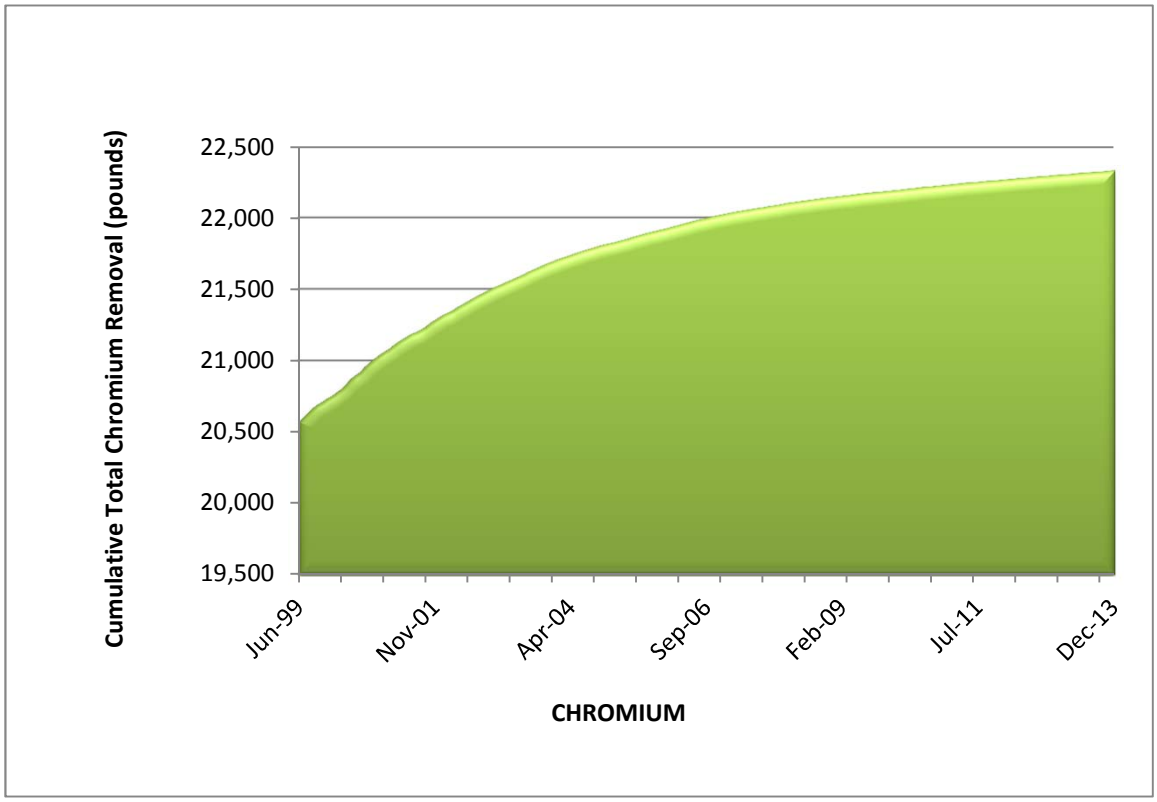
FIGURE 4. CUMULATIVE REMOVAL OVER TIME



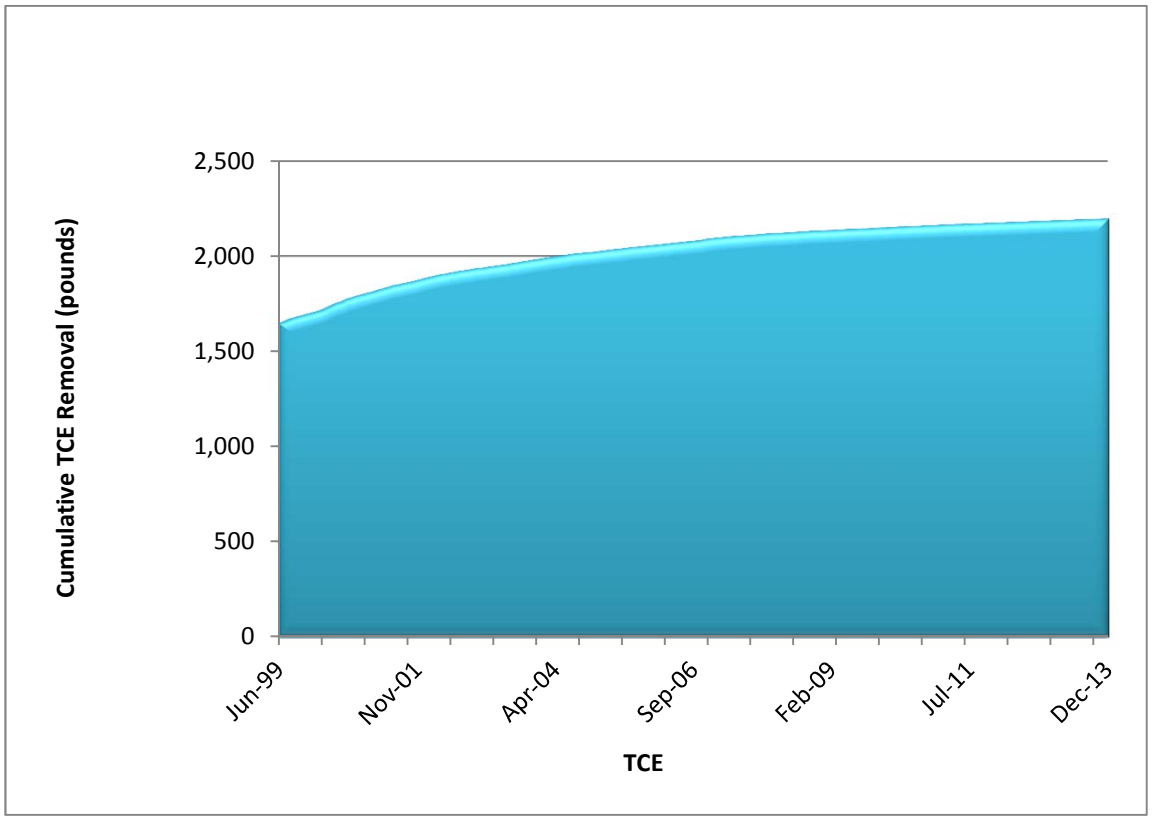
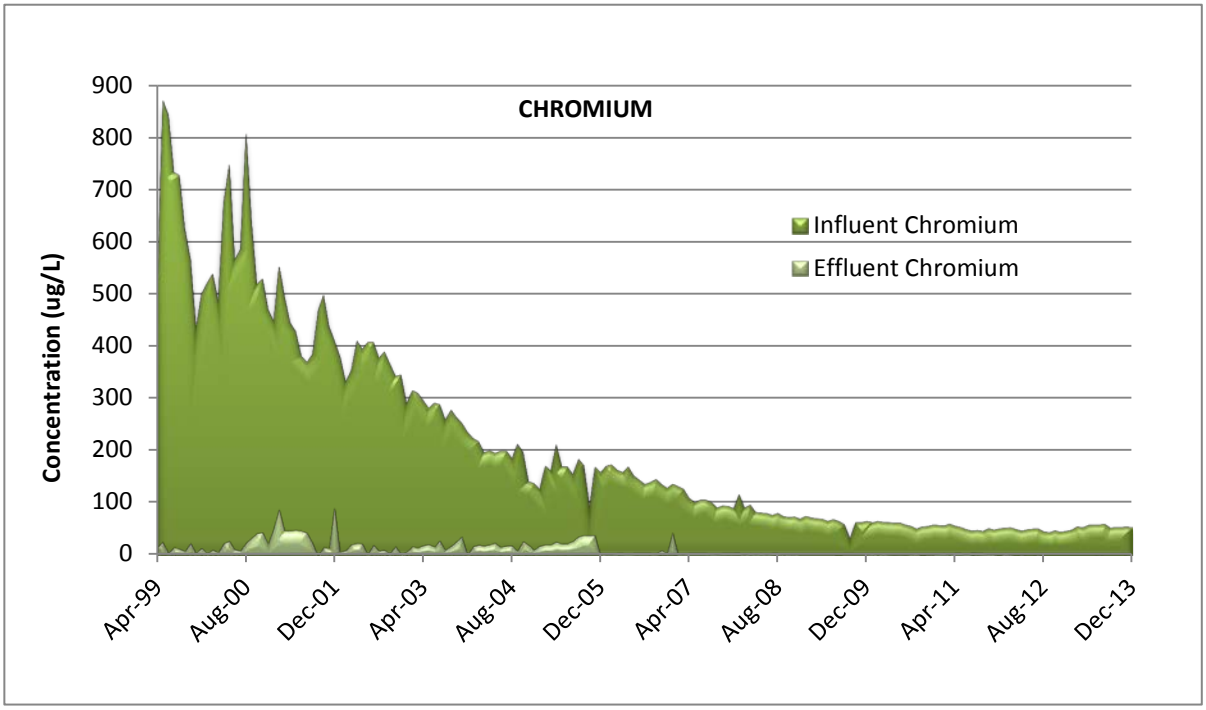


FIGURE 5. INFLUENT AND EFFLUENT CONCENTRATIONS OVER TIME



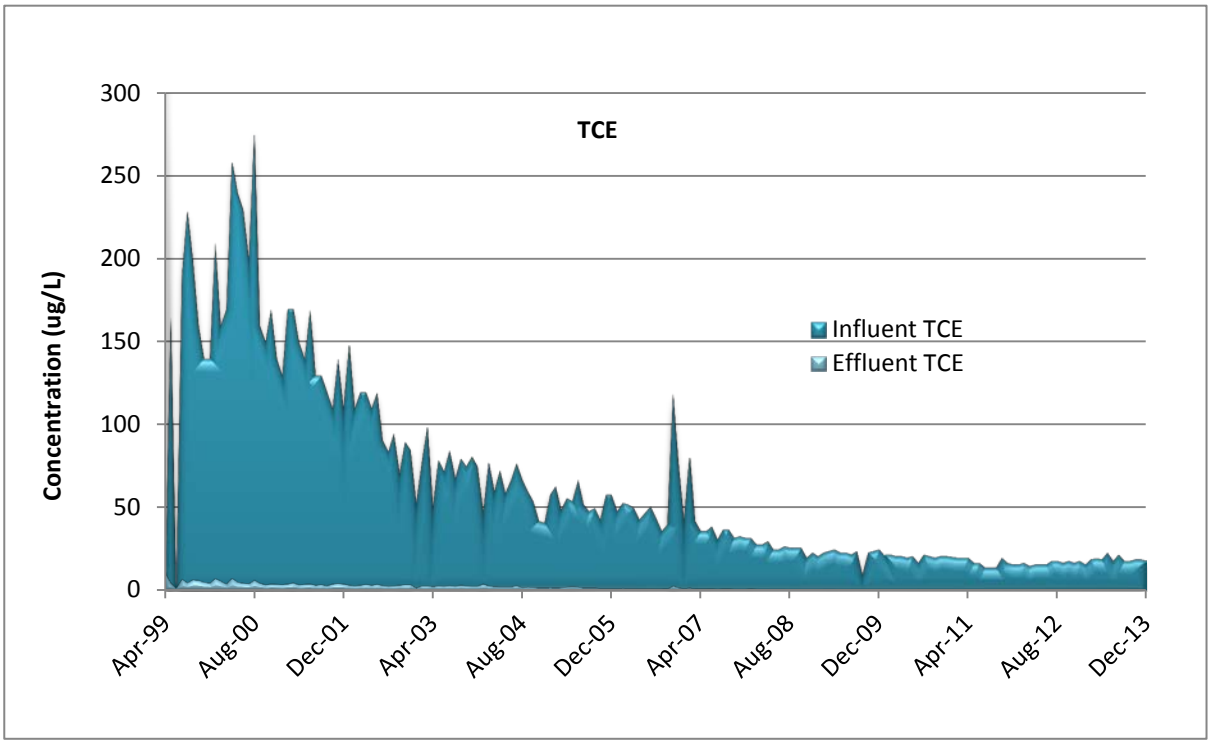
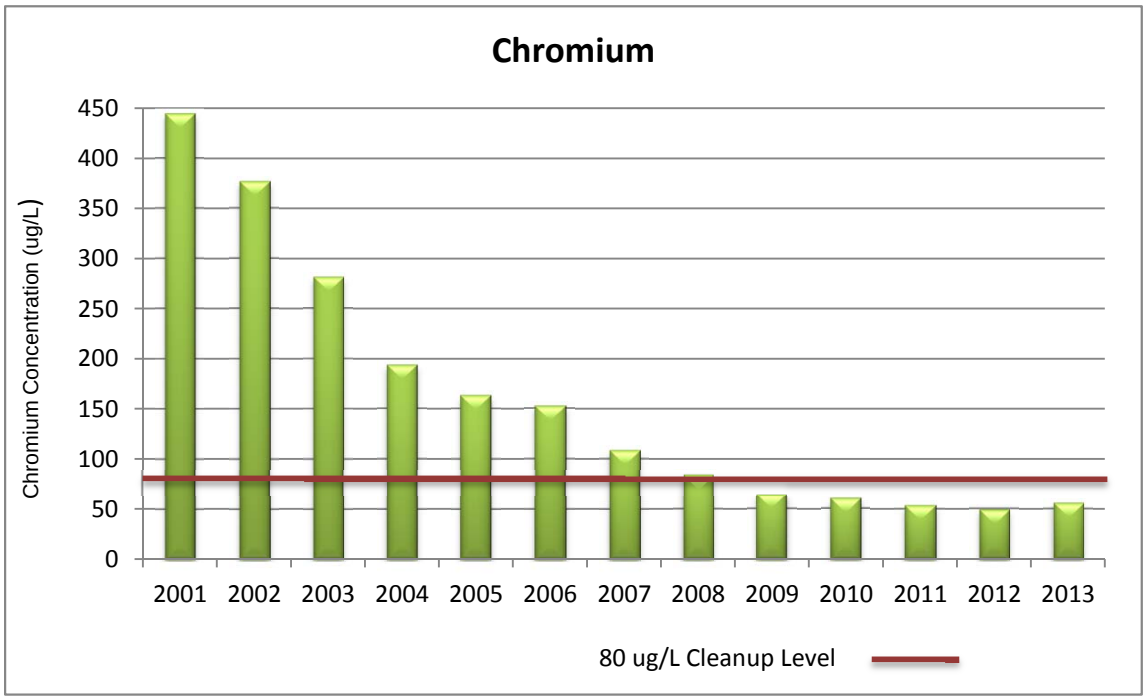
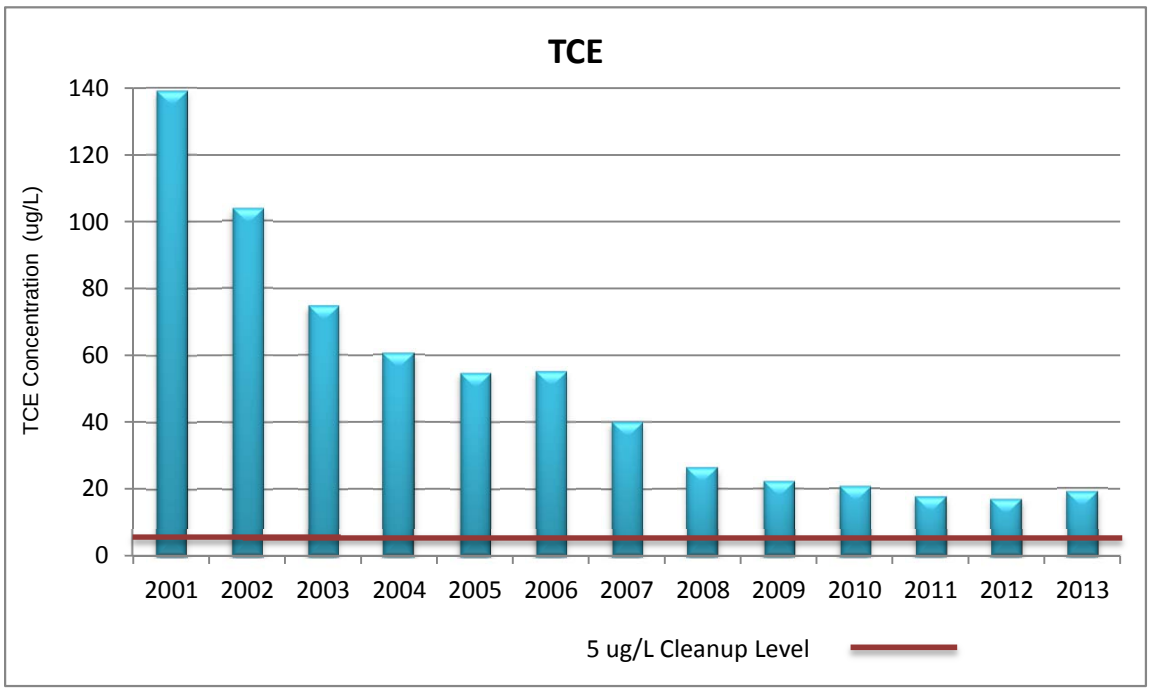


FIGURE 6. INFLUENT CONCENTRATIONS OVER TIME





Note: Concentrations per year are an average of monthly data.

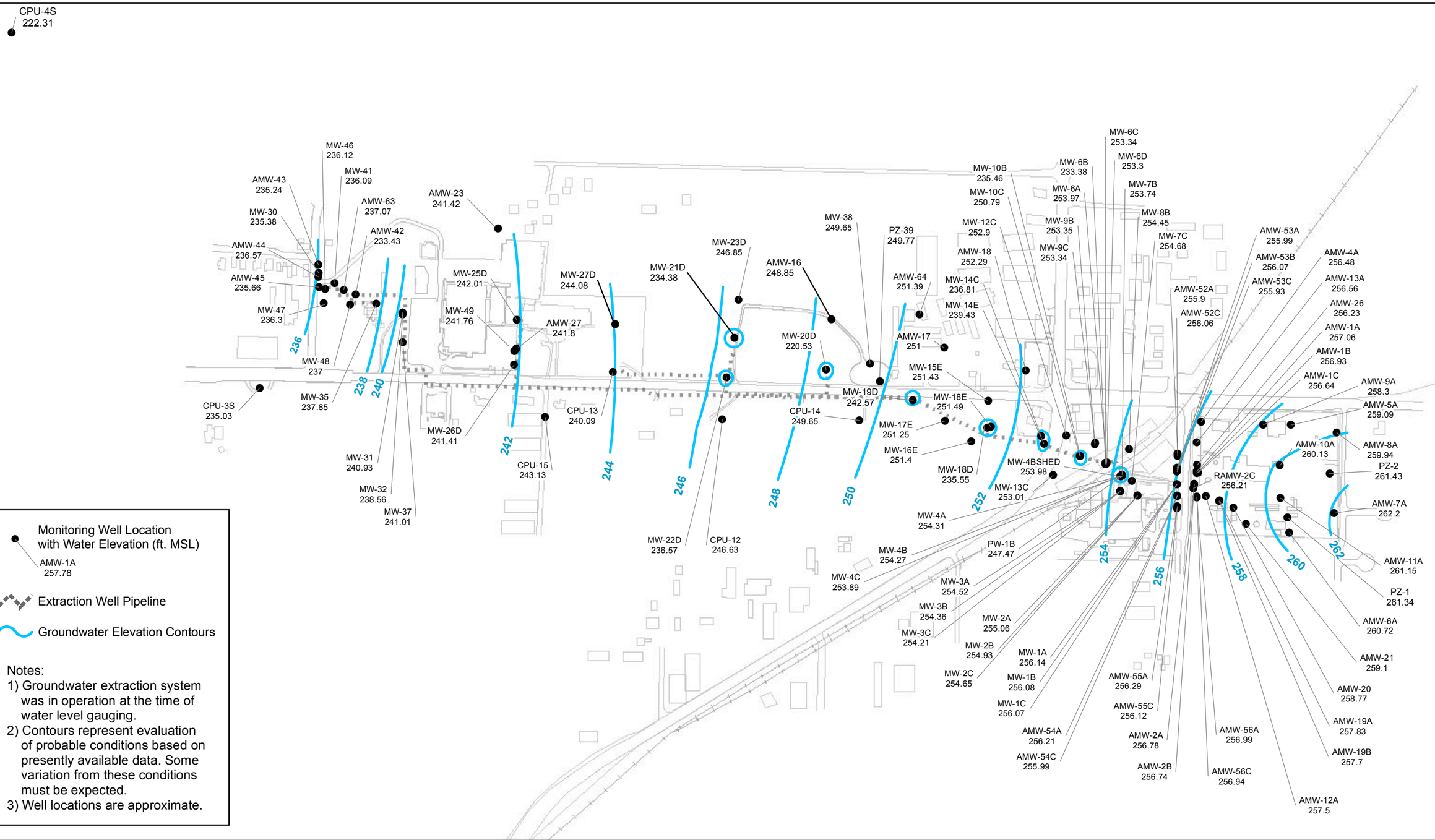


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FIGURE 7
ALLUVIAL AQUIFER GROUNDWATER CONTOURS
FALL 2013

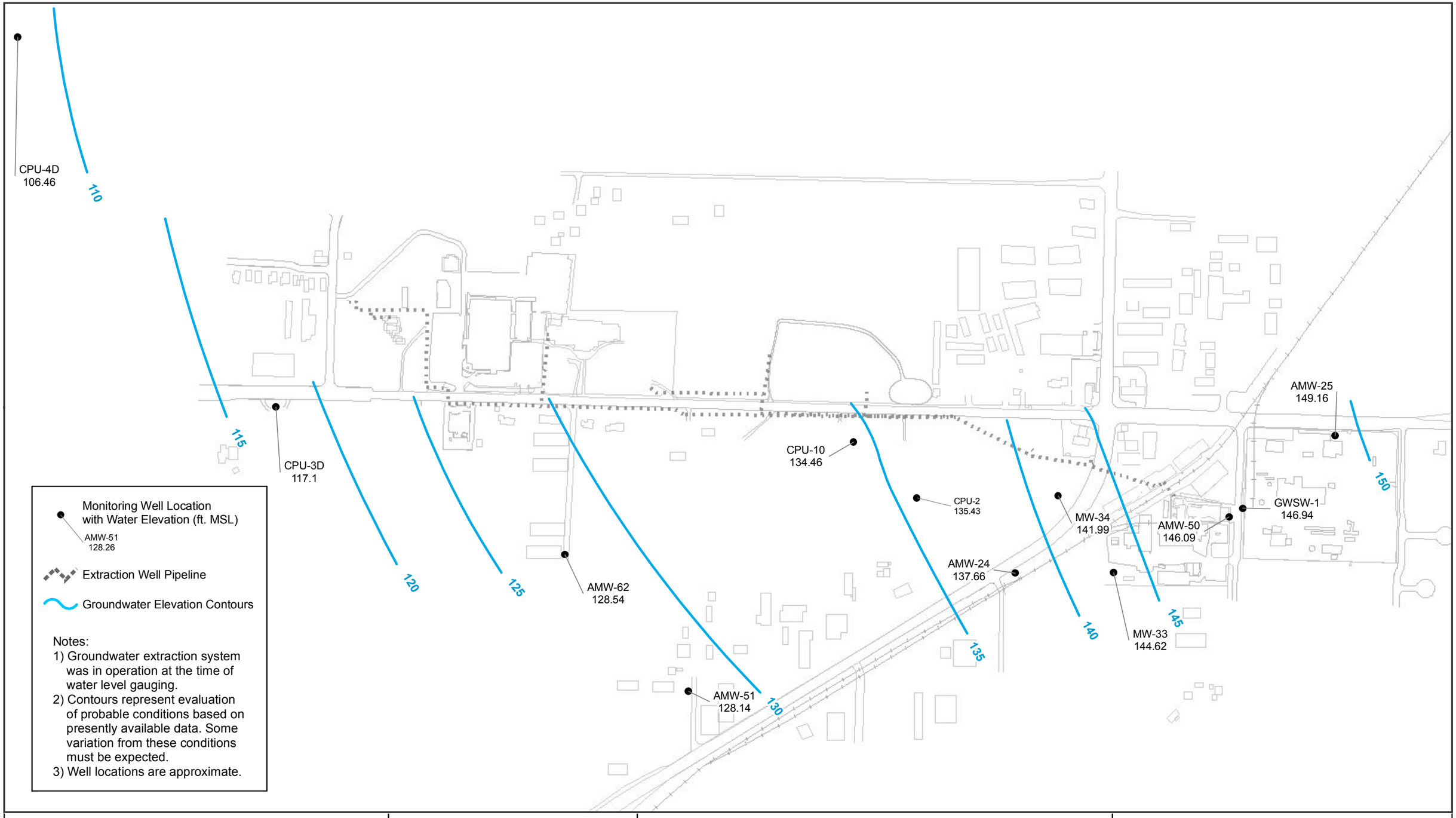

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FIGURE 8
TROUTDALE AQUIFER GROUNDWATER CONTOURS
FALL 2013

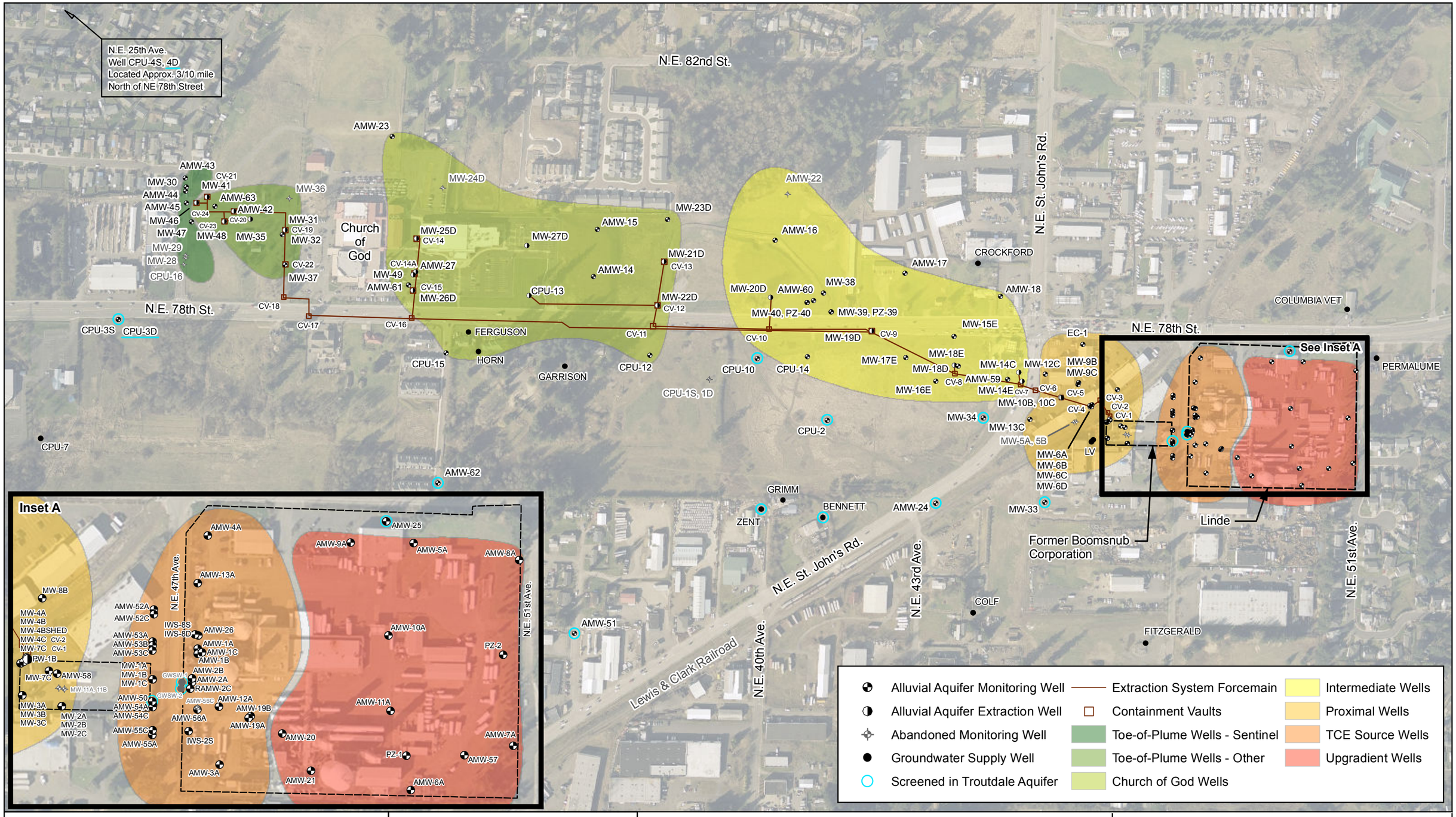

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FIGURE 9
EXTRACTION AND MONITORING WELL GROUPINGS

1995

2013

Extraction Well Pipeline

Chromium Concentration Contours

- 80 - 250 µg/L
- 250 - 500 µg/L
- 500 - 1,500 µg/L
- 1,500 - 5,000 µg/L
- 5,000 - 10,000 µg/L
- 10,000 - 20,000 µg/L
- >20,000 µg/L

Note:
Contours represent evaluation of probable conditions based on presently available data. Some variations from these conditions must be expected.

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FIGURE 10
CHROMIUM PLUME MAP
1995 vs. 2013

?
?
?
?

1995

2013

Extraction Well Pipeline

TCE Concentration Contours

- 5 - 25 µg/L
- 25 - 100 µg/L
- 100 - 500 µg/L
- 500 - 1,000 µg/L
- 1,000 - 2,000 µg/L
- > 2,000 µg/L

Note:
Contours represent evaluation of probable conditions based on presently available data. Some variations from these conditions must be expected.

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FIGURE 11
TRICHLOROETHENE PLUME MAP (OU-3)
1995 vs. 2013

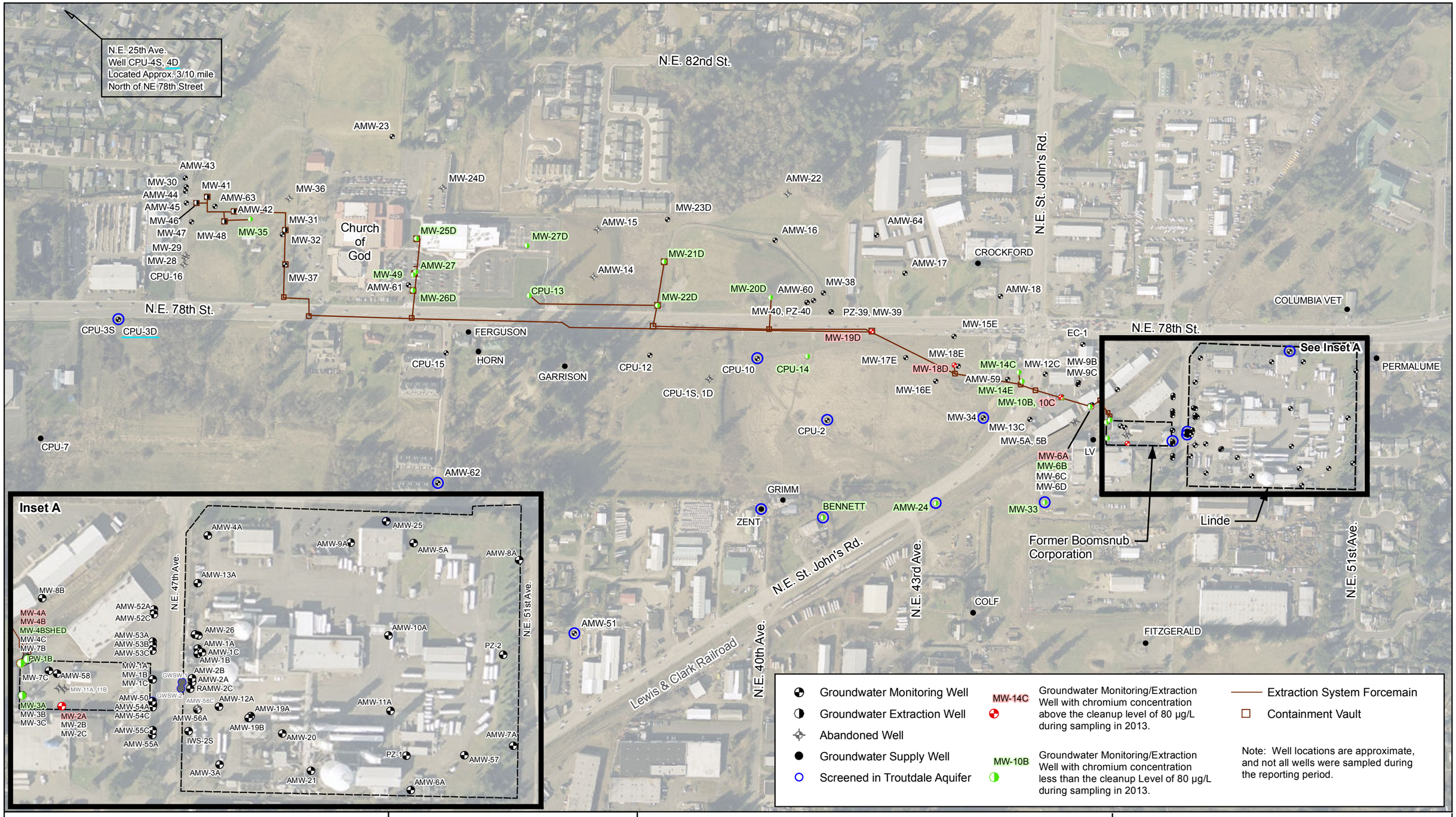

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FIGURE 12
WELLS WITH CHROMIUM CONCENTRATIONS ABOVE THE CLEANUP LEVEL IN 2013

N.E. 25th Ave.
Well CPU-4S, 4D
Located Approx. 3/10 mile
North of NE 78th Street

N.E. 82nd St.

N.E. St. John's Rd.

N.E. 78th St.

AMW-23
AMW-43
MW-30
MW-41
MW-36
AMW-44
AMW-63
AMW-45
AMW-42
MW-46
MW-31
MW-47
MW-48
MW-35
MW-32
MW-29
MW-28
CPU-16
MW-37
Church of God
MW-24D
MW-25D
MW-27D
AMW-27
MW-49
AMW-61
MW-26D
CPU-13
AMW-15
MW-23D
AMW-14
MW-21D
MW-22D
AMW-22
AMW-16
AMW-64
AMW-17
CROCKFORD
AMW-18
COLUMBIA VET
MW-20D
AMW-60
MW-38
MW-40, PZ-40
PZ-39, MW-39
MW-19D
MW-15E
MW-18E
MW-18D
MW-17E
MW-16E
AMW-59
MW-14C
MW-12C
MW-9B
MW-9C
MW-14E
MW-10B, 10C
MW-34
MW-13C
MW-5A, 5B
MW-6A
MW-6B
MW-6C
MW-6D
LV
EC-1
See Inset A
PERMALUME
CPU-3S
CPU-3D
FERGUSON
HORN
CPU-15
GARRISON
CPU-12
CPU-10
CPU-14
CPU-1S, 1D
CPU-2
CPU-7
AMW-62
GRIMM
ZENT
BENNETT
AMW-24
MW-33
Former Boomsnub Corporation
Linde
N.E. 51st Ave.
N.E. 43rd Ave.
COLF
FITZGERALD
AMW-51
N.E. 40th Ave.
Lewis & Clark Railroad

Inset A
N.E. 47th Ave.
AMW-4A
AMW-25
AMW-9A
AMW-5A
AMW-8A
AMW-13A
MW-8B
AMW-52A
AMW-52C
MW-4A
MW-4B
MW-4BSHED
MW-4C
MW-7B
RW-1B
AMW-53A
AMW-53B
AMW-53C
MW-1A
MW-1B
MW-1C
MW-7C
AMW-58
MW-11A, 11B
GWSW-1
GWSW-2
AMW-50
AMW-54A
AMW-54C
MW-3A
MW-3B
MW-3C
MW-2A
MW-2B
MW-2C
AMW-55C
AMW-55A
AMW-26
AMW-1A
AMW-1C
AMW-1B
AMW-2B
AMW-2A
RAMW-2C
AMW-56C
AMW-12A
AMW-56A
AMW-19A
AMW-19B
IWS-2S
AMW-10A
PZ-2
AMW-11A
AMW-20
AMW-7A
PZ-1
AMW-57
AMW-3A
AMW-21
AMW-6A

Groundwater Monitoring Well
Groundwater Extraction Well
Abandoned Well
Groundwater Supply Well
Screened in Troutdale Aquifer

MW-14C
Groundwater Monitoring/Extraction Well with TCE concentration above the cleanup Level of 5 µg/L during sampling in 2013.

MW-12C
Groundwater Monitoring/Extraction Well with TCE concentration less than the cleanup Level of 5 µg/L during sampling in 2013.

Extraction System Forcemain
Containment Vault

Note: Well locations are approximate, and not all wells were sampled during the reporting period.

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BOOMSNUB / AIRCO SUPERFUND SITE
HAZEL DELL, WASHINGTON

EA Project No. 1449545
File Location: \\SEATTLE\Seattle\Projects\0_Linde GIS\Linde Reports\ANNUAL2013\mxd\Fig_13_TCE_Conc

FIGURE 13
WELLS WITH TCE CONCENTRATIONS
ABOVE THE CLEANUP LEVEL IN 2013

TABLES

TABLE 1. 2013 EXTRACTION WELL PUMPING RATES

Flow Rates (gpm)												
Well ID	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
AMW-27	off	off	off	off	off	off	off	off	off	off	off	off
AMW-42	off	off	off	off	off	off	off	off	off	off	off	off
MW-6B	0.0	8.2	8.4	8.4	8.4	9.0	8.2	8.0	8.0	7.2	7.2	7.8
MW-10B	9.2	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.4	9.1	9.1	9.1
MW-10C	10.0	10.0	10.0	10.0	10.0	9.4	9.4	9.4	10.0	10.0	10.1	10.1
MW-14C	13.2	13.0	13.2	14.0	13.5	13.5	13.4	14.0	14.0	14.0	14.0	13.6
MW-14E	8.0	8.0	8.0	8.0	8.1	7.2	7.2	7.2	7.2	7.0	7.0	6.7
MW-18D	12.0	12.0	12.0	17.6	17.5	18.0	18.0	17.7	17.7	18.4	18.3	16.0
MW-19D	10.0	10.0	10.0	10.3	10.3	10.2	10.0	10.0	10.0	10.0	10.0	10.0
MW-20D	15.7	15.0	15.0	16.0	15.7	15.8	15.9	16.2	16.4	16.2	16.1	16.3
MW-21D	12.1	12.1	12.3	10.0	10.2	9.7	9.7	9.7	10.1	10.5	11.3	11.3
MW-22D	17.5	17.4	17.2	15.9	15.0	13.8	13.6	13.1	12.7	11.6	11.3	11.3
MW-25D	off	off	off	off	off	off	off	off	off	off	off	off
MW-26D	off	off	off	off	off	off	off	off	off	off	off	off
MW-27D	off	off	off	off	off	off	off	off	off	off	off	off
MW-31	off	off	off	off	off	off	off	off	off	off	off	off
MW-37	off	off	off	off	off	off	off	off	off	off	off	off
MW-48	off	off	off	off	off	off	off	off	off	off	off	off
MW-49	off	off	off	off	off	off	off	off	off	off	off	off
PW-1B	10.0	9.8	10.0	10.0	10.0	10.1	10.0	10.0	10.0	9.6	10.0	10.0
CPU-13	12.7	12.7	12.9	off	off	off	off	off	off	off	off	off
Total	130.4	137.2	138.0	129.2	127.7	125.7	124.4	124.3	125.5	123.6	124.4	122.2

Note: gpm = gallons per minute

TABLE 2. WELLS AND RECOMMENDED SAMPLING FREQUENCIES

Well Name	Well Type	GW Model Layer	Top of Screen		Bottom of Screen		TCE							Chromium							MAROS Recommended Sampling Frequency		2013 Sampling Frequency [1]		2014 Recommendations [2]		Rationale for Frequency
			Depth	Elevation	Depth	Elevation	Min. Conc. (ug/L)	Max. Conc. (ug/L)	Most Recent Conc. (ug/L)	Most Recent Data Qualifiers	Most Recent Sample Date	Conc. Below Cleanup Levels	Conc. Statistically Below Cleanup Levels [3]	Min. Conc. (ug/L)	Max. Conc. (ug/L)	Most Recent Conc. (ug/L)	Most Recent Data Qualifiers	Most Recent Sample Date	Conc. Below Cleanup Levels	Conc. Statistically Below Cleanup Levels [3]	TCE	Chromium	TCE	Chromium	TCE	Chromium	
Troutdale Wells																											
AMW-24	M/D	6	190	74.72	200	64.72	9.00	25.0	11.0		10/15/2013	No	NA	U	8.80	6.6		10/15/2013	Yes	NA	NA	NA	Annual	Annual	NC	NC	Troutdale well - TCE impacted
AMW-25	M/D	6	215	67.94	225	57.94	U	U	U	U	10/15/2012	Yes	NA	U	4.10	1.9	J	10/15/2012	Yes	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted; upgradient well
AMW-50	M/D	6	185.19	97.59	195.19	87.59	U	0.16	U	U	10/15/2012	Yes	NA	U	37.7	2.10	J	10/15/2012	Yes	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted
AMW-51	M/D	6	185.7	72.74	195.7	62.74	U	0.32	0.24	J	10/16/2012	Yes	NA	U	10.1	2.10	J	10/16/2012	Yes	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted
AMW-62	M/D	6	185.73	72.93	195.73	62.93	U	U	U	U	10/15/2012	Yes	NA	U	1.5	1.5	J	10/15/2012	Yes	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted
CPU-2	M	6	186.13	73.4	196.13	63.4	U	U	U	U	10/22/2012	Yes	NA	U	14.0	2	J	10/22/2012	Yes	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted
CPU-3D	M/D	6	212.38	34.39	217.38	29.39	U	U	U	U	10/15/2012	Yes	NA	U	11.0	1.80	J	10/15/2012	Yes	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted
CPU-10	M	6	186.9	74.34	196.9	64.34	U	U	U	U	10/23/2012	Yes	NA	U	23.2	23.20		10/23/2012	Yes	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted
MW-33	M/D	6	205	67.55	215	57.55	6.40	19.0	11.0		10/15/2013	No	NA	U	40.5	1.9	J	10/15/2013	Yes	NA	NA	NA	Annual	Annual	NC	NC	Troutdale well - TCE impacted
MW-34	M/D	6	195	72.33	205	62.33	U	U	U	U	10/17/2012	Yes	NA	U	25.4	0.80	J	10/17/2012	Yes	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted
BENNETT	Other	N/A	N/A	N/A	180	N/A	3.10	10.0	4.6		10/16/2013	Yes	NA	U	U	U	U	10/16/2013	Yes	NA	NA	NA	Semiannual	Semiannual	NC	NC	Troutdale well - TCE impacted -CPU request for semiannual sampling
Upgradient Wells																											
AMW-6A	M/D	1	24	260.56	34	250.56	U	0.93	0.42	J	10/16/2012	Yes	Yes	U	17.7	6.90		10/16/2012	Yes	Yes	NFS	NFS	Biennial	Biennial	NC	NC	Infiltration gallery monitoring well
AMW-7A	M/D	1	24.25	260.77	34.25	250.77	U	1.00	0.24	J	10/16/2012	Yes	Yes	U	5.20	2.90	J	10/16/2012	Yes	Yes	NFS	NFS	Biennial	Biennial	NC	NC	Infiltration gallery monitoring well
AMW-8A	M	1	24.5	260.99	34.5	250.99	0.33	692	0.40	J	10/31/2013	Yes	No								Biennial	NA	Annual	NA	**Biennial**	NA	Upgradient well - check for possible offsite TCE impacts
AMW-10A	M/D	1	21.5	262.51	31.5	252.51	U	0.79	0.32	J	10/16/2012	Yes	Yes	U	18.7	18.70		10/16/2012	Yes	Yes	NFS	NFS	Biennial	Biennial	NC	NC	Infiltration gallery monitoring well
AMW-11A	M/D	1	24	259.21	34	249.21	U	1.50	0.41	J	10/16/2012	Yes	Yes	U	9.40	2.00	J	10/16/2012	Yes	Yes	NFS	NFS	Biennial	Biennial	NC	NC	Infiltration gallery monitoring well
TCE Source Wells																											
AMW-1A	M	1	24.24	259.85	34.24	249.85	U	1290	22.0		10/22/2013	No	No								Biennial	NA	Quarterly [4]	NA	NC	NA	Per OU2 shutdown plan (TCE fluctuating above and below cleanup level)
AMW-2A	M	1	24.2	259.83	34.2	249.83	1.1	5350	3.8		10/22/2013	Yes	No								Biennial	NA	Quarterly [4]	NA	NC	NA	Per OU2 shutdown plan; well cluster - most impacted (TCE above cleanup level)
AMW-2B	M	1/2	47	237.11	57	227.11	U	30.8	0.37	J	10/31/2013	Yes	No								Biennial	NA	Annual [4]	NA	NC	NA	Per OU2 shutdown plan; well cluster - less frequent sampling
AMW-3A	M	1	24.5	259.42	34.5	249.42	0.16	34.0	0.44	J	10/31/2013	Yes	No								Biennial	NA	Annual [4]	NA	NC	NA	Per OU2 shutdown plan (TCE below cleanup level)
AMW-12A	M	1	24.05	259.69	34.05	249.69	19.0	19300	26		10/22/2013	No	No								Biennial	NA	Quarterly [4]	NA	NC	NA	Per OU2 shutdown plan (TCE above cleanup level)
AMW-13A	M	1	23.8	260.08	33.8	250.08	U	74.8	0.17	J	10/31/2013	Yes	No								Biennial	NA	Annual [4]	NA	NC	NA	Per OU2 shutdown plan (TCE below cleanup level)
AMW-19A	M	1	25	258.94	35	248.94	1.10	490	1.10		10/31/2013	Yes	No								Biennial	NA	Annual [4]	NA	NC	NA	Per OU2 shutdown plan (TCE below cleanup level)
AMW-26	M	1	24.2	258.82	34.2	248.82	U	100	0.52		10/18/2012	Yes	No								Biennial	NA	Biennial	NA	NC	NA	OU-2 monitoring well (TCE below cleanup level)
AMW-52A	M	1	24.55	255.85	34.55	245.85	U	29.0	0.10	J	10/31/2013	Yes	No								Biennial	NA	Annual [4]	NA	NC	NA	Per OU2 shutdown plan (TCE below cleanup level)
AMW-53A	M	1	22.2	258.85	32.2	248.85	0.86	240	13.0		10/21/2013	No	No								Biennial	NA	Quarterly [4]	NA	NC	NA	Per OU2 shutdown plan (TCE fluctuating above and below cleanup level)
AMW-54A	M	1	24.3	259.01	34.3	249.01	0.53	190	1.80		10/31/2013	Yes	No								Biennial	NA	Annual [4]	NA	NC	NA	Per OU2 shutdown plan (TCE below cleanup level)
AMW-55A	M	1	20.83	261.28	30.83	251.28	0.40	39.0	1.10		10/31/2013	Yes	No								Biennial	NA	Annual [4]	NA	NC	NA	Per OU2 shutdown plan (TCE below cleanup level)
AMW-56A	M	1	25.24	258.43	35.24	248.43	0.38	610	2.40		10/31/2013	Yes	No								Biennial	NA	Annual [4]	NA	NC	NA	Per OU2 shutdown plan (TCE below cleanup level)
MW-1A	M	1	28.36	257.13	38.26	247.23	4.80	3900	10.0		10/21/2013	No	No	U	162.0	19.3		10/24/2012	Yes	No	Biennial	Biennial	Quarterly [4]	Biennial	NC	NC	Per OU2 shutdown plan (TCE fluctuating above and below cleanup level) also Cr background well
Proximal Wells																											
MW-2A	M	1	32.09	250.48	37.09	245.48	1.70	24.7	1.70		10/24/2012	Yes	No	29.2	2660	220		10/18/2013	No	No	Biennial	Biennial	Biennial	Semiannual [5]	NC	**Annual**	Well cluster - most impacted and Cr residual contamination
MW-3A	M	1	22.34	257.87	32.34	247.87								54.5	1820	72		10/17/2013	Yes	No	NA	Biennial	NFS (2009)	Semiannual [5]	NA	**Annual**	Well cluster - most Cr impacted; TCE statistically below cleanup level
MW-3B	M	1	51.39	228.94	56.39	223.94	2.00	32.0	2.00		10/17/2012	Yes	No								Biennial	NA	Biennial	NFS (2009)	NC	NA	Well cluster - most TCE impacted; Cr statistically below cleanup level
MW-4A	M	1	26.81	253.49	36.81	243.49								362	5320	376		10/18/2013	No	No	NA	Biennial	NFS (2010)	Semiannual [5]	NA	**Annual**	Well cluster - not optimal depth for TCE
MW-4B	M	1	39.7	240.45	44.7	235.45	0.94	600	4.20		10/24/2012	Yes	No	353	15500	787		10/18/2013	No	No	Biennial	Biennial	Biennial	Semiannual [5]	NC	**Annual**	Well cluster - most impacted and Cr residual contamination
MW-4BShed	M	1	52.9	227.57	57.9	222.57								65.6	8580	65.6		10/17/2013	Yes	No	Biennial	Biennial	NFS (2010)	Semiannual [5]	NA	**NFS**	Well cluster - not optimal depth

TABLE 2. WELLS AND RECOMMENDED SAMPLING FREQUENCIES

Well Name	Well Type	GW Model Layer	Top of Screen		Bottom of Screen		TCE							Chromium							MAROS Recommended Sampling Frequency		2013 Sampling Frequency [1]		2014 Recommendations [2]		Rationale for Frequency
			Depth	Elevation	Depth	Elevation	Min. Conc. (ug/L)	Max. Conc. (ug/L)	Most Recent Conc. (ug/L)	Most Recent Data Qualifiers	Most Recent Sample Date	Conc. Below Cleanup Levels	Conc. Statistically Below Cleanup Levels [3]	Min. Conc. (ug/L)	Max. Conc. (ug/L)	Most Recent Conc. (ug/L)	Most Recent Data Qualifiers	Most Recent Sample Date	Conc. Below Cleanup Levels	Conc. Statistically Below Cleanup Levels [3]	TCE	Chromium	TCE	Chromium	TCE	Chromium	
MW-6A	M	1	18.25	260.52	28.25	250.52								U	167	133		10/16/2013	No	No	NA	Biennial	NFS (2009)	Semiannual [5]	NA	**Every 5 Years**	Well cluster - not optimal depth.
MW-6B	E	1	45.75	227.57	55.75	217.57	4.20	1230	4.40		10/15/2013	Yes	No	10.9	13000	20.8		10/15/2013	Yes	No	Biennial	Biennial	Semiannual	Semiannual	NC	NC	Extraction well - active (also well cluster)
MW-7B	M	1	47	233.02	57	223.02	7.30	984	7.30		10/19/2009	No	No								Biennial	NA	Every 5 years	NFS (2009)	NC	NA	Well cluster - adjacent to MW-4 cluster, less frequent sampling; Cr below cleanup level since 1998
MW-8B	M	1	46.9	233.8	56.9	223.8	2.40	3070	2.40		10/18/2012	Yes	No								Biennial	NA	Biennial	NFS (2009)	NC	NA	Plume area - not included in any other category; Cr statistically below cleanup level
MW-9B	M	1	44.9	230.52	54.9	220.52	3.70	2100	3.70		10/18/2012	Yes	No								Biennial	NA	Biennial	NFS (2009)	NC	NA	Well cluster - most TCE impacted; Cr below cleanup level since 1997
MW-10B	E	1	48	225.24	58	215.24	5.20	1300	14.0		10/15/2013	No	No	31.0	3600	34.6		10/15/2013	Yes	No	Biennial	Biennial	Semiannual	Semiannual	NC	NC	Extraction well - active (also well cluster)
MW-10C	E	1	70	203.25	80	193.25	2.50	1500	2.60		10/15/2013	Yes	No	67.2	6400	76.3		10/15/2013	Yes	No	Biennial	Biennial	Semiannual	Semiannual	NC	NC	Extraction well - active (also well cluster)
MW-12C	M	1	71.2	203.11	81.2	193.11	1.40	9430	1.4		10/18/2012	Yes	No								Biennial	NA	Biennial	NFS (2010)	NC	NA	TCE Plume boundary; Cr statistically below cleanup level
MW-13C	M	1	65.03	206.94	75.03	196.94	2.10	35.0	5.80		10/18/2012	No	No								Biennial	NA	Biennial	NFS (2010)	NC	NA	TCE Plume boundary; Cr statistically below cleanup level, TCE fluctuates above and below cleanup level
PW-1B	E	1	48	228.56	58	218.56	2.60	900	2.60		10/14/2013	Yes	No	34.1	13000	44.2		10/14/2013	Yes	No	Biennial	Biennial	Semiannual	Semiannual	NC	NC	Extraction well - active
Intermediate Wells																											
AMW-16	M	2	76.83	185.15	86.83	175.15	0.17	87.0	4.40		10/21/2013	Yes	No								Biennial	NA	Semiannual	NFS (2010)	NC	NA	Northern Plume area; Cr statistically below the cleanup level
AMW-17	M/D	1	81	180.87	91	170.87	1.10	240.0	180.00	D	10/16/2013	No	No								Quarterly	NA	Quarterly	NFS (2008)	NC	NA	Northern Plume monitoring well; Cr statistically below the cleanup level
AMW-18	M	1	92.69	186.15	102.69	176.15	U	460	34		10/21/2013	No	No								Quarterly	NA	Quarterly	NFS (2008)	NC	NA	Northern Plume monitoring well; Cr statistically below the cleanup level
AMW-59	M/D	3	134.74	134.6295	139.74	129.6295	76.0	310	92	D	10/16/2012	No	No								Biennial	NA	Biennial	NFS (2009)	NC	NA	Plume area - silt well; Cr statistically below the cleanup level
AMW-64	M	2	88.4	177.73	98.4	167.73	110	190	110	D	10/23/2012	No	No								Quarterly	NA	Quarterly	NA	NC	NA	Northern Plume monitoring well (installed in 2012)
CPU-14	M	2	60.43	197.13	70.43	187.13	5.20	63.0	6.4		10/17/2013	No	No	31.9	957	46.8		10/17/2013	Yes	No	Biennial	Biennial	Annual	Annual	NC	NC	Plume boundary
MW-14C	E	1	70	201.22	80	191.22	11.0	2500	12.0		10/15/2013	No	No	63.7	20000	63.7		10/15/2013	Yes	No	Biennial	Biennial	Semiannual	Semiannual	NC	NC	Extraction well - active (also well cluster)
MW-14E	E	2	115	153.95	125	143.95	67.0	6540	74.0		10/15/2013	No	No	39.9	21200	39.9		10/15/2013	Yes	No	Biennial	Biennial	Semiannual	Semiannual	NC	NC	Extraction well - active (also well cluster)
MW-15E	M	3	95.7	168.97	105.7	158.97	3.20	1100	3.20		10/21/2013	Yes	No								Biennial	NA	Semiannual	NFS (2008)	NC	NA	Plume area; Cr statistically below the cleanup level
MW-16E	M	2	111.1	147.25	121.1	137.35	U	5.70	0.42	J	10/18/2012	Yes	Yes								NFS	NA	Biennial	NFS (2010)	**NFS**	NA	Plume boundary; TCE and Cr statistically below cleanup level
MW-18D	E	1	73.4	189.34	93.4	169.34	41.0	7800	41.0		10/15/2013	No	No	96.6	23100	96.6		10/15/2013	No	No	Biennial	Biennial	Semiannual	Semiannual	NC	NC	Extraction well - active (also well cluster)
MW-18E	M/D	3	112.57	149.1965	122.57	139.1965	120	2700	120	D	10/21/2013	No	No								Biennial	NA	Annual	NFS (2010)	NC	NA	Plume area - TCE residual contamination
MW-19D	E	1	76.2	181.78	91.2	166.78	12.0	6300	29.0		10/15/2013	No	No	94.8	23000	94.8		10/15/2013	No	No	Biennial	Biennial	Semiannual	Semiannual	NC	NC	Extraction well - active
MW-20D	E	2	79.7	193.45	89.7	183.45	39.0	4100	39.0		10/15/2013	No	No	55	51000	55		10/15/2013	Yes	No	Biennial	Biennial	Semiannual	Semiannual	NC	NC	Extraction well - active
MW-38	M	1	77	187.2	82	182.2	7.4	70	70.0	D	10/31/2013	No	No								Quarterly	NA	Annual	NA	**Semiannual**	NA	Monitoring for Northern Plume impacts
PZ-39	M	2	88	176.37	90	174.37	54.0	2,100 J	54.0		10/17/2012	No	No								NA	NA	Semiannual	NFS (2010)	NC	NA	Monitoring for potential Northern Plume impacts

TABLE 2. WELLS AND RECOMMENDED SAMPLING FREQUENCIES

Well Name	Well Type	GW Model Layer	Top of Screen		Bottom of Screen		TCE							Chromium							MAROS Recommended Sampling Frequency		2013 Sampling Frequency [1]		2014 Recommendations [2]		Rationale for Frequency
			Depth	Elevation	Depth	Elevation	Min. Conc. (ug/L)	Max. Conc. (ug/L)	Most Recent Conc. (ug/L)	Most Recent Data Qualifiers	Most Recent Sample Date	Conc. Below Cleanup Levels	Conc. Statistically Below Cleanup Levels [3]	Min. Conc. (ug/L)	Max. Conc. (ug/L)	Most Recent Conc. (ug/L)	Most Recent Data Qualifiers	Most Recent Sample Date	Conc. Below Cleanup Levels	Conc. Statistically Below Cleanup Levels [3]	TCE	Chromium	TCE	Chromium	TCE	Chromium	
Church of God Wells																											
AMW-27	E	3	78	194.60	88	184.6	4.9	81.0	6.6		10/21/2013	No	No	2.9	7630	15.8		7/23/2013	Yes	No	Biennial	Biennial	Quarterly	Quarterly	**Semiannual**	**Biennial**	Extraction well - inactive; monitoring for potential contaminant rebound
AMW-61	M	3	91.86	181.92	96.86	176.92	2.40	43.0	8.50		10/21/2013	No	No								Biennial	NA	Semiannual	NFS (2010)	**Annual**	NA	Plume area - silt well (Cr below cleanup level)
CPU-12	M	2	61.12	214.11	71.12	204.11	U	13.0	4.40		10/31/2013	Yes	No								Biennial	NA	Annual	NFS (2010)	NC	NA	TCE Plume boundary (Cr below cleanup level)
CPU-13	E	3	80	198.99	90	188.99	0.92	110	0.92		10/14/2013	Yes	No	16.4	5000	44.8		10/14/2013	Yes	No	Biennial	Biennial	Semiannual	Semiannual	NC	NC	**Extraction well - inactive; shutdown in April 2013**
MW-21D	E	2	56	201.56	66	191.56	3.5	3000	3.5		10/14/2013	Yes	No	6.7	35000	8.8		10/14/2013	Yes	No	Biennial	Biennial	Semiannual	Semi-annual	NC	NC	Extraction well - active
MW-22D	E	3	54	215.02	64	205.02	3.7	390	3.7		10/14/2013	Yes	No	22.8	11000	23.3		10/14/2013	Yes	No	Biennial	Biennial	Semiannual	Semiannual	NC	NC	Extraction well - active
MW-23D	M	3	75.86	191.70	90.86	176.70	U	67.0	1.20		10/21/2013	Yes	No								Biennial	NA	Annual	NFS (2010)	NC	NA	TCE Plume boundary; Cr statistically below cleanup level
MW-25D	E	2	70	202.13	80	192.13	1.20	200	3.00		10/14/2013	Yes	No	U	16000	3.90	J	10/14/2013	Yes	No	Biennial	Biennial	Semiannual	Semiannual	**Annual**	**Annual**	**Extraction well - inactive**
MW-26D	E	3	83	189.86	93	179.86	U	52	0.46	J	10/14/2013	Yes	No	6.6	4800	7.0		10/14/2013	Yes	No	Biennial	Biennial	Semiannual	Semiannual	**Annual**	**Annual**	**Extraction well - inactive**
MW-27D	E	2	61.1	208.15	71.1	198.15	U	280	1.1		10/16/2013	Yes	No	3.90	6940	18.90		10/16/2013	Yes	No	Biennial	Biennial	Annual	Annual	NC	NC	Extraction well - inactive
MW-49	E	2	71.2	200.48	81.2	190.48	U	340	1.7		10/14/2013	Yes	No	U	36800	11.4		10/14/2013	Yes	No	Biennial	Biennial	Semiannual	Semiannual	**Annual**	**Annual**	**Extraction well - inactive**
Toe Wells																											
AMW-42	E	3	87	168.88	102	153.88	U	73.0	1.20		10/15/2012	Yes	No	U	2280	21.3		10/15/2012	Yes	No	Biennial	Biennial	Biennial	Biennial	NC	NC	Sentinel well downgradient of MW-35 - TCE and Cr are below the cleanup level
AMW-63	M	2	76.13	181.29	86.13	171.29	U	0.17	U	U	10/14/2010	Yes	Yes	U	12.4	6.8		10/14/2010	Yes	Yes	NFS	NFS	Every 5 years	Every 5 years	NC	NC	TCE and Cr are statistically below cleanup level. EPA request for sampling every 5 years.
MW-31	E	2	75	187.88	85	177.88	0.20	32	0.26	J	10/15/2012	Yes	No	U	535	11.40		10/15/2012	Yes	No	Biennial	Biennial	Biennial	Biennial	NC	NC	Concentrations below the cleanup level
MW-35	E/M	2	79.5	176.20	89.5	166.20	U	110	4.60		10/17/2013	Yes	No	U	4690	17.6		10/17/2013	Yes	No	Biennial	Biennial	Semiannual	Annual	NC	**Biennial**	Former extraction well - inactive - local TCE hot spot, Cr below the cleanup level
MW-41	E/M	2	74	179.08	84	169.08	U	8.3	U	U	10/14/2011	Yes	Yes	U	216	U	U	10/14/2011	Yes	Yes	NFS	NFS	Every 5 years	Every 5 years	NC	NC	TCE and Cr are statistically below cleanup level. EPA request for sampling every 5 years.

NOTES:

[1] The 2013 sampling frequencies shown are those approved by EPA as of 12/31/13.

[2] For wells with 2014 recommendations for a change in sampling frequency, additional explanation is provided in Table 5.

[3] The "concentration statistically below cleanup levels" determination is per the MAROS evaluation; this does not meet the EPA requirements for determining site closure.

[4] The sampling frequency for this well was revised as of September 2013, as part of the OU2 In-well Stripping Shutdown Plan.

[5] The EPA had requested semiannual sampling of this well during 2013; that additional sampling has been completed and the well sampling has reverted to the pre-2013 frequency.

Cr = Chromium.
E = Extraction well.
E/M = Extraction well with pump pulled; now sampled as a monitoring well.
EPA = U.S. Environmental Protection Agency.
GW = Groundwater.
M = Monitoring well.
MAROS = Monitoring and Remediation Optimization System.
M/D = Monitoring well with dedicated pump installed.
NA = Not applicable.
NFS = No further sampling (dates in parentheses indicate the Annual Report in which this recommendation was first made.)
NC = No change to the current sampling frequency.
TCE = Trichloroethene.
TOPPS = Toe of plume pilot study.
U = Analyte not detected above the specified reporting limit.
µg/L = Micrograms per liter.
Data used for the Annual Screening are from 1995 to the present. Maximum concentrations presented are based on data collected from 1995 through the present.
Biennial sampling - these wells will be sampled next in Fall 2014.
Every 5 years - these wells will be sampled next in Fall 2014.
Wells designated NFS in previous Annual Reports have been deleted from this table.
Where no entries are present for one of the two constitutents (TCE or Cr), that constituent is not being sampled in that well.
Bold text indicates changes from the 2012 Annual Report for recommendations and rationale for frequency.

TABLE 3. SUMMARY OF 2014 WELL SAMPLING FREQUENCIES

Well Name	Recommendation						Rationale for Recommendation
	Well Type	Quarterly	Semi-annual	Annual	Biennial	Every 5 Years	
Troutdale wells							
AMW-24	M/D			X			Troutdale well - TCE impacted
AMW-25	M/D				X		Troutdale well - unimpacted; upgradient well
AMW-50	M/D				X		Troutdale well - unimpacted
AMW-51	M/D				X		Troutdale well - unimpacted
AMW-62	M/D				X		Troutdale well - unimpacted
CPU-2	M				X		Troutdale well - unimpacted
CPU-3D	M/D				X		Troutdale well - unimpacted
CPU-10	M				X		Troutdale well - unimpacted
MW-33	M/D			X			Troutdale well - TCE impacted
MW-34	M/D				X		Troutdale well - unimpacted
BENNETT	Other		X				Troutdale well - TCE impacted -CPU request for semiannual sampling
Upgradient Wells							
AMW-6A	M/D				X		Infiltration gallery monitoring well
AMW-7A	M/D				X		Infiltration gallery monitoring well
AMW-8A	M				TCE		Upgradient well - check for possible offsite TCE impacts
AMW-10A	M/D				X		Infiltration gallery monitoring well
AMW-11A	M/D				X		Infiltration gallery monitoring well
TCE Source Wells							
AMW-1A	M	TCE					Per OU2 shutdown plan (TCE fluctuating above and below cleanup level)
AMW-2A	M	TCE					Per OU2 shutdown plan; well cluster - most impacted (TCE above cleanup level)
AMW-2B	M			TCE			Per OU2 shutdown plan; well cluster - less frequent sampling
AMW-3A	M			TCE			Per OU2 shutdown plan (TCE below cleanup level)
AMW-12A	M	TCE					Per OU2 shutdown plan (TCE above cleanup level)
AMW-13A	M			TCE			Per OU2 shutdown plan (TCE below cleanup level)
AMW-19A	M			TCE			Per OU2 shutdown plan (TCE below cleanup level)
AMW-26	M				TCE		OU-2 monitoring well (TCE below cleanup level)
AMW-52A	M			TCE			Per OU2 shutdown plan (TCE below cleanup level)
AMW-53A	M	TCE					Per OU2 shutdown plan (TCE fluctuating above and below cleanup level)
AMW-54A	M			TCE			Per OU2 shutdown plan (TCE below cleanup level)
AMW-55A	M			TCE			Per OU2 shutdown plan (TCE below cleanup level)
AMW-56A	M			TCE			Per OU2 shutdown plan (TCE below cleanup level)
MW-1A	M	TCE			Cr		Per OU2 shutdown plan (TCE fluctuating above and below cleanup level) also Cr background well
Proximal Wells							
MW-2A	M			Cr	TCE		Well cluster - most impacted and Cr residual contamination
MW-3A	M			Cr			Well cluster - most Cr impacted; TCE statistically below cleanup level
MW-3B	M				TCE		Well cluster - most TCE impacted; Cr statistically below cleanup level
MW-4A	M			Cr			Well cluster - not optimal depth for TCE
MW-4B	M			Cr	TCE		Well cluster - most impacted and Cr residual contamination
MW-6A	M					Cr	Well cluster - not optimal depth.
MW-6B	E		X				Extraction well - active (also well cluster)
MW-7B	M					TCE	Well cluster - adjacent to MW-4 cluster, less frequent sampling; Cr below cleanup level since 1998

TABLE 3. SUMMARY OF 2014 WELL SAMPLING FREQUENCIES

Well Name	Recommendation						Rationale for Recommendation
	Well Type	Quarterly	Semi-annual	Annual	Biennial	Every 5 Years	
MW-8B	M				TCE		Plume area - not included in any other category; Cr statistically below cleanup level
MW-9B	M				TCE		Well cluster - most TCE impacted; Cr below cleanup level since 1997
MW-10B	E		X				Extraction well - active (also well cluster)
MW-10C	E		X				Extraction well - active (also well cluster)
MW-12C	M				TCE		TCE Plume boundary; Cr statistically below cleanup level
MW-13C	M				TCE		TCE Plume boundary; Cr statistically below cleanup level, TCE fluctuates above and below cleanup level
PW-1B	E		X				Extraction well - active
Intermediate Wells							
AMW-16	M		TCE				Northern Plume area; Cr statistically below the cleanup level
AMW-17	M/D	TCE					Northern Plume monitoring well; Cr statistically below the cleanup level
AMW-18	M	TCE					Northern Plume monitoring well; Cr statistically below the cleanup level
AMW-59	M/D(E)				TCE		Plume area - silt well; Cr statistically below the cleanup level
AMW-64	M	TCE					Northern Plume monitoring well (installed in 2012)
CPU-14	M			X			Plume boundary
MW-14C	E		X				Extraction well - active (also well cluster)
MW-14E	E		X				Extraction well - active (also well cluster)
MW-15E	M		TCE				Plume area; Cr statistically below the cleanup level
MW-18D	E		X				Extraction well - active (also well cluster)
MW-18E	M			TCE			Plume area - TCE residual contamination
MW-19D	E		X				Extraction well - active
MW-20D	E		X				Extraction well - active
MW-38	M		TCE				Monitoring for Northern Plume impacts
PZ-39	M		TCE				Monitoring for potential Northern Plume impacts
Church of God Wells							
AMW-27	E		TCE		Cr		Extraction well - inactive; monitoring for potential contaminant rebound
AMW-61	M			TCE			Plume area - silt well (Cr below cleanup level)
CPU-12	M			TCE			TCE Plume boundary (Cr below cleanup level)
CPU-13	E		X				Extraction well - inactive; shutdown in April 2013
MW-21D	E		X				Extraction well - active
MW-22D	E		X				Extraction well - active
MW-23D	M			TCE			TCE Plume boundary; Cr statistically below cleanup level
MW-25D	E			X			Extraction well - inactive; monitoring for potential contaminant rebound
MW-26D	E			X			Extraction well - inactive; monitoring for potential contaminant rebound
MW-27D	E			X			Extraction well - inactive; monitoring for potential contaminant rebound
MW-49	E			X			Extraction well - inactive; monitoring for potential contaminant rebound

TABLE 3. SUMMARY OF 2014 WELL SAMPLING FREQUENCIES

Well Name	Recommendation						Rationale for Recommendation
	Well Type	Quarterly	Semi-annual	Annual	Biennial	Every 5 Years	
Other Toe Wells							
AMW-42	E				X		Sentinel well downgradient of MW-35 - TCE and Cr are below the cleanup level
AMW-63	M					X	TCE and Cr are statistically below cleanup level. EPA request for sampling every 5 years.
MW-31	E				X		Concentrations below the cleanup level
MW-35	E/M		TCE		Cr		Former extraction well - inactive - local TCE hot spot, Cr below the cleanup level
MW-41	E/M					X	TCE and Cr are statistically below cleanup level. EPA request for sampling every 5 years.
Total Wells:		8	19	23	27	4	**Total** 81

(5 wells are in 2 categories; i.e., TCE and Cr are on different sampling schedules)

NOTES:

Wells designated no further sampling (NFS) have been deleted from this table.

Cr = Chromium
TCE = Trichloroethene
X = TCE and chromium
EPA = U.S. Environmental Protection Agency
E = Extraction well
E/M = Extraction well with pump pulled; now sampled as a monitoring well
M = Monitoring well
M/D = Monitoring well with dedicated pump installed

TABLE 4. WELL SAMPLING FREQUENCY CHANGES FOR 2014

Well Group	Well ID	Sampling Frequency		Reason for Change
		From	To	
Upgradient	AMW-8A	Annual	Biennial	Although offsite impacts were observed during the 1990s and early 2000s, TCE concentrations in this upgradient well have been below the cleanup level since 2006.
Proximal	MW-2A	Semiannual for chromium	Annual	EPA request for semiannual sampling for chromium during 2013; that sampling has been completed and the sampling frequency is reverting to the 2012 frequency.
	MW-3A	Semiannual for chromium	Annual for chromium	EPA request for semiannual sampling for chromium during 2013; that sampling has been completed and the sampling frequency is reverting to the 2012 frequency.
	MW-4A	Semiannual for chromium	Annual for chromium	EPA request for semiannual sampling for chromium during 2013; that sampling has been completed and the sampling frequency is reverting to the 2012 frequency.
	MW-4B	Semiannual for chromium	Annual for chromium	EPA request for semiannual sampling for chromium during 2013; that sampling has been completed and the sampling frequency is reverting to the 2012 frequency.
	MW-4BShed	Semiannual for chromium	NFS	EPA request for semiannual sampling for chromium during 2013; that sampling has been completed and the sampling frequency is reverting to the 2012 frequency.
	MW-6A	Semiannual for chromium	Every 5 years for chromium	EPA request for semiannual sampling for chromium during 2013; that sampling has been completed and the sampling frequency is reverting to the 2012 frequency.
Intermediate	MW-16E	Biennial for TCE	NFS for TCE	TCE concentrations are statistically below the cleanup level, per the MAROS evaluation.
	MW-38	Annual for TCE	Semiannual for TCE	Increased monitoring for Northern Plume impacts; the TCE concentration in this well has recently increased with the arrival of the Northern Plume.
Church-of-God	AMW-27	Quarterly	Semiannual for TCE, biennial for chromium	This well was sampled quarterly for one year following shutdown of the pump; the frequency is being reduced for long-term monitoring. The TCE concentration is just above the cleanup level and the chromium concentration is below the cleanup level.
	AMW-61	Semiannual for TCE	Annual for TCE	This silt well was sampled semiannually during 2013 to monitor for potential contaminant rebound due to shutdown of nearby extraction wells; the frequency is being reduced for long-term monitoring.
	AMW-25D	Semiannual	Annual	This well was sampled semiannually for one year following shutdown of the pump; the frequency is being reduced for long-term monitoring. TCE and chromium concentrations are below the cleanup levels.
	AMW-26D	Semiannual	Annual	This well was sampled semiannually for one year following shutdown of the pump; the frequency is being reduced for long-term monitoring. TCE and chromium concentrations are below the cleanup levels.
	MW-49	Semiannual	Annual	This well was sampled semiannually for one year following shutdown of the pump; the frequency is being reduced for long-term monitoring. TCE and chromium concentrations are below the cleanup levels.
Toe	MW-35	Annual for chromium	Biennial for chromium	Chromium concentrations have been below the cleanup level since 2002.

NOTES:
MAROS = Monitoring and Remediation Optimization System.
NFS = No further sampling.
TCE = Trichloroethene.

TABLE 5. SUMMARY OF WELLS REQUIRING NO FURTHER SAMPLING FOR TCE AND/OR CHROMIUM

Well Name	TCE					Chromium				
	Min	Max	No. of Samples	NFS Year[1]	NFS Rationale	Min	Max	No. of Samples	NFS Year[1]	NFS Rationale
TCE Source Wells										
RAMW-2C	U	0.90	23	2009	All results except the first sample have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-1B	U	82.20	31	2010	All results since 1999 have been below the cleanup level.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-1C	U	73.9	24	2009	All results since 1997 (22 samples) have been below the cleanup level and MRL.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-4A	U	0.40	12	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-19B	U	0.77	17	2009	All results have been below the cleanup level and <1 ug/L. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-52C	U	U	15	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-53B	0.43 J	2.70	15	2009	All results have been below the cleanup level. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-53C	U	0.21 J	15	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-54C	U	0.36 J	15	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-55C	U	0.39 J	15	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-56C	U	0.44 J	23	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
MW-1B	U	400	28	2009	All results have been below the cleanup level and MRL since 2000 (22 samples).				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
MW-1C	U	92.0	20	2009	All results except the first sample have been below the cleanup level. Since 1997, all results have been below the MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	10	6	2009	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
Proximal Wells										
AMW-58	0.1 J	9.2	8	2012	TCE concentrations in this silt well have been below the cleanup level since 2005.	U	34.7	7	2010	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-2B	2.40	29.0	14	2010	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. TCE is currently below the cleanup level.	U	26.4	14	2009	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.

TABLE 5. SUMMARY OF WELLS REQUIRING NO FURTHER SAMPLING FOR TCE AND/OR CHROMIUM

Well Name	TCE					Chromium				
	Min	Max	No. of Samples	NFS Year[1]	NFS Rationale	Min	Max	No. of Samples	NFS Year[1]	NFS Rationale
MW-2C	0.36 J	40.5	8	2009	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. TCE has been below the cleanup level since 2002 (4 samples).	U	21.4	8	2009	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-3A	U	2.40	19	2009	All results have been below the cleanup level. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	NA (still sampling)
MW-3B				NA	NA (still sampling)	5.20	23.3	11	2009	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-3C	3.80	20.4	7	2008	This well is redundant for TCE, according to the MAROS evaluation.	U	9.30	7	2008	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-4A	0.80	210	19	2010	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness.				NA	NA (still sampling)
MW-4BShed	4.10	198	15	2010	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness.	65.6	8580	10	2013	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness.
MW-4C	3.80	40.0	8	2009	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. TCE has been on a decreasing trend and is currently below the cleanup level (1 sample).	61.0	248	47	2009	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. Chromium has been on a decreasing trend and was below the cleanup level (one sample).
MW-6A	U	38.1	5	2009	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. TCE has been below the cleanup level since 1995 (4 samples) and below the detection limit since 1997.				NA	NA (still sampling)
MW-6C	0.54	66.7	10	2010	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness.	8.63	400	10	2009	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. Chromium has been below the cleanup level since 1995 (9 samples).
MW-6D	4.30	63.5	8	2010	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness.	U	29.8	8	2009	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-7B				NA	NA (still sampling)	9.80	932	6	2009	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. Chromium has been below the cleanup level since 1997 (4 samples).
MW-7C	0.18 J	26.5	6	2009	This well is part of a well cluster (adjacent to the MW-4 cluster) but is not the most impacted well in the cluster and therefore provides data of limited usefulness. TCE has been below the cleanup level since 1997 (4 samples).	U	174	8	2009	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. Chromium has been below the cleanup level since 1995 (7 samples).
MW-8B				NA	NA (still sampling)	U	13.0	11	2009	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.

TABLE 5. SUMMARY OF WELLS REQUIRING NO FURTHER SAMPLING FOR TCE AND/OR CHROMIUM

Well Name	TCE					Chromium				
	Min	Max	No. of Samples	NFS Year[1]	NFS Rationale	Min	Max	No. of Samples	NFS Year[1]	NFS Rationale
MW-9B				NA	NA (still sampling)	U	429	16	2009	Chromium has been below the cleanup level since 1997 (12 samples).
MW-9C	3.80	2,280	9	2010	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness.	U	65.4	22	2010	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. Chromium has never exceeded the cleanup level.
MW-12C				NA	NA (still sampling)	U	19.0	38	2010	Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-13C				NA	NA (still sampling)	27.5	122	38	2010	Chromium is statistically below the cleanup level according to the MAROS evaluation.
Intermediate Wells										
AMW-16				NA	NA (still sampling)	U	3.0	21	2010	Chromium is statistically below the cleanup level according to the MAROS evaluation.
AMW-17				NA	NA (still sampling)	U	4.60	19	2008	All results have been below the cleanup level and all have been below the MRL except one. Chromium is statistically below the cleanup level according to the MAROS evaluation.
AMW-18				NA	NA (still sampling)	U	2.40	14	2008	Allresults have been below the cleanup level and all have been below the MRL except one. Chromium is statistically below the cleanup level according to the MAROS evaluation.
AMW-59				NA	NA (still sampling)	U	7.90	8	2009	All results have been below the cleanup level and all but one have been below the MRL. Chromium is statistically below the cleanup level according to the MAROS evaluation.
AMW-60	U	0.94	3	2009	All results have been below the cleanup level and near or below the MRL. This is a silt well.	U	8.90	3	2009	All results have been below the cleanup level and near or below the MRL. This is a silt well.
MW-15E				NA	NA (still sampling)	U	18.0	13	2008	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-16E	U	5.70	12	2013	TCE is statistically below the cleanup level according to the MAROS evaluation.	U	16.1	19	2010	Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-17E	U	0.85 J	5	2008	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	U	5	2008	All results have been below the cleanup level and the MRL. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-18E				NA	NA (still sampling)	U	597	35	2010	With the exception of three outliers, chromium concentrations have been below the cleanup level in all samples collected since the well was installed in 1993.
PZ-39				NA	NA (still sampling)	6.7	11.0	3	2010	Chromium has never exceeded the cleanup level.
MW-40	1.2	36	6	2009	Replaced with PZ-39.	97.6	443	6	2009	Replaced with PZ-39.
Church of God										
AMW-14	U	506	14	2012	Decommissioned	26	8300	14	2012	Decommissioned
AMW-61				NA	NA (still sampling)	17.3	1410	5	2010	Chromium is below the cleanup level. Due to excessive drawdown during low-flow pumping of this silt well, use of a PDB is recommended for VOC sampling only.
CPU-12				NA	NA (still sampling)	U	245	27	2010	Chromium concentrations have been below the cleanup level since 2002.
MW-23D				NA	NA (still sampling)	U	6.7	40	2010	Chromium is statistically below the cleanup level according to the MAROS evaluation.

TABLE 5. SUMMARY OF WELLS REQUIRING NO FURTHER SAMPLING FOR TCE AND/OR CHROMIUM

Well Name	TCE					Chromium				
	Min	Max	No. of Samples	NFS Year[1]	NFS Rationale	Min	Max	No. of Samples	NFS Year[1]	NFS Rationale
Other Toe Wells										
MW-37	U	U	28	2008	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	18.0	28	2008	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-46	U	U	41	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	28.0	42	2009	All results have been below the cleanup level.
MW-48	U	U	38	2009	All results have been below the cleanup level and MRL except one outlier in 2001. TCE is statistically below the cleanup level according to the MAROS evaluation (outlier excluded).	U	37.8	39	2009	All results have been below the cleanup level.
Sentinel Toe Wells										
AMW-43	U	U	38	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	7.80	39	2009	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
AMW-44	U	U	40	2008	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	57.8	41	2008	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
AMW-45	U	U	44	2008	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	30.8	47	2008	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-30	U	U	21	2008	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	5.80	24	2008	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-47	U	U	32	2008	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	17.0	34	2008	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.

Notes:

[1] Year = the Annual Status Report in which this recommendation was made.

Data used are from 1995 to the present.

J = The result is an estimated concentration that is less than the Method Reporting Limit but greater than or equal to the Method Detection Limit.

MAROS = Monitoring and Remediation Optimization Software.

MRL = Method reporting limit.

NA = Not applicable.

NFS = No further sampling.

TCE = Trichloroethene.

U = Analyte not detected above the specified reporting limit.

APPENDIX A

CHROMIUM CONCENTRATIONS IN GROUNDWATER

APPENDIX A-1

CHROMIUM CONCENTRATIONS – SUMMARY TABLES

A-1. Chromium Concentration Summary

Well Group	Well	Spring 2012	Fall 2012	Winter 2013	Spring 2013	Summer 2013	Fall 2013
Proximal	MW-2A	--	**190**	--	**489**	--	**220**
	MW-3A	--	75.4	--	54.5	--	72.1
	MW-4A	--	**362**	--	**505**	--	**376**
	MW-4B	--	**407**	--	**638**	--	**787**
	MW-4BSHED	--	--	--	68.3	--	65.6
	MW-6A	--	--	--	52.6	--	**133**
	MW-6B	48.1	17.8	--	19.8	--	20.8
	MW-10B	39.6	36.2	--	37.6	--	34.6
	MW-10C	**116**	**93.6**	--	**96**	--	76.3
	PW-1B	49.7	34.1	--	42.8	--	44.2
Intermediate	MW-14C	77.1	69.6	--	67.1	--	63.7
	MW-14E	42.1	41.1	--	41.7	--	39.9
	MW-18D	**109**	**107**	--	**106**	--	**96.6**
	MW-19D	**113**	**102**	--	**99.2**	--	**94.8**
	MW-20D	72.8	63.5	--	61.4	--	55
	CPU-14	--	37.1	--	--	--	46.8
Church of God	AMW-27*	--	--	3.9 J	4.8	15.8	--
	MW-21D	6.7	12	--	9.3	--	8.8
	MW-22D	28.5	25.4	--	22.8	--	23.3
	MW-25D	3.4 J	2.7 J	--	3.3 J	--	3.9 J
	MW-26D	6.6	11.7	--	38.6	--	7.0
	MW-27D	--	12.9 UJ	--	--	--	18.9 UJ
	MW-49	9.5	9.3	--	11.6	--	11.4
	CPU-13	19.5	16.4	--	25.3	--	44.8
Toe of Plume: Other Toe	MW-35	--	16.5 UJ	--	--	--	17.6
Troutdale Aquifer	AMW-24	--	8.8	--	--	--	6.6
	BENNETT	5.0 U	5.0 U	--	4.0 U	--	4.0 U
	MW-33	--	3.2 J	--	--	--	1.9 J

NOTES:

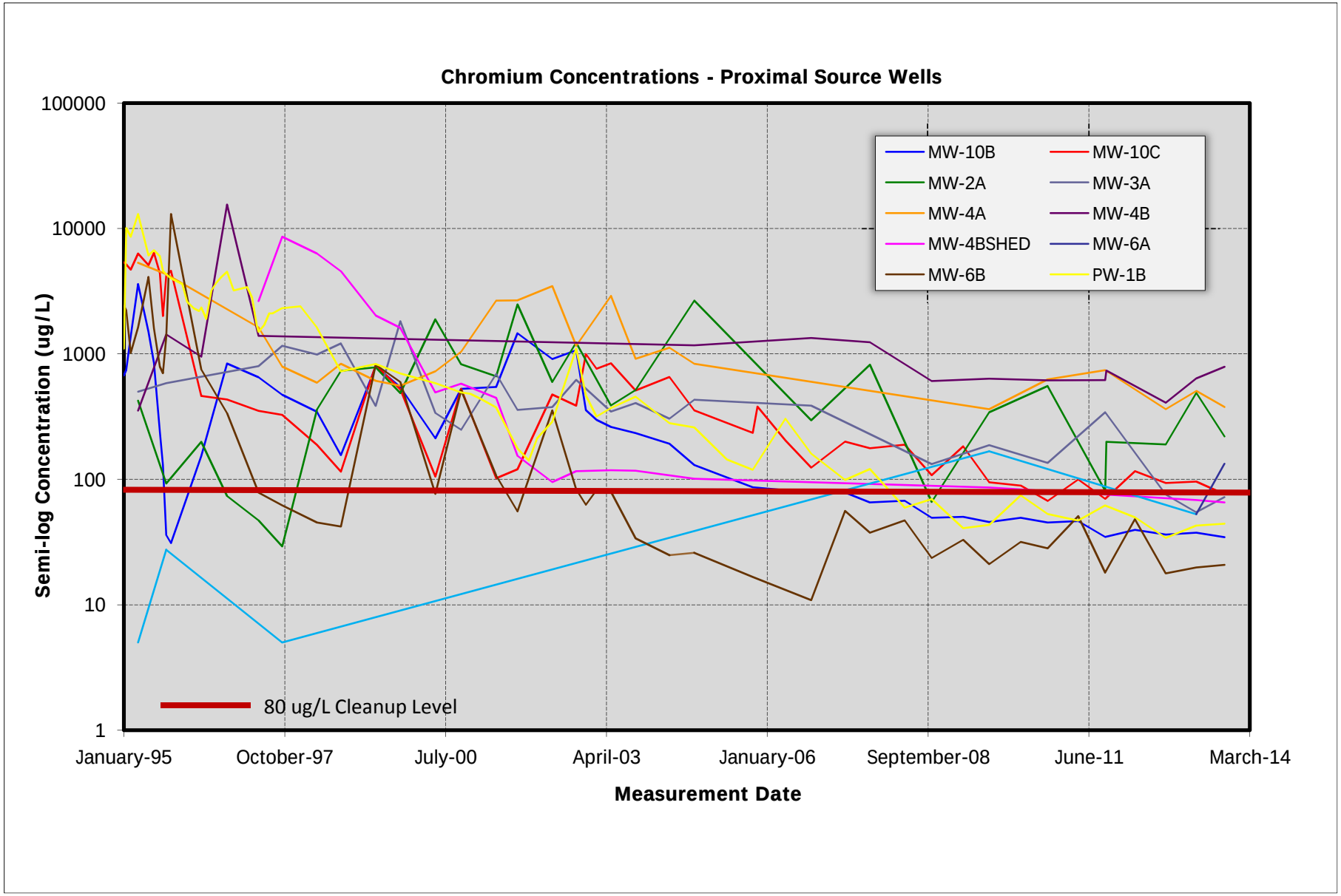
Only wells sampled during 2013 are included in this table.
Results are in micrograms per liter (µg/L).
Results are for total chromium, unless otherwise noted.

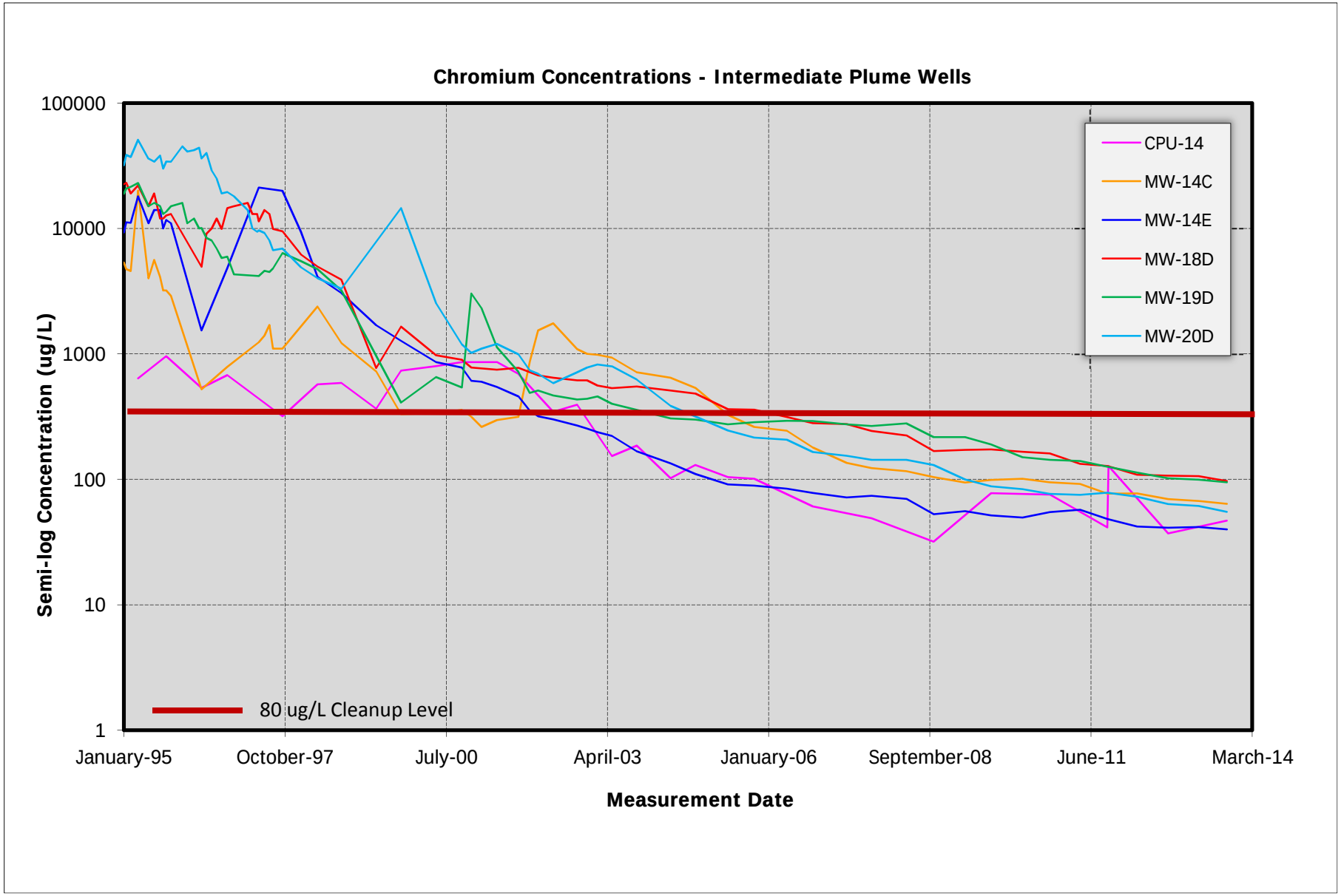
J = The result is an estimated concentration that is less than the Method Reporting Limit but greater than or equal to the Method Detection Limit.
-- = Well not sampled during the monitoring event.
U = Analyte not detected above the specified reporting limit.
UJ = The analyte was not detected, but the associated limit of quantitation is estimated due to discrepancies in quality control criteria.
* = Well AMW-27 was sampled in Winter and Summer 2013 to monitor concentrations following shutdown of the pump in this former extraction well.

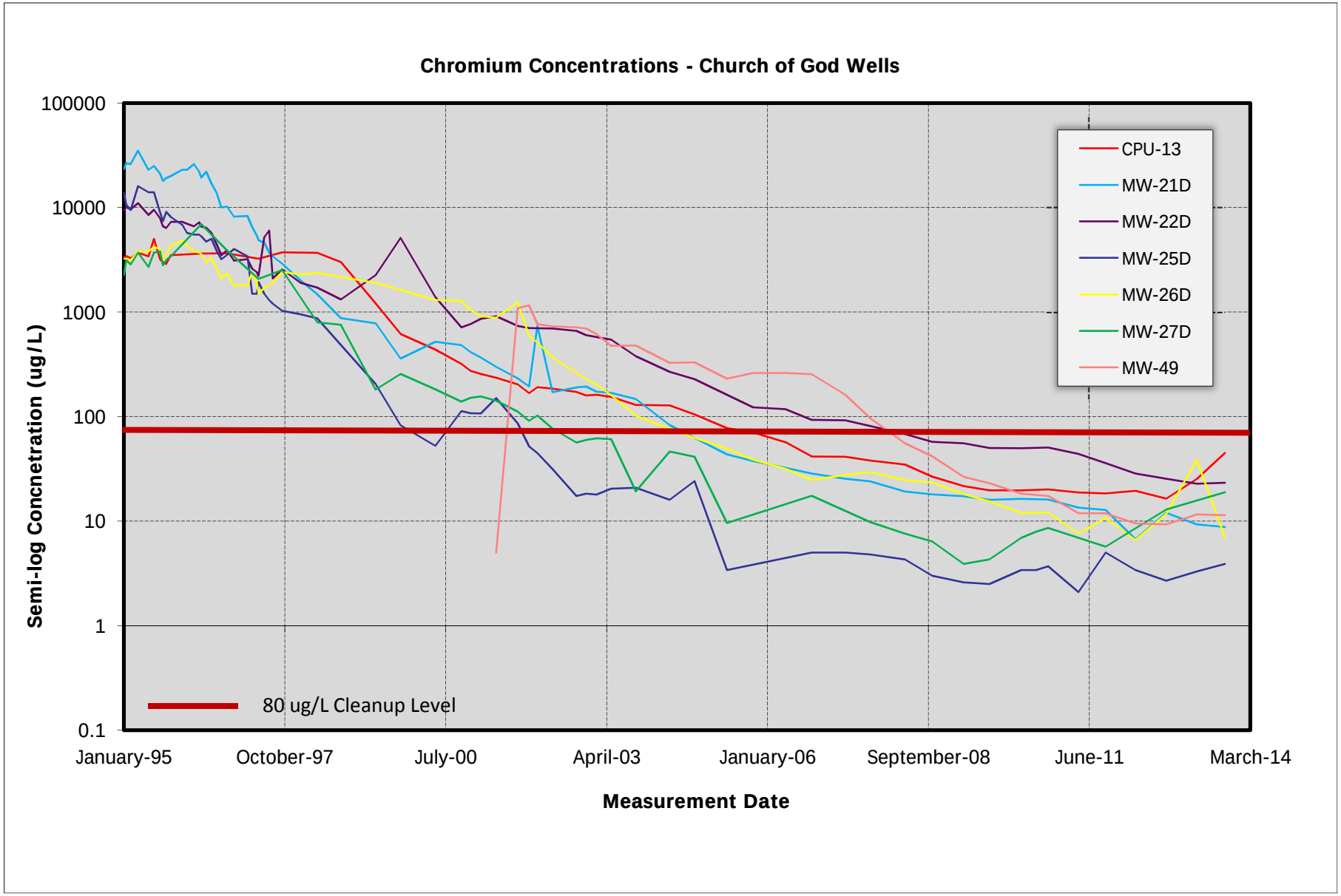
Results shown in **bold and shaded** are above the cleanup level of 80 µg/L.

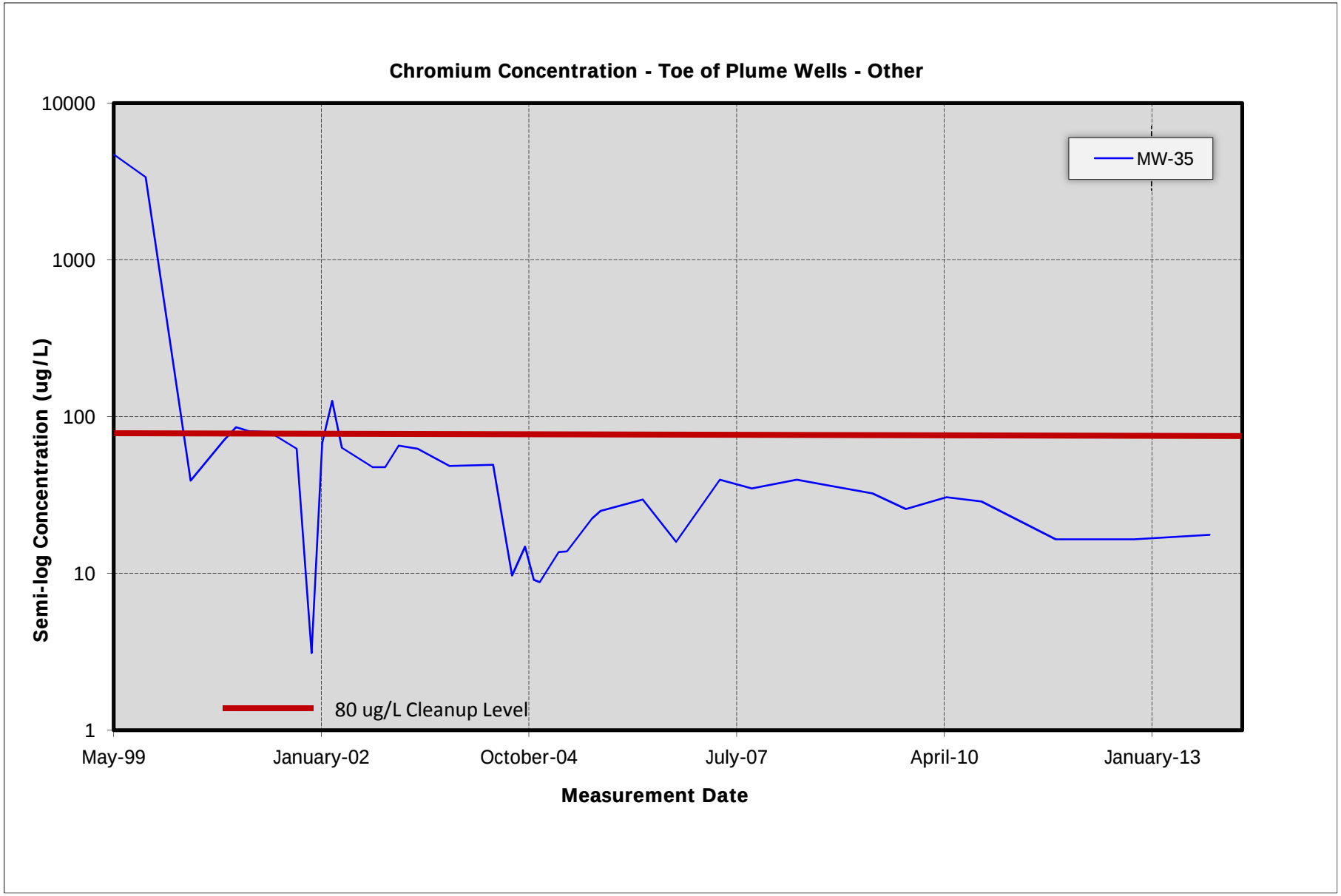
APPENDIX A-2

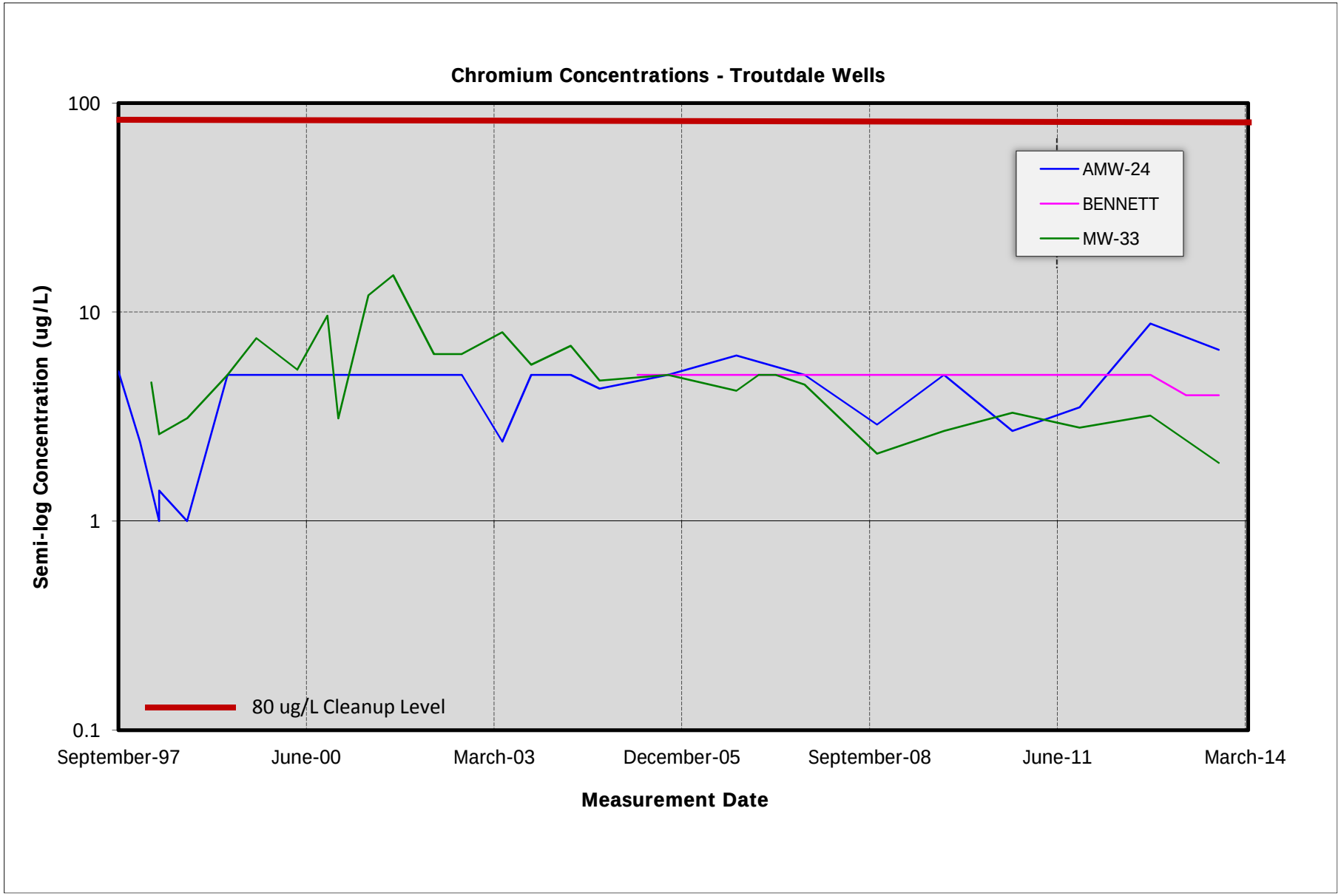
CHROMIUM CONCENTRATIONS – BY WELL GROUPING


Chromium Concentrations - Proximal Source Wells
Semi-log Concentration (ug/L)
100000
10000
1000
100
10
1
January-95
October-97
July-00
April-03
January-06
September-08
June-11
March-14
Measurement Date
MW-10B
MW-10C
MW-2A
MW-3A
MW-4A
MW-4B
MW-4BSHED
MW-6A
MW-6B
PW-1B
80 ug/L Cleanup Level


Chromium Concentrations - Intermediate Plume Wells
Semi-log Concentration (ug/L)
100000
10000
1000
100
10
1
January-95
October-97
July-00
April-03
January-06
September-08
June-11
March-14
Measurement Date
CPU-14
MW-14C
MW-14E
MW-18D
MW-19D
MW-20D
80 ug/L Cleanup Level


Chromium Concentrations - Church of God Wells
Semi-log Concnetration (ug/L)
100000
10000
1000
100
10
1
0.1
January-95
October-97
July-00
April-03
January-06
September-08
June-11
March-14
Measurement Date
CPU-13
MW-21D
MW-22D
MW-25D
MW-26D
MW-27D
MW-49
80 ug/L Cleanup Level


Chromium Concentration - Toe of Plume Wells - Other
10000
1000
100
10
1
Semi-log Concentration (ug/L)
MW-35
80 ug/L Cleanup Level
May-99
January-02
October-04
July-07
April-10
January-13
Measurement Date


Chromium Concentrations - Troutdale Wells
100
10
1
0.1
Semi-log Concentration (ug/L)
AMW-24
BENNETT
MW-33
80 ug/L Cleanup Level
September-97
June-00
March-03
December-05
September-08
June-11
March-14
Measurement Date

APPENDIX A-3

CHROMIUM CONCENTRATIONS – INDIVIDUAL WELLS

APPENDIX A-3
TABLE OF CONTENTS

Toe of Plume – Other Toe Wells

Troutdale Wells

UPGRADIENT WELLS

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: AMW-6A **Time Period:** 1/19/1995 **to** 10/18/2013

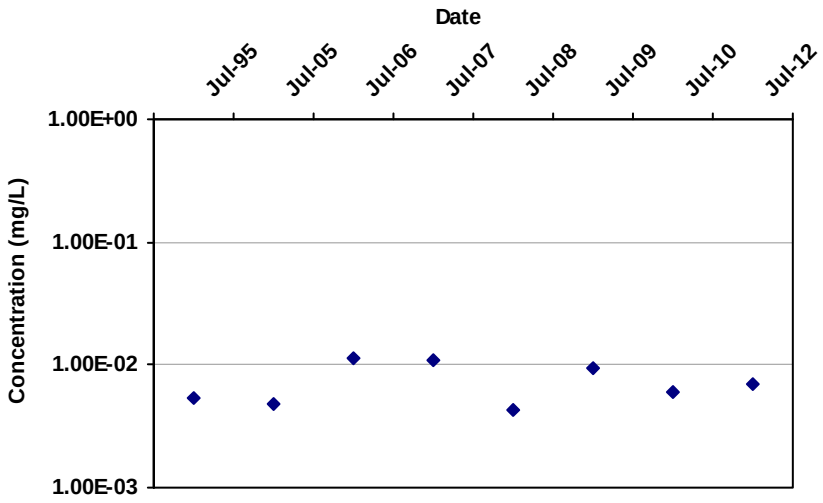
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

0

Confidence in Trend:

45.2%

Coefficient of Variation:

0.38

Mann Kendall Concentration Trend: (See Note)

S

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-6A	T	7/1/1995	CHROMIUM, HEXAV	5.3E-03		1	1
AMW-6A	T	7/1/2005	CHROMIUM, HEXAV	4.8E-03		1	1
AMW-6A	T	7/1/2006	CHROMIUM, HEXAV	1.1E-02		4	4
AMW-6A	T	7/1/2007	CHROMIUM, HEXAV	1.1E-02		3	3
AMW-6A	T	7/1/2008	CHROMIUM, HEXAV	4.3E-03		2	2
AMW-6A	T	7/1/2009	CHROMIUM, HEXAV	9.4E-03		2	2
AMW-6A	T	7/1/2010	CHROMIUM, HEXAV	5.9E-03		2	2
AMW-6A	T	7/1/2012	CHROMIUM, HEXAV	6.9E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects

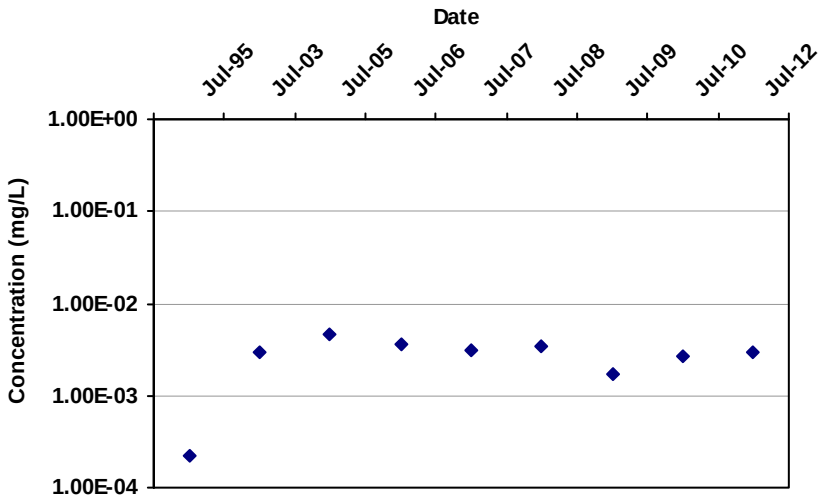
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-7A	**Time Period:**	1/19/1995 **to** 10/18/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	CHROMIUM, HEXAVALENT	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-4

Confidence in Trend:

61.9%

Coefficient of Variation:

0.45

Mann Kendall Concentration Trend: (See Note)

S

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-7A	T	7/1/1995	CHROMIUM, HEXAV	2.2E-04		2	1
AMW-7A	T	7/1/2003	CHROMIUM, HEXAV	3.0E-03	ND	1	0
AMW-7A	T	7/1/2005	CHROMIUM, HEXAV	4.7E-03		1	1
AMW-7A	T	7/1/2006	CHROMIUM, HEXAV	3.6E-03		4	4
AMW-7A	T	7/1/2007	CHROMIUM, HEXAV	3.1E-03		3	2
AMW-7A	T	7/1/2008	CHROMIUM, HEXAV	3.5E-03		2	1
AMW-7A	T	7/1/2009	CHROMIUM, HEXAV	1.7E-03		2	1
AMW-7A	T	7/1/2010	CHROMIUM, HEXAV	2.7E-03		2	2
AMW-7A	T	7/1/2012	CHROMIUM, HEXAV	2.9E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: AMW-10A **Time Period:** 1/19/1995 **to** 10/18/2013

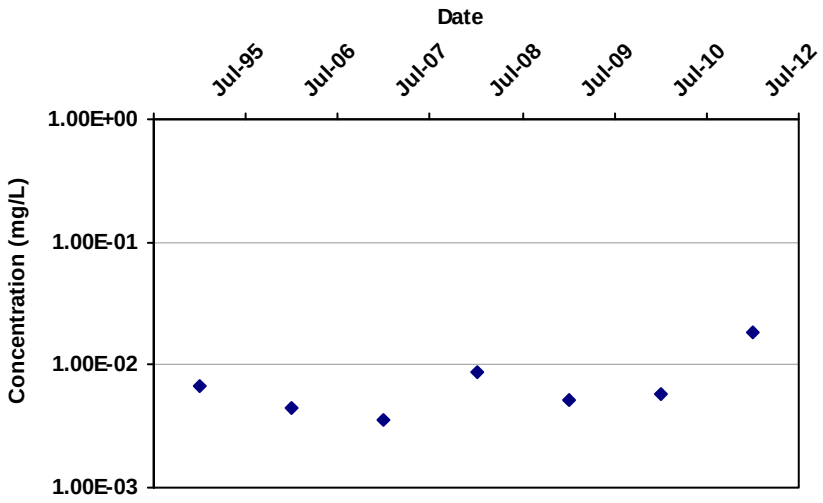
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

7

Confidence in Trend:

80.9%

Coefficient of Variation:

0.69

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-10A	T	7/1/1995	CHROMIUM, HEXAV	6.6E-03		2	2
AMW-10A	T	7/1/2006	CHROMIUM, HEXAV	4.5E-03		4	3
AMW-10A	T	7/1/2007	CHROMIUM, HEXAV	3.5E-03		3	2
AMW-10A	T	7/1/2008	CHROMIUM, HEXAV	8.6E-03		2	2
AMW-10A	T	7/1/2009	CHROMIUM, HEXAV	5.2E-03		2	2
AMW-10A	T	7/1/2010	CHROMIUM, HEXAV	5.7E-03		2	2
AMW-10A	T	7/1/2012	CHROMIUM, HEXAV	1.9E-02		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: AMW-11A **Time Period:** 1/19/1995 **to** 10/18/2013

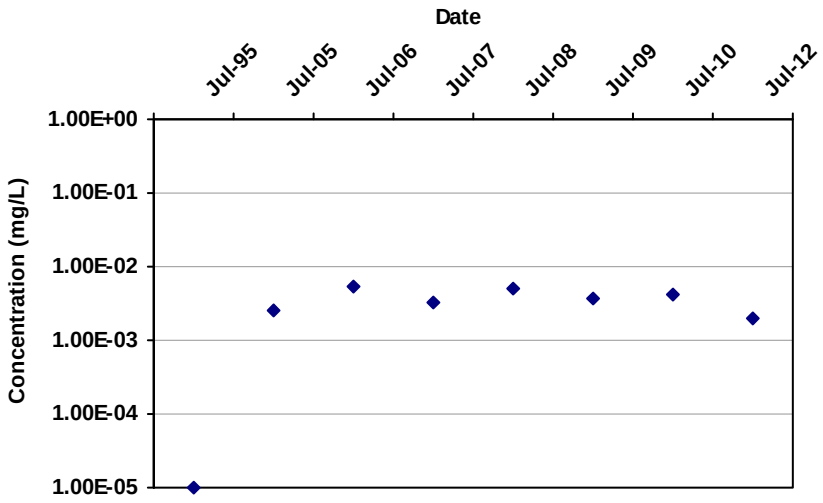
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

4

Confidence in Trend:

64.0%

Coefficient of Variation:

0.53

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-11A	T	7/1/1995	CHROMIUM, HEXAV	1.0E-05	ND	2	0
AMW-11A	T	7/1/2005	CHROMIUM, HEXAV	2.6E-03		1	1
AMW-11A	T	7/1/2006	CHROMIUM, HEXAV	5.5E-03		4	4
AMW-11A	T	7/1/2007	CHROMIUM, HEXAV	3.3E-03		3	1
AMW-11A	T	7/1/2008	CHROMIUM, HEXAV	4.9E-03		2	2
AMW-11A	T	7/1/2009	CHROMIUM, HEXAV	3.7E-03		2	2
AMW-11A	T	7/1/2010	CHROMIUM, HEXAV	4.1E-03		2	2
AMW-11A	T	7/1/2012	CHROMIUM, HEXAV	2.0E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects

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); ND = Non-detect

TCE SOURCE WELLS

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-1A **Time Period:** 1/19/1995 **to** 10/18/2013

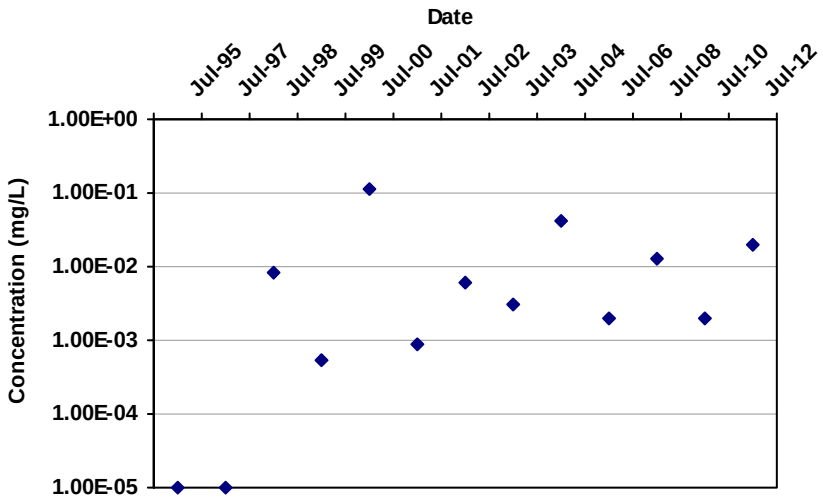
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

28

Confidence in Trend:

95.0%

Coefficient of Variation:

1.93

Mann Kendall Concentration Trend: (See Note)

I

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-1A	T	7/1/1995	CHROMIUM, HEXAV	1.0E-05	ND	2	0
MW-1A	T	7/1/1997	CHROMIUM, HEXAV	1.0E-05	ND	2	0
MW-1A	T	7/1/1998	CHROMIUM, HEXAV	8.2E-03		2	2
MW-1A	T	7/1/1999	CHROMIUM, HEXAV	5.4E-04		2	1
MW-1A	T	7/1/2000	CHROMIUM, HEXAV	1.1E-01		2	2
MW-1A	T	7/1/2001	CHROMIUM, HEXAV	8.8E-04		2	1
MW-1A	T	7/1/2002	CHROMIUM, HEXAV	6.1E-03		2	1
MW-1A	T	7/1/2003	CHROMIUM, HEXAV	3.1E-03		2	2
MW-1A	T	7/1/2004	CHROMIUM, HEXAV	4.2E-02		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-1A	T	7/1/2006	CHROMIUM, HEXAV	2.0E-03	ND	1	0
MW-1A	T	7/1/2008	CHROMIUM, HEXAV	1.3E-02		1	1
MW-1A	T	7/1/2010	CHROMIUM, HEXAV	2.0E-03	ND	1	0
MW-1A	T	7/1/2012	CHROMIUM, HEXAV	1.9E-02		1	1

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); ND = Non-detect

PROXIMAL WELLS

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-2A **Time Period:** 1/19/1995 **to** 10/18/2013

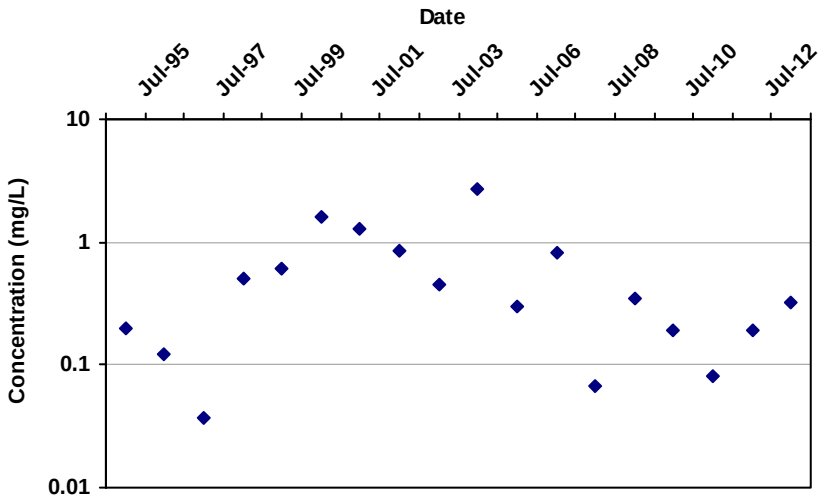
Well Type: S **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-19

Confidence in Trend:

75.0%

Coefficient of Variation:

1.14

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-2A	S	7/1/1995	CHROMIUM, HEXAV	2.0E-01		2	2
MW-2A	S	7/1/1996	CHROMIUM, HEXAV	1.2E-01		2	2
MW-2A	S	7/1/1997	CHROMIUM, HEXAV	3.7E-02		2	2
MW-2A	S	7/1/1998	CHROMIUM, HEXAV	5.1E-01		2	2
MW-2A	S	7/1/1999	CHROMIUM, HEXAV	6.2E-01		2	2
MW-2A	S	7/1/2000	CHROMIUM, HEXAV	1.6E+00		2	2
MW-2A	S	7/1/2001	CHROMIUM, HEXAV	1.3E+00		2	2
MW-2A	S	7/1/2002	CHROMIUM, HEXAV	8.6E-01		2	2
MW-2A	S	7/1/2003	CHROMIUM, HEXAV	4.5E-01		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-2A	S	7/1/2004	CHROMIUM, HEXAV	2.7E+00		1	1
MW-2A	S	7/1/2006	CHROMIUM, HEXAV	3.0E-01		1	1
MW-2A	S	7/1/2007	CHROMIUM, HEXAV	8.2E-01		1	1
MW-2A	S	7/1/2008	CHROMIUM, HEXAV	6.6E-02		1	1
MW-2A	S	7/1/2009	CHROMIUM, HEXAV	3.4E-01		1	1
MW-2A	S	7/1/2010	CHROMIUM, HEXAV	1.9E-01		1	1
MW-2A	S	7/1/2011	CHROMIUM, HEXAV	8.1E-02		1	1
MW-2A	S	7/1/2012	CHROMIUM, HEXAV	1.9E-01		1	1
MW-2A	S	7/1/2013	CHROMIUM, HEXAV	3.3E-01		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-3A **Time Period:** 1/19/1995 **to** 10/18/2013

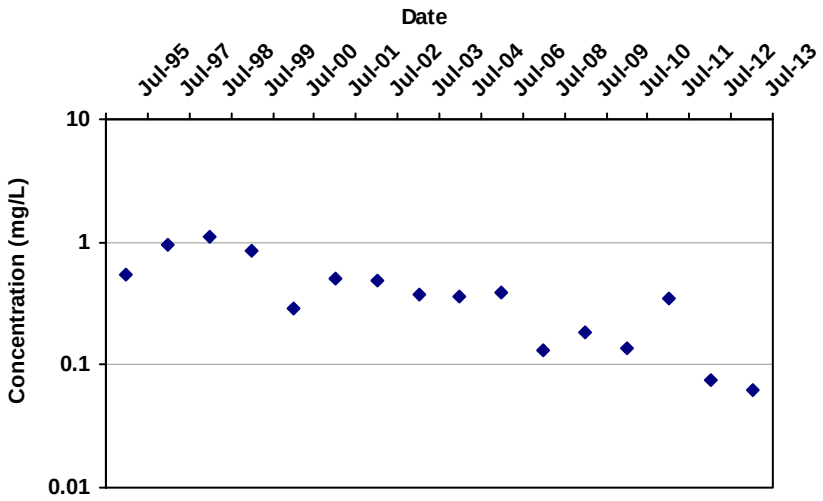
Well Type: S **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-86

Confidence in Trend:

100.0%

Coefficient of Variation:

0.73

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-3A	S	7/1/1995	CHROMIUM, HEXAV	5.4E-01		2	2
MW-3A	S	7/1/1997	CHROMIUM, HEXAV	9.6E-01		2	2
MW-3A	S	7/1/1998	CHROMIUM, HEXAV	1.1E+00		2	2
MW-3A	S	7/1/1999	CHROMIUM, HEXAV	8.4E-01		2	2
MW-3A	S	7/1/2000	CHROMIUM, HEXAV	2.9E-01		2	2
MW-3A	S	7/1/2001	CHROMIUM, HEXAV	5.0E-01		2	2
MW-3A	S	7/1/2002	CHROMIUM, HEXAV	4.8E-01		2	2
MW-3A	S	7/1/2003	CHROMIUM, HEXAV	3.8E-01		2	2
MW-3A	S	7/1/2004	CHROMIUM, HEXAV	3.6E-01		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-3A	S	7/1/2006	CHROMIUM, HEXAV	3.9E-01		1	1
MW-3A	S	7/1/2008	CHROMIUM, HEXAV	1.3E-01		1	1
MW-3A	S	7/1/2009	CHROMIUM, HEXAV	1.9E-01		1	1
MW-3A	S	7/1/2010	CHROMIUM, HEXAV	1.4E-01		1	1
MW-3A	S	7/1/2011	CHROMIUM, HEXAV	3.4E-01		1	1
MW-3A	S	7/1/2012	CHROMIUM, HEXAV	7.5E-02		1	1
MW-3A	S	7/1/2013	CHROMIUM, HEXAV	6.3E-02		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-4A **Time Period:** 1/19/1995 **to** 10/18/2013

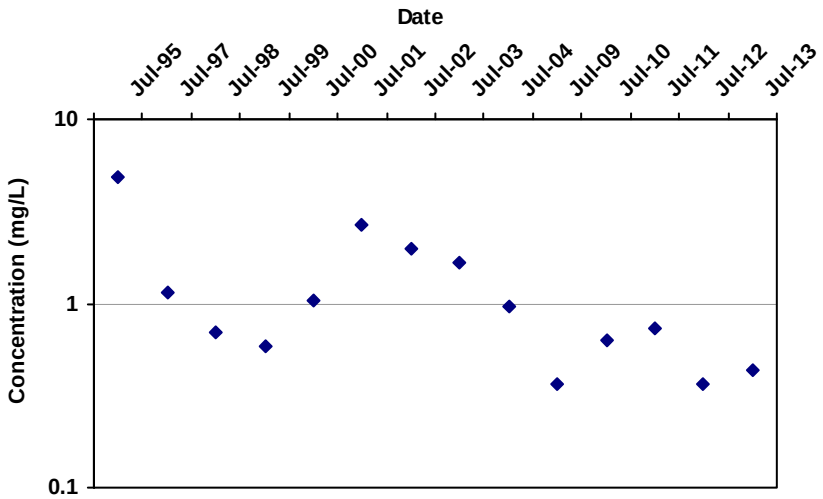
Well Type: S **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-43

Confidence in Trend:

99.0%

Coefficient of Variation:

0.94

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-4A	S	7/1/1995	CHROMIUM, HEXAV	4.8E+00		2	2
MW-4A	S	7/1/1997	CHROMIUM, HEXAV	1.1E+00		2	2
MW-4A	S	7/1/1998	CHROMIUM, HEXAV	7.0E-01		2	2
MW-4A	S	7/1/1999	CHROMIUM, HEXAV	5.8E-01		2	2
MW-4A	S	7/1/2000	CHROMIUM, HEXAV	1.0E+00		2	2
MW-4A	S	7/1/2001	CHROMIUM, HEXAV	2.7E+00		2	2
MW-4A	S	7/1/2002	CHROMIUM, HEXAV	2.0E+00		2	2
MW-4A	S	7/1/2003	CHROMIUM, HEXAV	1.7E+00		2	2
MW-4A	S	7/1/2004	CHROMIUM, HEXAV	9.7E-01		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-4A	S	7/1/2009	CHROMIUM, HEXAV	3.6E-01		1	1
MW-4A	S	7/1/2010	CHROMIUM, HEXAV	6.3E-01		1	1
MW-4A	S	7/1/2011	CHROMIUM, HEXAV	7.4E-01		1	1
MW-4A	S	7/1/2012	CHROMIUM, HEXAV	3.6E-01		1	1
MW-4A	S	7/1/2013	CHROMIUM, HEXAV	4.4E-01		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-4B **Time Period:** 1/19/1995 **to** 10/18/2013

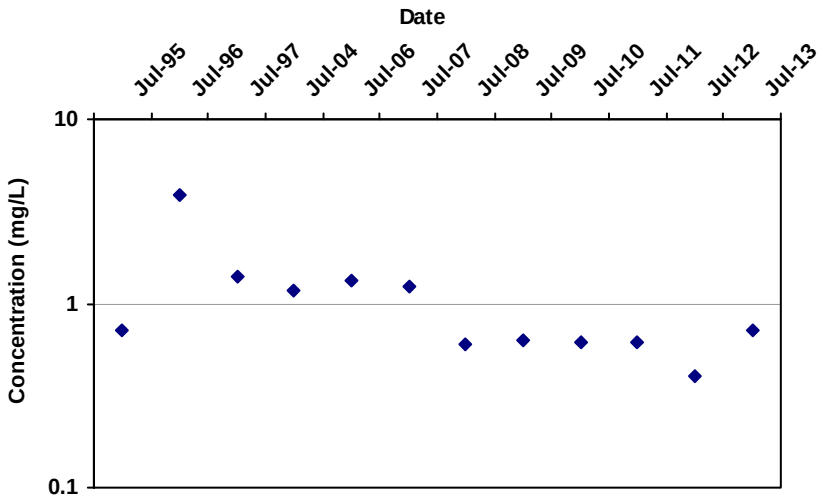
Well Type: S **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-34

Confidence in Trend:

99.0%

Coefficient of Variation:

0.83

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-4B	S	7/1/1995	CHROMIUM, HEXAV	7.1E-01		2	2
MW-4B	S	7/1/1996	CHROMIUM, HEXAV	3.8E+00		2	2
MW-4B	S	7/1/1997	CHROMIUM, HEXAV	1.4E+00		1	1
MW-4B	S	7/1/2004	CHROMIUM, HEXAV	1.2E+00		1	1
MW-4B	S	7/1/2006	CHROMIUM, HEXAV	1.3E+00		1	1
MW-4B	S	7/1/2007	CHROMIUM, HEXAV	1.2E+00		1	1
MW-4B	S	7/1/2008	CHROMIUM, HEXAV	6.1E-01		1	1
MW-4B	S	7/1/2009	CHROMIUM, HEXAV	6.3E-01		1	1
MW-4B	S	7/1/2010	CHROMIUM, HEXAV	6.2E-01		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-4B	S	7/1/2011	CHROMIUM, HEXAV	6.2E-01		1	1
MW-4B	S	7/1/2012	CHROMIUM, HEXAV	4.1E-01		1	1
MW-4B	S	7/1/2013	CHROMIUM, HEXAV	7.1E-01		2	2

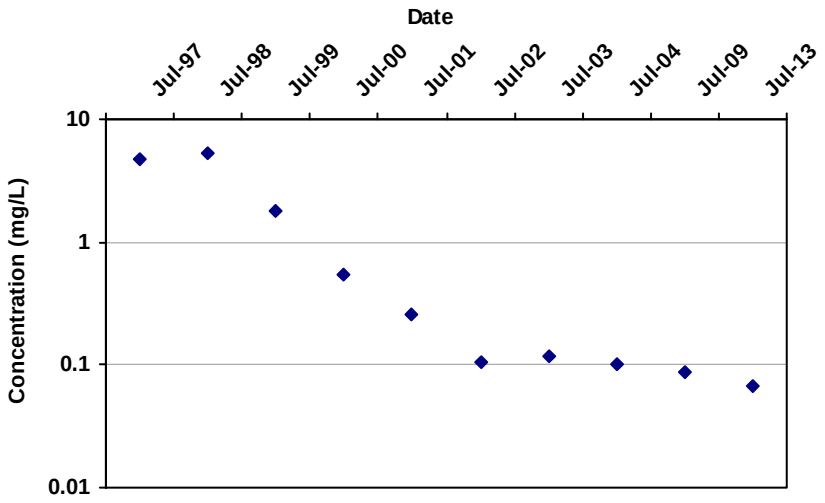
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-4BSHED	**Time Period:**	1/19/1995 **to** 10/18/2013
Well Type:	S	**Consolidation Period:**	Yearly
COC:	CHROMIUM, HEXAVALENT	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-41

Confidence in Trend:

100.0%

Coefficient of Variation:

1.55

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-4BSHED	S	7/1/1997	CHROMIUM, HEXAV	4.8E+00		2	2
MW-4BSHED	S	7/1/1998	CHROMIUM, HEXAV	5.4E+00		2	2
MW-4BSHED	S	7/1/1999	CHROMIUM, HEXAV	1.8E+00		2	2
MW-4BSHED	S	7/1/2000	CHROMIUM, HEXAV	5.3E-01		2	2
MW-4BSHED	S	7/1/2001	CHROMIUM, HEXAV	2.6E-01		2	2
MW-4BSHED	S	7/1/2002	CHROMIUM, HEXAV	1.1E-01		2	2
MW-4BSHED	S	7/1/2003	CHROMIUM, HEXAV	1.2E-01		2	2
MW-4BSHED	S	7/1/2004	CHROMIUM, HEXAV	1.0E-01		1	1
MW-4BSHED	S	7/1/2009	CHROMIUM, HEXAV	8.6E-02		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-4BSHED	S	7/1/2013	CHROMIUM, HEXAV	6.7E-02		2	2

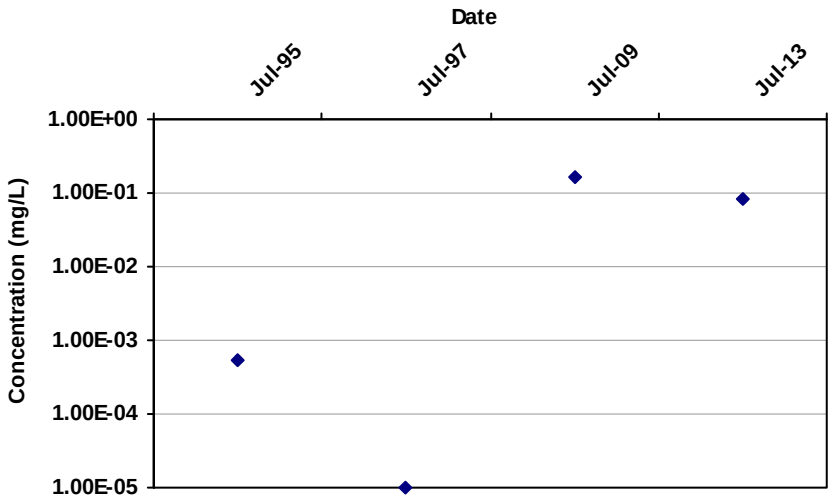
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-6A	**Time Period:**	1/19/1995 **to** 10/18/2013
Well Type:	S	**Consolidation Period:**	Yearly
COC:	CHROMIUM, HEXAVALENT	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

2

Confidence in Trend:

62.5%

Coefficient of Variation:

1.27

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-6A	S	7/1/1995	CHROMIUM, HEXAV	5.2E-04		2	1
MW-6A	S	7/1/1997	CHROMIUM, HEXAV	1.0E-05	ND	1	0
MW-6A	S	7/1/2009	CHROMIUM, HEXAV	1.7E-01		1	1
MW-6A	S	7/1/2013	CHROMIUM, HEXAV	8.4E-02		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-6B **Time Period:** 1/19/1995 **to** 10/18/2013

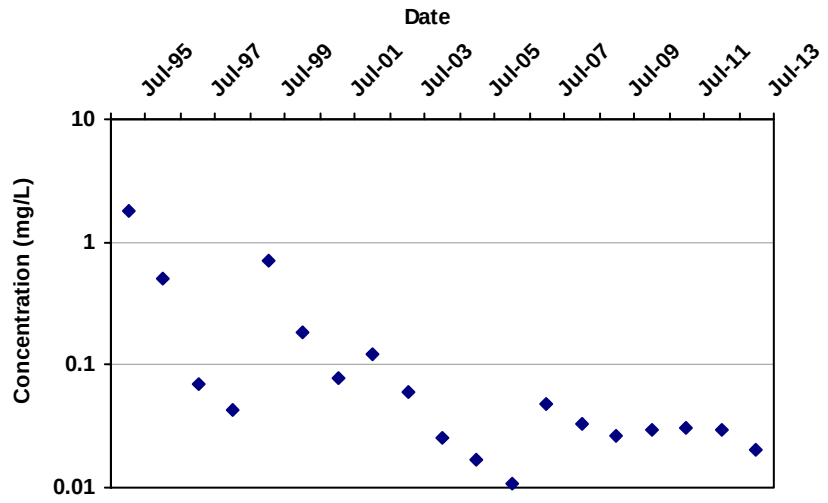
Well Type: S **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-99

Confidence in Trend:

100.0%

Coefficient of Variation:

2.11

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-6B	S	7/1/1995	CHROMIUM, HEXAV	1.8E+00		11	11
MW-6B	S	7/1/1996	CHROMIUM, HEXAV	5.0E-01		2	2
MW-6B	S	7/1/1997	CHROMIUM, HEXAV	7.0E-02		2	2
MW-6B	S	7/1/1998	CHROMIUM, HEXAV	4.4E-02		2	2
MW-6B	S	7/1/1999	CHROMIUM, HEXAV	7.0E-01		2	2
MW-6B	S	7/1/2000	CHROMIUM, HEXAV	1.9E-01		3	3
MW-6B	S	7/1/2001	CHROMIUM, HEXAV	7.7E-02		2	2
MW-6B	S	7/1/2002	CHROMIUM, HEXAV	1.2E-01		3	3
MW-6B	S	7/1/2003	CHROMIUM, HEXAV	6.1E-02		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-6B	S	7/1/2004	CHROMIUM, HEXAV	2.5E-02		2	2
MW-6B	S	7/1/2005	CHROMIUM, HEXAV	1.7E-02		1	1
MW-6B	S	7/1/2006	CHROMIUM, HEXAV	1.1E-02		1	1
MW-6B	S	7/1/2007	CHROMIUM, HEXAV	4.9E-02		2	2
MW-6B	S	7/1/2008	CHROMIUM, HEXAV	3.3E-02		2	2
MW-6B	S	7/1/2009	CHROMIUM, HEXAV	2.6E-02		2	2
MW-6B	S	7/1/2010	CHROMIUM, HEXAV	3.0E-02		2	2
MW-6B	S	7/1/2011	CHROMIUM, HEXAV	3.0E-02		2	2
MW-6B	S	7/1/2012	CHROMIUM, HEXAV	2.9E-02		2	2
MW-6B	S	7/1/2013	CHROMIUM, HEXAV	2.0E-02		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-10B **Time Period:** 1/19/1995 **to** 10/18/2013

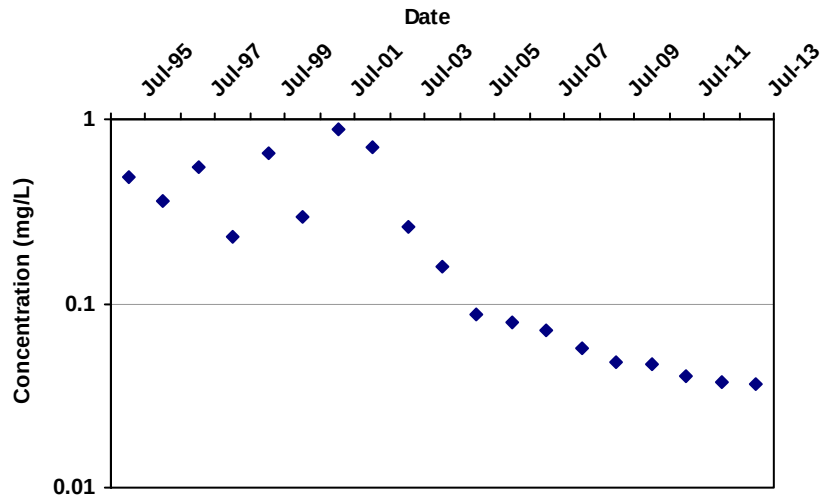
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-131

Confidence in Trend:

100.0%

Coefficient of Variation:

1.00

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-10B	T	7/1/1995	CHROMIUM, HEXAV	4.9E-01		11	11
MW-10B	T	7/1/1996	CHROMIUM, HEXAV	3.6E-01		2	2
MW-10B	T	7/1/1997	CHROMIUM, HEXAV	5.5E-01		2	2
MW-10B	T	7/1/1998	CHROMIUM, HEXAV	2.3E-01		2	2
MW-10B	T	7/1/1999	CHROMIUM, HEXAV	6.6E-01		2	2
MW-10B	T	7/1/2000	CHROMIUM, HEXAV	2.9E-01		3	3
MW-10B	T	7/1/2001	CHROMIUM, HEXAV	8.9E-01		2	2
MW-10B	T	7/1/2002	CHROMIUM, HEXAV	7.0E-01		3	3
MW-10B	T	7/1/2003	CHROMIUM, HEXAV	2.6E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-10B	T	7/1/2004	CHROMIUM, HEXAV	1.6E-01		2	2
MW-10B	T	7/1/2005	CHROMIUM, HEXAV	8.7E-02		1	1
MW-10B	T	7/1/2006	CHROMIUM, HEXAV	7.9E-02		1	1
MW-10B	T	7/1/2007	CHROMIUM, HEXAV	7.2E-02		2	2
MW-10B	T	7/1/2008	CHROMIUM, HEXAV	5.8E-02		2	2
MW-10B	T	7/1/2009	CHROMIUM, HEXAV	4.8E-02		2	2
MW-10B	T	7/1/2010	CHROMIUM, HEXAV	4.7E-02		2	2
MW-10B	T	7/1/2011	CHROMIUM, HEXAV	4.0E-02		2	2
MW-10B	T	7/1/2012	CHROMIUM, HEXAV	3.8E-02		2	2
MW-10B	T	7/1/2013	CHROMIUM, HEXAV	3.6E-02		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-10C **Time Period:** 1/19/1995 **to** 10/18/2013

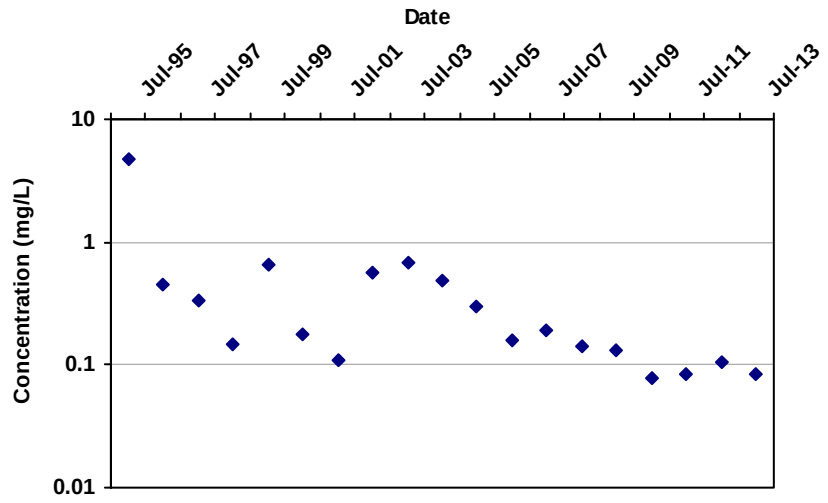
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-97

Confidence in Trend:

100.0%

Coefficient of Variation:

2.05

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-10C	T	7/1/1995	CHROMIUM, HEXAV	4.7E+00		11	11
MW-10C	T	7/1/1996	CHROMIUM, HEXAV	4.5E-01		2	2
MW-10C	T	7/1/1997	CHROMIUM, HEXAV	3.4E-01		2	2
MW-10C	T	7/1/1998	CHROMIUM, HEXAV	1.5E-01		2	2
MW-10C	T	7/1/1999	CHROMIUM, HEXAV	6.5E-01		2	2
MW-10C	T	7/1/2000	CHROMIUM, HEXAV	1.8E-01		3	3
MW-10C	T	7/1/2001	CHROMIUM, HEXAV	1.1E-01		2	2
MW-10C	T	7/1/2002	CHROMIUM, HEXAV	5.7E-01		3	3
MW-10C	T	7/1/2003	CHROMIUM, HEXAV	6.9E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-10C	T	7/1/2004	CHROMIUM, HEXAV	4.8E-01		2	2
MW-10C	T	7/1/2005	CHROMIUM, HEXAV	3.0E-01		2	2
MW-10C	T	7/1/2006	CHROMIUM, HEXAV	1.6E-01		2	2
MW-10C	T	7/1/2007	CHROMIUM, HEXAV	1.9E-01		2	2
MW-10C	T	7/1/2008	CHROMIUM, HEXAV	1.4E-01		2	2
MW-10C	T	7/1/2009	CHROMIUM, HEXAV	1.3E-01		2	2
MW-10C	T	7/1/2010	CHROMIUM, HEXAV	7.7E-02		2	2
MW-10C	T	7/1/2011	CHROMIUM, HEXAV	8.4E-02		2	2
MW-10C	T	7/1/2012	CHROMIUM, HEXAV	1.0E-01		2	2
MW-10C	T	7/1/2013	CHROMIUM, HEXAV	8.6E-02		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: PW-1B **Time Period:** 1/19/1995 **to** 10/18/2013

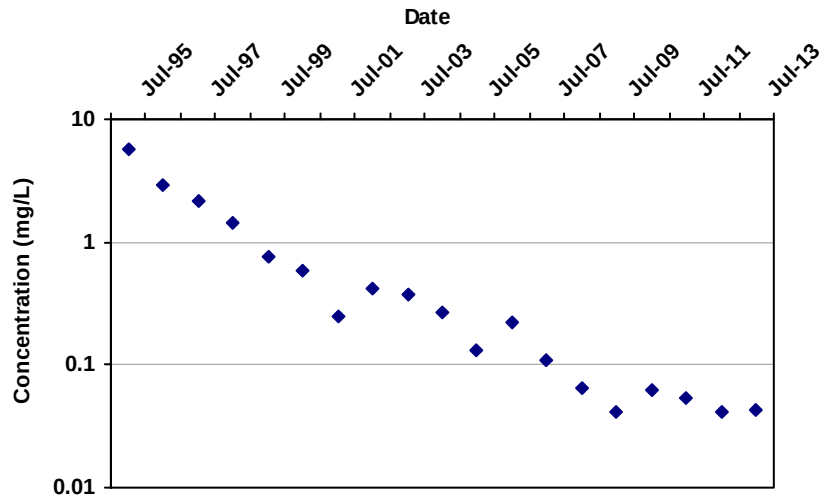
Well Type: S **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-155

Confidence in Trend:

100.0%

Coefficient of Variation:

1.73

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
PW-1B	S	7/1/1995	CHROMIUM, HEXAV	5.8E+00		11	11
PW-1B	S	7/1/1996	CHROMIUM, HEXAV	3.0E+00		12	12
PW-1B	S	7/1/1997	CHROMIUM, HEXAV	2.1E+00		9	9
PW-1B	S	7/1/1998	CHROMIUM, HEXAV	1.4E+00		3	3
PW-1B	S	7/1/1999	CHROMIUM, HEXAV	7.7E-01		4	4
PW-1B	S	7/1/2000	CHROMIUM, HEXAV	5.9E-01		4	4
PW-1B	S	7/1/2001	CHROMIUM, HEXAV	2.5E-01		4	4
PW-1B	S	7/1/2002	CHROMIUM, HEXAV	4.2E-01		4	4
PW-1B	S	7/1/2003	CHROMIUM, HEXAV	3.8E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
PW-1B	S	7/1/2004	CHROMIUM, HEXAV	2.7E-01		2	2
PW-1B	S	7/1/2005	CHROMIUM, HEXAV	1.3E-01		2	2
PW-1B	S	7/1/2006	CHROMIUM, HEXAV	2.2E-01		2	2
PW-1B	S	7/1/2007	CHROMIUM, HEXAV	1.1E-01		2	2
PW-1B	S	7/1/2008	CHROMIUM, HEXAV	6.4E-02		2	2
PW-1B	S	7/1/2009	CHROMIUM, HEXAV	4.2E-02		2	2
PW-1B	S	7/1/2010	CHROMIUM, HEXAV	6.3E-02		2	2
PW-1B	S	7/1/2011	CHROMIUM, HEXAV	5.4E-02		3	3
PW-1B	S	7/1/2012	CHROMIUM, HEXAV	4.1E-02		2	2
PW-1B	S	7/1/2013	CHROMIUM, HEXAV	4.3E-02		2	2

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); ND = Non-detect

INTERMEDIATE WELLS

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: CPU-14 **Time Period:** 1/19/1995 **to** 10/18/2013

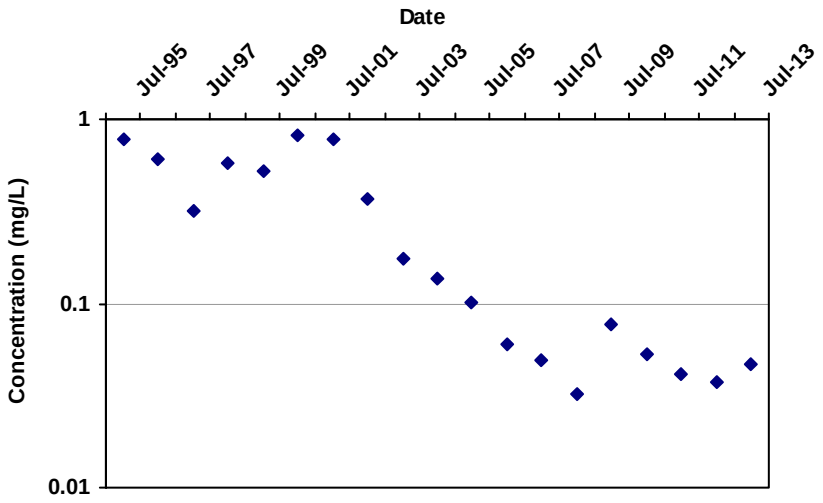
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-127

Confidence in Trend:

100.0%

Coefficient of Variation:

1.00

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-14	T	7/1/1995	CHROMIUM, HEXAV	7.8E-01		2	2
CPU-14	T	7/1/1996	CHROMIUM, HEXAV	6.0E-01		2	2
CPU-14	T	7/1/1997	CHROMIUM, HEXAV	3.2E-01		1	1
CPU-14	T	7/1/1998	CHROMIUM, HEXAV	5.8E-01		2	2
CPU-14	T	7/1/1999	CHROMIUM, HEXAV	5.2E-01		2	2
CPU-14	T	7/1/2000	CHROMIUM, HEXAV	8.3E-01		2	2
CPU-14	T	7/1/2001	CHROMIUM, HEXAV	7.7E-01		2	2
CPU-14	T	7/1/2002	CHROMIUM, HEXAV	3.7E-01		2	2
CPU-14	T	7/1/2003	CHROMIUM, HEXAV	1.8E-01		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-14	T	7/1/2004	CHROMIUM, HEXAV	1.4E-01		2	2
CPU-14	T	7/1/2005	CHROMIUM, HEXAV	1.0E-01		2	2
CPU-14	T	7/1/2006	CHROMIUM, HEXAV	6.1E-02		1	1
CPU-14	T	7/1/2007	CHROMIUM, HEXAV	5.0E-02		1	1
CPU-14	T	7/1/2008	CHROMIUM, HEXAV	3.2E-02		1	1
CPU-14	T	7/1/2009	CHROMIUM, HEXAV	7.7E-02		1	1
CPU-14	T	7/1/2010	CHROMIUM, HEXAV	5.3E-02		1	1
CPU-14	T	7/1/2011	CHROMIUM, HEXAV	4.1E-02		1	1
CPU-14	T	7/1/2012	CHROMIUM, HEXAV	3.7E-02		1	1
CPU-14	T	7/1/2013	CHROMIUM, HEXAV	4.7E-02		1	1

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-14C **Time Period:** 1/19/1995 **to** 10/18/2013

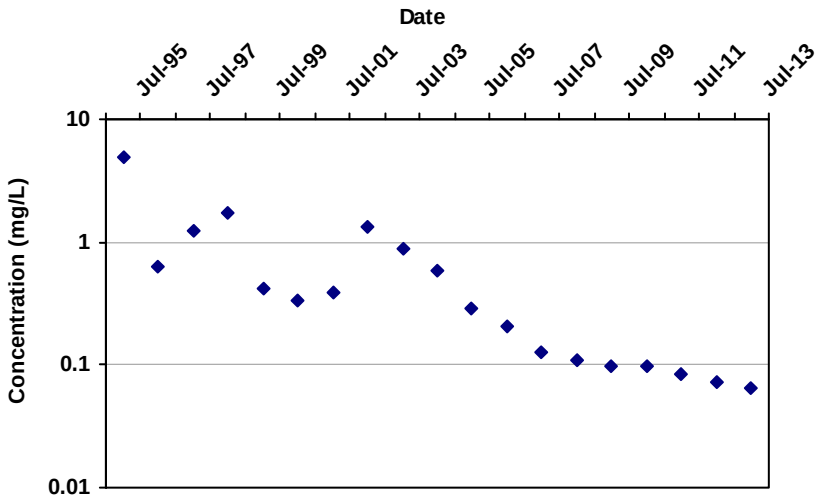
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-137

Confidence in Trend:

100.0%

Coefficient of Variation:

1.56

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-14C	T	7/1/1995	CHROMIUM, HEXAV	4.8E+00		11	11
MW-14C	T	7/1/1996	CHROMIUM, HEXAV	6.4E-01		2	2
MW-14C	T	7/1/1997	CHROMIUM, HEXAV	1.3E+00		6	6
MW-14C	T	7/1/1998	CHROMIUM, HEXAV	1.7E+00		2	2
MW-14C	T	7/1/1999	CHROMIUM, HEXAV	4.1E-01		3	3
MW-14C	T	7/1/2000	CHROMIUM, HEXAV	3.4E-01		5	5
MW-14C	T	7/1/2001	CHROMIUM, HEXAV	3.8E-01		4	4
MW-14C	T	7/1/2002	CHROMIUM, HEXAV	1.3E+00		4	4
MW-14C	T	7/1/2003	CHROMIUM, HEXAV	8.7E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-14C	T	7/1/2004	CHROMIUM, HEXAV	5.9E-01		2	2
MW-14C	T	7/1/2005	CHROMIUM, HEXAV	2.9E-01		2	2
MW-14C	T	7/1/2006	CHROMIUM, HEXAV	2.1E-01		2	2
MW-14C	T	7/1/2007	CHROMIUM, HEXAV	1.3E-01		2	2
MW-14C	T	7/1/2008	CHROMIUM, HEXAV	1.1E-01		2	2
MW-14C	T	7/1/2009	CHROMIUM, HEXAV	9.7E-02		2	2
MW-14C	T	7/1/2010	CHROMIUM, HEXAV	9.8E-02		2	2
MW-14C	T	7/1/2011	CHROMIUM, HEXAV	8.4E-02		2	2
MW-14C	T	7/1/2012	CHROMIUM, HEXAV	7.3E-02		2	2
MW-14C	T	7/1/2013	CHROMIUM, HEXAV	6.5E-02		2	2

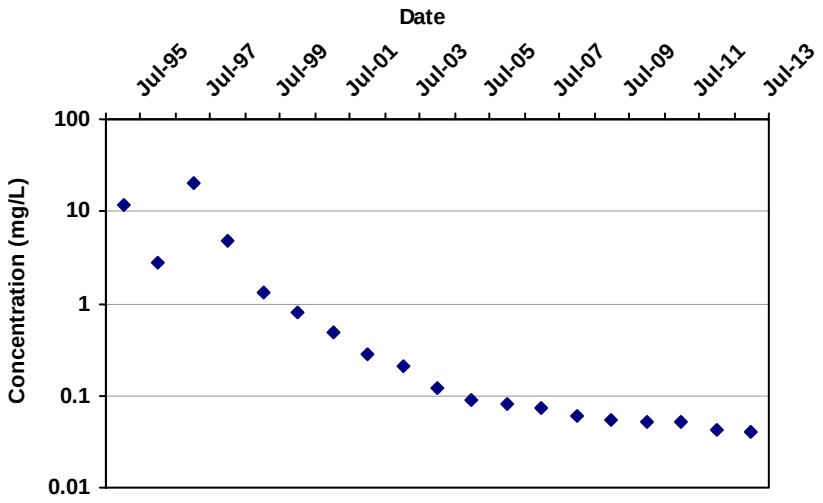
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-14E	**Time Period:**	1/19/1995 **to** 10/18/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	CHROMIUM, HEXAVALENT	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-163

Confidence in Trend:

100.0%

Coefficient of Variation:

2.28

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-14E	T	7/1/1995	CHROMIUM, HEXAV	1.2E+01		11	11
MW-14E	T	7/1/1996	CHROMIUM, HEXAV	2.7E+00		2	2
MW-14E	T	7/1/1997	CHROMIUM, HEXAV	2.1E+01		2	2
MW-14E	T	7/1/1998	CHROMIUM, HEXAV	4.9E+00		3	3
MW-14E	T	7/1/1999	CHROMIUM, HEXAV	1.3E+00		3	3
MW-14E	T	7/1/2000	CHROMIUM, HEXAV	8.0E-01		5	5
MW-14E	T	7/1/2001	CHROMIUM, HEXAV	4.8E-01		4	4
MW-14E	T	7/1/2002	CHROMIUM, HEXAV	2.8E-01		4	4
MW-14E	T	7/1/2003	CHROMIUM, HEXAV	2.1E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-14E	T	7/1/2004	CHROMIUM, HEXAV	1.2E-01		2	2
MW-14E	T	7/1/2005	CHROMIUM, HEXAV	9.0E-02		2	2
MW-14E	T	7/1/2006	CHROMIUM, HEXAV	8.1E-02		2	2
MW-14E	T	7/1/2007	CHROMIUM, HEXAV	7.3E-02		2	2
MW-14E	T	7/1/2008	CHROMIUM, HEXAV	6.1E-02		2	2
MW-14E	T	7/1/2009	CHROMIUM, HEXAV	5.4E-02		2	2
MW-14E	T	7/1/2010	CHROMIUM, HEXAV	5.2E-02		2	2
MW-14E	T	7/1/2011	CHROMIUM, HEXAV	5.3E-02		2	2
MW-14E	T	7/1/2012	CHROMIUM, HEXAV	4.2E-02		2	2
MW-14E	T	7/1/2013	CHROMIUM, HEXAV	4.1E-02		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-18D **Time Period:** 1/19/1995 **to** 10/18/2013

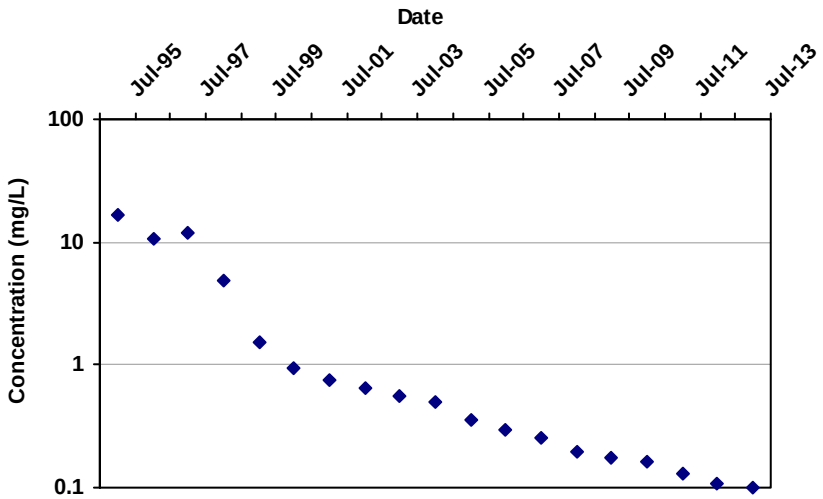
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-169

Confidence in Trend:

100.0%

Coefficient of Variation:

1.82

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-18D	T	7/1/1995	CHROMIUM, HEXAV	1.7E+01		11	11
MW-18D	T	7/1/1996	CHROMIUM, HEXAV	1.1E+01		8	8
MW-18D	T	7/1/1997	CHROMIUM, HEXAV	1.2E+01		9	9
MW-18D	T	7/1/1998	CHROMIUM, HEXAV	4.9E+00		3	3
MW-18D	T	7/1/1999	CHROMIUM, HEXAV	1.5E+00		4	4
MW-18D	T	7/1/2000	CHROMIUM, HEXAV	9.4E-01		5	5
MW-18D	T	7/1/2001	CHROMIUM, HEXAV	7.6E-01		2	2
MW-18D	T	7/1/2002	CHROMIUM, HEXAV	6.4E-01		4	4
MW-18D	T	7/1/2003	CHROMIUM, HEXAV	5.5E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-18D	T	7/1/2004	CHROMIUM, HEXAV	5.0E-01		2	2
MW-18D	T	7/1/2005	CHROMIUM, HEXAV	3.6E-01		2	2
MW-18D	T	7/1/2006	CHROMIUM, HEXAV	3.0E-01		2	2
MW-18D	T	7/1/2007	CHROMIUM, HEXAV	2.6E-01		2	2
MW-18D	T	7/1/2008	CHROMIUM, HEXAV	1.9E-01		2	2
MW-18D	T	7/1/2009	CHROMIUM, HEXAV	1.7E-01		2	2
MW-18D	T	7/1/2010	CHROMIUM, HEXAV	1.6E-01		2	2
MW-18D	T	7/1/2011	CHROMIUM, HEXAV	1.3E-01		2	2
MW-18D	T	7/1/2012	CHROMIUM, HEXAV	1.1E-01		2	2
MW-18D	T	7/1/2013	CHROMIUM, HEXAV	1.0E-01		2	2

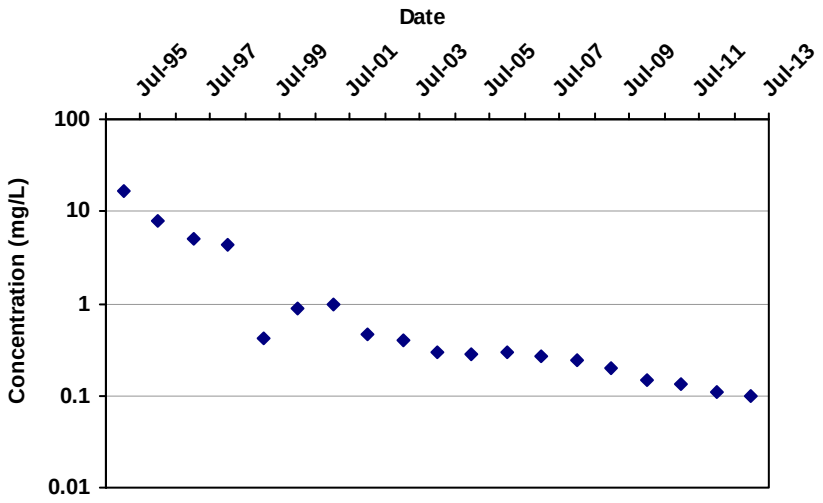
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-19D	**Time Period:**	1/19/1995 **to** 10/18/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	CHROMIUM, HEXAVALENT	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-161

Confidence in Trend:

100.0%

Coefficient of Variation:

2.02

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-19D	T	7/1/1995	CHROMIUM, HEXAV	1.7E+01		11	11
MW-19D	T	7/1/1996	CHROMIUM, HEXAV	7.9E+00		12	12
MW-19D	T	7/1/1997	CHROMIUM, HEXAV	5.0E+00		6	6
MW-19D	T	7/1/1998	CHROMIUM, HEXAV	4.4E+00		3	3
MW-19D	T	7/1/1999	CHROMIUM, HEXAV	4.1E-01		1	1
MW-19D	T	7/1/2000	CHROMIUM, HEXAV	8.8E-01		4	4
MW-19D	T	7/1/2001	CHROMIUM, HEXAV	9.8E-01		4	4
MW-19D	T	7/1/2002	CHROMIUM, HEXAV	4.6E-01		4	4
MW-19D	T	7/1/2003	CHROMIUM, HEXAV	4.0E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-19D	T	7/1/2004	CHROMIUM, HEXAV	3.0E-01		2	2
MW-19D	T	7/1/2005	CHROMIUM, HEXAV	2.8E-01		2	2
MW-19D	T	7/1/2006	CHROMIUM, HEXAV	2.9E-01		2	2
MW-19D	T	7/1/2007	CHROMIUM, HEXAV	2.7E-01		2	2
MW-19D	T	7/1/2008	CHROMIUM, HEXAV	2.5E-01		2	2
MW-19D	T	7/1/2009	CHROMIUM, HEXAV	2.0E-01		2	2
MW-19D	T	7/1/2010	CHROMIUM, HEXAV	1.5E-01		2	2
MW-19D	T	7/1/2011	CHROMIUM, HEXAV	1.3E-01		2	2
MW-19D	T	7/1/2012	CHROMIUM, HEXAV	1.1E-01		2	2
MW-19D	T	7/1/2013	CHROMIUM, HEXAV	9.7E-02		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-20D **Time Period:** 1/19/1995 **to** 10/18/2013

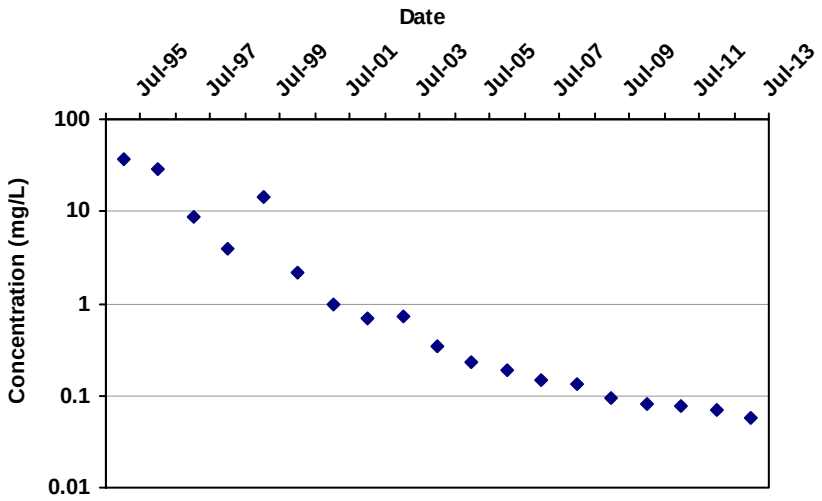
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-165

Confidence in Trend:

100.0%

Coefficient of Variation:

2.01

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-20D	T	7/1/1995	CHROMIUM, HEXAV	3.6E+01		11	11
MW-20D	T	7/1/1996	CHROMIUM, HEXAV	2.9E+01		12	12
MW-20D	T	7/1/1997	CHROMIUM, HEXAV	8.7E+00		9	9
MW-20D	T	7/1/1998	CHROMIUM, HEXAV	4.0E+00		3	3
MW-20D	T	7/1/1999	CHROMIUM, HEXAV	1.5E+01		1	1
MW-20D	T	7/1/2000	CHROMIUM, HEXAV	2.2E+00		5	5
MW-20D	T	7/1/2001	CHROMIUM, HEXAV	9.9E-01		4	4
MW-20D	T	7/1/2002	CHROMIUM, HEXAV	6.9E-01		4	4
MW-20D	T	7/1/2003	CHROMIUM, HEXAV	7.4E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-20D	T	7/1/2004	CHROMIUM, HEXAV	3.5E-01		2	2
MW-20D	T	7/1/2005	CHROMIUM, HEXAV	2.3E-01		2	2
MW-20D	T	7/1/2006	CHROMIUM, HEXAV	1.8E-01		2	2
MW-20D	T	7/1/2007	CHROMIUM, HEXAV	1.5E-01		2	2
MW-20D	T	7/1/2008	CHROMIUM, HEXAV	1.4E-01		2	2
MW-20D	T	7/1/2009	CHROMIUM, HEXAV	9.4E-02		2	2
MW-20D	T	7/1/2010	CHROMIUM, HEXAV	8.0E-02		2	2
MW-20D	T	7/1/2011	CHROMIUM, HEXAV	7.7E-02		2	2
MW-20D	T	7/1/2012	CHROMIUM, HEXAV	6.8E-02		2	2
MW-20D	T	7/1/2013	CHROMIUM, HEXAV	5.8E-02		2	2

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); ND = Non-detect

CHURCH OF GOD WELLS

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: AMW-27 **Time Period:** 1/19/1995 **to** 10/18/2013

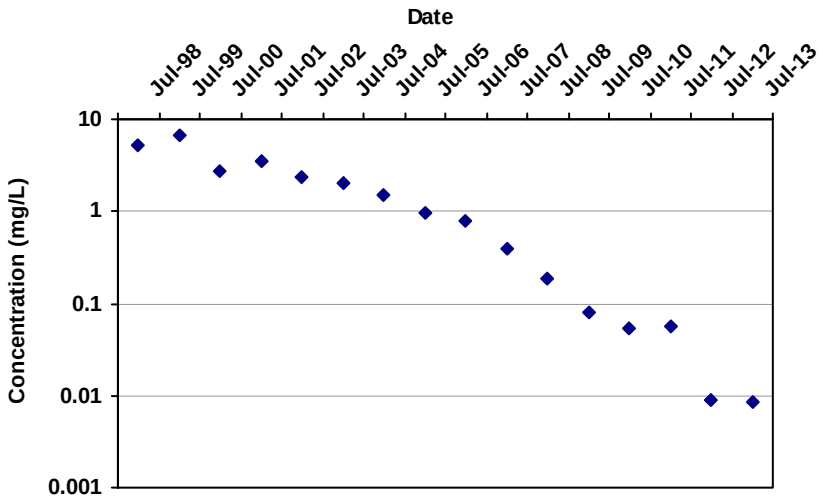
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-114

Confidence in Trend:

100.0%

Coefficient of Variation:

1.22

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-27	T	7/1/1998	CHROMIUM, HEXAV	5.3E+00		1	1
AMW-27	T	7/1/1999	CHROMIUM, HEXAV	6.8E+00		4	4
AMW-27	T	7/1/2000	CHROMIUM, HEXAV	2.8E+00		5	5
AMW-27	T	7/1/2001	CHROMIUM, HEXAV	3.5E+00		4	4
AMW-27	T	7/1/2002	CHROMIUM, HEXAV	2.4E+00		4	4
AMW-27	T	7/1/2003	CHROMIUM, HEXAV	2.1E+00		3	3
AMW-27	T	7/1/2004	CHROMIUM, HEXAV	1.5E+00		2	2
AMW-27	T	7/1/2005	CHROMIUM, HEXAV	9.8E-01		2	2
AMW-27	T	7/1/2006	CHROMIUM, HEXAV	7.7E-01		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-27	T	7/1/2007	CHROMIUM, HEXAV	4.0E-01		2	2
AMW-27	T	7/1/2008	CHROMIUM, HEXAV	1.9E-01		2	2
AMW-27	T	7/1/2009	CHROMIUM, HEXAV	7.9E-02		2	2
AMW-27	T	7/1/2010	CHROMIUM, HEXAV	5.2E-02		2	2
AMW-27	T	7/1/2011	CHROMIUM, HEXAV	5.7E-02		2	2
AMW-27	T	7/1/2012	CHROMIUM, HEXAV	9.2E-03		2	2
AMW-27	T	7/1/2013	CHROMIUM, HEXAV	8.7E-03		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: CPU-13 **Time Period:** 1/19/1995 **to** 10/18/2013

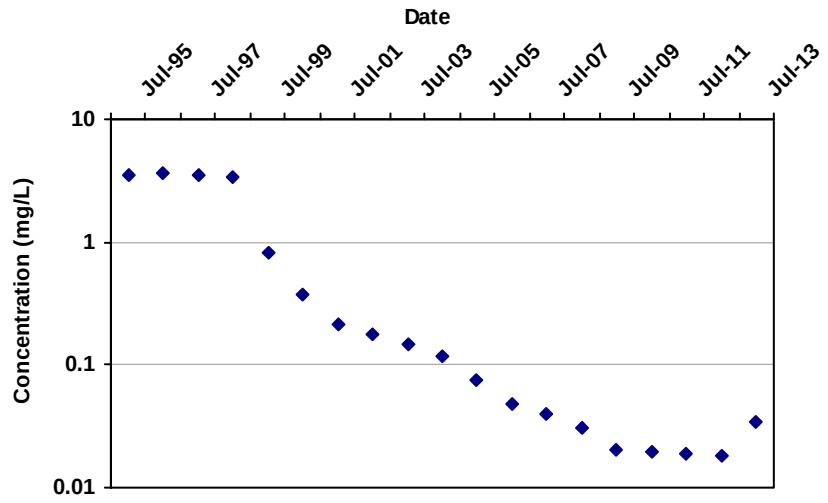
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-157

Confidence in Trend:

100.0%

Coefficient of Variation:

1.67

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-13	T	7/1/1995	CHROMIUM, HEXAV	3.5E+00		11	11
CPU-13	T	7/1/1996	CHROMIUM, HEXAV	3.6E+00		2	2
CPU-13	T	7/1/1997	CHROMIUM, HEXAV	3.5E+00		2	2
CPU-13	T	7/1/1998	CHROMIUM, HEXAV	3.3E+00		2	2
CPU-13	T	7/1/1999	CHROMIUM, HEXAV	8.3E-01		4	4
CPU-13	T	7/1/2000	CHROMIUM, HEXAV	3.8E-01		5	5
CPU-13	T	7/1/2001	CHROMIUM, HEXAV	2.1E-01		4	4
CPU-13	T	7/1/2002	CHROMIUM, HEXAV	1.8E-01		4	4
CPU-13	T	7/1/2003	CHROMIUM, HEXAV	1.5E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-13	T	7/1/2004	CHROMIUM, HEXAV	1.2E-01		2	2
CPU-13	T	7/1/2005	CHROMIUM, HEXAV	7.4E-02		2	2
CPU-13	T	7/1/2006	CHROMIUM, HEXAV	4.9E-02		2	2
CPU-13	T	7/1/2007	CHROMIUM, HEXAV	4.0E-02		2	2
CPU-13	T	7/1/2008	CHROMIUM, HEXAV	3.0E-02		2	2
CPU-13	T	7/1/2009	CHROMIUM, HEXAV	2.1E-02		2	2
CPU-13	T	7/1/2010	CHROMIUM, HEXAV	2.0E-02		2	2
CPU-13	T	7/1/2011	CHROMIUM, HEXAV	1.9E-02		2	2
CPU-13	T	7/1/2012	CHROMIUM, HEXAV	1.8E-02		2	2
CPU-13	T	7/1/2013	CHROMIUM, HEXAV	3.4E-02		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-21D **Time Period:** 1/19/1995 **to** 10/18/2013

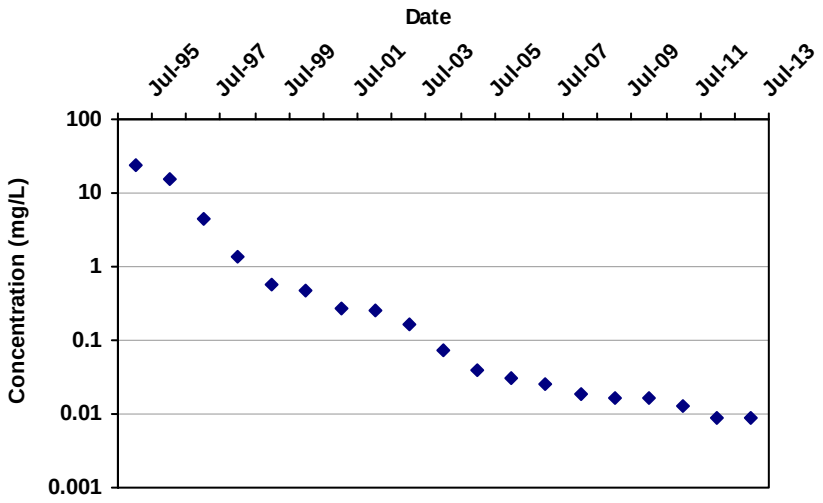
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-169

Confidence in Trend:

100.0%

Coefficient of Variation:

2.53

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-21D	T	7/1/1995	CHROMIUM, HEXAV	2.4E+01		11	11
MW-21D	T	7/1/1996	CHROMIUM, HEXAV	1.6E+01		12	12
MW-21D	T	7/1/1997	CHROMIUM, HEXAV	4.4E+00		9	9
MW-21D	T	7/1/1998	CHROMIUM, HEXAV	1.4E+00		3	3
MW-21D	T	7/1/1999	CHROMIUM, HEXAV	5.8E-01		4	4
MW-21D	T	7/1/2000	CHROMIUM, HEXAV	4.8E-01		5	5
MW-21D	T	7/1/2001	CHROMIUM, HEXAV	2.6E-01		4	4
MW-21D	T	7/1/2002	CHROMIUM, HEXAV	2.6E-01		4	4
MW-21D	T	7/1/2003	CHROMIUM, HEXAV	1.6E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-21D	T	7/1/2004	CHROMIUM, HEXAV	7.2E-02		2	2
MW-21D	T	7/1/2005	CHROMIUM, HEXAV	4.0E-02		2	2
MW-21D	T	7/1/2006	CHROMIUM, HEXAV	3.0E-02		2	2
MW-21D	T	7/1/2007	CHROMIUM, HEXAV	2.5E-02		2	2
MW-21D	T	7/1/2008	CHROMIUM, HEXAV	1.9E-02		2	2
MW-21D	T	7/1/2009	CHROMIUM, HEXAV	1.7E-02		2	2
MW-21D	T	7/1/2010	CHROMIUM, HEXAV	1.6E-02		2	2
MW-21D	T	7/1/2011	CHROMIUM, HEXAV	1.3E-02		2	2
MW-21D	T	7/1/2012	CHROMIUM, HEXAV	9.0E-03		2	2
MW-21D	T	7/1/2013	CHROMIUM, HEXAV	9.0E-03		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-22D **Time Period:** 1/19/1995 **to** 10/18/2013

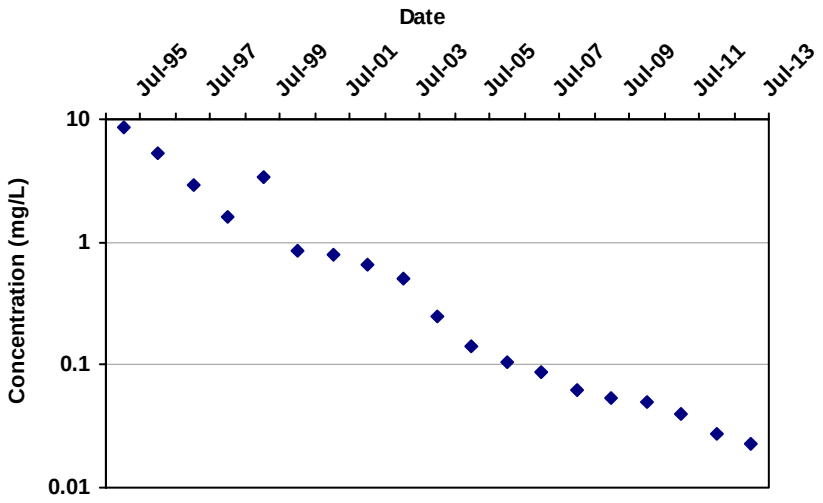
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-167

Confidence in Trend:

100.0%

Coefficient of Variation:

1.69

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-22D	T	7/1/1995	CHROMIUM, HEXAV	8.6E+00		11	11
MW-22D	T	7/1/1996	CHROMIUM, HEXAV	5.4E+00		11	11
MW-22D	T	7/1/1997	CHROMIUM, HEXAV	2.9E+00		9	9
MW-22D	T	7/1/1998	CHROMIUM, HEXAV	1.6E+00		3	3
MW-22D	T	7/1/1999	CHROMIUM, HEXAV	3.4E+00		2	2
MW-22D	T	7/1/2000	CHROMIUM, HEXAV	8.6E-01		4	4
MW-22D	T	7/1/2001	CHROMIUM, HEXAV	8.0E-01		4	4
MW-22D	T	7/1/2002	CHROMIUM, HEXAV	6.5E-01		3	3
MW-22D	T	7/1/2003	CHROMIUM, HEXAV	5.0E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-22D	T	7/1/2004	CHROMIUM, HEXAV	2.5E-01		2	2
MW-22D	T	7/1/2005	CHROMIUM, HEXAV	1.4E-01		2	2
MW-22D	T	7/1/2006	CHROMIUM, HEXAV	1.0E-01		2	2
MW-22D	T	7/1/2007	CHROMIUM, HEXAV	8.7E-02		2	2
MW-22D	T	7/1/2008	CHROMIUM, HEXAV	6.3E-02		2	2
MW-22D	T	7/1/2009	CHROMIUM, HEXAV	5.3E-02		2	2
MW-22D	T	7/1/2010	CHROMIUM, HEXAV	5.0E-02		2	2
MW-22D	T	7/1/2011	CHROMIUM, HEXAV	4.0E-02		2	2
MW-22D	T	7/1/2012	CHROMIUM, HEXAV	2.7E-02		2	2
MW-22D	T	7/1/2013	CHROMIUM, HEXAV	2.3E-02		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-25D **Time Period:** 1/19/1995 **to** 10/18/2013

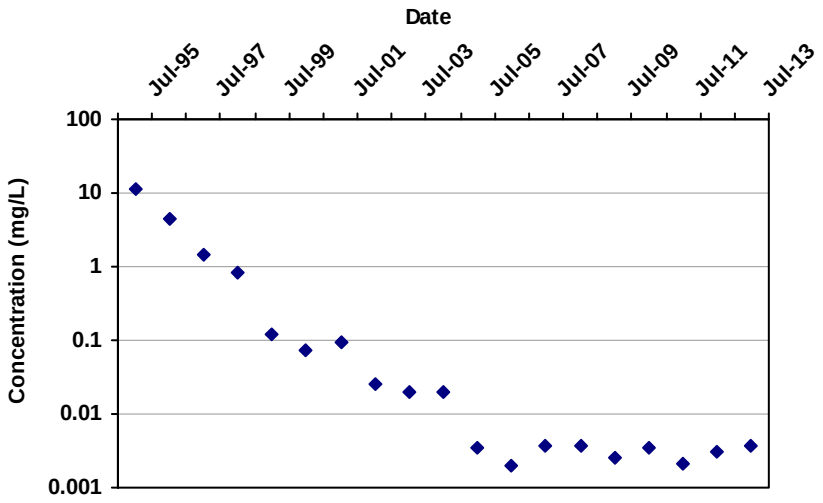
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-133

Confidence in Trend:

100.0%

Coefficient of Variation:

2.78

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-25D	T	7/1/1995	CHROMIUM, HEXAV	1.1E+01		12	12
MW-25D	T	7/1/1996	CHROMIUM, HEXAV	4.6E+00		12	12
MW-25D	T	7/1/1997	CHROMIUM, HEXAV	1.5E+00		9	9
MW-25D	T	7/1/1998	CHROMIUM, HEXAV	8.1E-01		3	3
MW-25D	T	7/1/1999	CHROMIUM, HEXAV	1.2E-01		3	3
MW-25D	T	7/1/2000	CHROMIUM, HEXAV	7.5E-02		5	5
MW-25D	T	7/1/2001	CHROMIUM, HEXAV	9.2E-02		4	4
MW-25D	T	7/1/2002	CHROMIUM, HEXAV	2.6E-02		4	4
MW-25D	T	7/1/2003	CHROMIUM, HEXAV	2.0E-02		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-25D	T	7/1/2004	CHROMIUM, HEXAV	2.0E-02		2	2
MW-25D	T	7/1/2005	CHROMIUM, HEXAV	3.4E-03		1	1
MW-25D	T	7/1/2006	CHROMIUM, HEXAV	2.0E-03	ND	1	0
MW-25D	T	7/1/2007	CHROMIUM, HEXAV	3.8E-03		2	1
MW-25D	T	7/1/2008	CHROMIUM, HEXAV	3.6E-03		2	2
MW-25D	T	7/1/2009	CHROMIUM, HEXAV	2.5E-03		2	2
MW-25D	T	7/1/2010	CHROMIUM, HEXAV	3.5E-03		3	3
MW-25D	T	7/1/2011	CHROMIUM, HEXAV	2.0E-03		2	1
MW-25D	T	7/1/2012	CHROMIUM, HEXAV	3.0E-03		2	2
MW-25D	T	7/1/2013	CHROMIUM, HEXAV	3.6E-03		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-26D **Time Period:** 1/19/1995 **to** 10/18/2013

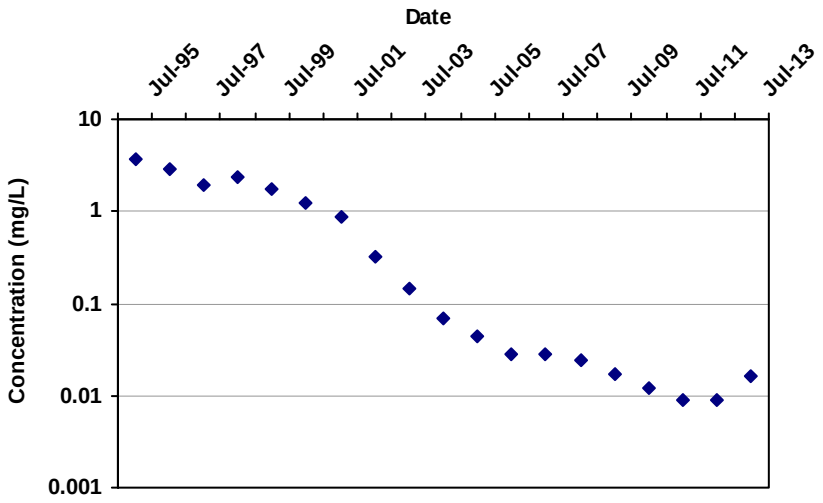
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-161

Confidence in Trend:

100.0%

Coefficient of Variation:

1.42

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-26D	T	7/1/1995	CHROMIUM, HEXAV	3.6E+00		11	11
MW-26D	T	7/1/1996	CHROMIUM, HEXAV	2.9E+00		12	12
MW-26D	T	7/1/1997	CHROMIUM, HEXAV	1.9E+00		9	9
MW-26D	T	7/1/1998	CHROMIUM, HEXAV	2.4E+00		3	3
MW-26D	T	7/1/1999	CHROMIUM, HEXAV	1.7E+00		4	4
MW-26D	T	7/1/2000	CHROMIUM, HEXAV	1.3E+00		4	4
MW-26D	T	7/1/2001	CHROMIUM, HEXAV	8.8E-01		4	4
MW-26D	T	7/1/2002	CHROMIUM, HEXAV	3.3E-01		4	4
MW-26D	T	7/1/2003	CHROMIUM, HEXAV	1.5E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-26D	T	7/1/2004	CHROMIUM, HEXAV	6.9E-02		2	2
MW-26D	T	7/1/2005	CHROMIUM, HEXAV	4.4E-02		2	2
MW-26D	T	7/1/2006	CHROMIUM, HEXAV	2.8E-02		2	2
MW-26D	T	7/1/2007	CHROMIUM, HEXAV	2.9E-02		2	2
MW-26D	T	7/1/2008	CHROMIUM, HEXAV	2.4E-02		2	2
MW-26D	T	7/1/2009	CHROMIUM, HEXAV	1.7E-02		2	2
MW-26D	T	7/1/2010	CHROMIUM, HEXAV	1.2E-02		2	2
MW-26D	T	7/1/2011	CHROMIUM, HEXAV	9.0E-03		2	2
MW-26D	T	7/1/2012	CHROMIUM, HEXAV	8.8E-03		2	2
MW-26D	T	7/1/2013	CHROMIUM, HEXAV	1.6E-02		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-27D **Time Period:** 1/19/1995 **to** 10/18/2013

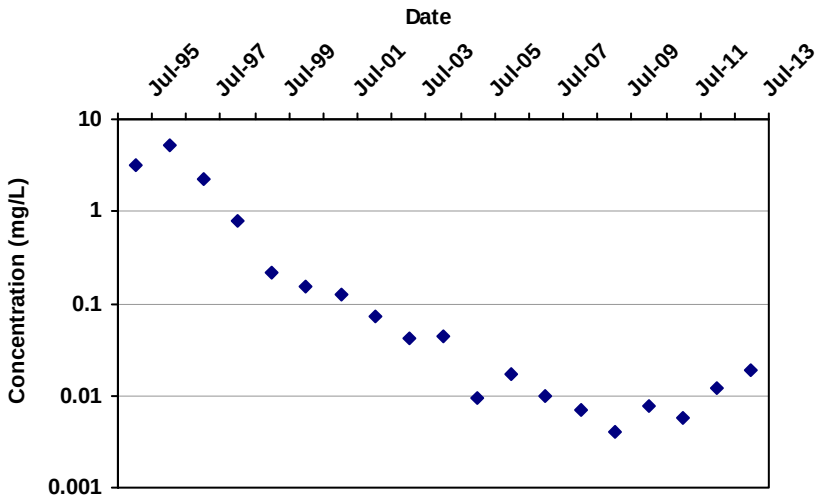
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-129

Confidence in Trend:

100.0%

Coefficient of Variation:

2.18

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-27D	T	7/1/1995	CHROMIUM, HEXAV	3.1E+00		11	11
MW-27D	T	7/1/1996	CHROMIUM, HEXAV	5.2E+00		2	2
MW-27D	T	7/1/1997	CHROMIUM, HEXAV	2.3E+00		2	2
MW-27D	T	7/1/1998	CHROMIUM, HEXAV	7.8E-01		2	2
MW-27D	T	7/1/1999	CHROMIUM, HEXAV	2.2E-01		2	2
MW-27D	T	7/1/2000	CHROMIUM, HEXAV	1.6E-01		3	3
MW-27D	T	7/1/2001	CHROMIUM, HEXAV	1.2E-01		4	4
MW-27D	T	7/1/2002	CHROMIUM, HEXAV	7.2E-02		4	4
MW-27D	T	7/1/2003	CHROMIUM, HEXAV	4.2E-02		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-27D	T	7/1/2004	CHROMIUM, HEXAV	4.4E-02		2	2
MW-27D	T	7/1/2005	CHROMIUM, HEXAV	9.6E-03		1	1
MW-27D	T	7/1/2006	CHROMIUM, HEXAV	1.8E-02		1	1
MW-27D	T	7/1/2007	CHROMIUM, HEXAV	9.8E-03		1	1
MW-27D	T	7/1/2008	CHROMIUM, HEXAV	7.0E-03		2	2
MW-27D	T	7/1/2009	CHROMIUM, HEXAV	4.1E-03		2	2
MW-27D	T	7/1/2010	CHROMIUM, HEXAV	7.8E-03		3	3
MW-27D	T	7/1/2011	CHROMIUM, HEXAV	5.7E-03		1	1
MW-27D	T	7/1/2012	CHROMIUM, HEXAV	1.2E-02		1	1
MW-27D	T	7/1/2013	CHROMIUM, HEXAV	1.9E-02		1	1

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-49 **Time Period:** 1/19/1995 **to** 10/18/2013

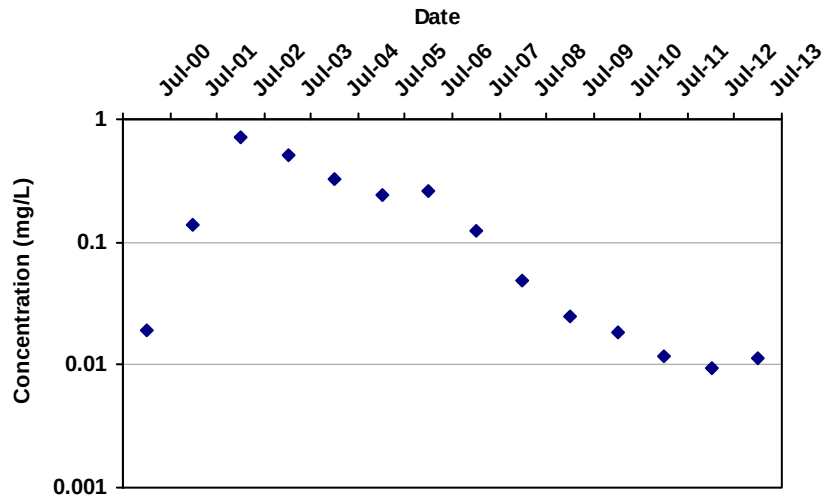
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-59

Confidence in Trend:

100.0%

Coefficient of Variation:

1.24

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-49	T	7/1/2000	CHROMIUM, HEXAV	1.9E-02		2	1
MW-49	T	7/1/2001	CHROMIUM, HEXAV	1.4E-01		4	4
MW-49	T	7/1/2002	CHROMIUM, HEXAV	7.3E-01		4	4
MW-49	T	7/1/2003	CHROMIUM, HEXAV	5.2E-01		3	3
MW-49	T	7/1/2004	CHROMIUM, HEXAV	3.3E-01		2	2
MW-49	T	7/1/2005	CHROMIUM, HEXAV	2.5E-01		2	2
MW-49	T	7/1/2006	CHROMIUM, HEXAV	2.6E-01		2	2
MW-49	T	7/1/2007	CHROMIUM, HEXAV	1.3E-01		2	2
MW-49	T	7/1/2008	CHROMIUM, HEXAV	4.8E-02		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-49	T	7/1/2009	CHROMIUM, HEXAV	2.5E-02		2	2
MW-49	T	7/1/2010	CHROMIUM, HEXAV	1.8E-02		1	1
MW-49	T	7/1/2011	CHROMIUM, HEXAV	1.2E-02		2	2
MW-49	T	7/1/2012	CHROMIUM, HEXAV	9.4E-03		2	2
MW-49	T	7/1/2013	CHROMIUM, HEXAV	1.1E-02		2	2

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); ND = Non-detect

TOE OF PLUME

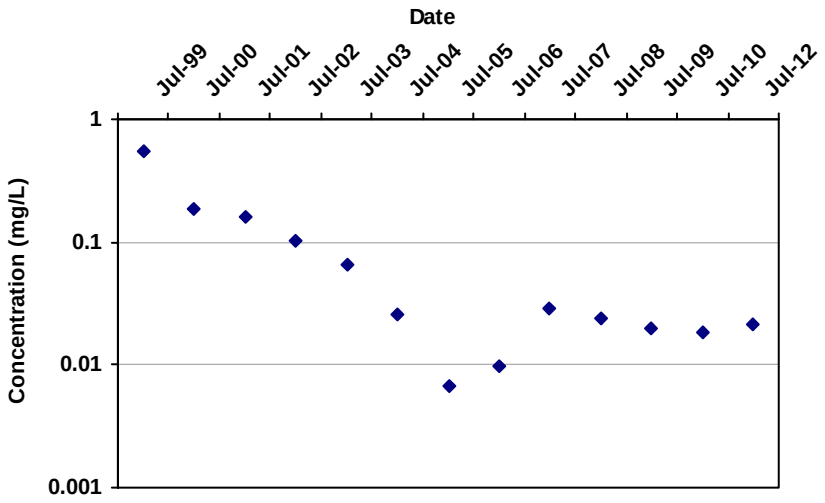
Other Toe Wells

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-42	**Time Period:**	1/19/1995 **to** 10/18/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	CHROMIUM, HEXAVALENT	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-50

Confidence in Trend:

99.9%

Coefficient of Variation:

1.60

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-42	T	7/1/1999	CHROMIUM, HEXAV	5.5E-01		10	10
AMW-42	T	7/1/2000	CHROMIUM, HEXAV	1.9E-01		13	13
AMW-42	T	7/1/2001	CHROMIUM, HEXAV	1.6E-01		4	4
AMW-42	T	7/1/2002	CHROMIUM, HEXAV	1.0E-01		4	4
AMW-42	T	7/1/2003	CHROMIUM, HEXAV	6.4E-02		3	3
AMW-42	T	7/1/2004	CHROMIUM, HEXAV	2.6E-02		6	6
AMW-42	T	7/1/2005	CHROMIUM, HEXAV	6.6E-03		4	4
AMW-42	T	7/1/2006	CHROMIUM, HEXAV	9.8E-03		2	1
AMW-42	T	7/1/2007	CHROMIUM, HEXAV	2.9E-02		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-42	T	7/1/2008	CHROMIUM, HEXAV	2.4E-02		1	1
AMW-42	T	7/1/2009	CHROMIUM, HEXAV	2.0E-02		1	1
AMW-42	T	7/1/2010	CHROMIUM, HEXAV	1.8E-02		1	1
AMW-42	T	7/1/2012	CHROMIUM, HEXAV	2.1E-02		1	1

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: AMW-63 **Time Period:** 1/19/1995 **to** 10/18/2013

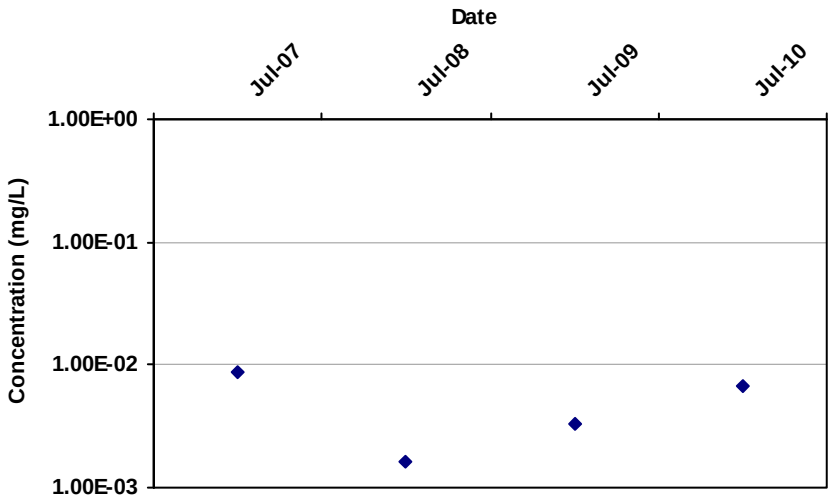
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

0

Confidence in Trend:

37.5%

Coefficient of Variation:

0.63

Mann Kendall Concentration Trend: (See Note)

S

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-63	T	7/1/2007	CHROMIUM, HEXAV	8.8E-03		4	4
AMW-63	T	7/1/2008	CHROMIUM, HEXAV	1.6E-03	ND	2	0
AMW-63	T	7/1/2009	CHROMIUM, HEXAV	3.3E-03		2	1
AMW-63	T	7/1/2010	CHROMIUM, HEXAV	6.8E-03		1	1

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-31 **Time Period:** 1/19/1995 **to** 10/18/2013

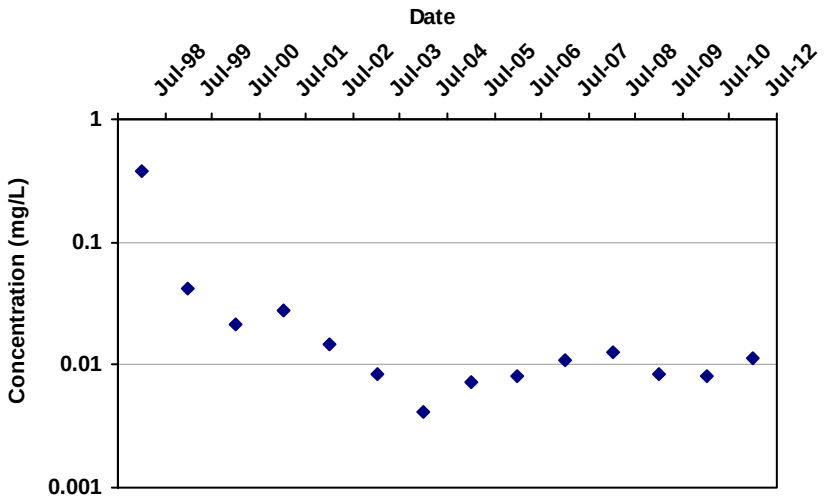
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-38

Confidence in Trend:

97.9%

Coefficient of Variation:

2.41

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-31	T	7/1/1998	CHROMIUM, HEXAV	3.7E-01		6	6
MW-31	T	7/1/1999	CHROMIUM, HEXAV	4.2E-02		8	8
MW-31	T	7/1/2000	CHROMIUM, HEXAV	2.2E-02		12	12
MW-31	T	7/1/2001	CHROMIUM, HEXAV	2.7E-02		2	2
MW-31	T	7/1/2002	CHROMIUM, HEXAV	1.5E-02		3	3
MW-31	T	7/1/2003	CHROMIUM, HEXAV	8.3E-03		3	3
MW-31	T	7/1/2004	CHROMIUM, HEXAV	4.2E-03		2	1
MW-31	T	7/1/2005	CHROMIUM, HEXAV	7.3E-03		1	1
MW-31	T	7/1/2006	CHROMIUM, HEXAV	8.1E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-31	T	7/1/2007	CHROMIUM, HEXAV	1.1E-02		1	1
MW-31	T	7/1/2008	CHROMIUM, HEXAV	1.3E-02		1	1
MW-31	T	7/1/2009	CHROMIUM, HEXAV	8.4E-03		1	1
MW-31	T	7/1/2010	CHROMIUM, HEXAV	8.1E-03		1	1
MW-31	T	7/1/2012	CHROMIUM, HEXAV	1.1E-02		1	1

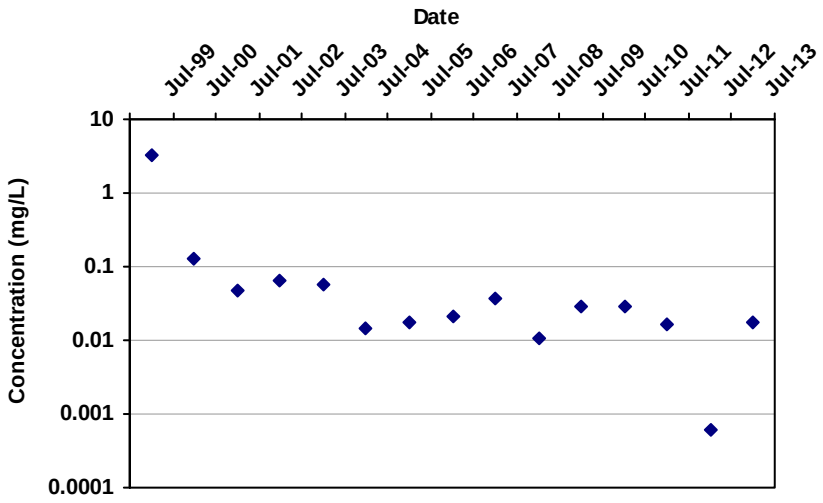
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-35	**Time Period:**	1/19/1995 **to** 10/18/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	CHROMIUM, HEXAVALENT	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-59

Confidence in Trend:

99.9%

Coefficient of Variation:

3.34

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-35	T	7/1/1999	CHROMIUM, HEXAV	3.4E+00		4	4
MW-35	T	7/1/2000	CHROMIUM, HEXAV	1.3E-01		12	12
MW-35	T	7/1/2001	CHROMIUM, HEXAV	4.8E-02		10	10
MW-35	T	7/1/2002	CHROMIUM, HEXAV	6.6E-02		7	7
MW-35	T	7/1/2003	CHROMIUM, HEXAV	5.6E-02		2	2
MW-35	T	7/1/2004	CHROMIUM, HEXAV	1.4E-02		5	5
MW-35	T	7/1/2005	CHROMIUM, HEXAV	1.8E-02		4	4
MW-35	T	7/1/2006	CHROMIUM, HEXAV	2.2E-02		2	2
MW-35	T	7/1/2007	CHROMIUM, HEXAV	3.7E-02		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-35	T	7/1/2008	CHROMIUM, HEXAV	1.0E-02		2	1
MW-35	T	7/1/2009	CHROMIUM, HEXAV	2.9E-02		2	2
MW-35	T	7/1/2010	CHROMIUM, HEXAV	3.0E-02		2	2
MW-35	T	7/1/2011	CHROMIUM, HEXAV	1.7E-02		1	1
MW-35	T	7/1/2012	CHROMIUM, HEXAV	6.0E-04	ND	1	0
MW-35	T	7/1/2013	CHROMIUM, HEXAV	1.8E-02		1	1

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-41 **Time Period:** 1/19/1995 **to** 10/18/2013

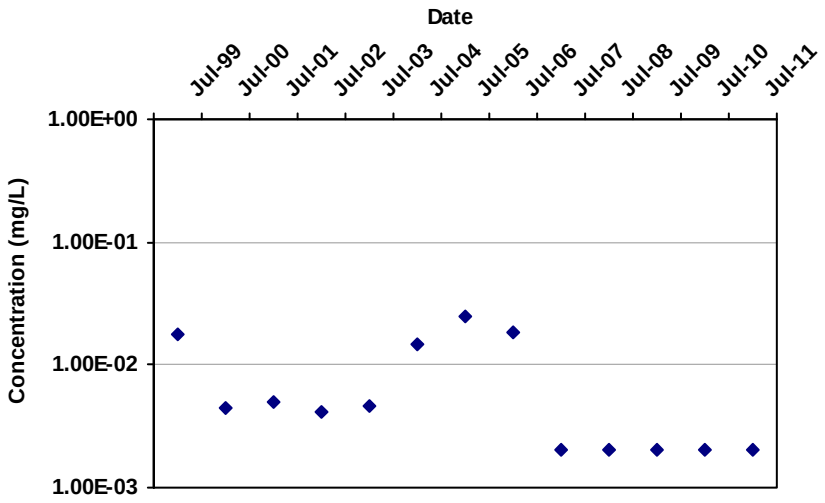
Well Type: T **Consolidation Period:** Yearly

COC: CHROMIUM, HEXAVALENT **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-30

Confidence in Trend:

96.2%

Coefficient of Variation:

1.00

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-41	T	7/1/1999	CHROMIUM, HEXAV	1.8E-02		8	8
MW-41	T	7/1/2000	CHROMIUM, HEXAV	4.5E-03		13	9
MW-41	T	7/1/2001	CHROMIUM, HEXAV	5.0E-03	ND	4	0
MW-41	T	7/1/2002	CHROMIUM, HEXAV	4.2E-03		4	2
MW-41	T	7/1/2003	CHROMIUM, HEXAV	4.6E-03		3	1
MW-41	T	7/1/2004	CHROMIUM, HEXAV	1.5E-02		6	3
MW-41	T	7/1/2005	CHROMIUM, HEXAV	2.5E-02		5	4
MW-41	T	7/1/2006	CHROMIUM, HEXAV	1.8E-02		2	1
MW-41	T	7/1/2007	CHROMIUM, HEXAV	2.0E-03	ND	4	0

MAROS Mann-Kendall Statistics Summary

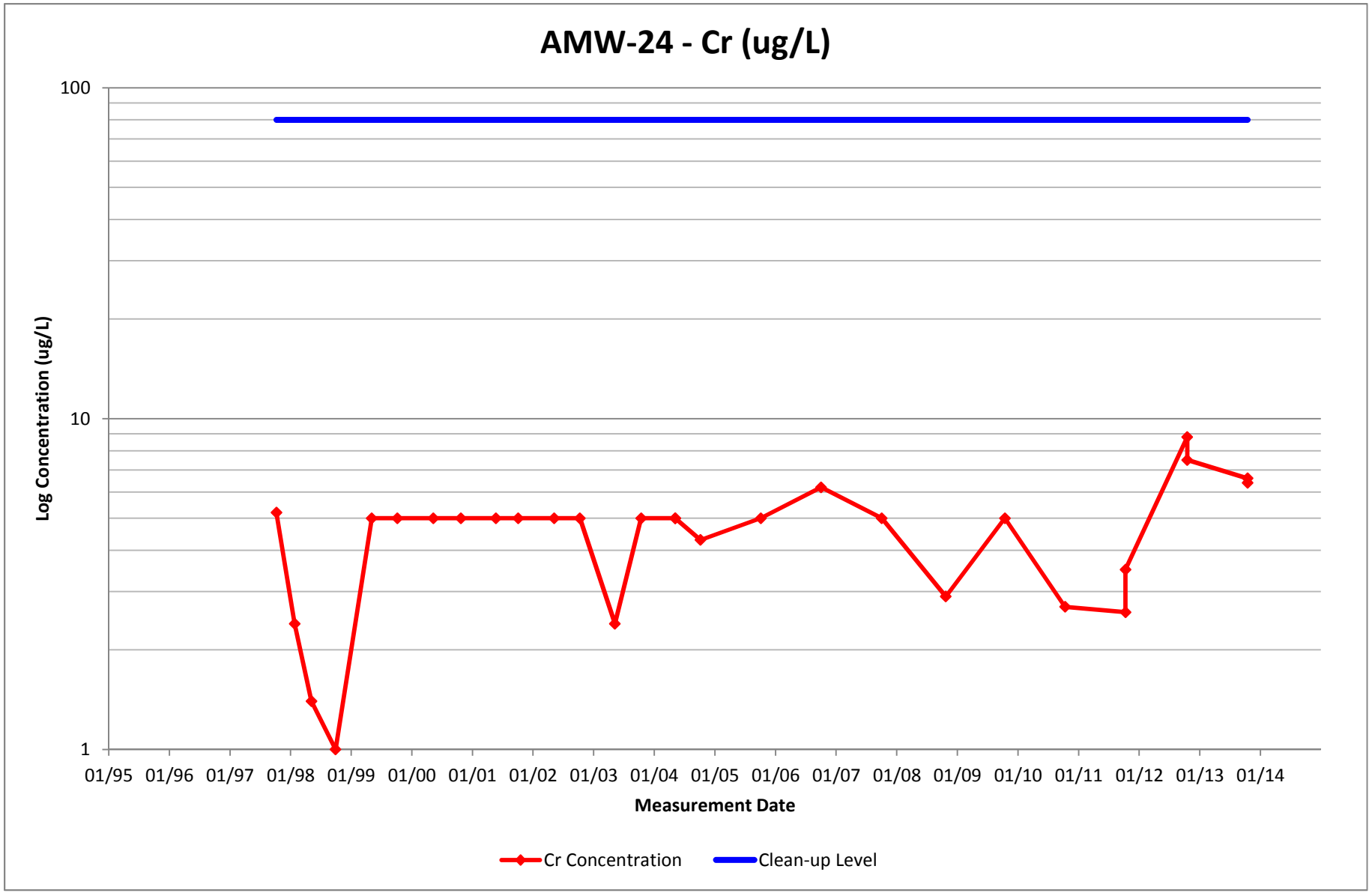
Project: Boomsnub/Airco Superfund Site **User Name:**

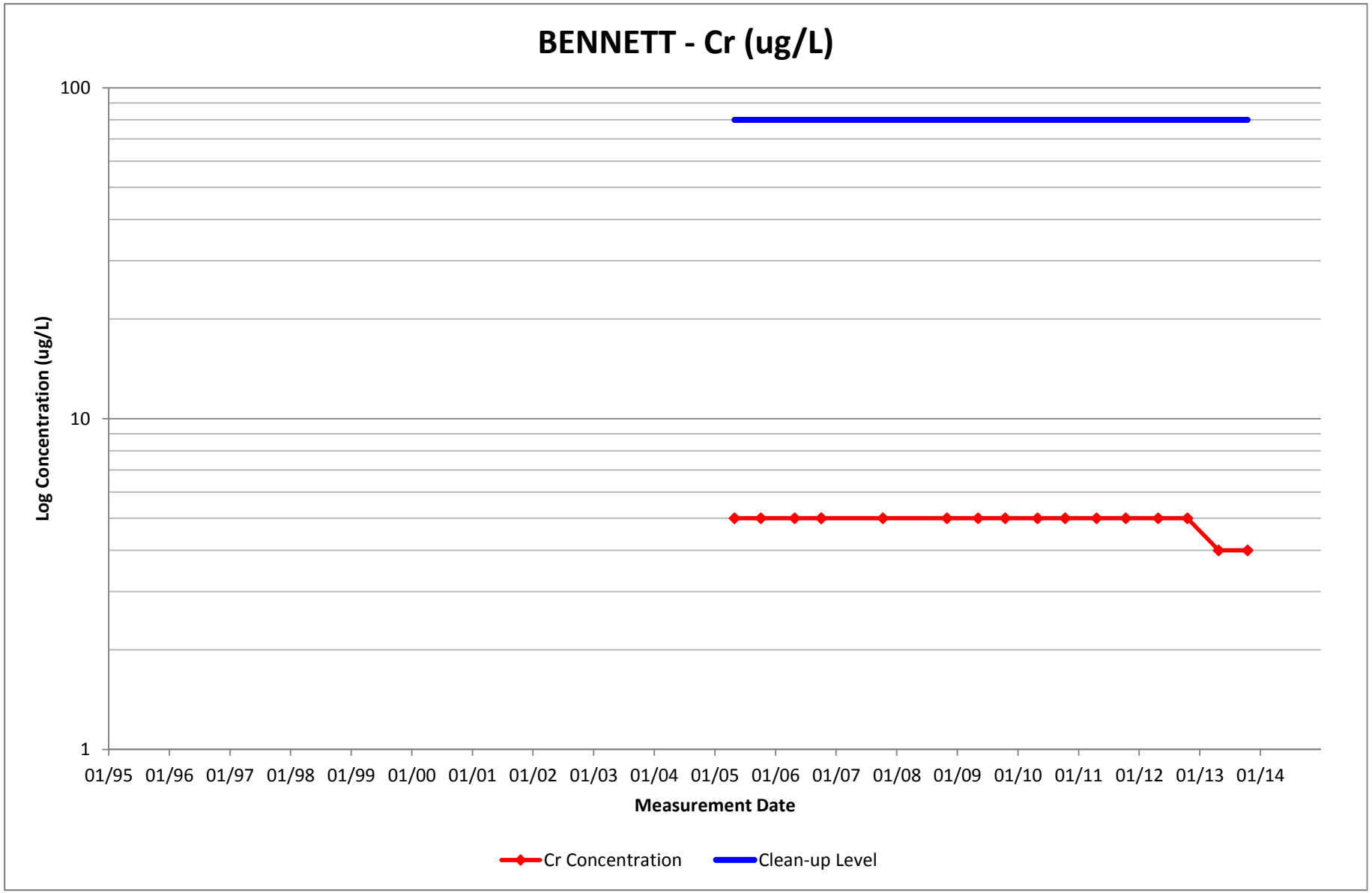
Location: Hazel Dell **State:** Washington

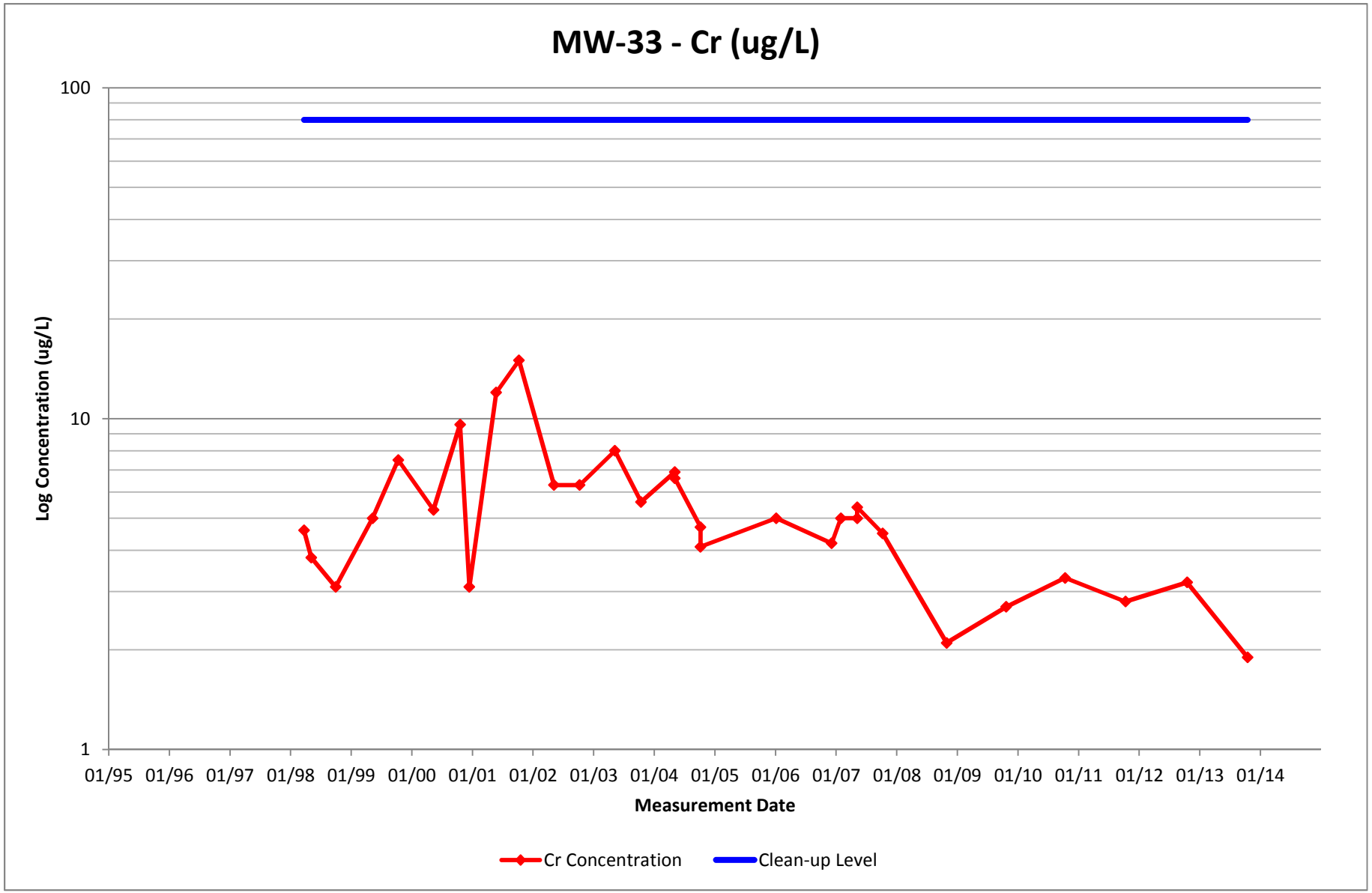
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-41	T	7/1/2008	CHROMIUM, HEXAV	2.0E-03	ND	2	0
MW-41	T	7/1/2009	CHROMIUM, HEXAV	2.0E-03	ND	2	0
MW-41	T	7/1/2010	CHROMIUM, HEXAV	2.0E-03	ND	1	0
MW-41	T	7/1/2011	CHROMIUM, HEXAV	2.0E-03	ND	1	0

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); ND = Non-detect

TROUTDALE WELLS


AMW-24 - Cr (ug/L)
100
10
1
Log Concentration (ug/L)
01/95
01/96
01/97
01/98
01/99
01/00
01/01
01/02
01/03
01/04
01/05
01/06
01/07
01/08
01/09
01/10
01/11
01/12
01/13
01/14
Measurement Date
Cr Concentration
Clean-up Level


BENNETT - Cr (ug/L)
100
10
1
Log Concentration (ug/L)
01/95 01/96 01/97 01/98 01/99 01/00 01/01 01/02 01/03 01/04 01/05 01/06 01/07 01/08 01/09 01/10 01/11 01/12 01/13 01/14
Measurement Date
Cr Concentration
Clean-up Level


MW-33 - Cr (ug/L)
100
10
1
Log Concentration (ug/L)
01/95 01/96 01/97 01/98 01/99 01/00 01/01 01/02 01/03 01/04 01/05 01/06 01/07 01/08 01/09 01/10 01/11 01/12 01/13 01/14
Measurement Date
Cr Concentration
Clean-up Level

APPENDIX B

TCE CONCENTRATIONS IN GROUNDWATER

APPENDIX B-1

TCE CONCENTRATIONS – SUMMARY TABLES

B-1. TCE Concentration Summary

Well Group	Well	Spring 2012	Fall 2012	Winter 2013	Spring 2013	Summer 2013	Fall 2013
Upgradient	AMW-8A	--	0.33 J	--	--	--	0.4 J
TCE Source (OU-2)	AMW-1A	**5.7**	**44**	--	**9.9**	--	**22**
	AMW-2A	**6.1**	**14**	--	**9.3**	--	3.8
	AMW-2B	--	0.4 J	--	--	--	0.37 J
	AMW-3A	--	0.48 J	--	--	--	0.44 J
	AMW-12A	**27**	**33**	--	**29**	--	**26**
	AMW-13A	--	0.17 J	--	--	--	0.17 J
	AMW-19A	--	1.2	--	--	--	1.1
	AMW-52A	--	0.5 U	--	--	--	0.1 J
	AMW-53A	1.8	**12**	--	**5.3**	--	**13**
	AMW-54A	--	1.8	--	--	--	1.8
	AMW-55A	--	1.3	--	--	--	1.1
	AMW-56A	--	2.7	--	--	--	2.4
	MW-1A	**6.1**	**6.1**	--	**8.2**	--	**10**
Proximal	MW-6B	4.2	**5.1**	--	**5.4**	--	4.4
	MW-10B	**16**	**16**	--	**14**	--	**14**
	MW-10C	2.5	3.0	--	2.6	--	2.6
	PW-1B	2.6	3.1	--	3.0	--	2.6
Intermediate	AMW-16	0.17 J	1.8	--	2.0	--	4.4
	MW-14C	**11**	**19**	--	**14**	--	**12**
	MW-14E	**72**	**67**	--	**75**	--	**74**
	MW-15E	4.5	4.2	--	3.4	--	3.2
	MW-18D	**47**	**49**	--	**42**	--	**41**
	MW-18E	--	**170**	--	--	--	**120**
	MW-19D	**30**	**34**	--	**27**	--	**29**
	MW-20D	**47**	**45**	--	**44**	--	**39**
	MW-38	--	**7.4**	--	--	--	**70**
	CPU-14	--	**5.2**	--	--	--	**6.4**
	PZ-39	**56**	**54**	--	**53**	--	**43**
Northern Plume	AMW-17	**160**	**210**	**210**	**240**	**230**	**180**
	AMW-18	**52**	**39**	**48**	**44**	**36**	**34**
	AMW-64	**160**	**110**	**110**	**94**	**84**	**75**
Church of God	AMW-27*	**12**	**6.8**	**5.6**	5.0	4.9	**6.6**
	AMW-61	--	**5.4**	--	2.4	--	**8.5**
	MW-21D	**5.4**	**5.3**	--	4.3	--	3.5

B-1. TCE Concentration Summary

Well Group	Well	Spring 2012	Fall 2012	Winter 2013	Spring 2013	Summer 2013	Fall 2013
Church of God Cont.	MW-22D	**6.8**	**5.6**	--	4.5	--	3.7
	MW-23D	--	1.4	--	--	--	1.2
	MW-25D	1.3	1.3	--	2.6	--	3.0
	MW-26D	0.76	0.84	--	2.1	--	0.46 J
	MW-27D	--	0.89	--	--	--	1.1
	MW-49	1.4	1.1	--	1.5	--	1.7
	CPU-12	--	4.9	--	--	--	4.4
	CPU-13	1.4	1.5	--	1.2	--	0.92
Toe of Plume: Other Toe	MW-35	--	**5.4**	--	5.0	--	4.6
Troutdale Aquifer	AMW-24	--	**11**	--	--	--	**11**
	BENNETT	3.8	**6.9**	--	3.1	--	4.6
	MW-33	--	**11**	--	--	--	**11**

NOTES:

Only wells sampled during 2012 are included in this table.
Results are in micrograms per liter (µg/L).

J = The result is an estimated concentration that is less than the Method Reporting Limit but greater than or equal to the Method Detection Limit.

-- = Well not sampled during the monitoring event.

U = Analyte not detected above the specified reporting limit.

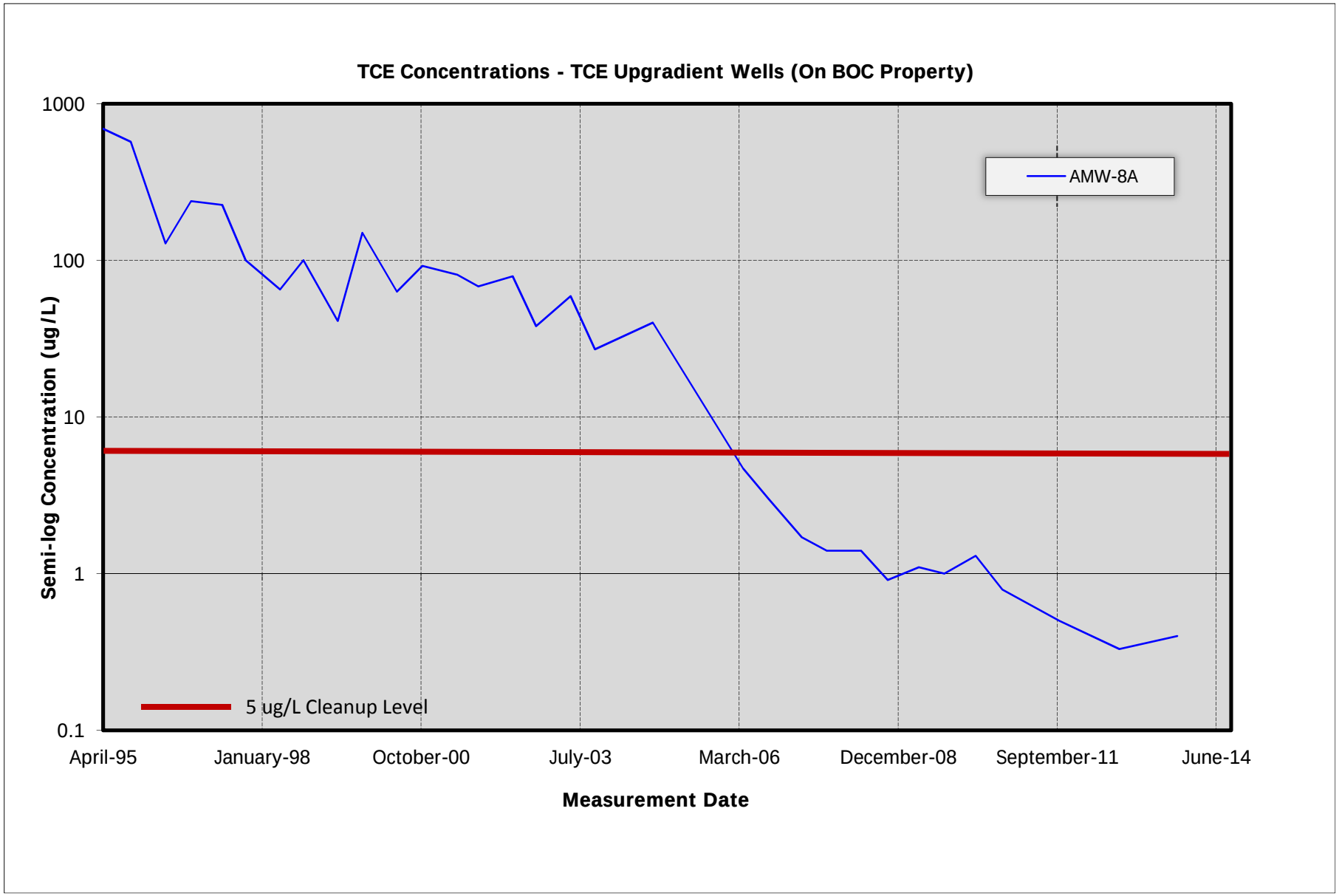
UJ = The analyte was not detected, but the associated limit of quantitation is estimated due to discrepancies in quality control criteria.

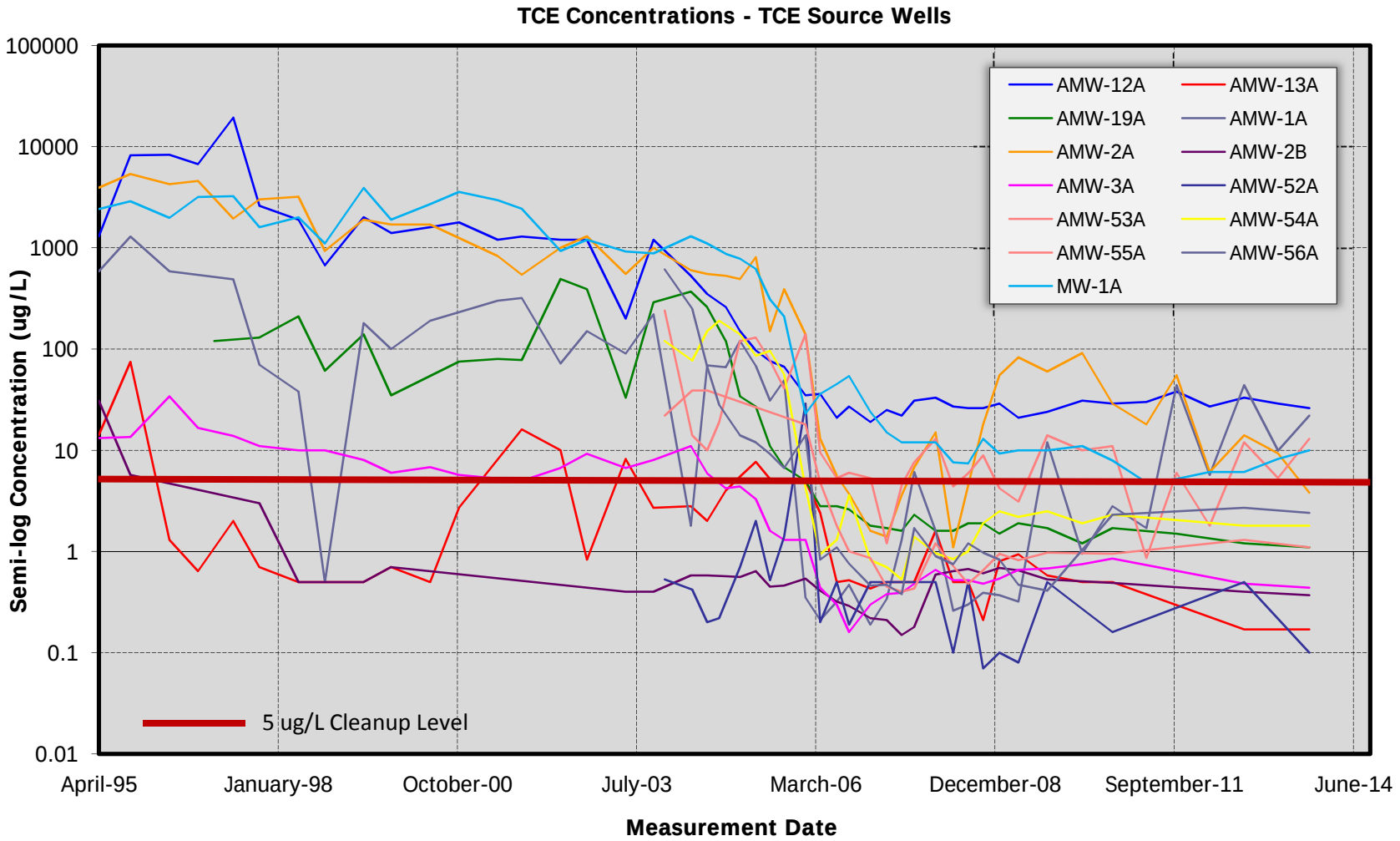
* = Two samples were collected from well AMW-27 in Fall 2013; one from a PDB deployed at 80-82 feet below ground surface (5.7 µg/L TCE), and one from a PDB deployed at 84-86 feet below ground surface (6.6 µg/L TCE).

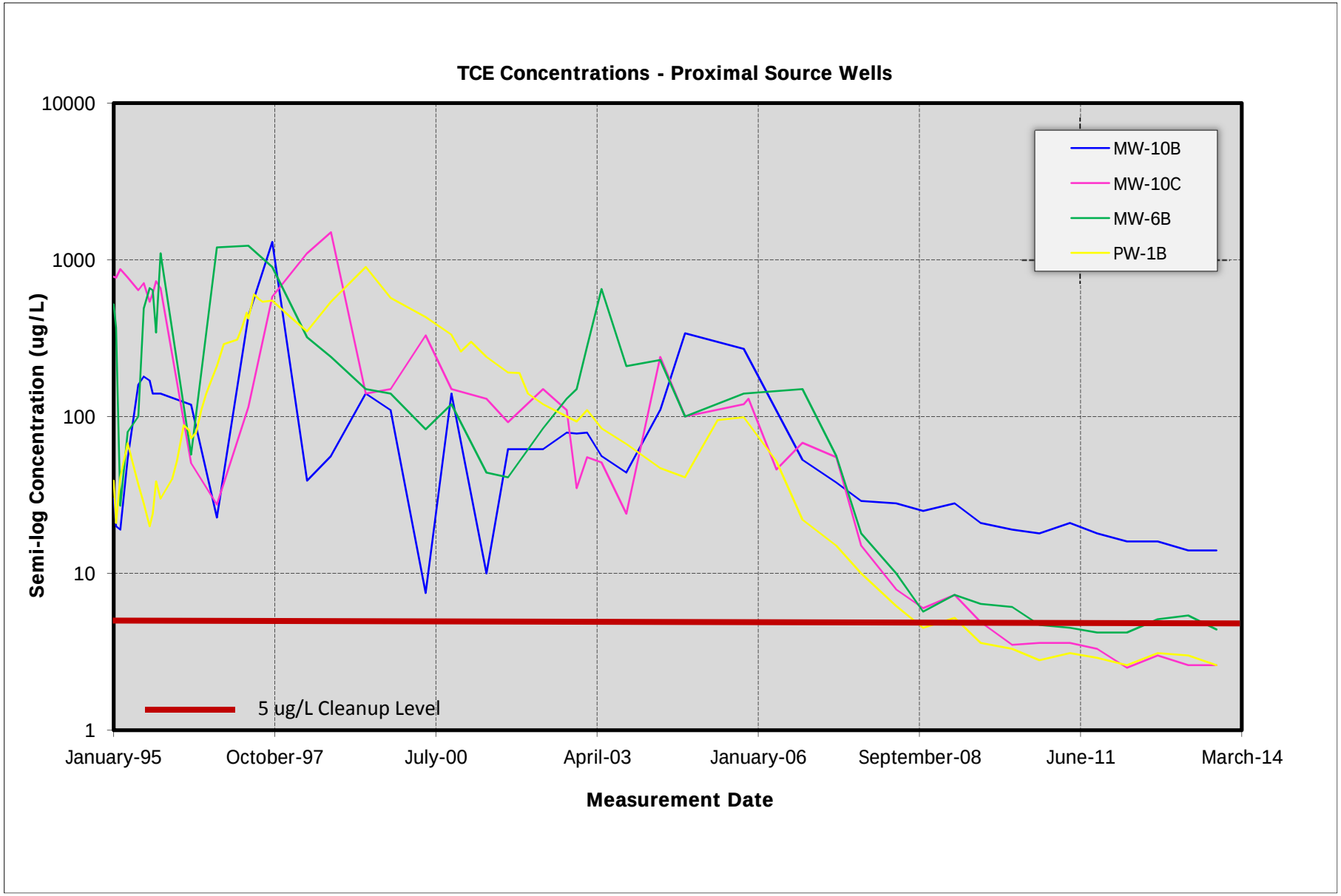
Results shown in **bold and shaded** are above the cleanup level of 5.0 µg/L.

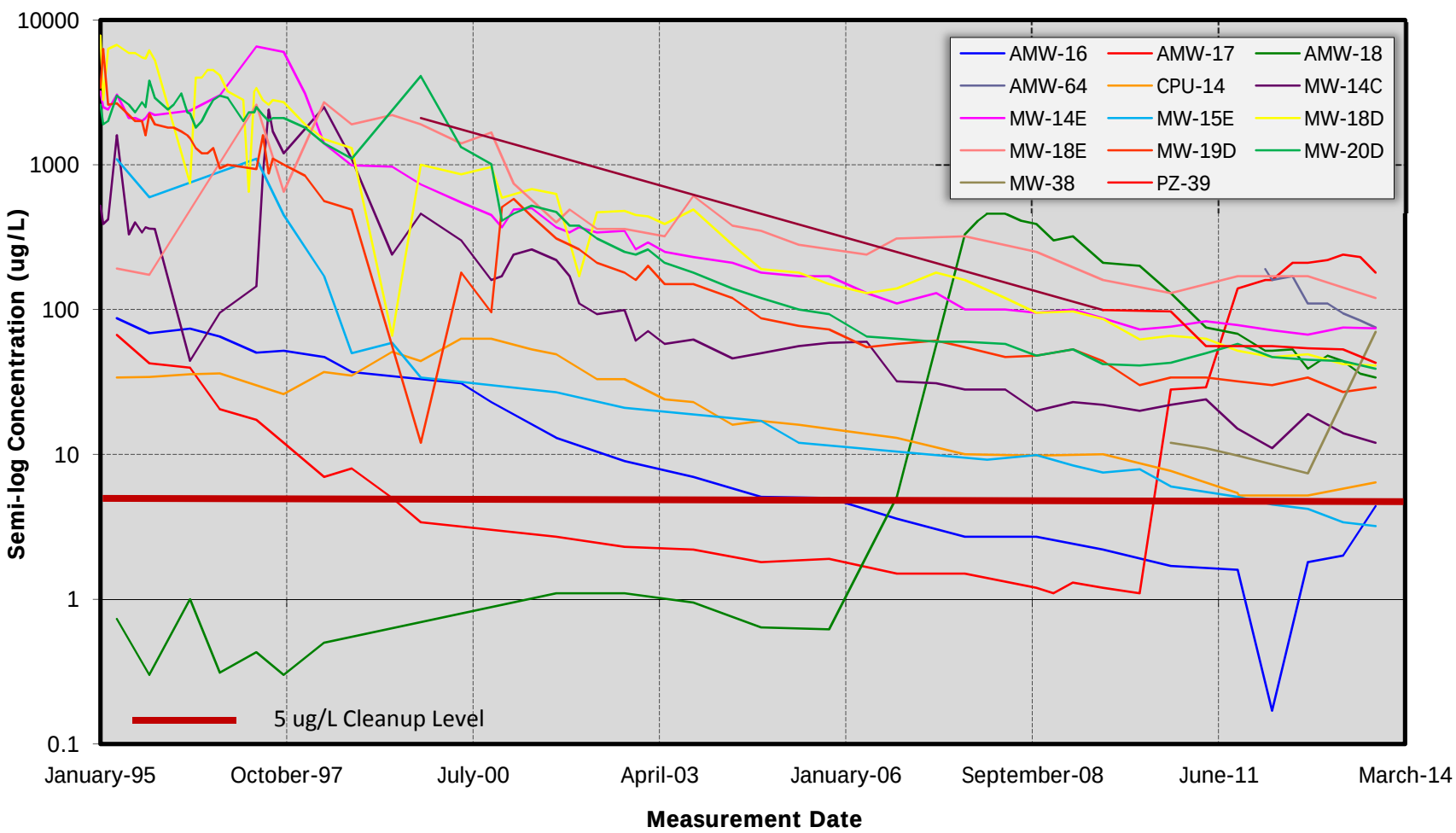
APPENDIX B-2

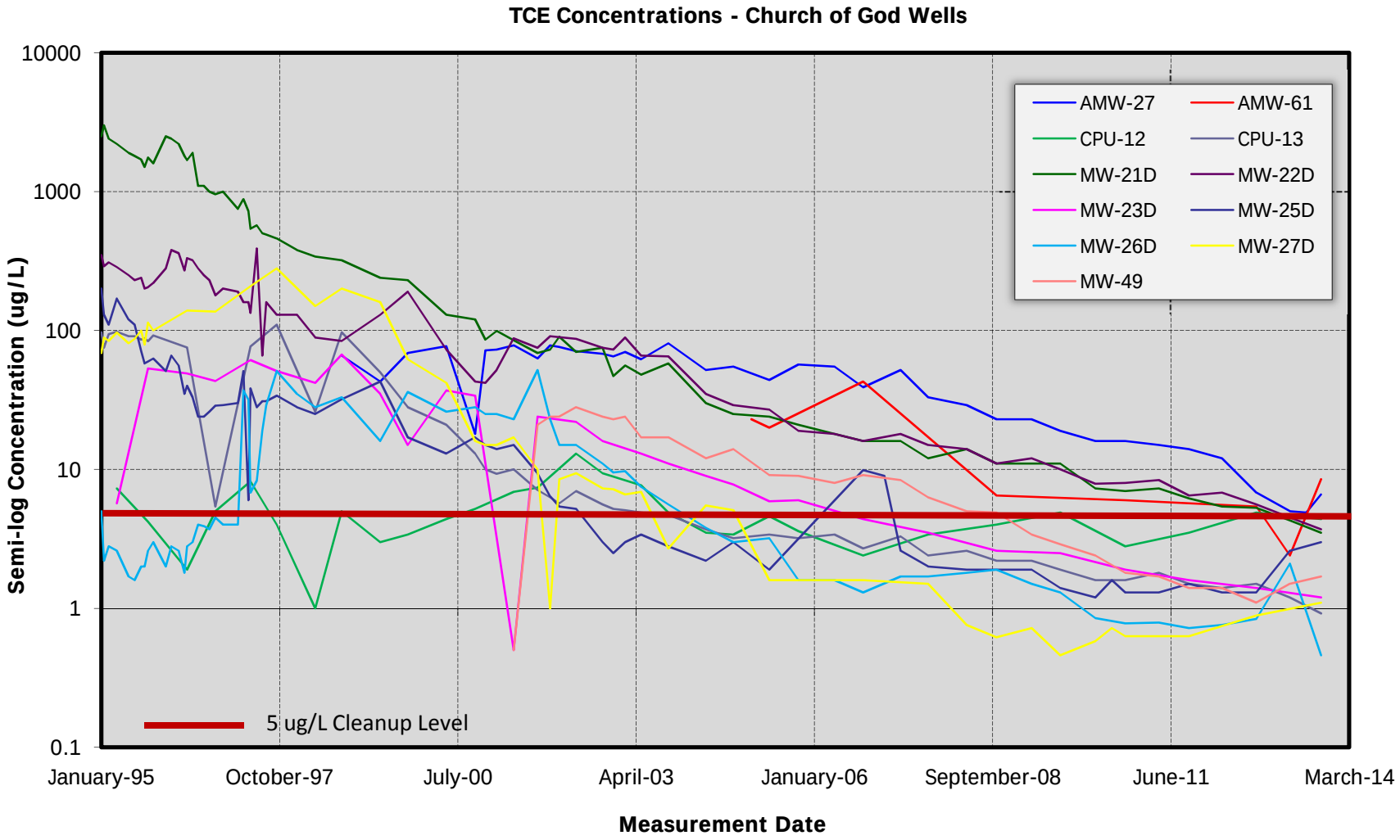
TCE CONCENTRATIONS –
BY WELL GROUPING

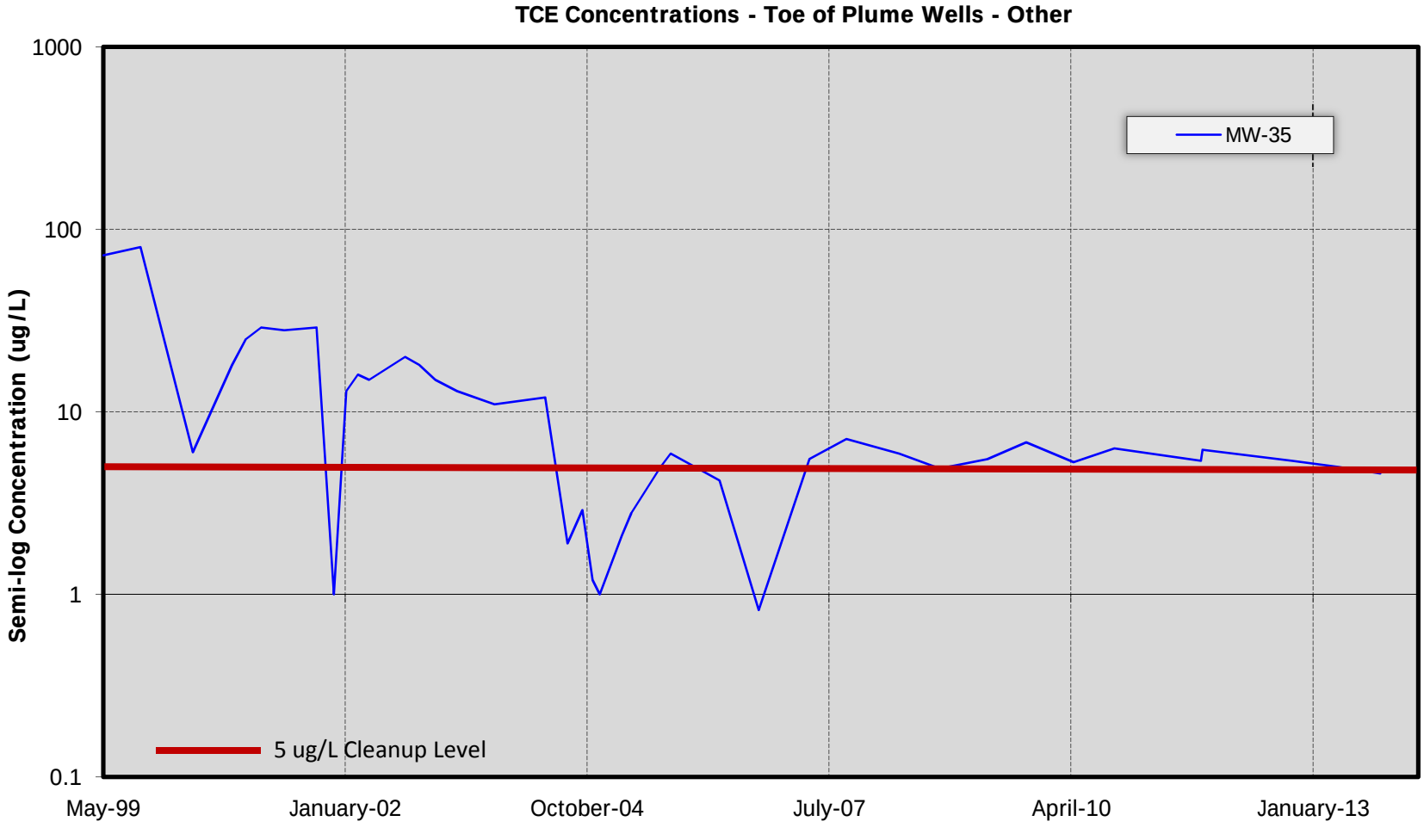

TCE Concentrations - TCE Upgradient Wells (On BOC Property)
1000
100
10
1
0.1
Semi-log Concentration (ug/L)
AMW-8A
5 ug/L Cleanup Level
April-95
January-98
October-00
July-03
March-06
December-08
September-11
June-14
Measurement Date

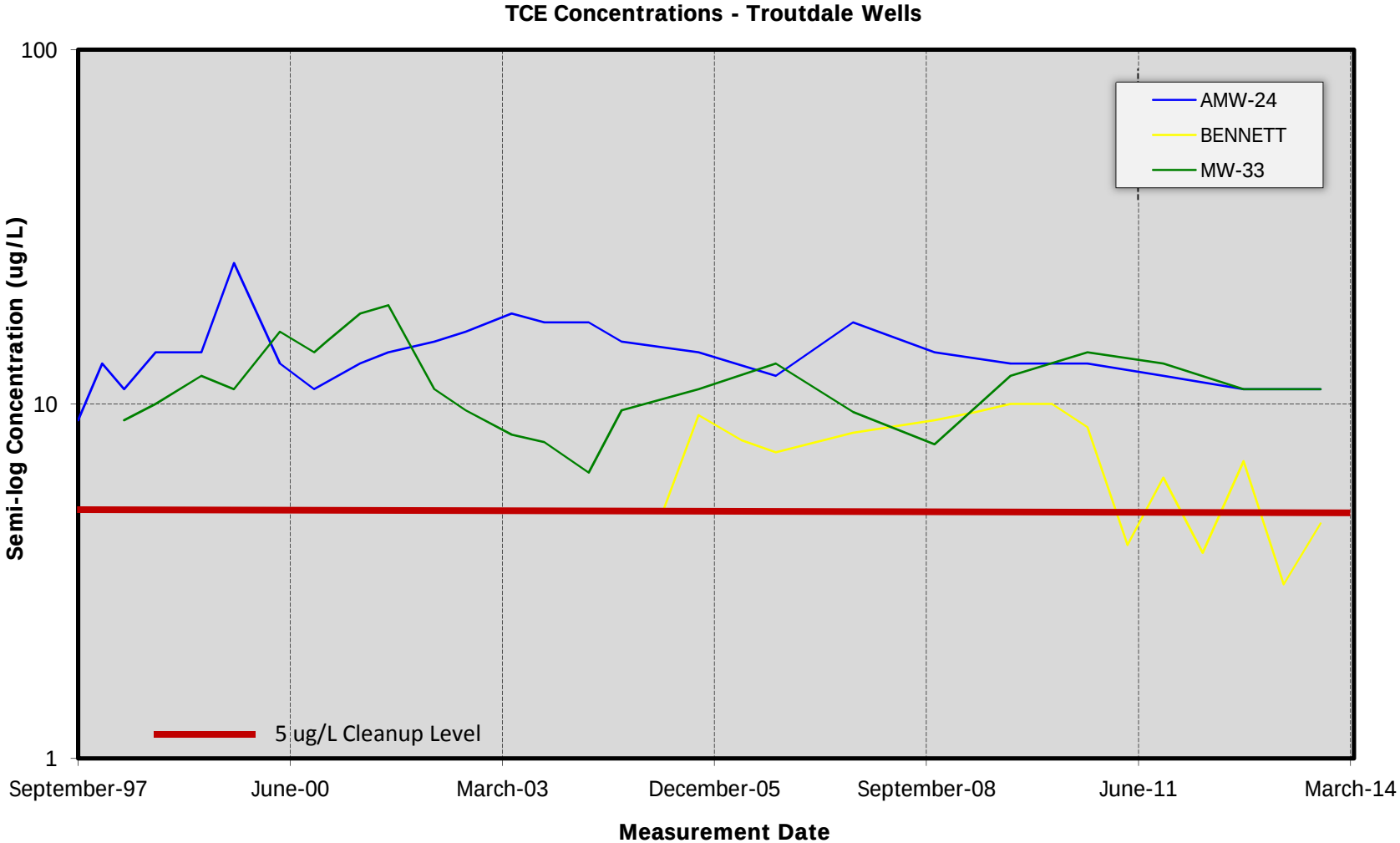

TCE Concentrations - TCE Source Wells
Semi-log Concentration (ug/L)
100000
10000
1000
100
10
1
0.1
0.01
April-95
January-98
October-00
July-03
March-06
December-08
September-11
June-14
Measurement Date
AMW-12A
AMW-13A
AMW-19A
AMW-1A
AMW-2A
AMW-2B
AMW-3A
AMW-52A
AMW-53A
AMW-54A
AMW-55A
AMW-56A
MW-1A
5 ug/L Cleanup Level


TCE Concentrations - Proximal Source Wells
Semi-log Concentration (ug/L)
10000
1000
100
10
1
January-95
October-97
July-00
April-03
January-06
September-08
June-11
March-14
Measurement Date
MW-10B
MW-10C
MW-6B
PW-1B
5 ug/L Cleanup Level


TCE Concentrations - Intermediate Plume Wells
Semi-log Concentration (ug/L)
10000
1000
100
10
1
0.1
January-95
October-97
July-00
April-03
January-06
September-08
June-11
March-14
Measurement Date
AMW-16
AMW-17
AMW-18
AMW-64
CPU-14
MW-14C
MW-14E
MW-15E
MW-18D
MW-18E
MW-19D
MW-20D
MW-38
PZ-39
5 ug/L Cleanup Level


TCE Concentrations - Church of God Wells
Semi-log Concentration (ug/L)
10000
1000
100
10
1
0.1
January-95
October-97
July-00
April-03
January-06
September-08
June-11
March-14
Measurement Date
AMW-27
AMW-61
CPU-12
CPU-13
MW-21D
MW-22D
MW-23D
MW-25D
MW-26D
MW-27D
MW-49
5 ug/L Cleanup Level


TCE Concentrations - Toe of Plume Wells - Other
1000
100
10
1
0.1
Semi-log Concentration (ug/L)
MW-35
5 ug/L Cleanup Level
May-99
January-02
October-04
July-07
April-10
January-13
Measurement Date


TCE Concentrations - Troutdale Wells
100
10
1
Semi-log Concentration (ug/L)
AMW-24
BENNETT
MW-33
5 ug/L Cleanup Level
September-97
June-00
March-03
December-05
September-08
June-11
March-14
Measurement Date

APPENDIX B-3

TCE CONCENTRATIONS – INDIVIDUAL WELLS

APPENDIX B-3
TABLE OF CONTENTS

Intermediate Wells

Church of God Wells

Toe of Plume – Other Toe Wells

Troutdale Wells

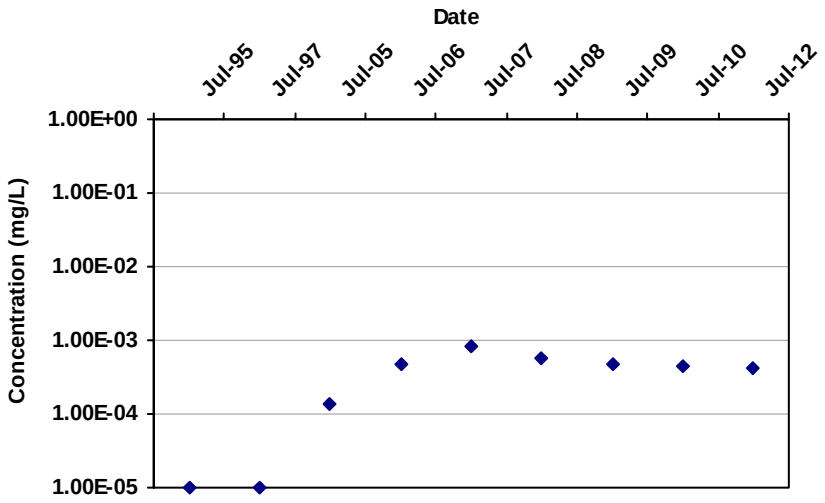
UPGRADIENT WELLS

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-6A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

9

Confidence in Trend:

79.2%

Coefficient of Variation:

0.72

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-6A	T	7/1/1995	TRICHLOROETHYLEN	1.0E-05	ND	2	0
AMW-6A	T	7/1/1997	TRICHLOROETHYLEN	1.0E-05	ND	1	0
AMW-6A	T	7/1/2005	TRICHLOROETHYLEN	1.4E-04	ND	1	0
AMW-6A	T	7/1/2006	TRICHLOROETHYLEN	4.7E-04		4	3
AMW-6A	T	7/1/2007	TRICHLOROETHYLEN	8.2E-04		3	3
AMW-6A	T	7/1/2008	TRICHLOROETHYLEN	5.8E-04		2	2
AMW-6A	T	7/1/2009	TRICHLOROETHYLEN	4.7E-04		2	2
AMW-6A	T	7/1/2010	TRICHLOROETHYLEN	4.3E-04		2	2
AMW-6A	T	7/1/2012	TRICHLOROETHYLEN	4.2E-04		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects

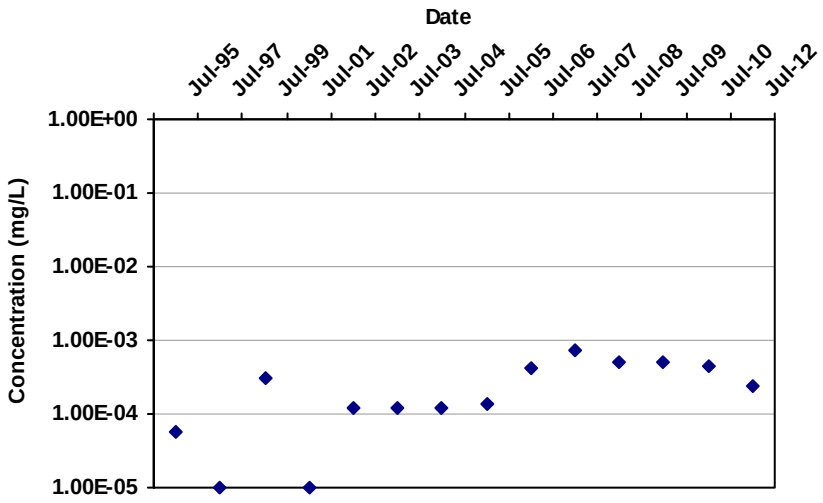
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-7A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

51

Confidence in Trend:

99.8%

Coefficient of Variation:

0.84

Mann Kendall Concentration Trend: (See Note)

I

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-7A	T	7/1/1995	TRICHLOROETHYLEN	5.7E-05		2	1
AMW-7A	T	7/1/1997	TRICHLOROETHYLEN	1.0E-05	ND	1	0
AMW-7A	T	7/1/1999	TRICHLOROETHYLEN	3.0E-04	ND	1	0
AMW-7A	T	7/1/2001	TRICHLOROETHYLEN	1.0E-05	ND	2	0
AMW-7A	T	7/1/2002	TRICHLOROETHYLEN	1.2E-04	ND	2	0
AMW-7A	T	7/1/2003	TRICHLOROETHYLEN	1.2E-04	ND	2	0
AMW-7A	T	7/1/2004	TRICHLOROETHYLEN	1.2E-04	ND	2	0
AMW-7A	T	7/1/2005	TRICHLOROETHYLEN	1.4E-04	ND	1	0
AMW-7A	T	7/1/2006	TRICHLOROETHYLEN	4.1E-04		4	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-7A	T	7/1/2007	TRICHLOROETHYLEN	7.4E-04		3	3
AMW-7A	T	7/1/2008	TRICHLOROETHYLEN	4.9E-04		2	2
AMW-7A	T	7/1/2009	TRICHLOROETHYLEN	5.1E-04		2	2
AMW-7A	T	7/1/2010	TRICHLOROETHYLEN	4.4E-04		2	2
AMW-7A	T	7/1/2012	TRICHLOROETHYLEN	2.4E-04		1	1

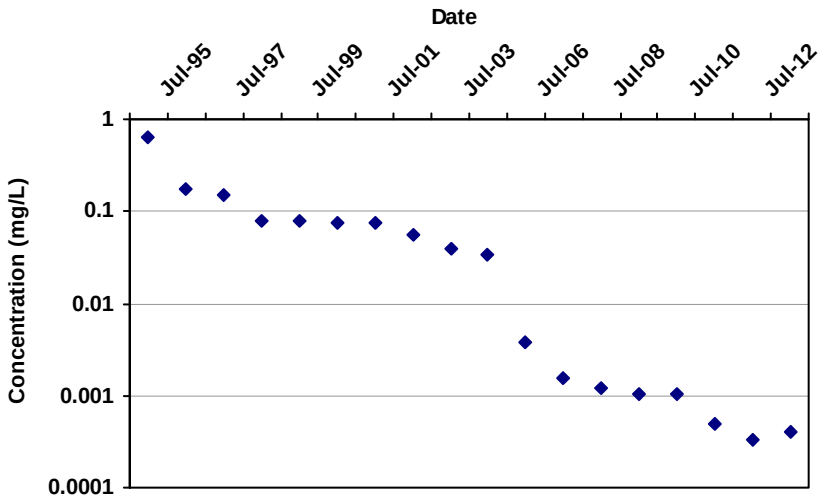
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-8A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-151

Confidence in Trend:

100.0%

Coefficient of Variation:

1.89

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-8A	T	7/1/1995	TRICHLOROETHYLEN	6.3E-01		2	2
AMW-8A	T	7/1/1996	TRICHLOROETHYLEN	1.7E-01		2	2
AMW-8A	T	7/1/1997	TRICHLOROETHYLEN	1.5E-01		2	2
AMW-8A	T	7/1/1998	TRICHLOROETHYLEN	8.1E-02		2	2
AMW-8A	T	7/1/1999	TRICHLOROETHYLEN	7.8E-02		2	2
AMW-8A	T	7/1/2000	TRICHLOROETHYLEN	7.6E-02		2	2
AMW-8A	T	7/1/2001	TRICHLOROETHYLEN	7.4E-02		2	2
AMW-8A	T	7/1/2002	TRICHLOROETHYLEN	5.5E-02		2	2
AMW-8A	T	7/1/2003	TRICHLOROETHYLEN	4.0E-02		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-8A	T	7/1/2004	TRICHLOROETHYLEN	3.4E-02		2	2
AMW-8A	T	7/1/2006	TRICHLOROETHYLEN	3.8E-03		2	2
AMW-8A	T	7/1/2007	TRICHLOROETHYLEN	1.5E-03		2	2
AMW-8A	T	7/1/2008	TRICHLOROETHYLEN	1.2E-03		3	3
AMW-8A	T	7/1/2009	TRICHLOROETHYLEN	1.0E-03		2	2
AMW-8A	T	7/1/2010	TRICHLOROETHYLEN	1.0E-03		2	2
AMW-8A	T	7/1/2011	TRICHLOROETHYLEN	5.0E-04		1	1
AMW-8A	T	7/1/2012	TRICHLOROETHYLEN	3.3E-04		1	1
AMW-8A	T	7/1/2013	TRICHLOROETHYLEN	4.0E-04		1	1

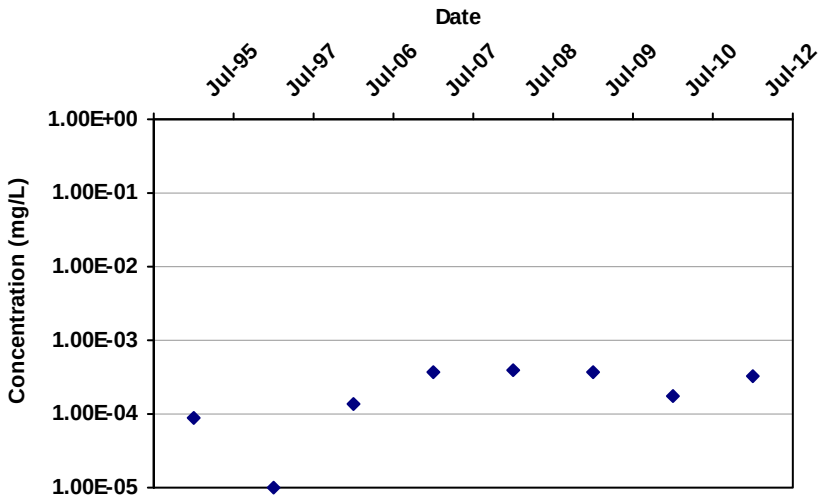
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-10A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

10

Confidence in Trend:

86.2%

Coefficient of Variation:

0.64

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-10A	T	7/1/1995	TRICHLOROETHYLEN	8.9E-05		2	1
AMW-10A	T	7/1/1997	TRICHLOROETHYLEN	1.0E-05	ND	1	0
AMW-10A	T	7/1/2006	TRICHLOROETHYLEN	1.4E-04	ND	4	0
AMW-10A	T	7/1/2007	TRICHLOROETHYLEN	3.7E-04		3	2
AMW-10A	T	7/1/2008	TRICHLOROETHYLEN	4.0E-04		2	2
AMW-10A	T	7/1/2009	TRICHLOROETHYLEN	3.7E-04		2	2
AMW-10A	T	7/1/2010	TRICHLOROETHYLEN	1.7E-04		2	2
AMW-10A	T	7/1/2012	TRICHLOROETHYLEN	3.2E-04		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects

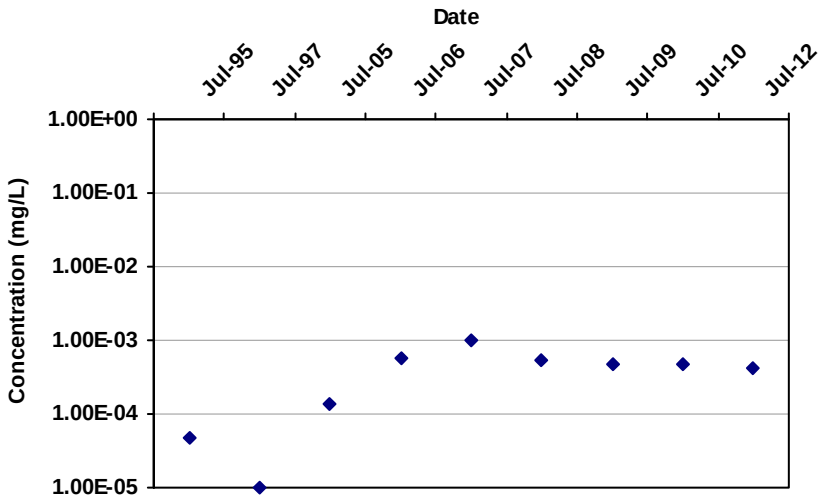
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-11A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

6

Confidence in Trend:

69.4%

Coefficient of Variation:

0.75

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-11A	T	7/1/1995	TRICHLOROETHYLEN	4.8E-05		2	1
AMW-11A	T	7/1/1997	TRICHLOROETHYLEN	1.0E-05	ND	1	0
AMW-11A	T	7/1/2005	TRICHLOROETHYLEN	1.4E-04	ND	1	0
AMW-11A	T	7/1/2006	TRICHLOROETHYLEN	5.7E-04		4	3
AMW-11A	T	7/1/2007	TRICHLOROETHYLEN	9.8E-04		3	3
AMW-11A	T	7/1/2008	TRICHLOROETHYLEN	5.5E-04		2	2
AMW-11A	T	7/1/2009	TRICHLOROETHYLEN	4.8E-04		2	2
AMW-11A	T	7/1/2010	TRICHLOROETHYLEN	4.8E-04		2	2
AMW-11A	T	7/1/2012	TRICHLOROETHYLEN	4.1E-04		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects

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); ND = Non-detect

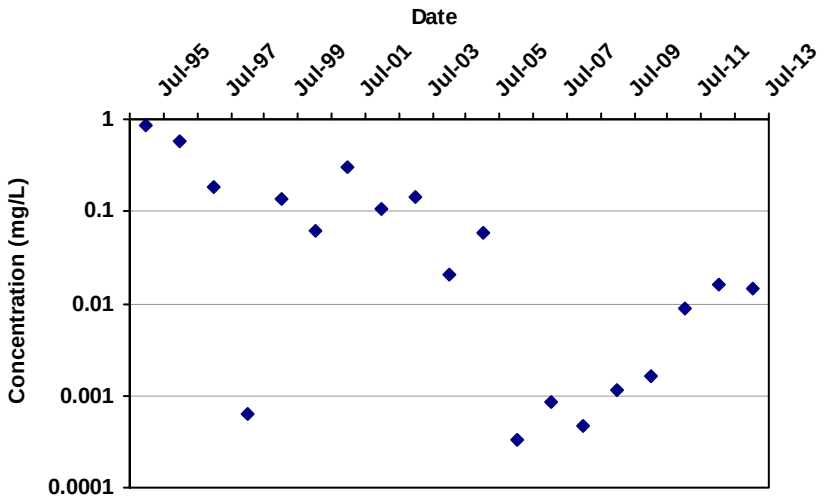
TCE SOURCE WELLS

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-1A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	S	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-77

Confidence in Trend:

99.7%

Coefficient of Variation:

1.74

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-1A	S	7/1/1995	TRICHLOROETHYLEN	8.7E-01		2	2
AMW-1A	S	7/1/1996	TRICHLOROETHYLEN	5.9E-01		1	1
AMW-1A	S	7/1/1997	TRICHLOROETHYLEN	1.8E-01		2	2
AMW-1A	S	7/1/1998	TRICHLOROETHYLEN	6.2E-04		2	1
AMW-1A	S	7/1/1999	TRICHLOROETHYLEN	1.3E-01		2	2
AMW-1A	S	7/1/2000	TRICHLOROETHYLEN	6.0E-02		2	2
AMW-1A	S	7/1/2001	TRICHLOROETHYLEN	3.1E-01		2	2
AMW-1A	S	7/1/2002	TRICHLOROETHYLEN	1.0E-01		2	2
AMW-1A	S	7/1/2003	TRICHLOROETHYLEN	1.4E-01		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-1A	S	7/1/2004	TRICHLOROETHYLEN	2.0E-02		3	3
AMW-1A	S	7/1/2005	TRICHLOROETHYLEN	5.9E-02		4	4
AMW-1A	S	7/1/2006	TRICHLOROETHYLEN	3.2E-04		4	4
AMW-1A	S	7/1/2007	TRICHLOROETHYLEN	8.5E-04		4	4
AMW-1A	S	7/1/2008	TRICHLOROETHYLEN	4.7E-04		4	4
AMW-1A	S	7/1/2009	TRICHLOROETHYLEN	1.1E-03		3	3
AMW-1A	S	7/1/2010	TRICHLOROETHYLEN	1.6E-03		2	2
AMW-1A	S	7/1/2011	TRICHLOROETHYLEN	8.6E-03		2	2
AMW-1A	S	7/1/2012	TRICHLOROETHYLEN	1.6E-02		2	2
AMW-1A	S	7/1/2013	TRICHLOROETHYLEN	1.5E-02		2	2

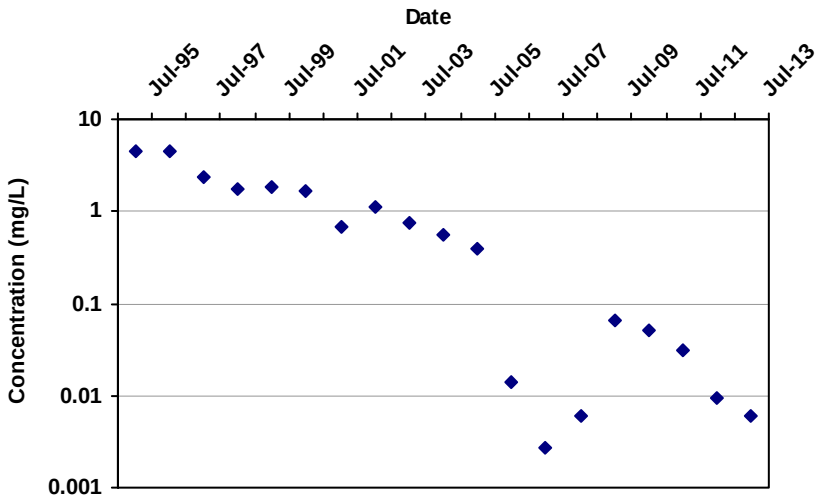
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-2A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	S	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-139

Confidence in Trend:

100.0%

Coefficient of Variation:

1.33

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-2A	S	7/1/1995	TRICHLOROETHYLEN	4.6E+00		2	2
AMW-2A	S	7/1/1996	TRICHLOROETHYLEN	4.4E+00		2	2
AMW-2A	S	7/1/1997	TRICHLOROETHYLEN	2.4E+00		2	2
AMW-2A	S	7/1/1998	TRICHLOROETHYLEN	1.7E+00		2	2
AMW-2A	S	7/1/1999	TRICHLOROETHYLEN	1.8E+00		2	2
AMW-2A	S	7/1/2000	TRICHLOROETHYLEN	1.7E+00		2	2
AMW-2A	S	7/1/2001	TRICHLOROETHYLEN	6.7E-01		2	2
AMW-2A	S	7/1/2002	TRICHLOROETHYLEN	1.1E+00		2	2
AMW-2A	S	7/1/2003	TRICHLOROETHYLEN	7.4E-01		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-2A	S	7/1/2004	TRICHLOROETHYLEN	5.6E-01		3	3
AMW-2A	S	7/1/2005	TRICHLOROETHYLEN	3.9E-01		4	4
AMW-2A	S	7/1/2006	TRICHLOROETHYLEN	1.4E-02		4	4
AMW-2A	S	7/1/2007	TRICHLOROETHYLEN	2.7E-03		4	4
AMW-2A	S	7/1/2008	TRICHLOROETHYLEN	6.0E-03		4	4
AMW-2A	S	7/1/2009	TRICHLOROETHYLEN	6.5E-02		3	3
AMW-2A	S	7/1/2010	TRICHLOROETHYLEN	5.1E-02		2	2
AMW-2A	S	7/1/2011	TRICHLOROETHYLEN	3.1E-02		2	2
AMW-2A	S	7/1/2012	TRICHLOROETHYLEN	9.2E-03		2	2
AMW-2A	S	7/1/2013	TRICHLOROETHYLEN	5.9E-03		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: AMW-2B **Time Period:** 1/19/1995 **to** 10/31/2013

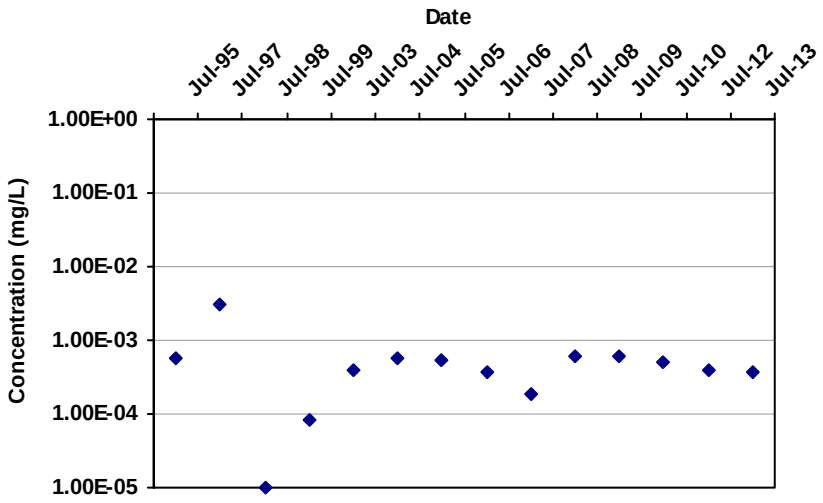
Well Type: S **Consolidation Period:** Yearly

COC: TRICHLOROETHYLENE (TCE) **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-4

Confidence in Trend:

56.4%

Coefficient of Variation:

1.23

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-2B	S	7/1/1995	TRICHLOROETHYLEN	5.5E-04		2	1
AMW-2B	S	7/1/1997	TRICHLOROETHYLEN	3.0E-03		1	1
AMW-2B	S	7/1/1998	TRICHLOROETHYLEN	1.0E-05	ND	2	0
AMW-2B	S	7/1/1999	TRICHLOROETHYLEN	8.4E-05		2	1
AMW-2B	S	7/1/2003	TRICHLOROETHYLEN	4.0E-04		2	2
AMW-2B	S	7/1/2004	TRICHLOROETHYLEN	5.8E-04		3	3
AMW-2B	S	7/1/2005	TRICHLOROETHYLEN	5.2E-04		4	4
AMW-2B	S	7/1/2006	TRICHLOROETHYLEN	3.8E-04		4	4
AMW-2B	S	7/1/2007	TRICHLOROETHYLEN	1.9E-04		4	4

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-2B	S	7/1/2008	TRICHLOROETHYLEN	6.3E-04		4	4
AMW-2B	S	7/1/2009	TRICHLOROETHYLEN	6.2E-04		3	3
AMW-2B	S	7/1/2010	TRICHLOROETHYLEN	4.9E-04		1	1
AMW-2B	S	7/1/2012	TRICHLOROETHYLEN	4.0E-04		1	1
AMW-2B	S	7/1/2013	TRICHLOROETHYLEN	3.7E-04		1	1

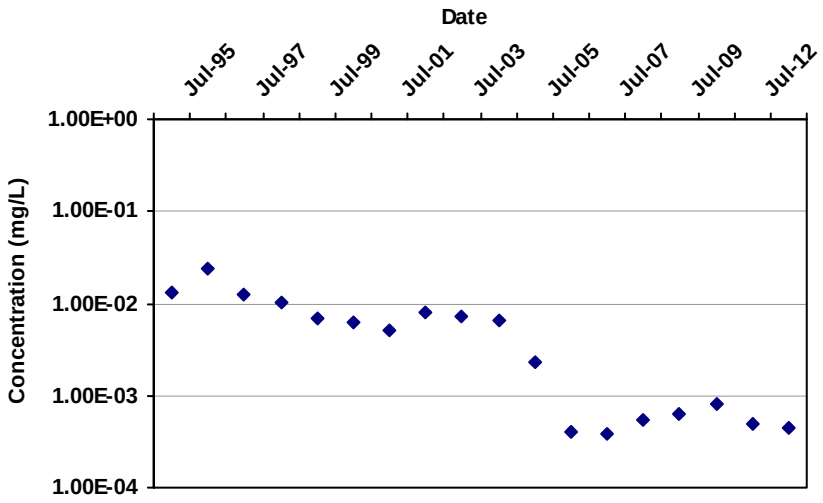
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-3A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	S	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-109

Confidence in Trend:

100.0%

Coefficient of Variation:

1.06

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-3A	S	7/1/1995	TRICHLOROETHYLEN	1.3E-02		2	2
AMW-3A	S	7/1/1996	TRICHLOROETHYLEN	2.4E-02		2	2
AMW-3A	S	7/1/1997	TRICHLOROETHYLEN	1.2E-02		2	2
AMW-3A	S	7/1/1998	TRICHLOROETHYLEN	1.0E-02		2	2
AMW-3A	S	7/1/1999	TRICHLOROETHYLEN	6.9E-03		2	2
AMW-3A	S	7/1/2000	TRICHLOROETHYLEN	6.2E-03		2	2
AMW-3A	S	7/1/2001	TRICHLOROETHYLEN	5.0E-03		1	1
AMW-3A	S	7/1/2002	TRICHLOROETHYLEN	7.9E-03		2	2
AMW-3A	S	7/1/2003	TRICHLOROETHYLEN	7.3E-03		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-3A	S	7/1/2004	TRICHLOROETHYLEN	6.5E-03		3	3
AMW-3A	S	7/1/2005	TRICHLOROETHYLEN	2.3E-03		4	4
AMW-3A	S	7/1/2006	TRICHLOROETHYLEN	4.1E-04		4	4
AMW-3A	S	7/1/2007	TRICHLOROETHYLEN	3.8E-04		4	4
AMW-3A	S	7/1/2008	TRICHLOROETHYLEN	5.4E-04		4	4
AMW-3A	S	7/1/2009	TRICHLOROETHYLEN	6.2E-04		3	3
AMW-3A	S	7/1/2010	TRICHLOROETHYLEN	8.0E-04		2	2
AMW-3A	S	7/1/2012	TRICHLOROETHYLEN	4.8E-04		1	1
AMW-3A	S	7/1/2013	TRICHLOROETHYLEN	4.4E-04		1	1

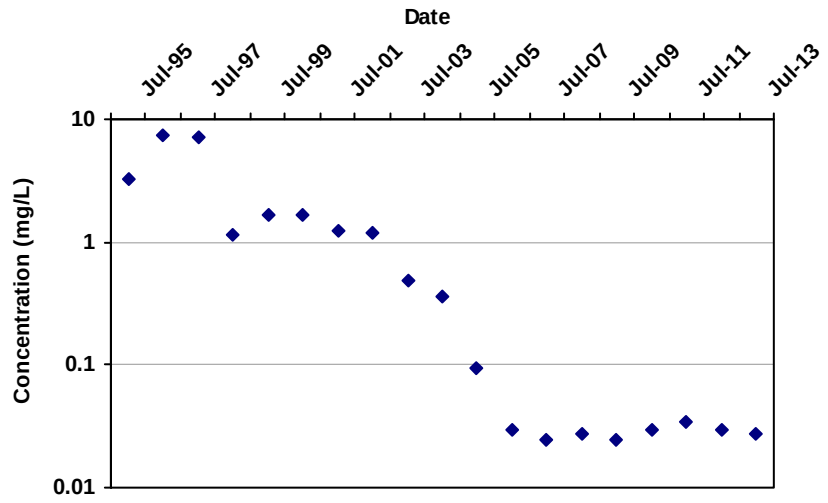
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-12A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	S	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-123

Confidence in Trend:

100.0%

Coefficient of Variation:

1.65

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-12A	S	7/1/1995	TRICHLOROETHYLEN	3.3E+00		2	2
AMW-12A	S	7/1/1996	TRICHLOROETHYLEN	7.5E+00		2	2
AMW-12A	S	7/1/1997	TRICHLOROETHYLEN	7.1E+00		2	2
AMW-12A	S	7/1/1998	TRICHLOROETHYLEN	1.1E+00		2	2
AMW-12A	S	7/1/1999	TRICHLOROETHYLEN	1.7E+00		2	2
AMW-12A	S	7/1/2000	TRICHLOROETHYLEN	1.7E+00		2	2
AMW-12A	S	7/1/2001	TRICHLOROETHYLEN	1.2E+00		2	2
AMW-12A	S	7/1/2002	TRICHLOROETHYLEN	1.2E+00		2	2
AMW-12A	S	7/1/2003	TRICHLOROETHYLEN	4.9E-01		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-12A	S	7/1/2004	TRICHLOROETHYLEN	3.6E-01		3	3
AMW-12A	S	7/1/2005	TRICHLOROETHYLEN	9.3E-02		4	4
AMW-12A	S	7/1/2006	TRICHLOROETHYLEN	2.9E-02		4	4
AMW-12A	S	7/1/2007	TRICHLOROETHYLEN	2.4E-02		4	4
AMW-12A	S	7/1/2008	TRICHLOROETHYLEN	2.8E-02		4	4
AMW-12A	S	7/1/2009	TRICHLOROETHYLEN	2.4E-02		3	3
AMW-12A	S	7/1/2010	TRICHLOROETHYLEN	3.0E-02		2	2
AMW-12A	S	7/1/2011	TRICHLOROETHYLEN	3.4E-02		2	2
AMW-12A	S	7/1/2012	TRICHLOROETHYLEN	3.0E-02		2	2
AMW-12A	S	7/1/2013	TRICHLOROETHYLEN	2.7E-02		2	2

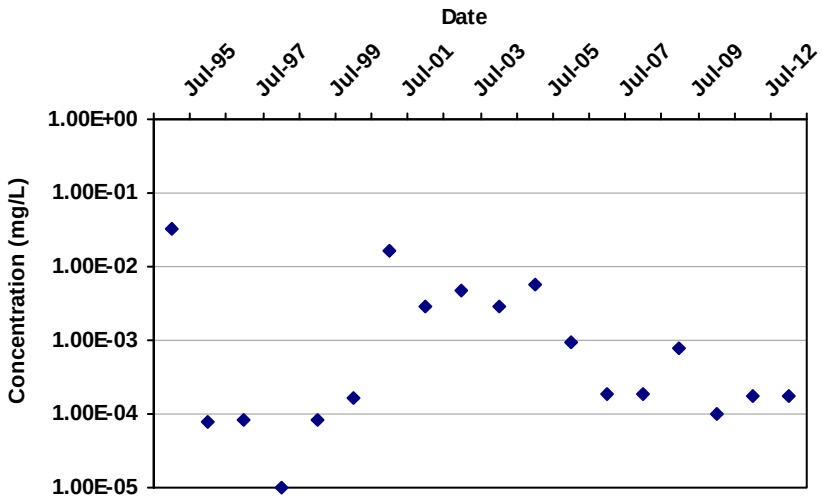
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-13A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	S	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-1

Confidence in Trend:

50.0%

Coefficient of Variation:

2.17

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-13A	S	7/1/1995	TRICHLOROETHYLEN	3.3E-02		2	2
AMW-13A	S	7/1/1996	TRICHLOROETHYLEN	8.0E-05		2	1
AMW-13A	S	7/1/1997	TRICHLOROETHYLEN	8.4E-05		2	1
AMW-13A	S	7/1/1998	TRICHLOROETHYLEN	1.0E-05	ND	2	0
AMW-13A	S	7/1/1999	TRICHLOROETHYLEN	8.4E-05		2	1
AMW-13A	S	7/1/2000	TRICHLOROETHYLEN	1.6E-04		2	1
AMW-13A	S	7/1/2001	TRICHLOROETHYLEN	1.6E-02		1	1
AMW-13A	S	7/1/2002	TRICHLOROETHYLEN	2.9E-03		2	2
AMW-13A	S	7/1/2003	TRICHLOROETHYLEN	4.7E-03		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-13A	S	7/1/2004	TRICHLOROETHYLEN	2.8E-03		3	3
AMW-13A	S	7/1/2005	TRICHLOROETHYLEN	5.8E-03		4	4
AMW-13A	S	7/1/2006	TRICHLOROETHYLEN	9.7E-04		4	3
AMW-13A	S	7/1/2007	TRICHLOROETHYLEN	1.9E-04		4	1
AMW-13A	S	7/1/2008	TRICHLOROETHYLEN	1.9E-04		4	2
AMW-13A	S	7/1/2009	TRICHLOROETHYLEN	7.6E-04		3	3
AMW-13A	S	7/1/2010	TRICHLOROETHYLEN	1.0E-04	ND	2	0
AMW-13A	S	7/1/2012	TRICHLOROETHYLEN	1.7E-04		1	1
AMW-13A	S	7/1/2013	TRICHLOROETHYLEN	1.7E-04		1	1

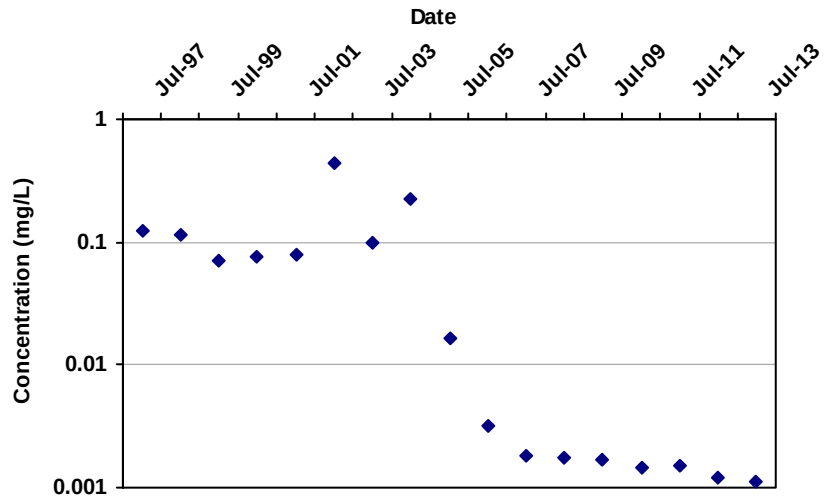
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-19A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	S	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-100

Confidence in Trend:

100.0%

Coefficient of Variation:

1.54

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-19A	S	7/1/1997	TRICHLOROETHYLEN	1.2E-01		2	2
AMW-19A	S	7/1/1998	TRICHLOROETHYLEN	1.1E-01		2	2
AMW-19A	S	7/1/1999	TRICHLOROETHYLEN	7.0E-02		2	2
AMW-19A	S	7/1/2000	TRICHLOROETHYLEN	7.5E-02		1	1
AMW-19A	S	7/1/2001	TRICHLOROETHYLEN	7.9E-02		2	2
AMW-19A	S	7/1/2002	TRICHLOROETHYLEN	4.4E-01		2	2
AMW-19A	S	7/1/2003	TRICHLOROETHYLEN	9.8E-02		2	2
AMW-19A	S	7/1/2004	TRICHLOROETHYLEN	2.3E-01		3	3
AMW-19A	S	7/1/2005	TRICHLOROETHYLEN	1.6E-02		4	4

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-19A	S	7/1/2006	TRICHLOROETHYLEN	3.2E-03		4	4
AMW-19A	S	7/1/2007	TRICHLOROETHYLEN	1.8E-03		4	4
AMW-19A	S	7/1/2008	TRICHLOROETHYLEN	1.7E-03		4	4
AMW-19A	S	7/1/2009	TRICHLOROETHYLEN	1.7E-03		3	3
AMW-19A	S	7/1/2010	TRICHLOROETHYLEN	1.4E-03		2	2
AMW-19A	S	7/1/2011	TRICHLOROETHYLEN	1.5E-03		1	1
AMW-19A	S	7/1/2012	TRICHLOROETHYLEN	1.2E-03		1	1
AMW-19A	S	7/1/2013	TRICHLOROETHYLEN	1.1E-03		1	1

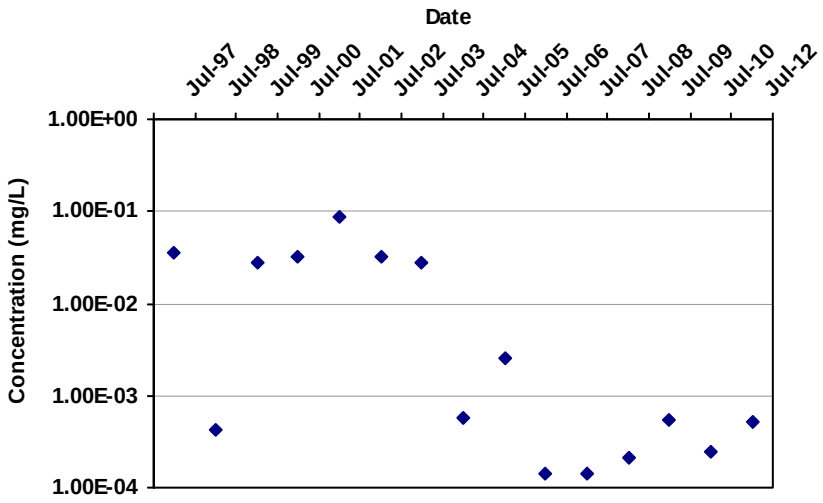
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-26	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	S	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-50

Confidence in Trend:

99.3%

Coefficient of Variation:

1.49

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-26	S	7/1/1997	TRICHLOROETHYLEN	3.6E-02		1	1
AMW-26	S	7/1/1998	TRICHLOROETHYLEN	4.2E-04		2	1
AMW-26	S	7/1/1999	TRICHLOROETHYLEN	2.8E-02		2	2
AMW-26	S	7/1/2000	TRICHLOROETHYLEN	3.3E-02		2	2
AMW-26	S	7/1/2001	TRICHLOROETHYLEN	8.8E-02		2	2
AMW-26	S	7/1/2002	TRICHLOROETHYLEN	3.2E-02		2	2
AMW-26	S	7/1/2003	TRICHLOROETHYLEN	2.7E-02		2	2
AMW-26	S	7/1/2004	TRICHLOROETHYLEN	5.6E-04		2	2
AMW-26	S	7/1/2005	TRICHLOROETHYLEN	2.6E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-26	S	7/1/2006	TRICHLOROETHYLEN	1.4E-04	ND	1	0
AMW-26	S	7/1/2007	TRICHLOROETHYLEN	1.4E-04	ND	1	0
AMW-26	S	7/1/2008	TRICHLOROETHYLEN	2.1E-04		4	3
AMW-26	S	7/1/2009	TRICHLOROETHYLEN	5.3E-04		3	3
AMW-26	S	7/1/2010	TRICHLOROETHYLEN	2.4E-04		1	1
AMW-26	S	7/1/2012	TRICHLOROETHYLEN	5.2E-04		1	1

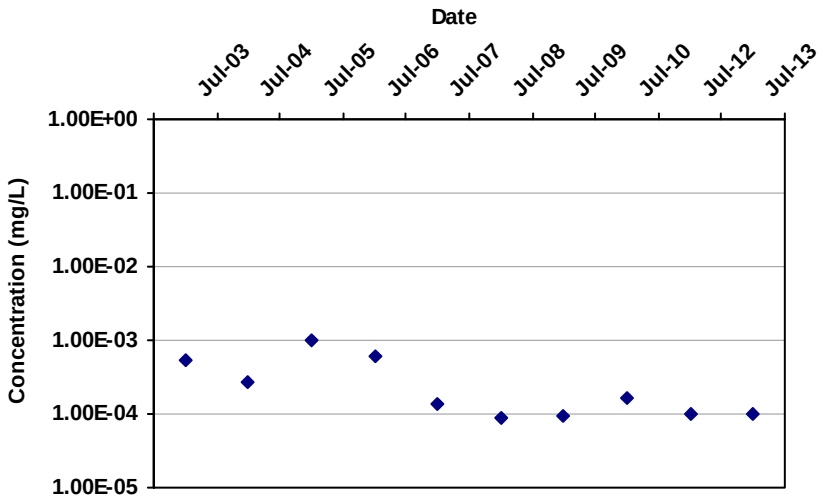
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-52A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	S	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-21

Confidence in Trend:

96.4%

Coefficient of Variation:

1.00

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-52A	S	7/1/2003	TRICHLOROETHYLEN	5.3E-04		1	1
AMW-52A	S	7/1/2004	TRICHLOROETHYLEN	2.6E-04		3	3
AMW-52A	S	7/1/2005	TRICHLOROETHYLEN	1.0E-03		4	4
AMW-52A	S	7/1/2006	TRICHLOROETHYLEN	6.3E-04		4	3
AMW-52A	S	7/1/2007	TRICHLOROETHYLEN	1.4E-04	ND	4	0
AMW-52A	S	7/1/2008	TRICHLOROETHYLEN	8.8E-05		4	2
AMW-52A	S	7/1/2009	TRICHLOROETHYLEN	9.3E-05		3	2
AMW-52A	S	7/1/2010	TRICHLOROETHYLEN	1.6E-04		1	1
AMW-52A	S	7/1/2012	TRICHLOROETHYLEN	1.0E-04	ND	1	0

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-52A	S	7/1/2013	TRICHLOROETHYLEN	1.0E-04		1	1

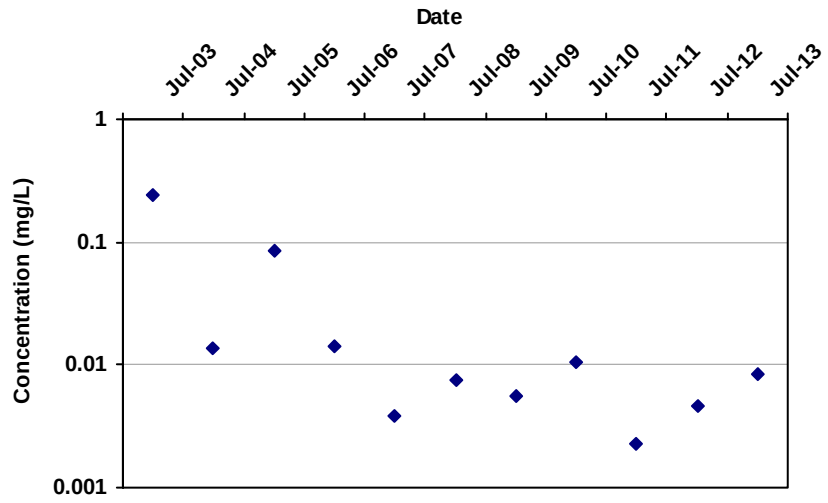
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-53A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	S	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-27

Confidence in Trend:

98.0%

Coefficient of Variation:

1.99

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-53A	S	7/1/2003	TRICHLOROETHYLEN	2.4E-01		1	1
AMW-53A	S	7/1/2004	TRICHLOROETHYLEN	1.4E-02		3	3
AMW-53A	S	7/1/2005	TRICHLOROETHYLEN	8.4E-02		4	4
AMW-53A	S	7/1/2006	TRICHLOROETHYLEN	1.4E-02		4	4
AMW-53A	S	7/1/2007	TRICHLOROETHYLEN	3.8E-03		4	4
AMW-53A	S	7/1/2008	TRICHLOROETHYLEN	7.4E-03		4	4
AMW-53A	S	7/1/2009	TRICHLOROETHYLEN	5.7E-03		3	3
AMW-53A	S	7/1/2010	TRICHLOROETHYLEN	1.0E-02		2	2
AMW-53A	S	7/1/2011	TRICHLOROETHYLEN	2.3E-03		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-53A	S	7/1/2012	TRICHLOROETHYLEN	4.6E-03		2	2
AMW-53A	S	7/1/2013	TRICHLOROETHYLEN	8.3E-03		2	2

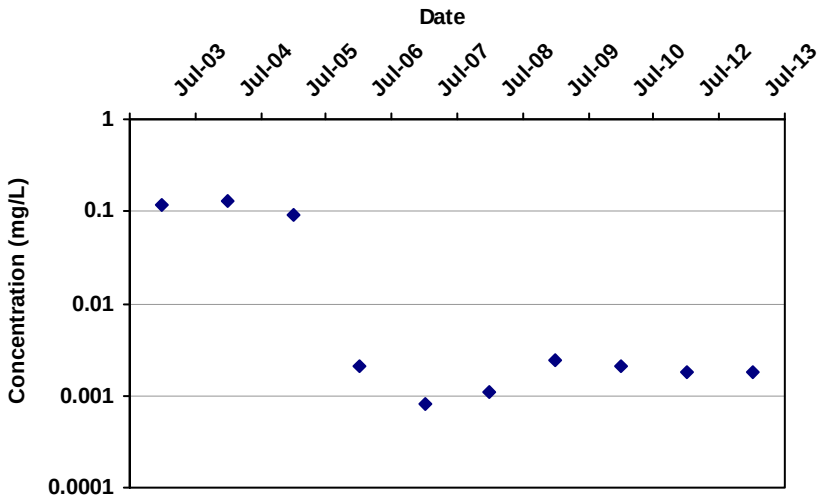
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-54A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	S	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-20

Confidence in Trend:

95.5%

Coefficient of Variation:

1.56

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-54A	S	7/1/2003	TRICHLOROETHYLEN	1.2E-01		1	1
AMW-54A	S	7/1/2004	TRICHLOROETHYLEN	1.3E-01		3	3
AMW-54A	S	7/1/2005	TRICHLOROETHYLEN	9.0E-02		4	4
AMW-54A	S	7/1/2006	TRICHLOROETHYLEN	2.1E-03		4	4
AMW-54A	S	7/1/2007	TRICHLOROETHYLEN	8.1E-04		4	4
AMW-54A	S	7/1/2008	TRICHLOROETHYLEN	1.1E-03		4	4
AMW-54A	S	7/1/2009	TRICHLOROETHYLEN	2.4E-03		3	3
AMW-54A	S	7/1/2010	TRICHLOROETHYLEN	2.1E-03		2	2
AMW-54A	S	7/1/2012	TRICHLOROETHYLEN	1.8E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-54A	S	7/1/2013	TRICHLOROETHYLEN	1.8E-03		1	1

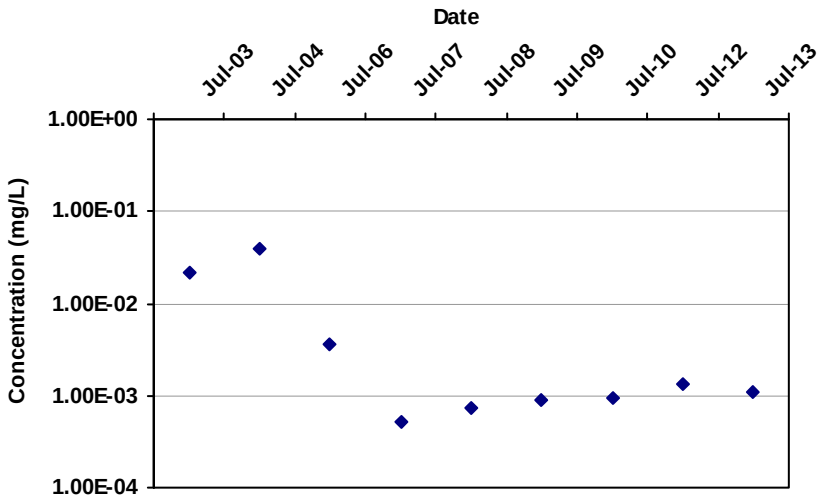
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-55A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	S	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-6

Confidence in Trend:

69.4%

Coefficient of Variation:

1.75

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-55A	S	7/1/2003	TRICHLOROETHYLEN	2.2E-02		1	1
AMW-55A	S	7/1/2004	TRICHLOROETHYLEN	3.9E-02		2	2
AMW-55A	S	7/1/2006	TRICHLOROETHYLEN	3.5E-03		4	4
AMW-55A	S	7/1/2007	TRICHLOROETHYLEN	5.1E-04		4	4
AMW-55A	S	7/1/2008	TRICHLOROETHYLEN	7.2E-04		4	4
AMW-55A	S	7/1/2009	TRICHLOROETHYLEN	9.1E-04		3	3
AMW-55A	S	7/1/2010	TRICHLOROETHYLEN	9.5E-04		1	1
AMW-55A	S	7/1/2012	TRICHLOROETHYLEN	1.3E-03		1	1
AMW-55A	S	7/1/2013	TRICHLOROETHYLEN	1.1E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects

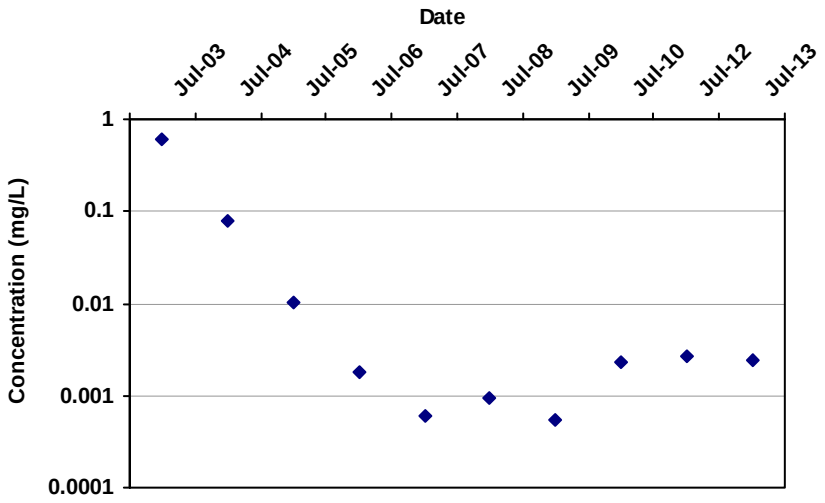
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-56A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-15

Confidence in Trend:

89.2%

Coefficient of Variation:

2.69

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-56A	T	7/1/2003	TRICHLOROETHYLEN	6.1E-01		1	1
AMW-56A	T	7/1/2004	TRICHLOROETHYLEN	7.8E-02		3	3
AMW-56A	T	7/1/2005	TRICHLOROETHYLEN	1.0E-02		4	4
AMW-56A	T	7/1/2006	TRICHLOROETHYLEN	1.8E-03		4	4
AMW-56A	T	7/1/2007	TRICHLOROETHYLEN	6.1E-04		4	4
AMW-56A	T	7/1/2008	TRICHLOROETHYLEN	9.4E-04		4	4
AMW-56A	T	7/1/2009	TRICHLOROETHYLEN	5.4E-04		3	3
AMW-56A	T	7/1/2010	TRICHLOROETHYLEN	2.3E-03		1	1
AMW-56A	T	7/1/2012	TRICHLOROETHYLEN	2.7E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-56A	T	7/1/2013	TRICHLOROETHYLEN	2.4E-03		1	1

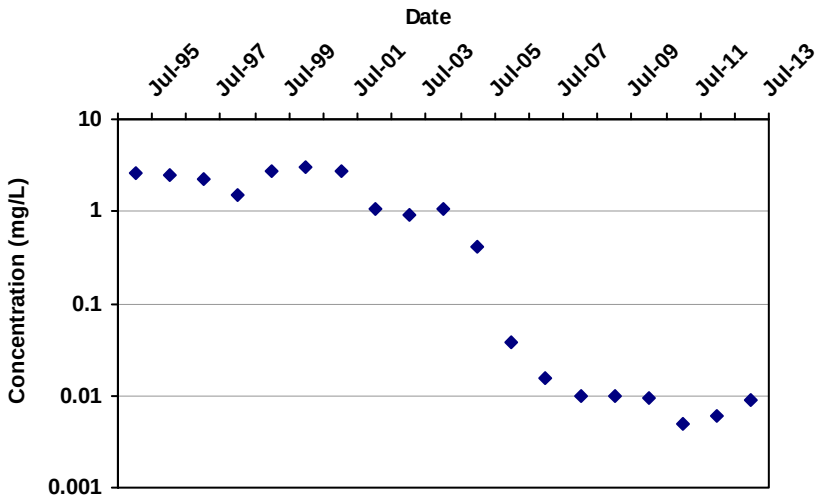
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-1A	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	S	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-133

Confidence in Trend:

100.0%

Coefficient of Variation:

1.07

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-1A	S	7/1/1995	TRICHLOROETHYLEN	2.6E+00		2	2
MW-1A	S	7/1/1996	TRICHLOROETHYLEN	2.5E+00		2	2
MW-1A	S	7/1/1997	TRICHLOROETHYLEN	2.3E+00		2	2
MW-1A	S	7/1/1998	TRICHLOROETHYLEN	1.5E+00		2	2
MW-1A	S	7/1/1999	TRICHLOROETHYLEN	2.7E+00		2	2
MW-1A	S	7/1/2000	TRICHLOROETHYLEN	3.1E+00		2	2
MW-1A	S	7/1/2001	TRICHLOROETHYLEN	2.7E+00		2	2
MW-1A	S	7/1/2002	TRICHLOROETHYLEN	1.1E+00		2	2
MW-1A	S	7/1/2003	TRICHLOROETHYLEN	9.0E-01		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-1A	S	7/1/2004	TRICHLOROETHYLEN	1.1E+00		3	3
MW-1A	S	7/1/2005	TRICHLOROETHYLEN	4.2E-01		4	4
MW-1A	S	7/1/2006	TRICHLOROETHYLEN	3.8E-02		4	4
MW-1A	S	7/1/2007	TRICHLOROETHYLEN	1.5E-02		4	4
MW-1A	S	7/1/2008	TRICHLOROETHYLEN	9.7E-03		4	4
MW-1A	S	7/1/2009	TRICHLOROETHYLEN	9.8E-03		3	3
MW-1A	S	7/1/2010	TRICHLOROETHYLEN	9.3E-03		2	2
MW-1A	S	7/1/2011	TRICHLOROETHYLEN	5.0E-03		2	2
MW-1A	S	7/1/2012	TRICHLOROETHYLEN	6.1E-03		2	2
MW-1A	S	7/1/2013	TRICHLOROETHYLEN	9.1E-03		2	2

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); ND = Non-detect

PROXIMAL WELLS

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-2A **Time Period:** 1/19/1995 **to** 10/31/2013

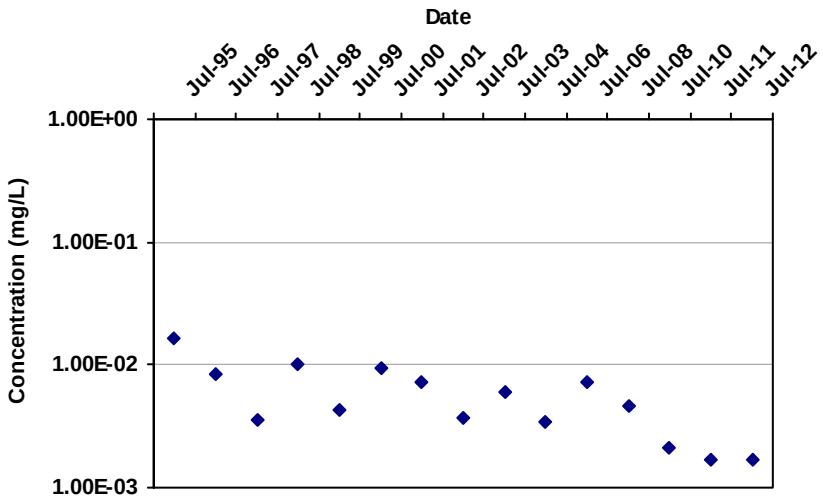
Well Type: T **Consolidation Period:** Yearly

COC: TRICHLOROETHYLENE (TCE) **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-62

Confidence in Trend:

99.9%

Coefficient of Variation:

0.66

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-2A	T	7/1/1995	TRICHLOROETHYLEN	1.6E-02		2	2
MW-2A	T	7/1/1996	TRICHLOROETHYLEN	8.4E-03		2	2
MW-2A	T	7/1/1997	TRICHLOROETHYLEN	3.5E-03		2	2
MW-2A	T	7/1/1998	TRICHLOROETHYLEN	1.0E-02		2	2
MW-2A	T	7/1/1999	TRICHLOROETHYLEN	4.3E-03		2	2
MW-2A	T	7/1/2000	TRICHLOROETHYLEN	9.4E-03		2	2
MW-2A	T	7/1/2001	TRICHLOROETHYLEN	7.3E-03		2	2
MW-2A	T	7/1/2002	TRICHLOROETHYLEN	3.7E-03		2	2
MW-2A	T	7/1/2003	TRICHLOROETHYLEN	5.9E-03		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-2A	T	7/1/2004	TRICHLOROETHYLEN	3.4E-03		1	1
MW-2A	T	7/1/2006	TRICHLOROETHYLEN	7.3E-03		1	1
MW-2A	T	7/1/2008	TRICHLOROETHYLEN	4.7E-03		1	1
MW-2A	T	7/1/2010	TRICHLOROETHYLEN	2.1E-03		1	1
MW-2A	T	7/1/2011	TRICHLOROETHYLEN	1.7E-03		1	1
MW-2A	T	7/1/2012	TRICHLOROETHYLEN	1.7E-03		1	1

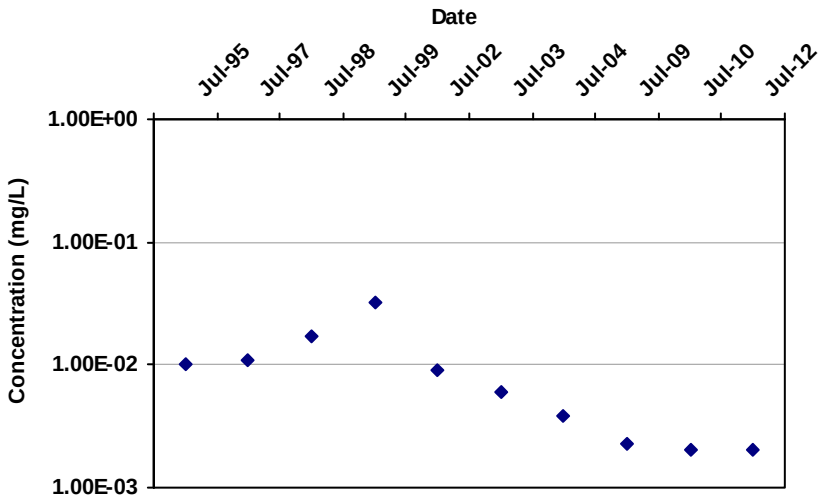
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-3B	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-32

Confidence in Trend:

99.9%

Coefficient of Variation:

0.97

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-3B	T	7/1/1995	TRICHLOROETHYLEN	1.0E-02		2	2
MW-3B	T	7/1/1997	TRICHLOROETHYLEN	1.1E-02		1	1
MW-3B	T	7/1/1998	TRICHLOROETHYLEN	1.7E-02		2	2
MW-3B	T	7/1/1999	TRICHLOROETHYLEN	3.2E-02		2	2
MW-3B	T	7/1/2002	TRICHLOROETHYLEN	9.2E-03		1	1
MW-3B	T	7/1/2003	TRICHLOROETHYLEN	5.9E-03		1	1
MW-3B	T	7/1/2004	TRICHLOROETHYLEN	3.9E-03		1	1
MW-3B	T	7/1/2009	TRICHLOROETHYLEN	2.3E-03		1	1
MW-3B	T	7/1/2010	TRICHLOROETHYLEN	2.0E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-3B	T	7/1/2012	TRICHLOROETHYLEN	2.0E-03		1	1

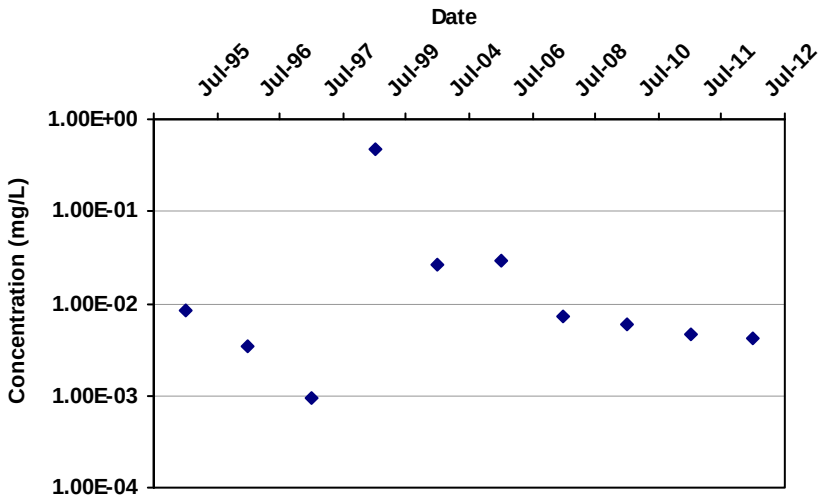
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-4B	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-9

Confidence in Trend:

75.8%

Coefficient of Variation:

2.61

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-4B	T	7/1/1995	TRICHLOROETHYLEN	8.2E-03		2	2
MW-4B	T	7/1/1996	TRICHLOROETHYLEN	3.5E-03		2	2
MW-4B	T	7/1/1997	TRICHLOROETHYLEN	9.4E-04		1	1
MW-4B	T	7/1/1999	TRICHLOROETHYLEN	4.8E-01		2	2
MW-4B	T	7/1/2004	TRICHLOROETHYLEN	2.6E-02		1	1
MW-4B	T	7/1/2006	TRICHLOROETHYLEN	2.9E-02		1	1
MW-4B	T	7/1/2008	TRICHLOROETHYLEN	7.2E-03		1	1
MW-4B	T	7/1/2010	TRICHLOROETHYLEN	5.9E-03		1	1
MW-4B	T	7/1/2011	TRICHLOROETHYLEN	4.6E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-4B	T	7/1/2012	TRICHLOROETHYLEN	4.2E-03		1	1

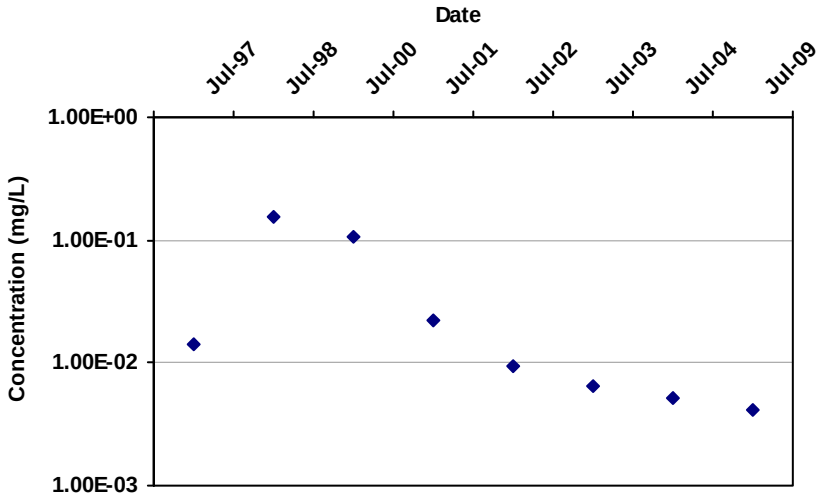
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-4BSHED	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-22

Confidence in Trend:

99.8%

Coefficient of Variation:

1.43

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-4BSHED	T	7/1/1997	TRICHLOROETHYLEN	1.4E-02		2	2
MW-4BSHED	T	7/1/1998	TRICHLOROETHYLEN	1.6E-01		2	2
MW-4BSHED	T	7/1/2000	TRICHLOROETHYLEN	1.1E-01		2	2
MW-4BSHED	T	7/1/2001	TRICHLOROETHYLEN	2.2E-02		2	2
MW-4BSHED	T	7/1/2002	TRICHLOROETHYLEN	9.5E-03		2	2
MW-4BSHED	T	7/1/2003	TRICHLOROETHYLEN	6.5E-03		2	2
MW-4BSHED	T	7/1/2004	TRICHLOROETHYLEN	5.2E-03		1	1
MW-4BSHED	T	7/1/2009	TRICHLOROETHYLEN	4.1E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects

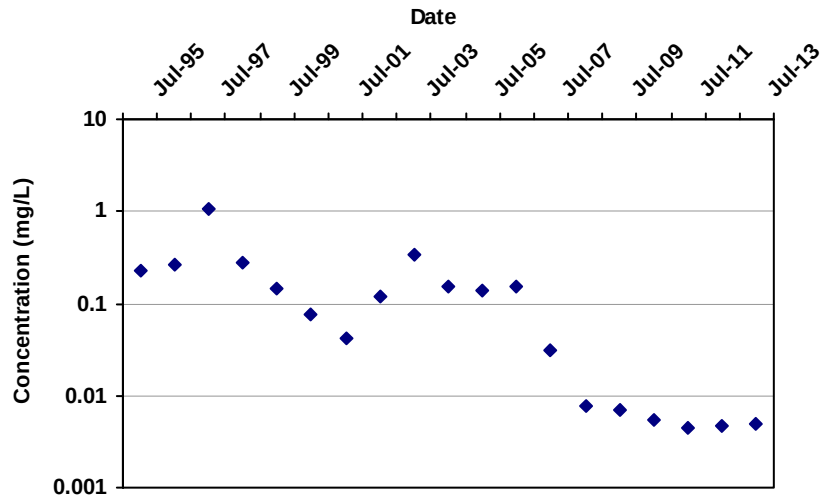
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-6B	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-113

Confidence in Trend:

100.0%

Coefficient of Variation:

1.50

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-6B	T	7/1/1995	TRICHLOROETHYLEN	2.3E-01		11	11
MW-6B	T	7/1/1996	TRICHLOROETHYLEN	2.6E-01		2	2
MW-6B	T	7/1/1997	TRICHLOROETHYLEN	1.1E+00		2	2
MW-6B	T	7/1/1998	TRICHLOROETHYLEN	2.8E-01		2	2
MW-6B	T	7/1/1999	TRICHLOROETHYLEN	1.4E-01		2	2
MW-6B	T	7/1/2000	TRICHLOROETHYLEN	7.6E-02		3	3
MW-6B	T	7/1/2001	TRICHLOROETHYLEN	4.2E-02		2	2
MW-6B	T	7/1/2002	TRICHLOROETHYLEN	1.2E-01		3	3
MW-6B	T	7/1/2003	TRICHLOROETHYLEN	3.4E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-6B	T	7/1/2004	TRICHLOROETHYLEN	1.5E-01		2	2
MW-6B	T	7/1/2005	TRICHLOROETHYLEN	1.4E-01		1	1
MW-6B	T	7/1/2006	TRICHLOROETHYLEN	1.5E-01		1	1
MW-6B	T	7/1/2007	TRICHLOROETHYLEN	3.2E-02		2	2
MW-6B	T	7/1/2008	TRICHLOROETHYLEN	7.5E-03		2	2
MW-6B	T	7/1/2009	TRICHLOROETHYLEN	6.8E-03		2	2
MW-6B	T	7/1/2010	TRICHLOROETHYLEN	5.4E-03		2	2
MW-6B	T	7/1/2011	TRICHLOROETHYLEN	4.3E-03		2	2
MW-6B	T	7/1/2012	TRICHLOROETHYLEN	4.6E-03		2	2
MW-6B	T	7/1/2013	TRICHLOROETHYLEN	4.9E-03		2	2

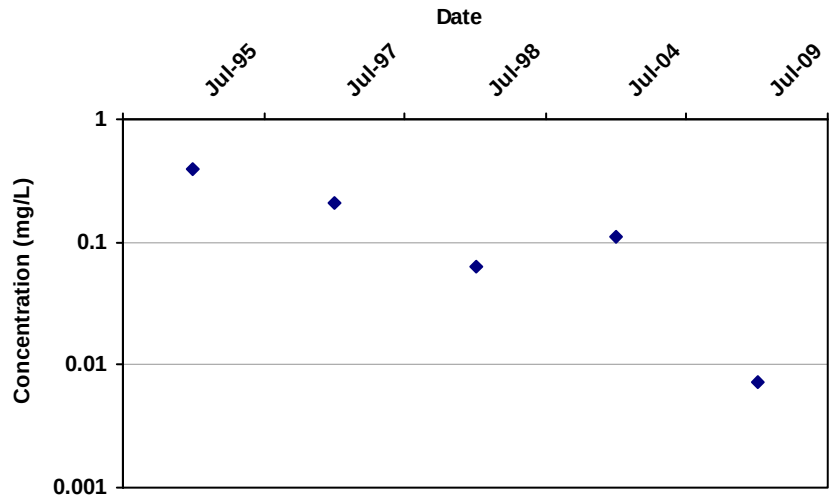
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-7B	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-8

Confidence in Trend:

95.8%

Coefficient of Variation:

0.97

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-7B	T	7/1/1995	TRICHLOROETHYLEN	3.9E-01		2	2
MW-7B	T	7/1/1997	TRICHLOROETHYLEN	2.1E-01		1	1
MW-7B	T	7/1/1998	TRICHLOROETHYLEN	6.2E-02		1	1
MW-7B	T	7/1/2004	TRICHLOROETHYLEN	1.1E-01		1	1
MW-7B	T	7/1/2009	TRICHLOROETHYLEN	7.3E-03		1	1

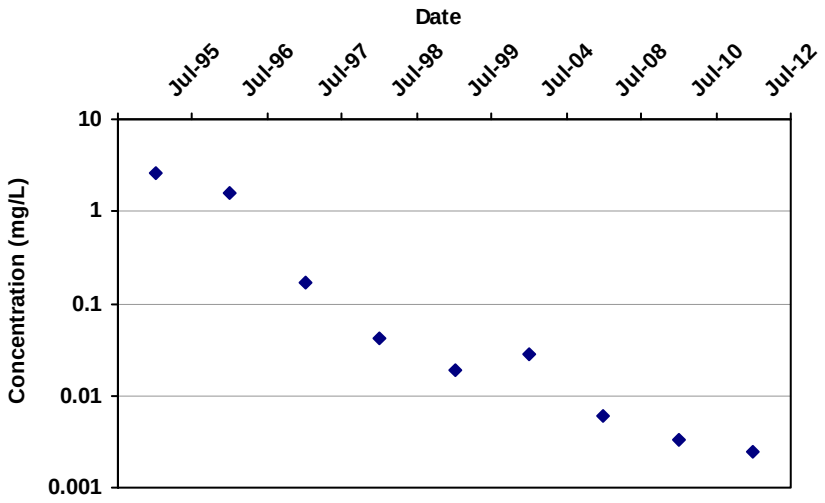
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-8B	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-34

Confidence in Trend:

100.0%

Coefficient of Variation:

1.90

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-8B	T	7/1/1995	TRICHLOROETHYLEN	2.6E+00		2	2
MW-8B	T	7/1/1996	TRICHLOROETHYLEN	1.6E+00		2	2
MW-8B	T	7/1/1997	TRICHLOROETHYLEN	1.7E-01		2	2
MW-8B	T	7/1/1998	TRICHLOROETHYLEN	4.1E-02		1	1
MW-8B	T	7/1/1999	TRICHLOROETHYLEN	1.9E-02		2	2
MW-8B	T	7/1/2004	TRICHLOROETHYLEN	2.8E-02		1	1
MW-8B	T	7/1/2008	TRICHLOROETHYLEN	6.0E-03		1	1
MW-8B	T	7/1/2010	TRICHLOROETHYLEN	3.3E-03		1	1
MW-8B	T	7/1/2012	TRICHLOROETHYLEN	2.4E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects

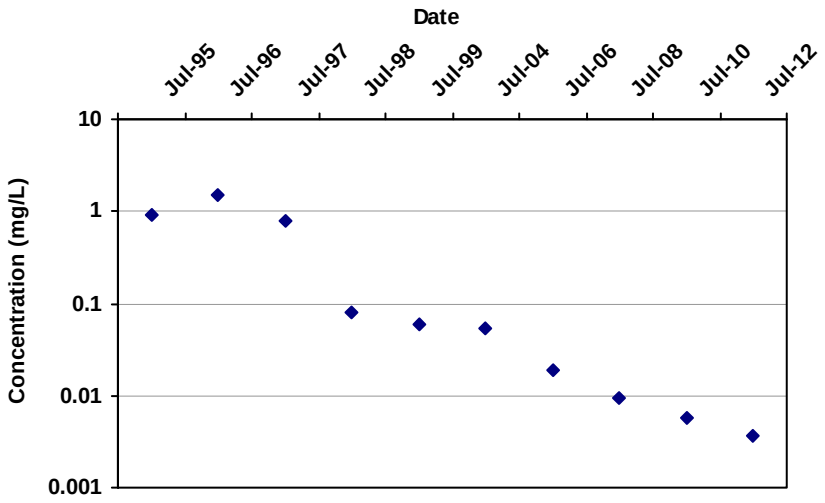
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-9B	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-43

Confidence in Trend:

100.0%

Coefficient of Variation:

1.54

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-9B	T	7/1/1995	TRICHLOROETHYLEN	9.4E-01		2	2
MW-9B	T	7/1/1996	TRICHLOROETHYLEN	1.5E+00		2	2
MW-9B	T	7/1/1997	TRICHLOROETHYLEN	7.8E-01		2	2
MW-9B	T	7/1/1998	TRICHLOROETHYLEN	8.1E-02		2	2
MW-9B	T	7/1/1999	TRICHLOROETHYLEN	6.0E-02		2	2
MW-9B	T	7/1/2004	TRICHLOROETHYLEN	5.5E-02		1	1
MW-9B	T	7/1/2006	TRICHLOROETHYLEN	1.9E-02		1	1
MW-9B	T	7/1/2008	TRICHLOROETHYLEN	9.3E-03		1	1
MW-9B	T	7/1/2010	TRICHLOROETHYLEN	5.7E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-9B	T	7/1/2012	TRICHLOROETHYLEN	3.7E-03		1	1

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-10B **Time Period:** 1/19/1995 **to** 10/31/2013

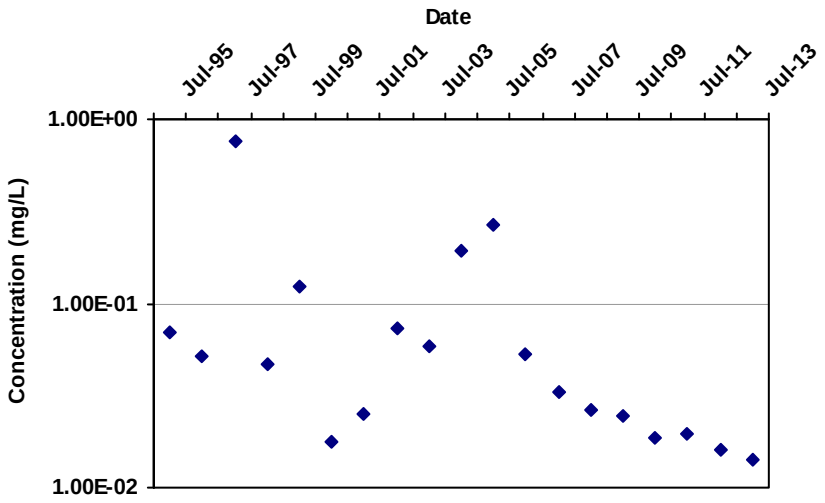
Well Type: T **Consolidation Period:** Yearly

COC: TRICHLOROETHYLENE (TCE) **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-83

Confidence in Trend:

99.8%

Coefficient of Variation:

1.73

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-10B	T	7/1/1995	TRICHLOROETHYLEN	7.0E-02		11	11
MW-10B	T	7/1/1996	TRICHLOROETHYLEN	5.2E-02		2	2
MW-10B	T	7/1/1997	TRICHLOROETHYLEN	7.5E-01		2	2
MW-10B	T	7/1/1998	TRICHLOROETHYLEN	4.7E-02		2	2
MW-10B	T	7/1/1999	TRICHLOROETHYLEN	1.2E-01		2	2
MW-10B	T	7/1/2000	TRICHLOROETHYLEN	1.8E-02		3	3
MW-10B	T	7/1/2001	TRICHLOROETHYLEN	2.5E-02		2	2
MW-10B	T	7/1/2002	TRICHLOROETHYLEN	7.3E-02		3	3
MW-10B	T	7/1/2003	TRICHLOROETHYLEN	5.8E-02		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-10B	T	7/1/2004	TRICHLOROETHYLEN	1.9E-01		2	2
MW-10B	T	7/1/2005	TRICHLOROETHYLEN	2.7E-01		1	1
MW-10B	T	7/1/2006	TRICHLOROETHYLEN	5.3E-02		1	1
MW-10B	T	7/1/2007	TRICHLOROETHYLEN	3.3E-02		2	2
MW-10B	T	7/1/2008	TRICHLOROETHYLEN	2.6E-02		2	2
MW-10B	T	7/1/2009	TRICHLOROETHYLEN	2.4E-02		2	2
MW-10B	T	7/1/2010	TRICHLOROETHYLEN	1.8E-02		2	2
MW-10B	T	7/1/2011	TRICHLOROETHYLEN	1.9E-02		2	2
MW-10B	T	7/1/2012	TRICHLOROETHYLEN	1.6E-02		2	2
MW-10B	T	7/1/2013	TRICHLOROETHYLEN	1.4E-02		2	2

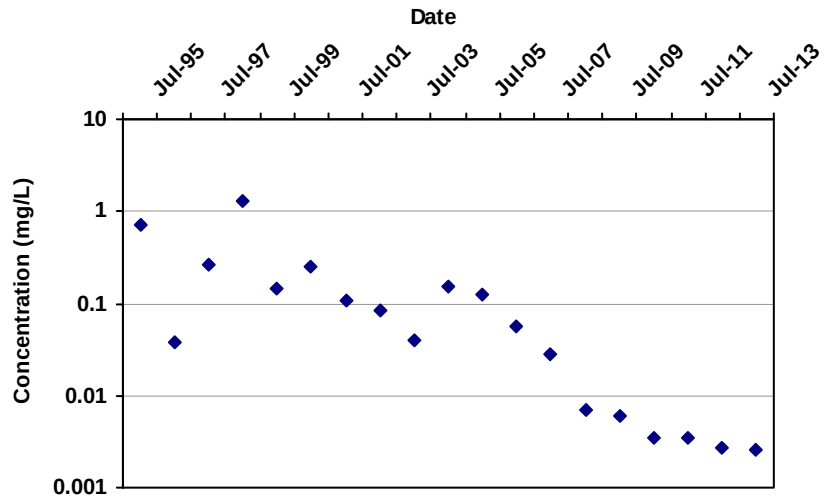
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-10C	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-129

Confidence in Trend:

100.0%

Coefficient of Variation:

1.81

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-10C	T	7/1/1995	TRICHLOROETHYLEN	7.0E-01		11	11
MW-10C	T	7/1/1996	TRICHLOROETHYLEN	3.7E-02		2	2
MW-10C	T	7/1/1997	TRICHLOROETHYLEN	2.6E-01		2	2
MW-10C	T	7/1/1998	TRICHLOROETHYLEN	1.3E+00		2	2
MW-10C	T	7/1/1999	TRICHLOROETHYLEN	1.4E-01		2	2
MW-10C	T	7/1/2000	TRICHLOROETHYLEN	2.5E-01		3	3
MW-10C	T	7/1/2001	TRICHLOROETHYLEN	1.1E-01		2	2
MW-10C	T	7/1/2002	TRICHLOROETHYLEN	8.3E-02		3	3
MW-10C	T	7/1/2003	TRICHLOROETHYLEN	4.1E-02		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-10C	T	7/1/2004	TRICHLOROETHYLEN	1.5E-01		2	2
MW-10C	T	7/1/2005	TRICHLOROETHYLEN	1.2E-01		2	2
MW-10C	T	7/1/2006	TRICHLOROETHYLEN	5.6E-02		2	2
MW-10C	T	7/1/2007	TRICHLOROETHYLEN	2.9E-02		2	2
MW-10C	T	7/1/2008	TRICHLOROETHYLEN	6.9E-03		2	2
MW-10C	T	7/1/2009	TRICHLOROETHYLEN	6.0E-03		2	2
MW-10C	T	7/1/2010	TRICHLOROETHYLEN	3.5E-03		2	2
MW-10C	T	7/1/2011	TRICHLOROETHYLEN	3.4E-03		2	2
MW-10C	T	7/1/2012	TRICHLOROETHYLEN	2.7E-03		2	2
MW-10C	T	7/1/2013	TRICHLOROETHYLEN	2.6E-03		2	2

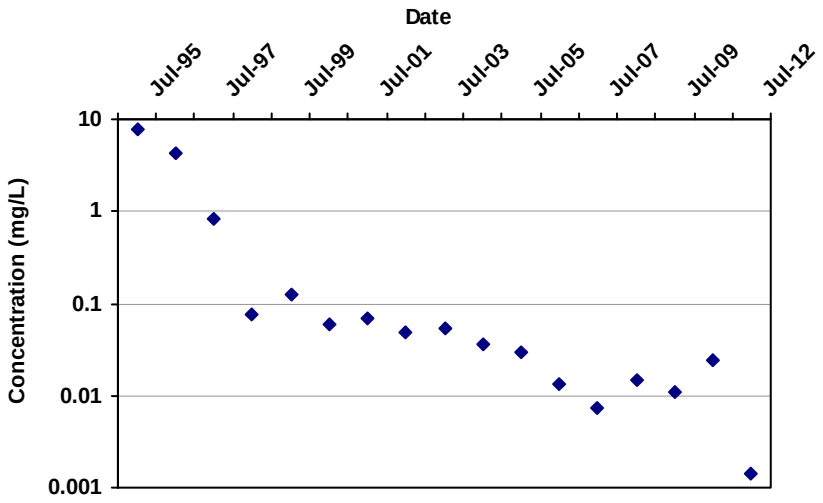
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-12C	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-116

Confidence in Trend:

100.0%

Coefficient of Variation:

2.61

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-12C	T	7/1/1995	TRICHLOROETHYLEN	7.7E+00		2	2
MW-12C	T	7/1/1996	TRICHLOROETHYLEN	4.4E+00		2	2
MW-12C	T	7/1/1997	TRICHLOROETHYLEN	8.1E-01		2	2
MW-12C	T	7/1/1998	TRICHLOROETHYLEN	7.7E-02		2	2
MW-12C	T	7/1/1999	TRICHLOROETHYLEN	1.2E-01		2	2
MW-12C	T	7/1/2000	TRICHLOROETHYLEN	6.1E-02		2	2
MW-12C	T	7/1/2001	TRICHLOROETHYLEN	7.0E-02		1	1
MW-12C	T	7/1/2002	TRICHLOROETHYLEN	4.9E-02		1	1
MW-12C	T	7/1/2003	TRICHLOROETHYLEN	5.5E-02		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-12C	T	7/1/2004	TRICHLOROETHYLEN	3.6E-02		2	2
MW-12C	T	7/1/2005	TRICHLOROETHYLEN	2.9E-02		1	1
MW-12C	T	7/1/2006	TRICHLOROETHYLEN	1.3E-02		1	1
MW-12C	T	7/1/2007	TRICHLOROETHYLEN	7.4E-03		1	1
MW-12C	T	7/1/2008	TRICHLOROETHYLEN	1.5E-02		1	1
MW-12C	T	7/1/2009	TRICHLOROETHYLEN	1.1E-02		1	1
MW-12C	T	7/1/2010	TRICHLOROETHYLEN	2.4E-02		1	1
MW-12C	T	7/1/2012	TRICHLOROETHYLEN	1.4E-03		1	1

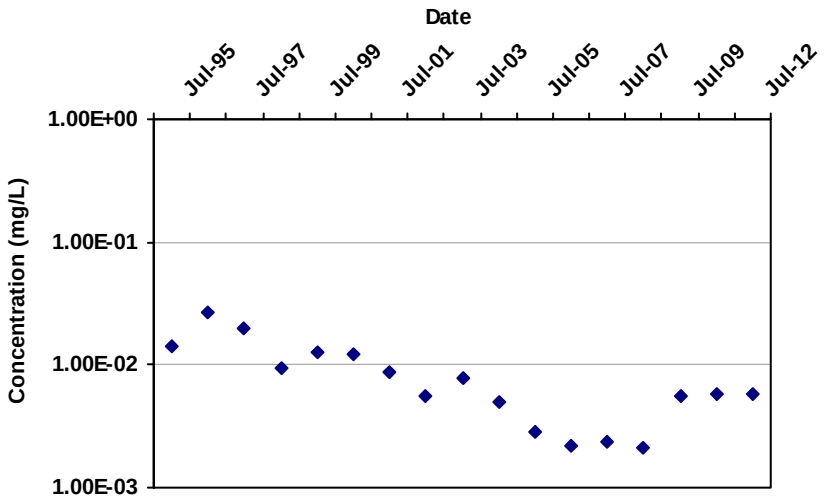
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-13C	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-84

Confidence in Trend:

100.0%

Coefficient of Variation:

0.77

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-13C	T	7/1/1995	TRICHLOROETHYLEN	1.4E-02		2	2
MW-13C	T	7/1/1996	TRICHLOROETHYLEN	2.7E-02		2	2
MW-13C	T	7/1/1997	TRICHLOROETHYLEN	2.0E-02		2	2
MW-13C	T	7/1/1998	TRICHLOROETHYLEN	9.5E-03		2	2
MW-13C	T	7/1/1999	TRICHLOROETHYLEN	1.2E-02		2	2
MW-13C	T	7/1/2000	TRICHLOROETHYLEN	1.2E-02		2	2
MW-13C	T	7/1/2001	TRICHLOROETHYLEN	8.8E-03		2	2
MW-13C	T	7/1/2002	TRICHLOROETHYLEN	5.7E-03		2	2
MW-13C	T	7/1/2003	TRICHLOROETHYLEN	7.9E-03		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-13C	T	7/1/2004	TRICHLOROETHYLEN	4.9E-03		2	2
MW-13C	T	7/1/2005	TRICHLOROETHYLEN	2.8E-03		1	1
MW-13C	T	7/1/2006	TRICHLOROETHYLEN	2.2E-03		1	1
MW-13C	T	7/1/2007	TRICHLOROETHYLEN	2.4E-03		1	1
MW-13C	T	7/1/2008	TRICHLOROETHYLEN	2.1E-03		1	1
MW-13C	T	7/1/2009	TRICHLOROETHYLEN	5.6E-03		1	1
MW-13C	T	7/1/2010	TRICHLOROETHYLEN	5.7E-03		1	1
MW-13C	T	7/1/2012	TRICHLOROETHYLEN	5.8E-03		1	1

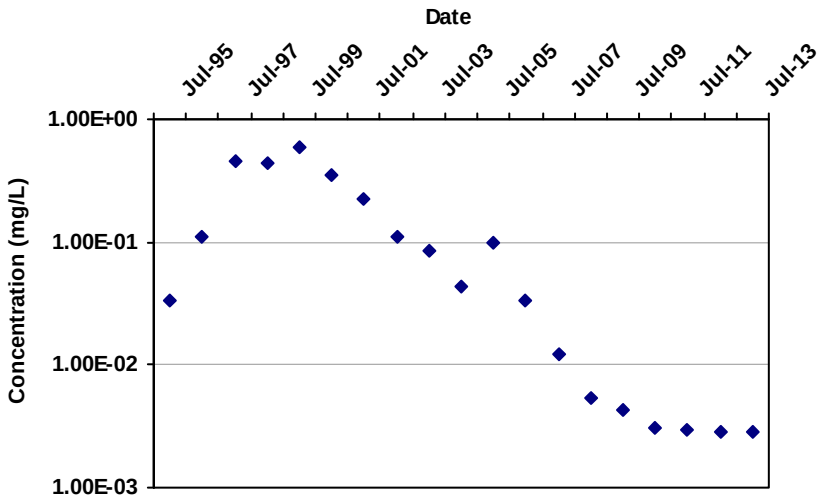
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	PW-1B	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-129

Confidence in Trend:

100.0%

Coefficient of Variation:

1.34

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
PW-1B	T	7/1/1995	TRICHLOROETHYLEN	3.3E-02		11	11
PW-1B	T	7/1/1996	TRICHLOROETHYLEN	1.1E-01		12	12
PW-1B	T	7/1/1997	TRICHLOROETHYLEN	4.6E-01		9	9
PW-1B	T	7/1/1998	TRICHLOROETHYLEN	4.3E-01		3	3
PW-1B	T	7/1/1999	TRICHLOROETHYLEN	5.9E-01		3	3
PW-1B	T	7/1/2000	TRICHLOROETHYLEN	3.5E-01		5	5
PW-1B	T	7/1/2001	TRICHLOROETHYLEN	2.3E-01		4	4
PW-1B	T	7/1/2002	TRICHLOROETHYLEN	1.1E-01		4	4
PW-1B	T	7/1/2003	TRICHLOROETHYLEN	8.5E-02		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
PW-1B	T	7/1/2004	TRICHLOROETHYLEN	4.4E-02		2	2
PW-1B	T	7/1/2005	TRICHLOROETHYLEN	9.7E-02		2	2
PW-1B	T	7/1/2006	TRICHLOROETHYLEN	3.4E-02		2	2
PW-1B	T	7/1/2007	TRICHLOROETHYLEN	1.2E-02		2	2
PW-1B	T	7/1/2008	TRICHLOROETHYLEN	5.3E-03		2	2
PW-1B	T	7/1/2009	TRICHLOROETHYLEN	4.3E-03		2	2
PW-1B	T	7/1/2010	TRICHLOROETHYLEN	3.0E-03		2	2
PW-1B	T	7/1/2011	TRICHLOROETHYLEN	3.0E-03		3	3
PW-1B	T	7/1/2012	TRICHLOROETHYLEN	2.8E-03		2	2
PW-1B	T	7/1/2013	TRICHLOROETHYLEN	2.8E-03		2	2

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); ND = Non-detect

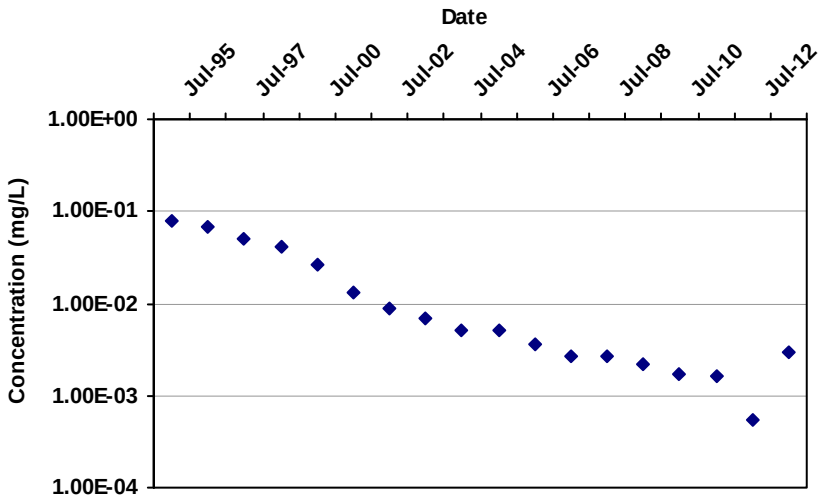
INTERMEDIATE WELLS

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-16	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-140

Confidence in Trend:

100.0%

Coefficient of Variation:

1.38

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-16	T	7/1/1995	TRICHLOROETHYLEN	7.7E-02		2	2
AMW-16	T	7/1/1996	TRICHLOROETHYLEN	6.9E-02		2	2
AMW-16	T	7/1/1997	TRICHLOROETHYLEN	5.1E-02		2	2
AMW-16	T	7/1/1998	TRICHLOROETHYLEN	4.2E-02		2	2
AMW-16	T	7/1/2000	TRICHLOROETHYLEN	2.7E-02		2	2
AMW-16	T	7/1/2001	TRICHLOROETHYLEN	1.3E-02		1	1
AMW-16	T	7/1/2002	TRICHLOROETHYLEN	9.0E-03		1	1
AMW-16	T	7/1/2003	TRICHLOROETHYLEN	7.0E-03		1	1
AMW-16	T	7/1/2004	TRICHLOROETHYLEN	5.1E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-16	T	7/1/2005	TRICHLOROETHYLEN	5.0E-03		1	1
AMW-16	T	7/1/2006	TRICHLOROETHYLEN	3.6E-03		1	1
AMW-16	T	7/1/2007	TRICHLOROETHYLEN	2.7E-03		1	1
AMW-16	T	7/1/2008	TRICHLOROETHYLEN	2.7E-03		1	1
AMW-16	T	7/1/2009	TRICHLOROETHYLEN	2.2E-03		1	1
AMW-16	T	7/1/2010	TRICHLOROETHYLEN	1.7E-03		1	1
AMW-16	T	7/1/2011	TRICHLOROETHYLEN	1.6E-03		1	1
AMW-16	T	7/1/2012	TRICHLOROETHYLEN	5.5E-04		2	2
AMW-16	T	7/1/2013	TRICHLOROETHYLEN	3.0E-03		2	2

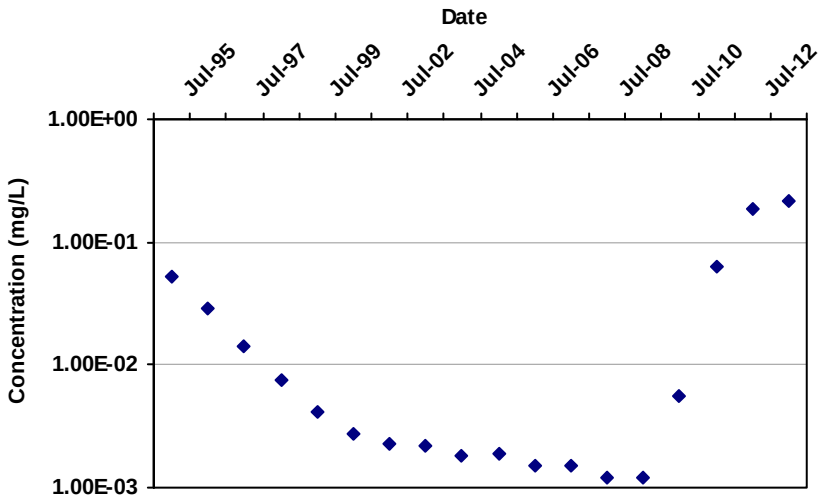
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-17	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-34

Confidence in Trend:

89.3%

Coefficient of Variation:

1.93

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-17	T	7/1/1995	TRICHLOROETHYLEN	5.3E-02		2	2
AMW-17	T	7/1/1996	TRICHLOROETHYLEN	2.8E-02		2	2
AMW-17	T	7/1/1997	TRICHLOROETHYLEN	1.4E-02		2	2
AMW-17	T	7/1/1998	TRICHLOROETHYLEN	7.5E-03		2	2
AMW-17	T	7/1/1999	TRICHLOROETHYLEN	4.1E-03		2	2
AMW-17	T	7/1/2001	TRICHLOROETHYLEN	2.7E-03		1	1
AMW-17	T	7/1/2002	TRICHLOROETHYLEN	2.3E-03		1	1
AMW-17	T	7/1/2003	TRICHLOROETHYLEN	2.2E-03		1	1
AMW-17	T	7/1/2004	TRICHLOROETHYLEN	1.8E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-17	T	7/1/2005	TRICHLOROETHYLEN	1.9E-03		1	1
AMW-17	T	7/1/2006	TRICHLOROETHYLEN	1.5E-03		1	1
AMW-17	T	7/1/2007	TRICHLOROETHYLEN	1.5E-03		1	1
AMW-17	T	7/1/2008	TRICHLOROETHYLEN	1.2E-03		1	1
AMW-17	T	7/1/2009	TRICHLOROETHYLEN	1.2E-03		3	3
AMW-17	T	7/1/2010	TRICHLOROETHYLEN	5.5E-03		2	2
AMW-17	T	7/1/2011	TRICHLOROETHYLEN	6.4E-02		2	2
AMW-17	T	7/1/2012	TRICHLOROETHYLEN	1.8E-01		4	4
AMW-17	T	7/1/2013	TRICHLOROETHYLEN	2.2E-01		4	4

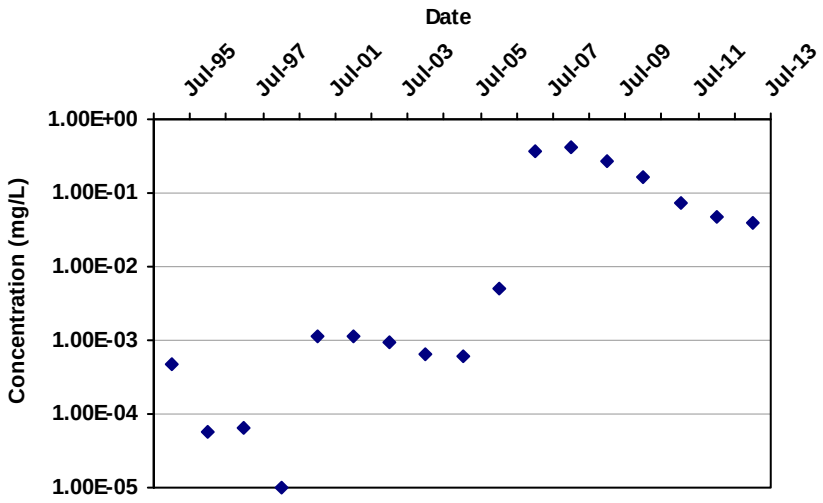
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-18	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

67

Confidence in Trend:

99.8%

Coefficient of Variation:

1.70

Mann Kendall Concentration Trend: (See Note)

I

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-18	T	7/1/1995	TRICHLOROETHYLEN	4.7E-04		2	2
AMW-18	T	7/1/1996	TRICHLOROETHYLEN	5.6E-05		2	1
AMW-18	T	7/1/1997	TRICHLOROETHYLEN	6.6E-05		2	1
AMW-18	T	7/1/1998	TRICHLOROETHYLEN	1.0E-05	ND	1	0
AMW-18	T	7/1/2001	TRICHLOROETHYLEN	1.1E-03		1	1
AMW-18	T	7/1/2002	TRICHLOROETHYLEN	1.1E-03		1	1
AMW-18	T	7/1/2003	TRICHLOROETHYLEN	9.5E-04		1	1
AMW-18	T	7/1/2004	TRICHLOROETHYLEN	6.4E-04		1	1
AMW-18	T	7/1/2005	TRICHLOROETHYLEN	6.2E-04		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-18	T	7/1/2006	TRICHLOROETHYLEN	5.1E-03		1	1
AMW-18	T	7/1/2007	TRICHLOROETHYLEN	3.7E-01		2	2
AMW-18	T	7/1/2008	TRICHLOROETHYLEN	4.3E-01		4	4
AMW-18	T	7/1/2009	TRICHLOROETHYLEN	2.7E-01		3	3
AMW-18	T	7/1/2010	TRICHLOROETHYLEN	1.6E-01		2	2
AMW-18	T	7/1/2011	TRICHLOROETHYLEN	7.1E-02		2	2
AMW-18	T	7/1/2012	TRICHLOROETHYLEN	4.9E-02		4	4
AMW-18	T	7/1/2013	TRICHLOROETHYLEN	4.0E-02		4	4

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: AMW-59 **Time Period:** 1/19/1995 **to** 10/31/2013

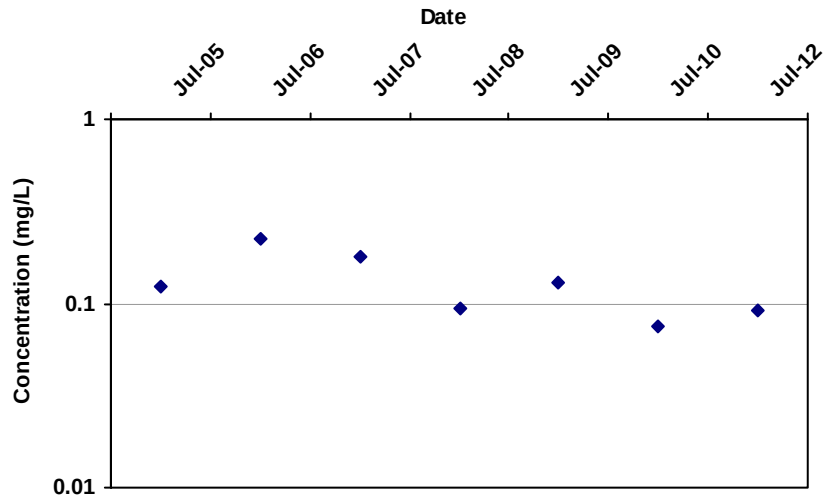
Well Type: T **Consolidation Period:** Yearly

COC: TRICHLOROETHYLENE (TCE) **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-11

Confidence in Trend:

93.2%

Coefficient of Variation:

0.40

Mann Kendall Concentration Trend: (See Note)

PD

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-59	T	7/1/2005	TRICHLOROETHYLEN	1.2E-01		3	3
AMW-59	T	7/1/2006	TRICHLOROETHYLEN	2.2E-01		2	2
AMW-59	T	7/1/2007	TRICHLOROETHYLEN	1.8E-01		1	1
AMW-59	T	7/1/2008	TRICHLOROETHYLEN	9.5E-02		1	1
AMW-59	T	7/1/2009	TRICHLOROETHYLEN	1.3E-01		1	1
AMW-59	T	7/1/2010	TRICHLOROETHYLEN	7.6E-02		1	1
AMW-59	T	7/1/2012	TRICHLOROETHYLEN	9.2E-02		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects

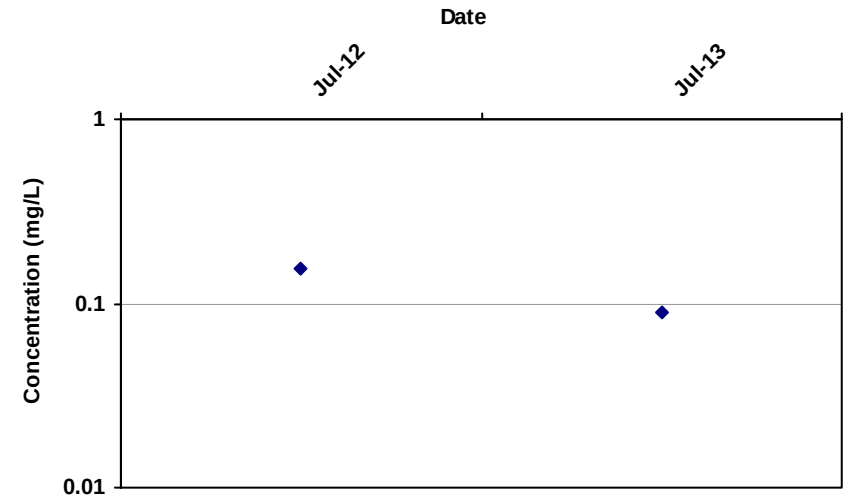
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-64	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

0

Confidence in Trend:

0.0%

Coefficient of Variation:

0.00

Mann Kendall Concentration Trend: (See Note)

N/A

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-64	T	7/1/2012	TRICHLOROETHYLEN	1.5E-01		4	4
AMW-64	T	7/1/2013	TRICHLOROETHYLEN	9.0E-02		4	4

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: CPU-14 **Time Period:** 1/19/1995 **to** 10/31/2013

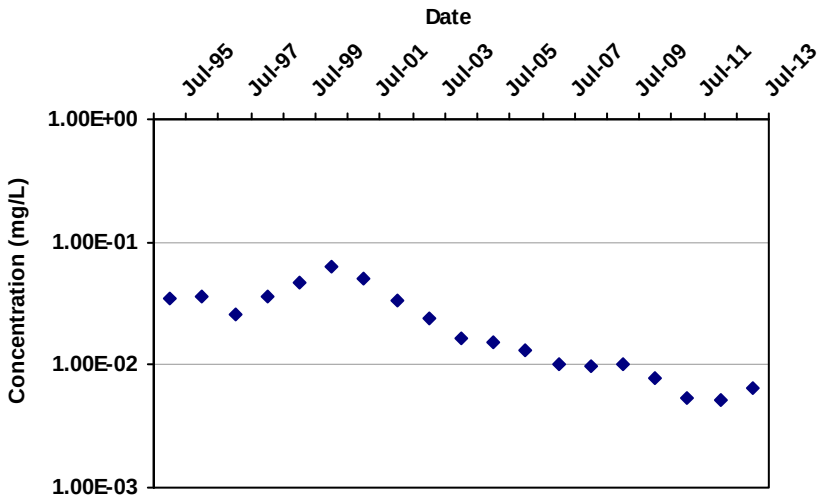
Well Type: T **Consolidation Period:** Yearly

COC: TRICHLOROETHYLENE (TCE) **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-128

Confidence in Trend:

100.0%

Coefficient of Variation:

0.73

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-14	T	7/1/1995	TRICHLOROETHYLEN	3.4E-02		2	2
CPU-14	T	7/1/1996	TRICHLOROETHYLEN	3.6E-02		2	2
CPU-14	T	7/1/1997	TRICHLOROETHYLEN	2.6E-02		1	1
CPU-14	T	7/1/1998	TRICHLOROETHYLEN	3.6E-02		2	2
CPU-14	T	7/1/1999	TRICHLOROETHYLEN	4.7E-02		2	2
CPU-14	T	7/1/2000	TRICHLOROETHYLEN	6.3E-02		2	2
CPU-14	T	7/1/2001	TRICHLOROETHYLEN	5.1E-02		2	2
CPU-14	T	7/1/2002	TRICHLOROETHYLEN	3.3E-02		2	2
CPU-14	T	7/1/2003	TRICHLOROETHYLEN	2.3E-02		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-14	T	7/1/2004	TRICHLOROETHYLEN	1.6E-02		2	2
CPU-14	T	7/1/2005	TRICHLOROETHYLEN	1.5E-02		2	2
CPU-14	T	7/1/2006	TRICHLOROETHYLEN	1.3E-02		1	1
CPU-14	T	7/1/2007	TRICHLOROETHYLEN	1.0E-02		1	1
CPU-14	T	7/1/2008	TRICHLOROETHYLEN	9.8E-03		1	1
CPU-14	T	7/1/2009	TRICHLOROETHYLEN	1.0E-02		1	1
CPU-14	T	7/1/2010	TRICHLOROETHYLEN	7.7E-03		1	1
CPU-14	T	7/1/2011	TRICHLOROETHYLEN	5.4E-03		1	1
CPU-14	T	7/1/2012	TRICHLOROETHYLEN	5.2E-03		1	1
CPU-14	T	7/1/2013	TRICHLOROETHYLEN	6.4E-03		1	1

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-14C **Time Period:** 1/19/1995 **to** 10/31/2013

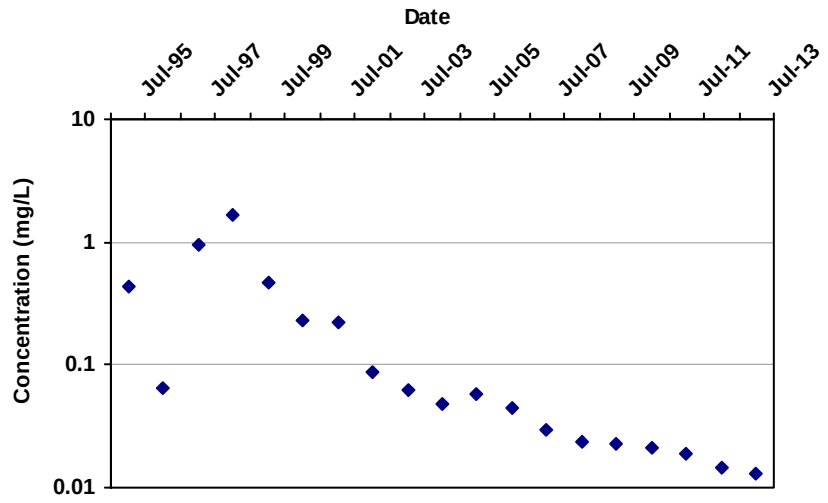
Well Type: T **Consolidation Period:** Yearly

COC: TRICHLOROETHYLENE (TCE) **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-149

Confidence in Trend:

100.0%

Coefficient of Variation:

1.78

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-14C	T	7/1/1995	TRICHLOROETHYLEN	4.4E-01		11	11
MW-14C	T	7/1/1996	TRICHLOROETHYLEN	6.5E-02		2	2
MW-14C	T	7/1/1997	TRICHLOROETHYLEN	9.4E-01		6	6
MW-14C	T	7/1/1998	TRICHLOROETHYLEN	1.7E+00		2	2
MW-14C	T	7/1/1999	TRICHLOROETHYLEN	4.6E-01		3	3
MW-14C	T	7/1/2000	TRICHLOROETHYLEN	2.3E-01		5	5
MW-14C	T	7/1/2001	TRICHLOROETHYLEN	2.2E-01		4	4
MW-14C	T	7/1/2002	TRICHLOROETHYLEN	8.9E-02		4	4
MW-14C	T	7/1/2003	TRICHLOROETHYLEN	6.3E-02		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-14C	T	7/1/2004	TRICHLOROETHYLEN	4.8E-02		2	2
MW-14C	T	7/1/2005	TRICHLOROETHYLEN	5.7E-02		2	2
MW-14C	T	7/1/2006	TRICHLOROETHYLEN	4.4E-02		2	2
MW-14C	T	7/1/2007	TRICHLOROETHYLEN	2.9E-02		2	2
MW-14C	T	7/1/2008	TRICHLOROETHYLEN	2.4E-02		2	2
MW-14C	T	7/1/2009	TRICHLOROETHYLEN	2.2E-02		2	2
MW-14C	T	7/1/2010	TRICHLOROETHYLEN	2.1E-02		2	2
MW-14C	T	7/1/2011	TRICHLOROETHYLEN	1.9E-02		2	2
MW-14C	T	7/1/2012	TRICHLOROETHYLEN	1.4E-02		2	2
MW-14C	T	7/1/2013	TRICHLOROETHYLEN	1.3E-02		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-14E **Time Period:** 1/19/1995 **to** 10/31/2013

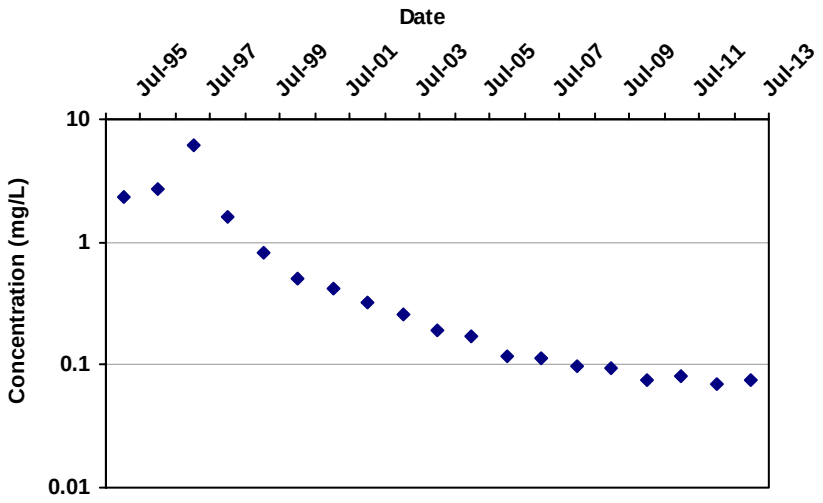
Well Type: T **Consolidation Period:** Yearly

COC: TRICHLOROETHYLENE (TCE) **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-159

Confidence in Trend:

100.0%

Coefficient of Variation:

1.78

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-14E	T	7/1/1995	TRICHLOROETHYLEN	2.3E+00		11	11
MW-14E	T	7/1/1996	TRICHLOROETHYLEN	2.7E+00		2	2
MW-14E	T	7/1/1997	TRICHLOROETHYLEN	6.3E+00		2	2
MW-14E	T	7/1/1998	TRICHLOROETHYLEN	1.6E+00		3	3
MW-14E	T	7/1/1999	TRICHLOROETHYLEN	8.2E-01		4	4
MW-14E	T	7/1/2000	TRICHLOROETHYLEN	5.1E-01		5	5
MW-14E	T	7/1/2001	TRICHLOROETHYLEN	4.2E-01		4	4
MW-14E	T	7/1/2002	TRICHLOROETHYLEN	3.3E-01		4	4
MW-14E	T	7/1/2003	TRICHLOROETHYLEN	2.6E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-14E	T	7/1/2004	TRICHLOROETHYLEN	1.9E-01		2	2
MW-14E	T	7/1/2005	TRICHLOROETHYLEN	1.7E-01		2	2
MW-14E	T	7/1/2006	TRICHLOROETHYLEN	1.2E-01		2	2
MW-14E	T	7/1/2007	TRICHLOROETHYLEN	1.1E-01		2	2
MW-14E	T	7/1/2008	TRICHLOROETHYLEN	9.7E-02		2	2
MW-14E	T	7/1/2009	TRICHLOROETHYLEN	9.3E-02		2	2
MW-14E	T	7/1/2010	TRICHLOROETHYLEN	7.4E-02		2	2
MW-14E	T	7/1/2011	TRICHLOROETHYLEN	8.0E-02		2	2
MW-14E	T	7/1/2012	TRICHLOROETHYLEN	6.9E-02		2	2
MW-14E	T	7/1/2013	TRICHLOROETHYLEN	7.4E-02		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-15E **Time Period:** 1/19/1995 **to** 10/31/2013

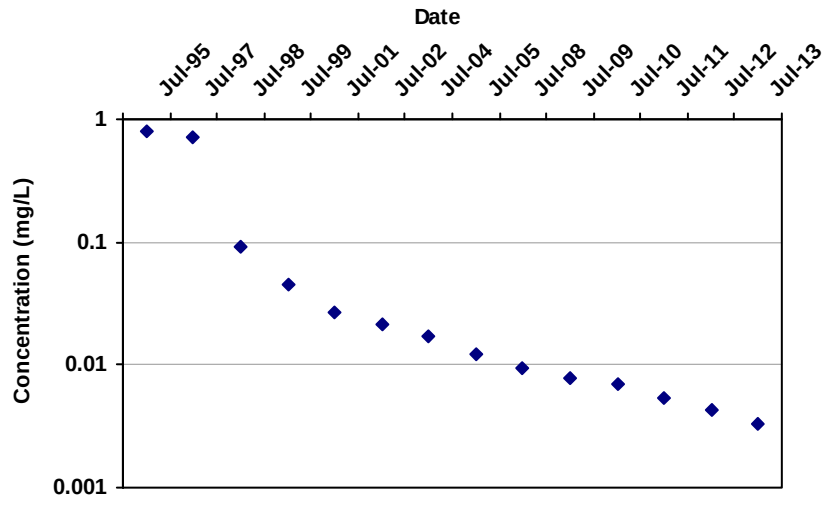
Well Type: T **Consolidation Period:** Yearly

COC: TRICHLOROETHYLENE (TCE) **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-91

Confidence in Trend:

100.0%

Coefficient of Variation:

2.13

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-15E	T	7/1/1995	TRICHLOROETHYLEN	8.1E-01		2	2
MW-15E	T	7/1/1997	TRICHLOROETHYLEN	7.0E-01		2	2
MW-15E	T	7/1/1998	TRICHLOROETHYLEN	9.2E-02		2	2
MW-15E	T	7/1/1999	TRICHLOROETHYLEN	4.5E-02		2	2
MW-15E	T	7/1/2001	TRICHLOROETHYLEN	2.7E-02		1	1
MW-15E	T	7/1/2002	TRICHLOROETHYLEN	2.1E-02		1	1
MW-15E	T	7/1/2004	TRICHLOROETHYLEN	1.7E-02		1	1
MW-15E	T	7/1/2005	TRICHLOROETHYLEN	1.2E-02		1	1
MW-15E	T	7/1/2008	TRICHLOROETHYLEN	9.5E-03		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-15E	T	7/1/2009	TRICHLOROETHYLEN	7.9E-03		2	2
MW-15E	T	7/1/2010	TRICHLOROETHYLEN	6.9E-03		2	2
MW-15E	T	7/1/2011	TRICHLOROETHYLEN	5.3E-03		2	2
MW-15E	T	7/1/2012	TRICHLOROETHYLEN	4.3E-03		2	2
MW-15E	T	7/1/2013	TRICHLOROETHYLEN	3.3E-03		2	2

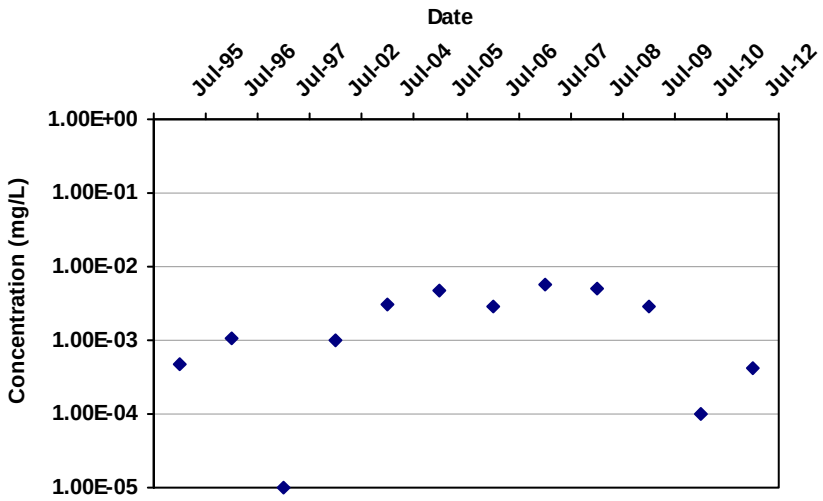
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-16E	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

9

Confidence in Trend:

70.4%

Coefficient of Variation:

0.90

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-16E	T	7/1/1995	TRICHLOROETHYLEN	4.6E-04		2	2
MW-16E	T	7/1/1996	TRICHLOROETHYLEN	1.1E-03		2	2
MW-16E	T	7/1/1997	TRICHLOROETHYLEN	1.0E-05	ND	1	0
MW-16E	T	7/1/2002	TRICHLOROETHYLEN	1.0E-03		1	1
MW-16E	T	7/1/2004	TRICHLOROETHYLEN	3.0E-03		1	1
MW-16E	T	7/1/2005	TRICHLOROETHYLEN	4.6E-03		1	1
MW-16E	T	7/1/2006	TRICHLOROETHYLEN	2.8E-03		1	1
MW-16E	T	7/1/2007	TRICHLOROETHYLEN	5.7E-03		1	1
MW-16E	T	7/1/2008	TRICHLOROETHYLEN	5.1E-03		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-16E	T	7/1/2009	TRICHLOROETHYLEN	2.8E-03		1	1
MW-16E	T	7/1/2010	TRICHLOROETHYLEN	1.0E-04	ND	1	0
MW-16E	T	7/1/2012	TRICHLOROETHYLEN	4.2E-04		1	1

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-18D **Time Period:** 1/19/1995 **to** 10/31/2013

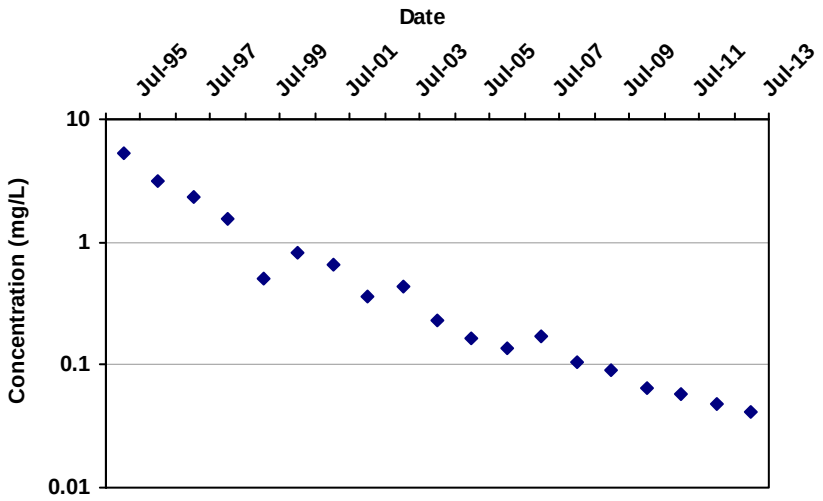
Well Type: T **Consolidation Period:** Yearly

COC: TRICHLOROETHYLENE (TCE) **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-161

Confidence in Trend:

100.0%

Coefficient of Variation:

1.61

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-18D	T	7/1/1995	TRICHLOROETHYLEN	5.3E+00		11	11
MW-18D	T	7/1/1996	TRICHLOROETHYLEN	3.2E+00		8	8
MW-18D	T	7/1/1997	TRICHLOROETHYLEN	2.3E+00		9	9
MW-18D	T	7/1/1998	TRICHLOROETHYLEN	1.5E+00		3	3
MW-18D	T	7/1/1999	TRICHLOROETHYLEN	5.0E-01		4	4
MW-18D	T	7/1/2000	TRICHLOROETHYLEN	8.1E-01		5	5
MW-18D	T	7/1/2001	TRICHLOROETHYLEN	6.5E-01		2	2
MW-18D	T	7/1/2002	TRICHLOROETHYLEN	3.6E-01		4	4
MW-18D	T	7/1/2003	TRICHLOROETHYLEN	4.4E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-18D	T	7/1/2004	TRICHLOROETHYLEN	2.3E-01		2	2
MW-18D	T	7/1/2005	TRICHLOROETHYLEN	1.6E-01		2	2
MW-18D	T	7/1/2006	TRICHLOROETHYLEN	1.3E-01		2	2
MW-18D	T	7/1/2007	TRICHLOROETHYLEN	1.7E-01		2	2
MW-18D	T	7/1/2008	TRICHLOROETHYLEN	1.1E-01		2	2
MW-18D	T	7/1/2009	TRICHLOROETHYLEN	9.1E-02		2	2
MW-18D	T	7/1/2010	TRICHLOROETHYLEN	6.4E-02		2	2
MW-18D	T	7/1/2011	TRICHLOROETHYLEN	5.7E-02		2	2
MW-18D	T	7/1/2012	TRICHLOROETHYLEN	4.8E-02		2	2
MW-18D	T	7/1/2013	TRICHLOROETHYLEN	4.1E-02		2	2

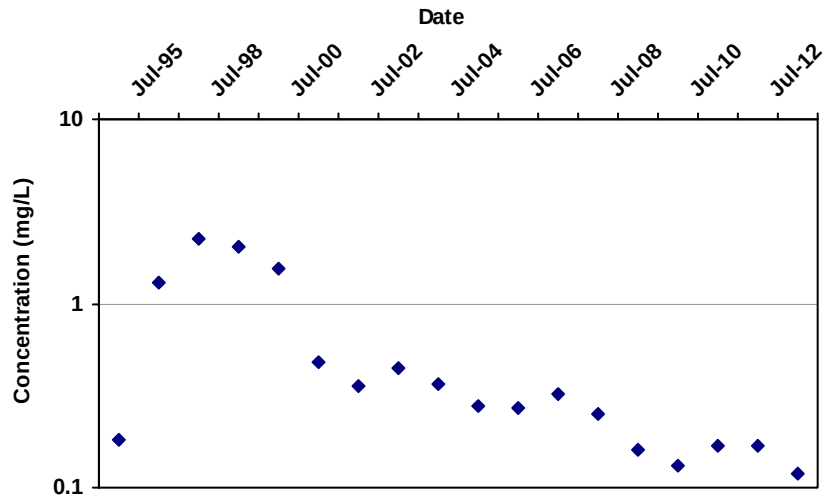
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-18E	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-106

Confidence in Trend:

100.0%

Coefficient of Variation:

1.14

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-18E	T	7/1/1995	TRICHLOROETHYLEN	1.8E-01		2	2
MW-18E	T	7/1/1997	TRICHLOROETHYLEN	1.3E+00		2	2
MW-18E	T	7/1/1998	TRICHLOROETHYLEN	2.3E+00		2	2
MW-18E	T	7/1/1999	TRICHLOROETHYLEN	2.0E+00		2	2
MW-18E	T	7/1/2000	TRICHLOROETHYLEN	1.5E+00		2	2
MW-18E	T	7/1/2001	TRICHLOROETHYLEN	4.8E-01		3	3
MW-18E	T	7/1/2002	TRICHLOROETHYLEN	3.6E-01		2	2
MW-18E	T	7/1/2003	TRICHLOROETHYLEN	4.4E-01		2	2
MW-18E	T	7/1/2004	TRICHLOROETHYLEN	3.6E-01		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-18E	T	7/1/2005	TRICHLOROETHYLEN	2.8E-01		1	1
MW-18E	T	7/1/2006	TRICHLOROETHYLEN	2.7E-01		2	2
MW-18E	T	7/1/2007	TRICHLOROETHYLEN	3.2E-01		1	1
MW-18E	T	7/1/2008	TRICHLOROETHYLEN	2.5E-01		1	1
MW-18E	T	7/1/2009	TRICHLOROETHYLEN	1.6E-01		1	1
MW-18E	T	7/1/2010	TRICHLOROETHYLEN	1.3E-01		1	1
MW-18E	T	7/1/2011	TRICHLOROETHYLEN	1.7E-01		1	1
MW-18E	T	7/1/2012	TRICHLOROETHYLEN	1.7E-01		1	1
MW-18E	T	7/1/2013	TRICHLOROETHYLEN	1.2E-01		1	1

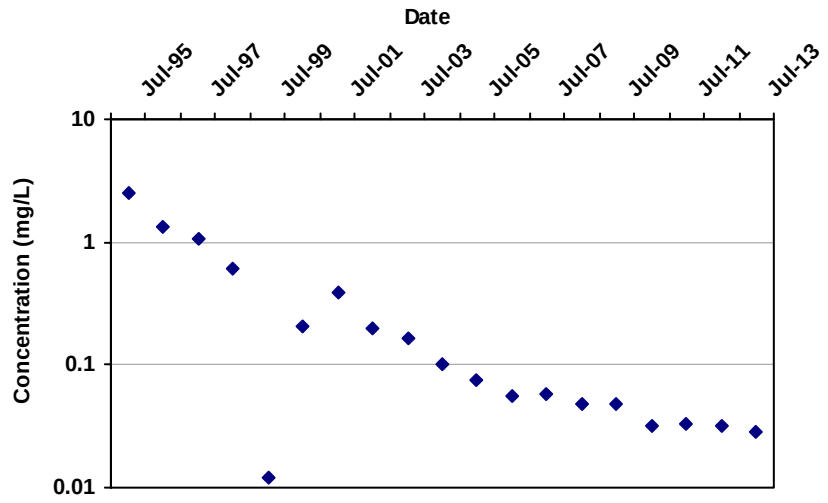
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-19D	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-134

Confidence in Trend:

100.0%

Coefficient of Variation:

1.72

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-19D	T	7/1/1995	TRICHLOROETHYLEN	2.5E+00		11	11
MW-19D	T	7/1/1996	TRICHLOROETHYLEN	1.3E+00		12	12
MW-19D	T	7/1/1997	TRICHLOROETHYLEN	1.1E+00		6	6
MW-19D	T	7/1/1998	TRICHLOROETHYLEN	6.1E-01		3	3
MW-19D	T	7/1/1999	TRICHLOROETHYLEN	1.2E-02		1	1
MW-19D	T	7/1/2000	TRICHLOROETHYLEN	2.1E-01		3	3
MW-19D	T	7/1/2001	TRICHLOROETHYLEN	3.9E-01		4	4
MW-19D	T	7/1/2002	TRICHLOROETHYLEN	2.0E-01		4	4
MW-19D	T	7/1/2003	TRICHLOROETHYLEN	1.7E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-19D	T	7/1/2004	TRICHLOROETHYLEN	1.0E-01		2	2
MW-19D	T	7/1/2005	TRICHLOROETHYLEN	7.5E-02		2	2
MW-19D	T	7/1/2006	TRICHLOROETHYLEN	5.6E-02		2	2
MW-19D	T	7/1/2007	TRICHLOROETHYLEN	5.8E-02		2	2
MW-19D	T	7/1/2008	TRICHLOROETHYLEN	4.7E-02		2	2
MW-19D	T	7/1/2009	TRICHLOROETHYLEN	4.8E-02		2	2
MW-19D	T	7/1/2010	TRICHLOROETHYLEN	3.2E-02		2	2
MW-19D	T	7/1/2011	TRICHLOROETHYLEN	3.3E-02		2	2
MW-19D	T	7/1/2012	TRICHLOROETHYLEN	3.2E-02		2	2
MW-19D	T	7/1/2013	TRICHLOROETHYLEN	2.8E-02		2	2

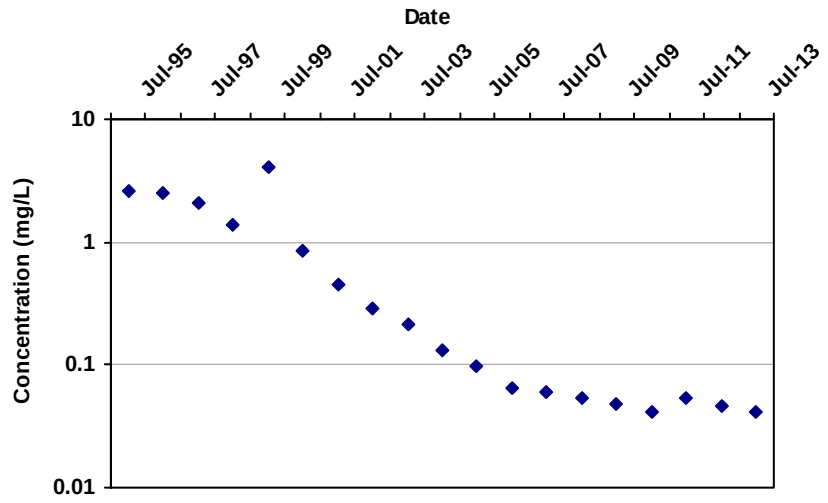
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-20D	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-155

Confidence in Trend:

100.0%

Coefficient of Variation:

1.48

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-20D	T	7/1/1995	TRICHLOROETHYLEN	2.6E+00		11	11
MW-20D	T	7/1/1996	TRICHLOROETHYLEN	2.5E+00		12	12
MW-20D	T	7/1/1997	TRICHLOROETHYLEN	2.1E+00		9	9
MW-20D	T	7/1/1998	TRICHLOROETHYLEN	1.4E+00		3	3
MW-20D	T	7/1/1999	TRICHLOROETHYLEN	4.1E+00		1	1
MW-20D	T	7/1/2000	TRICHLOROETHYLEN	8.6E-01		4	4
MW-20D	T	7/1/2001	TRICHLOROETHYLEN	4.5E-01		4	4
MW-20D	T	7/1/2002	TRICHLOROETHYLEN	2.9E-01		4	4
MW-20D	T	7/1/2003	TRICHLOROETHYLEN	2.1E-01		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-20D	T	7/1/2004	TRICHLOROETHYLEN	1.3E-01		2	2
MW-20D	T	7/1/2005	TRICHLOROETHYLEN	9.6E-02		2	2
MW-20D	T	7/1/2006	TRICHLOROETHYLEN	6.4E-02		2	2
MW-20D	T	7/1/2007	TRICHLOROETHYLEN	6.0E-02		2	2
MW-20D	T	7/1/2008	TRICHLOROETHYLEN	5.3E-02		2	2
MW-20D	T	7/1/2009	TRICHLOROETHYLEN	4.7E-02		2	2
MW-20D	T	7/1/2010	TRICHLOROETHYLEN	4.2E-02		2	2
MW-20D	T	7/1/2011	TRICHLOROETHYLEN	5.4E-02		2	2
MW-20D	T	7/1/2012	TRICHLOROETHYLEN	4.6E-02		2	2
MW-20D	T	7/1/2013	TRICHLOROETHYLEN	4.1E-02		2	2

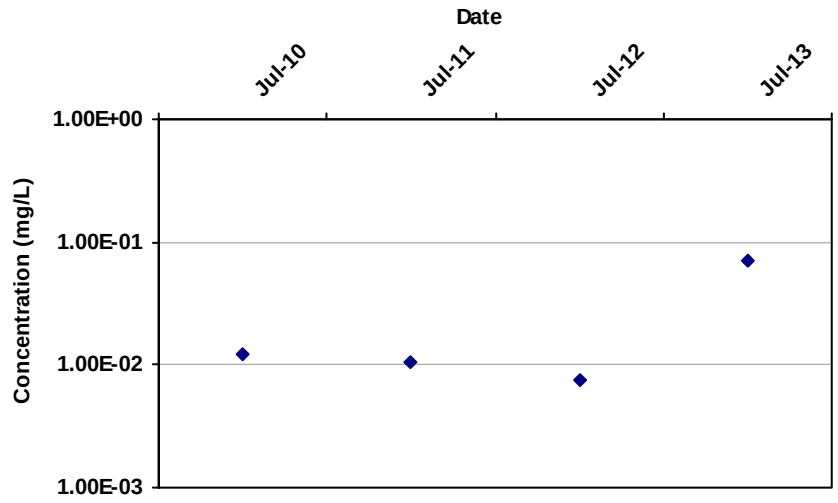
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-38	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

0

Confidence in Trend:

37.5%

Coefficient of Variation:

1.21

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-38	T	7/1/2010	TRICHLOROETHYLEN	1.2E-02		1	1
MW-38	T	7/1/2011	TRICHLOROETHYLEN	1.0E-02		2	2
MW-38	T	7/1/2012	TRICHLOROETHYLEN	7.4E-03		1	1
MW-38	T	7/1/2013	TRICHLOROETHYLEN	7.0E-02		1	1

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: PZ-39 **Time Period:** 1/19/1995 **to** 10/31/2013

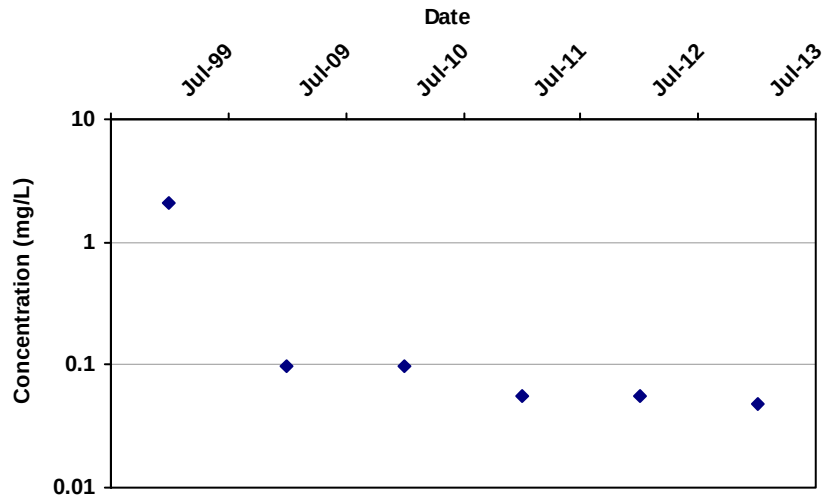
Well Type: T **Consolidation Period:** Yearly

COC: TRICHLOROETHYLENE (TCE) **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-15

Confidence in Trend:

99.9%

Coefficient of Variation:

2.03

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
PZ-39	T	7/1/1999	TRICHLOROETHYLEN	2.1E+00		1	1
PZ-39	T	7/1/2009	TRICHLOROETHYLEN	9.9E-02		1	1
PZ-39	T	7/1/2010	TRICHLOROETHYLEN	9.7E-02		1	1
PZ-39	T	7/1/2011	TRICHLOROETHYLEN	5.6E-02		2	2
PZ-39	T	7/1/2012	TRICHLOROETHYLEN	5.5E-02		2	2
PZ-39	T	7/1/2013	TRICHLOROETHYLEN	4.8E-02		2	2

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); ND = Non-detect

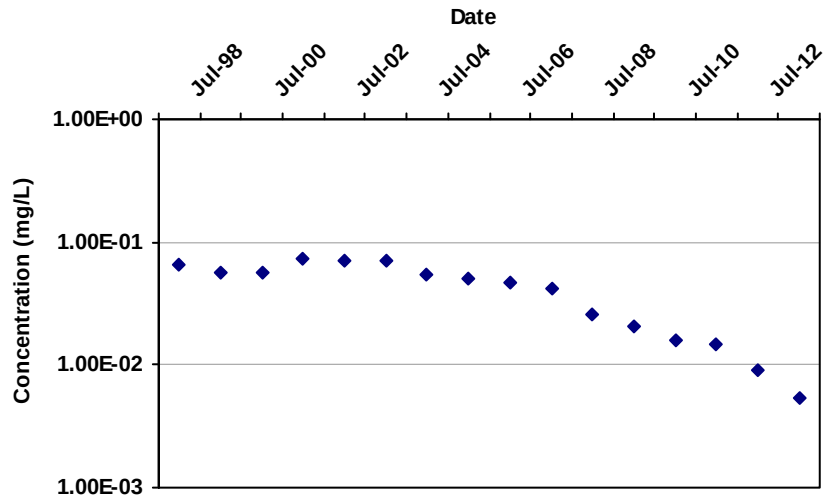
CHURCH OF GOD WELLS

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-27	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-100

Confidence in Trend:

100.0%

Coefficient of Variation:

0.56

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-27	T	7/1/1998	TRICHLOROETHYLEN	6.6E-02		1	1
AMW-27	T	7/1/1999	TRICHLOROETHYLEN	5.7E-02		3	3
AMW-27	T	7/1/2000	TRICHLOROETHYLEN	5.6E-02		5	5
AMW-27	T	7/1/2001	TRICHLOROETHYLEN	7.3E-02		4	4
AMW-27	T	7/1/2002	TRICHLOROETHYLEN	7.0E-02		4	4
AMW-27	T	7/1/2003	TRICHLOROETHYLEN	7.1E-02		3	3
AMW-27	T	7/1/2004	TRICHLOROETHYLEN	5.3E-02		2	2
AMW-27	T	7/1/2005	TRICHLOROETHYLEN	5.0E-02		2	2
AMW-27	T	7/1/2006	TRICHLOROETHYLEN	4.6E-02		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-27	T	7/1/2007	TRICHLOROETHYLEN	4.1E-02		2	2
AMW-27	T	7/1/2008	TRICHLOROETHYLEN	2.6E-02		2	2
AMW-27	T	7/1/2009	TRICHLOROETHYLEN	2.1E-02		2	2
AMW-27	T	7/1/2010	TRICHLOROETHYLEN	1.6E-02		2	2
AMW-27	T	7/1/2011	TRICHLOROETHYLEN	1.4E-02		2	2
AMW-27	T	7/1/2012	TRICHLOROETHYLEN	9.0E-03		2	2
AMW-27	T	7/1/2013	TRICHLOROETHYLEN	5.4E-03		3	3

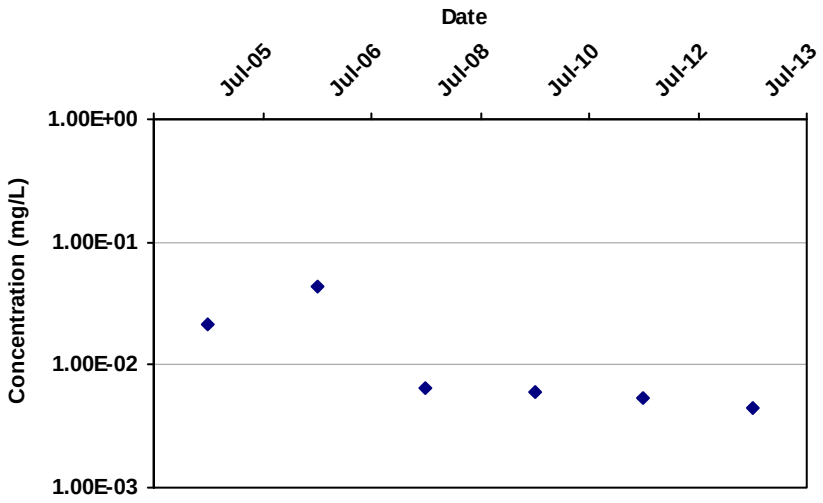
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-61	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-13

Confidence in Trend:

99.2%

Coefficient of Variation:

1.06

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-61	T	7/1/2005	TRICHLOROETHYLEN	2.1E-02		2	2
AMW-61	T	7/1/2006	TRICHLOROETHYLEN	4.3E-02		1	1
AMW-61	T	7/1/2008	TRICHLOROETHYLEN	6.5E-03		1	1
AMW-61	T	7/1/2010	TRICHLOROETHYLEN	6.0E-03		1	1
AMW-61	T	7/1/2012	TRICHLOROETHYLEN	5.4E-03		1	1
AMW-61	T	7/1/2013	TRICHLOROETHYLEN	4.5E-03		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: CPU-12 **Time Period:** 1/19/1995 **to** 10/31/2013

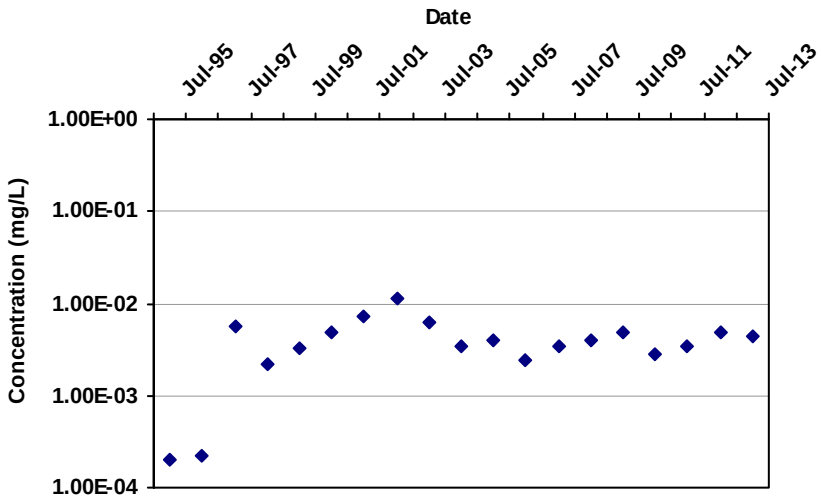
Well Type: T **Consolidation Period:** Yearly

COC: TRICHLOROETHYLENE (TCE) **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

30

Confidence in Trend:

84.3%

Coefficient of Variation:

0.59

Mann Kendall Concentration Trend: (See Note)

NT

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-12	T	7/1/1995	TRICHLOROETHYLEN	2.0E-04		2	1
CPU-12	T	7/1/1996	TRICHLOROETHYLEN	2.2E-04		2	1
CPU-12	T	7/1/1997	TRICHLOROETHYLEN	5.7E-03		2	2
CPU-12	T	7/1/1998	TRICHLOROETHYLEN	2.2E-03		2	2
CPU-12	T	7/1/1999	TRICHLOROETHYLEN	3.2E-03		2	2
CPU-12	T	7/1/2000	TRICHLOROETHYLEN	4.8E-03		2	2
CPU-12	T	7/1/2001	TRICHLOROETHYLEN	7.1E-03		2	2
CPU-12	T	7/1/2002	TRICHLOROETHYLEN	1.1E-02		2	2
CPU-12	T	7/1/2003	TRICHLOROETHYLEN	6.1E-03		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-12	T	7/1/2004	TRICHLOROETHYLEN	3.4E-03		2	2
CPU-12	T	7/1/2005	TRICHLOROETHYLEN	4.1E-03		2	2
CPU-12	T	7/1/2006	TRICHLOROETHYLEN	2.4E-03		1	1
CPU-12	T	7/1/2007	TRICHLOROETHYLEN	3.4E-03		1	1
CPU-12	T	7/1/2008	TRICHLOROETHYLEN	4.0E-03		1	1
CPU-12	T	7/1/2009	TRICHLOROETHYLEN	4.9E-03		1	1
CPU-12	T	7/1/2010	TRICHLOROETHYLEN	2.8E-03		1	1
CPU-12	T	7/1/2011	TRICHLOROETHYLEN	3.5E-03		1	1
CPU-12	T	7/1/2012	TRICHLOROETHYLEN	4.9E-03		1	1
CPU-12	T	7/1/2013	TRICHLOROETHYLEN	4.4E-03		1	1

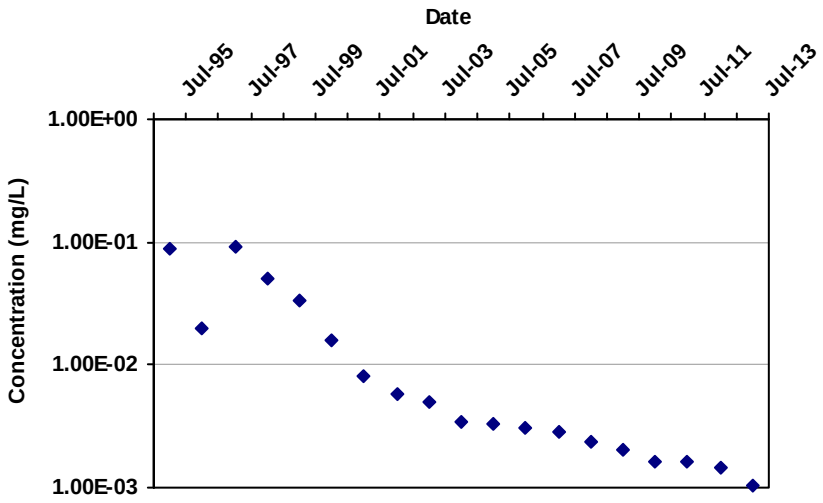
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	CPU-13	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-161

Confidence in Trend:

100.0%

Coefficient of Variation:

1.59

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-13	T	7/1/1995	TRICHLOROETHYLEN	9.0E-02		11	11
CPU-13	T	7/1/1996	TRICHLOROETHYLEN	2.0E-02		2	2
CPU-13	T	7/1/1997	TRICHLOROETHYLEN	9.2E-02		2	2
CPU-13	T	7/1/1998	TRICHLOROETHYLEN	5.0E-02		2	2
CPU-13	T	7/1/1999	TRICHLOROETHYLEN	3.4E-02		4	4
CPU-13	T	7/1/2000	TRICHLOROETHYLEN	1.6E-02		5	5
CPU-13	T	7/1/2001	TRICHLOROETHYLEN	8.0E-03		4	4
CPU-13	T	7/1/2002	TRICHLOROETHYLEN	5.8E-03		4	4
CPU-13	T	7/1/2003	TRICHLOROETHYLEN	4.9E-03		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-13	T	7/1/2004	TRICHLOROETHYLEN	3.4E-03		2	2
CPU-13	T	7/1/2005	TRICHLOROETHYLEN	3.3E-03		2	2
CPU-13	T	7/1/2006	TRICHLOROETHYLEN	3.0E-03		2	2
CPU-13	T	7/1/2007	TRICHLOROETHYLEN	2.8E-03		2	2
CPU-13	T	7/1/2008	TRICHLOROETHYLEN	2.4E-03		2	2
CPU-13	T	7/1/2009	TRICHLOROETHYLEN	2.0E-03		2	2
CPU-13	T	7/1/2010	TRICHLOROETHYLEN	1.6E-03		2	2
CPU-13	T	7/1/2011	TRICHLOROETHYLEN	1.6E-03		2	2
CPU-13	T	7/1/2012	TRICHLOROETHYLEN	1.4E-03		2	2
CPU-13	T	7/1/2013	TRICHLOROETHYLEN	1.1E-03		2	2

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: MW-21D **Time Period:** 1/19/1995 **to** 10/31/2013

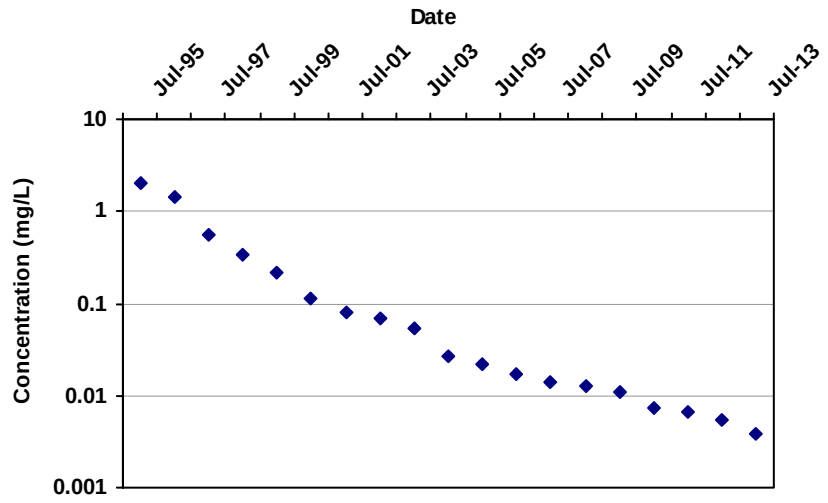
Well Type: T **Consolidation Period:** Yearly

COC: TRICHLOROETHYLENE (TCE) **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-171

Confidence in Trend:

100.0%

Coefficient of Variation:

2.05

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-21D	T	7/1/1995	TRICHLOROETHYLEN	2.0E+00		11	11
MW-21D	T	7/1/1996	TRICHLOROETHYLEN	1.4E+00		12	12
MW-21D	T	7/1/1997	TRICHLOROETHYLEN	5.5E-01		9	9
MW-21D	T	7/1/1998	TRICHLOROETHYLEN	3.5E-01		3	3
MW-21D	T	7/1/1999	TRICHLOROETHYLEN	2.1E-01		3	3
MW-21D	T	7/1/2000	TRICHLOROETHYLEN	1.1E-01		5	5
MW-21D	T	7/1/2001	TRICHLOROETHYLEN	8.1E-02		4	4
MW-21D	T	7/1/2002	TRICHLOROETHYLEN	6.9E-02		4	4
MW-21D	T	7/1/2003	TRICHLOROETHYLEN	5.4E-02		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-21D	T	7/1/2004	TRICHLOROETHYLEN	2.7E-02		2	2
MW-21D	T	7/1/2005	TRICHLOROETHYLEN	2.2E-02		2	2
MW-21D	T	7/1/2006	TRICHLOROETHYLEN	1.7E-02		2	2
MW-21D	T	7/1/2007	TRICHLOROETHYLEN	1.4E-02		2	2
MW-21D	T	7/1/2008	TRICHLOROETHYLEN	1.2E-02		2	2
MW-21D	T	7/1/2009	TRICHLOROETHYLEN	1.1E-02		2	2
MW-21D	T	7/1/2010	TRICHLOROETHYLEN	7.1E-03		2	2
MW-21D	T	7/1/2011	TRICHLOROETHYLEN	6.7E-03		2	2
MW-21D	T	7/1/2012	TRICHLOROETHYLEN	5.3E-03		2	2
MW-21D	T	7/1/2013	TRICHLOROETHYLEN	3.9E-03		2	2

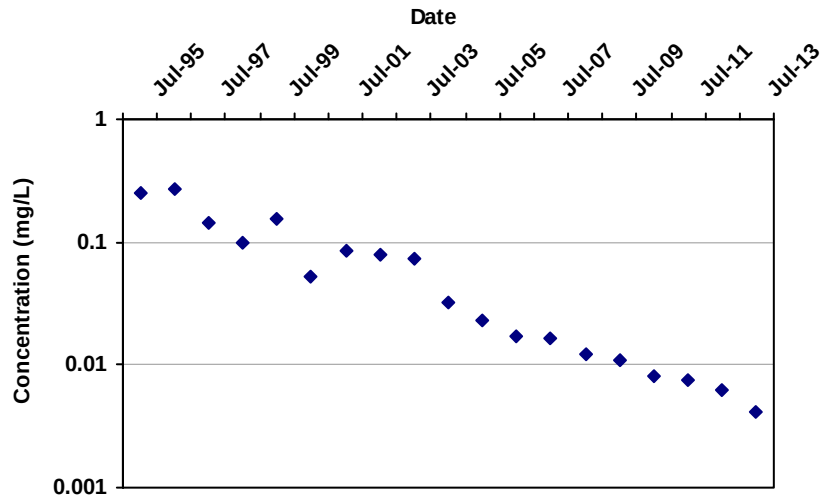
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-22D	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-159

Confidence in Trend:

100.0%

Coefficient of Variation:

1.16

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-22D	T	7/1/1995	TRICHLOROETHYLEN	2.5E-01		11	11
MW-22D	T	7/1/1996	TRICHLOROETHYLEN	2.7E-01		11	11
MW-22D	T	7/1/1997	TRICHLOROETHYLEN	1.4E-01		9	9
MW-22D	T	7/1/1998	TRICHLOROETHYLEN	9.9E-02		3	3
MW-22D	T	7/1/1999	TRICHLOROETHYLEN	1.6E-01		2	2
MW-22D	T	7/1/2000	TRICHLOROETHYLEN	5.3E-02		4	4
MW-22D	T	7/1/2001	TRICHLOROETHYLEN	8.4E-02		3	3
MW-22D	T	7/1/2002	TRICHLOROETHYLEN	7.8E-02		3	3
MW-22D	T	7/1/2003	TRICHLOROETHYLEN	7.3E-02		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-22D	T	7/1/2004	TRICHLOROETHYLEN	3.2E-02		2	2
MW-22D	T	7/1/2005	TRICHLOROETHYLEN	2.3E-02		2	2
MW-22D	T	7/1/2006	TRICHLOROETHYLEN	1.7E-02		2	2
MW-22D	T	7/1/2007	TRICHLOROETHYLEN	1.6E-02		2	2
MW-22D	T	7/1/2008	TRICHLOROETHYLEN	1.2E-02		2	2
MW-22D	T	7/1/2009	TRICHLOROETHYLEN	1.1E-02		2	2
MW-22D	T	7/1/2010	TRICHLOROETHYLEN	7.9E-03		2	2
MW-22D	T	7/1/2011	TRICHLOROETHYLEN	7.4E-03		2	2
MW-22D	T	7/1/2012	TRICHLOROETHYLEN	6.2E-03		2	2
MW-22D	T	7/1/2013	TRICHLOROETHYLEN	4.1E-03		2	2

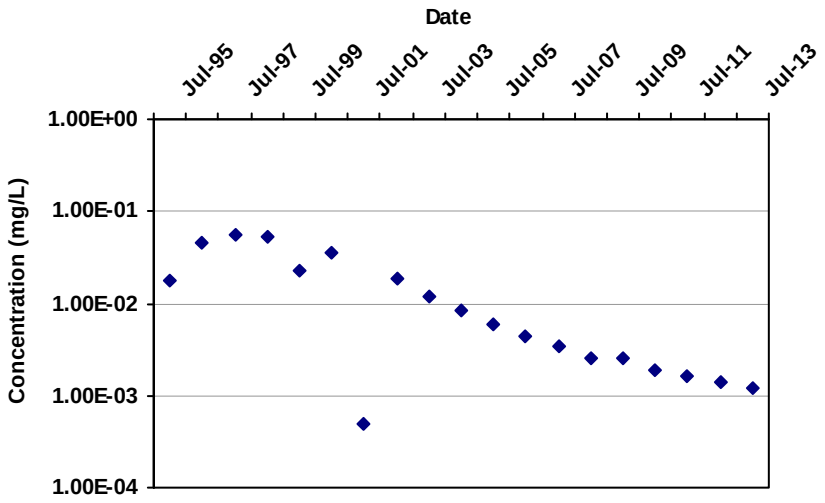
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-23D	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-129

Confidence in Trend:

100.0%

Coefficient of Variation:

1.19

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-23D	T	7/1/1995	TRICHLOROETHYLEN	1.7E-02		2	2
MW-23D	T	7/1/1996	TRICHLOROETHYLEN	4.6E-02		2	2
MW-23D	T	7/1/1997	TRICHLOROETHYLEN	5.6E-02		2	2
MW-23D	T	7/1/1998	TRICHLOROETHYLEN	5.3E-02		2	2
MW-23D	T	7/1/1999	TRICHLOROETHYLEN	2.3E-02		2	2
MW-23D	T	7/1/2000	TRICHLOROETHYLEN	3.5E-02		2	2
MW-23D	T	7/1/2001	TRICHLOROETHYLEN	4.9E-04		2	1
MW-23D	T	7/1/2002	TRICHLOROETHYLEN	1.9E-02		2	2
MW-23D	T	7/1/2003	TRICHLOROETHYLEN	1.2E-02		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-23D	T	7/1/2004	TRICHLOROETHYLEN	8.4E-03		2	2
MW-23D	T	7/1/2005	TRICHLOROETHYLEN	5.9E-03		2	2
MW-23D	T	7/1/2006	TRICHLOROETHYLEN	4.4E-03		1	1
MW-23D	T	7/1/2007	TRICHLOROETHYLEN	3.5E-03		1	1
MW-23D	T	7/1/2008	TRICHLOROETHYLEN	2.6E-03		1	1
MW-23D	T	7/1/2009	TRICHLOROETHYLEN	2.5E-03		1	1
MW-23D	T	7/1/2010	TRICHLOROETHYLEN	1.9E-03		1	1
MW-23D	T	7/1/2011	TRICHLOROETHYLEN	1.6E-03		1	1
MW-23D	T	7/1/2012	TRICHLOROETHYLEN	1.4E-03		1	1
MW-23D	T	7/1/2013	TRICHLOROETHYLEN	1.2E-03		1	1

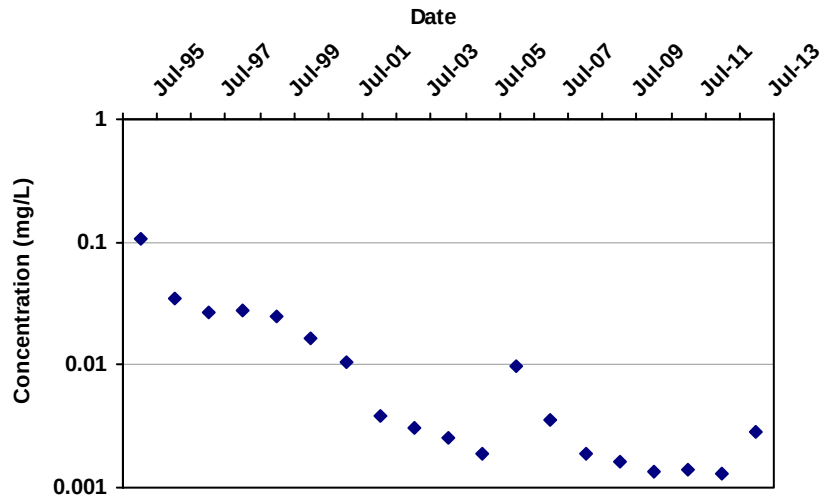
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-25D	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-138

Confidence in Trend:

100.0%

Coefficient of Variation:

1.65

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-25D	T	7/1/1995	TRICHLOROETHYLEN	1.1E-01		12	12
MW-25D	T	7/1/1996	TRICHLOROETHYLEN	3.4E-02		12	12
MW-25D	T	7/1/1997	TRICHLOROETHYLEN	2.7E-02		9	9
MW-25D	T	7/1/1998	TRICHLOROETHYLEN	2.8E-02		3	3
MW-25D	T	7/1/1999	TRICHLOROETHYLEN	2.4E-02		4	4
MW-25D	T	7/1/2000	TRICHLOROETHYLEN	1.6E-02		5	5
MW-25D	T	7/1/2001	TRICHLOROETHYLEN	1.1E-02		4	4
MW-25D	T	7/1/2002	TRICHLOROETHYLEN	3.8E-03		4	4
MW-25D	T	7/1/2003	TRICHLOROETHYLEN	3.1E-03		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-25D	T	7/1/2004	TRICHLOROETHYLEN	2.6E-03		2	2
MW-25D	T	7/1/2005	TRICHLOROETHYLEN	1.9E-03		1	1
MW-25D	T	7/1/2006	TRICHLOROETHYLEN	9.9E-03		1	1
MW-25D	T	7/1/2007	TRICHLOROETHYLEN	3.6E-03		3	3
MW-25D	T	7/1/2008	TRICHLOROETHYLEN	1.9E-03		2	2
MW-25D	T	7/1/2009	TRICHLOROETHYLEN	1.6E-03		2	2
MW-25D	T	7/1/2010	TRICHLOROETHYLEN	1.4E-03		3	3
MW-25D	T	7/1/2011	TRICHLOROETHYLEN	1.4E-03		2	2
MW-25D	T	7/1/2012	TRICHLOROETHYLEN	1.3E-03		2	2
MW-25D	T	7/1/2013	TRICHLOROETHYLEN	2.8E-03		2	2

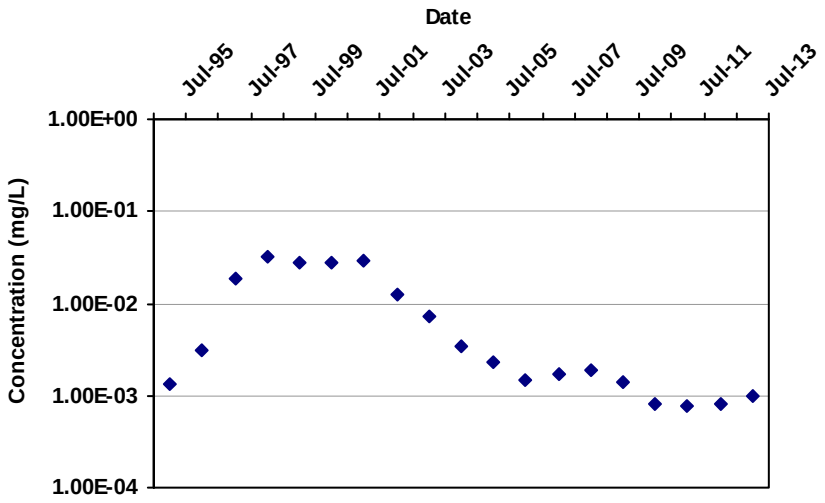
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-26D	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-101

Confidence in Trend:

100.0%

Coefficient of Variation:

1.25

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-26D	T	7/1/1995	TRICHLOROETHYLEN	1.3E-03		11	10
MW-26D	T	7/1/1996	TRICHLOROETHYLEN	3.1E-03		12	12
MW-26D	T	7/1/1997	TRICHLOROETHYLEN	1.9E-02		9	9
MW-26D	T	7/1/1998	TRICHLOROETHYLEN	3.2E-02		3	3
MW-26D	T	7/1/1999	TRICHLOROETHYLEN	2.7E-02		4	4
MW-26D	T	7/1/2000	TRICHLOROETHYLEN	2.7E-02		5	5
MW-26D	T	7/1/2001	TRICHLOROETHYLEN	2.9E-02		4	4
MW-26D	T	7/1/2002	TRICHLOROETHYLEN	1.2E-02		4	4
MW-26D	T	7/1/2003	TRICHLOROETHYLEN	7.4E-03		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-26D	T	7/1/2004	TRICHLOROETHYLEN	3.4E-03		2	2
MW-26D	T	7/1/2005	TRICHLOROETHYLEN	2.3E-03		2	2
MW-26D	T	7/1/2006	TRICHLOROETHYLEN	1.4E-03		2	2
MW-26D	T	7/1/2007	TRICHLOROETHYLEN	1.7E-03		2	2
MW-26D	T	7/1/2008	TRICHLOROETHYLEN	1.8E-03		2	2
MW-26D	T	7/1/2009	TRICHLOROETHYLEN	1.4E-03		2	2
MW-26D	T	7/1/2010	TRICHLOROETHYLEN	8.1E-04		2	2
MW-26D	T	7/1/2011	TRICHLOROETHYLEN	7.5E-04		2	2
MW-26D	T	7/1/2012	TRICHLOROETHYLEN	8.0E-04		2	2
MW-26D	T	7/1/2013	TRICHLOROETHYLEN	9.8E-04		2	2

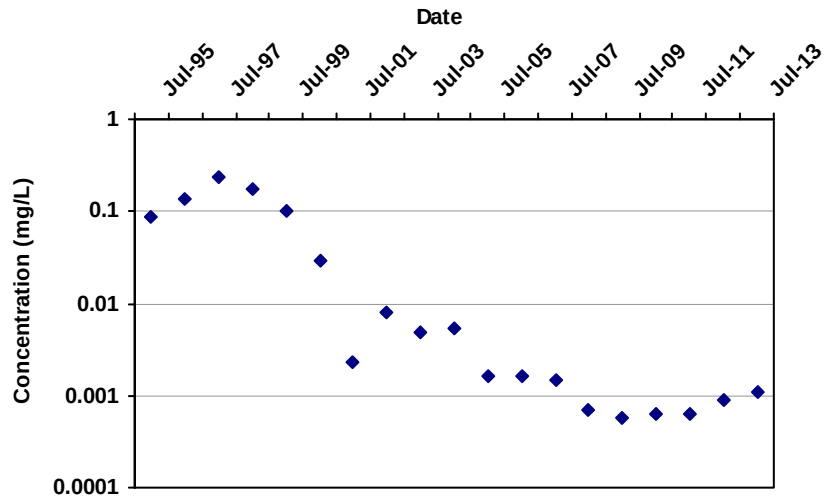
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-27D	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-128

Confidence in Trend:

100.0%

Coefficient of Variation:

1.70

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-27D	T	7/1/1995	TRICHLOROETHYLEN	8.9E-02		11	11
MW-27D	T	7/1/1996	TRICHLOROETHYLEN	1.4E-01		2	2
MW-27D	T	7/1/1997	TRICHLOROETHYLEN	2.4E-01		2	2
MW-27D	T	7/1/1998	TRICHLOROETHYLEN	1.7E-01		2	2
MW-27D	T	7/1/1999	TRICHLOROETHYLEN	1.0E-01		2	2
MW-27D	T	7/1/2000	TRICHLOROETHYLEN	3.0E-02		4	4
MW-27D	T	7/1/2001	TRICHLOROETHYLEN	2.2E-03		4	3
MW-27D	T	7/1/2002	TRICHLOROETHYLEN	8.1E-03		4	4
MW-27D	T	7/1/2003	TRICHLOROETHYLEN	5.0E-03		3	3

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-27D	T	7/1/2004	TRICHLOROETHYLEN	5.3E-03		2	2
MW-27D	T	7/1/2005	TRICHLOROETHYLEN	1.6E-03		1	1
MW-27D	T	7/1/2006	TRICHLOROETHYLEN	1.6E-03		1	1
MW-27D	T	7/1/2007	TRICHLOROETHYLEN	1.5E-03		1	1
MW-27D	T	7/1/2008	TRICHLOROETHYLEN	6.9E-04		2	2
MW-27D	T	7/1/2009	TRICHLOROETHYLEN	5.8E-04		2	2
MW-27D	T	7/1/2010	TRICHLOROETHYLEN	6.4E-04		3	3
MW-27D	T	7/1/2011	TRICHLOROETHYLEN	6.3E-04		1	1
MW-27D	T	7/1/2012	TRICHLOROETHYLEN	8.9E-04		1	1
MW-27D	T	7/1/2013	TRICHLOROETHYLEN	1.1E-03		1	1

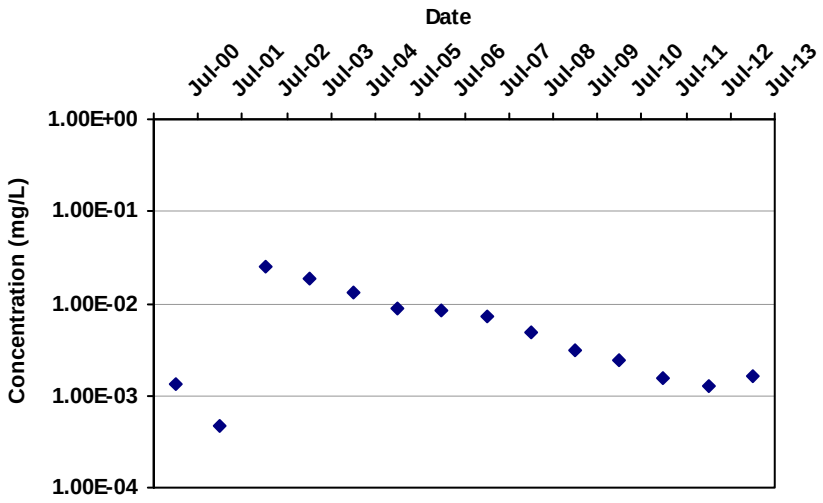
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-49	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-41

Confidence in Trend:

98.7%

Coefficient of Variation:

1.05

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-49	T	7/1/2000	TRICHLOROETHYLEN	1.3E-03		3	2
MW-49	T	7/1/2001	TRICHLOROETHYLEN	4.7E-04		4	2
MW-49	T	7/1/2002	TRICHLOROETHYLEN	2.5E-02		4	4
MW-49	T	7/1/2003	TRICHLOROETHYLEN	1.9E-02		3	3
MW-49	T	7/1/2004	TRICHLOROETHYLEN	1.3E-02		2	2
MW-49	T	7/1/2005	TRICHLOROETHYLEN	9.0E-03		2	2
MW-49	T	7/1/2006	TRICHLOROETHYLEN	8.5E-03		2	2
MW-49	T	7/1/2007	TRICHLOROETHYLEN	7.3E-03		2	2
MW-49	T	7/1/2008	TRICHLOROETHYLEN	4.9E-03		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-49	T	7/1/2009	TRICHLOROETHYLEN	3.1E-03		2	2
MW-49	T	7/1/2010	TRICHLOROETHYLEN	2.4E-03		1	1
MW-49	T	7/1/2011	TRICHLOROETHYLEN	1.5E-03		2	2
MW-49	T	7/1/2012	TRICHLOROETHYLEN	1.2E-03		2	2
MW-49	T	7/1/2013	TRICHLOROETHYLEN	1.6E-03		2	2

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); ND = Non-detect

TOE OF PLUME

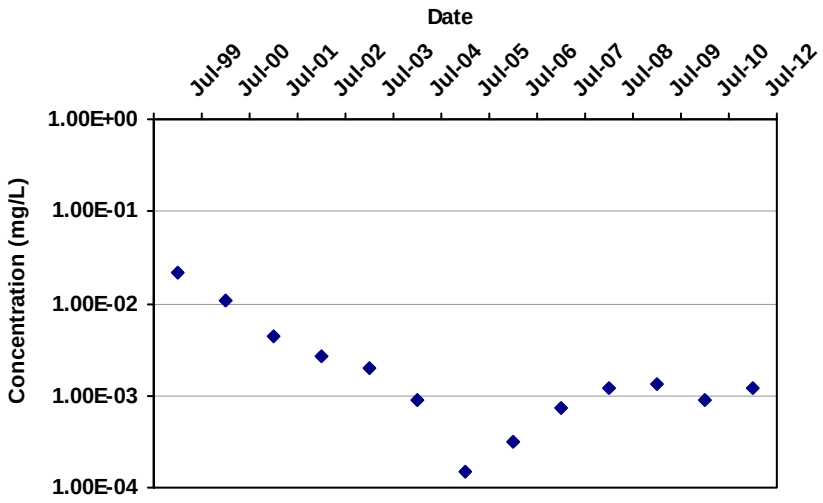
Other Toe Wells

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	AMW-42	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-35

Confidence in Trend:

98.2%

Coefficient of Variation:

1.63

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-42	T	7/1/1999	TRICHLOROETHYLEN	2.1E-02		9	9
AMW-42	T	7/1/2000	TRICHLOROETHYLEN	1.1E-02		13	13
AMW-42	T	7/1/2001	TRICHLOROETHYLEN	4.3E-03		4	4
AMW-42	T	7/1/2002	TRICHLOROETHYLEN	2.7E-03		4	4
AMW-42	T	7/1/2003	TRICHLOROETHYLEN	2.0E-03		3	3
AMW-42	T	7/1/2004	TRICHLOROETHYLEN	8.7E-04		6	5
AMW-42	T	7/1/2005	TRICHLOROETHYLEN	1.5E-04		4	1
AMW-42	T	7/1/2006	TRICHLOROETHYLEN	3.1E-04		2	2
AMW-42	T	7/1/2007	TRICHLOROETHYLEN	7.5E-04		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-42	T	7/1/2008	TRICHLOROETHYLEN	1.2E-03		1	1
AMW-42	T	7/1/2009	TRICHLOROETHYLEN	1.3E-03		1	1
AMW-42	T	7/1/2010	TRICHLOROETHYLEN	8.8E-04		1	1
AMW-42	T	7/1/2012	TRICHLOROETHYLEN	1.2E-03		1	1

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); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well: AMW-63 **Time Period:** 1/19/1995 **to** 10/31/2013

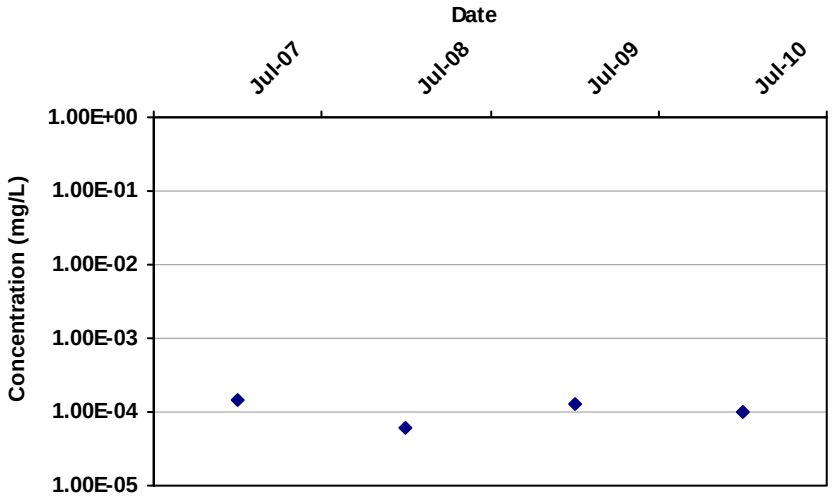
Well Type: T **Consolidation Period:** Yearly

COC: TRICHLOROETHYLENE (TCE) **Duplicate Consolidation:** Geometric Mean

Consolidation Type: Maximum

ND Values: Detection Limit

J Flag Values : Actual Value



Mann Kendall S Statistic:

-2

Confidence in Trend:

62.5%

Coefficient of Variation:

0.34

Mann Kendall Concentration Trend: (See Note)

S

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-63	T	7/1/2007	TRICHLOROETHYLEN	1.5E-04		4	1
AMW-63	T	7/1/2008	TRICHLOROETHYLEN	6.1E-05	ND	2	0
AMW-63	T	7/1/2009	TRICHLOROETHYLEN	1.3E-04		2	2
AMW-63	T	7/1/2010	TRICHLOROETHYLEN	1.0E-04	ND	1	0

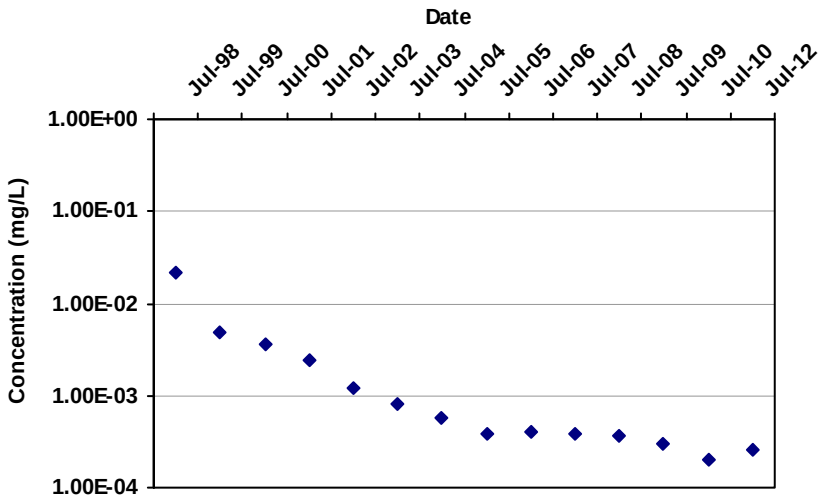
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-31	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-85

Confidence in Trend:

100.0%

Coefficient of Variation:

2.12

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-31	T	7/1/1998	TRICHLOROETHYLEN	2.2E-02		2	2
MW-31	T	7/1/1999	TRICHLOROETHYLEN	4.9E-03		8	8
MW-31	T	7/1/2000	TRICHLOROETHYLEN	3.7E-03		13	13
MW-31	T	7/1/2001	TRICHLOROETHYLEN	2.4E-03		2	2
MW-31	T	7/1/2002	TRICHLOROETHYLEN	1.2E-03		3	3
MW-31	T	7/1/2003	TRICHLOROETHYLEN	7.9E-04		3	3
MW-31	T	7/1/2004	TRICHLOROETHYLEN	5.7E-04		2	2
MW-31	T	7/1/2005	TRICHLOROETHYLEN	3.8E-04		1	1
MW-31	T	7/1/2006	TRICHLOROETHYLEN	4.0E-04		1	1

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-31	T	7/1/2007	TRICHLOROETHYLEN	3.9E-04		1	1
MW-31	T	7/1/2008	TRICHLOROETHYLEN	3.6E-04		1	1
MW-31	T	7/1/2009	TRICHLOROETHYLEN	3.0E-04		1	1
MW-31	T	7/1/2010	TRICHLOROETHYLEN	2.0E-04		1	1
MW-31	T	7/1/2012	TRICHLOROETHYLEN	2.6E-04		1	1

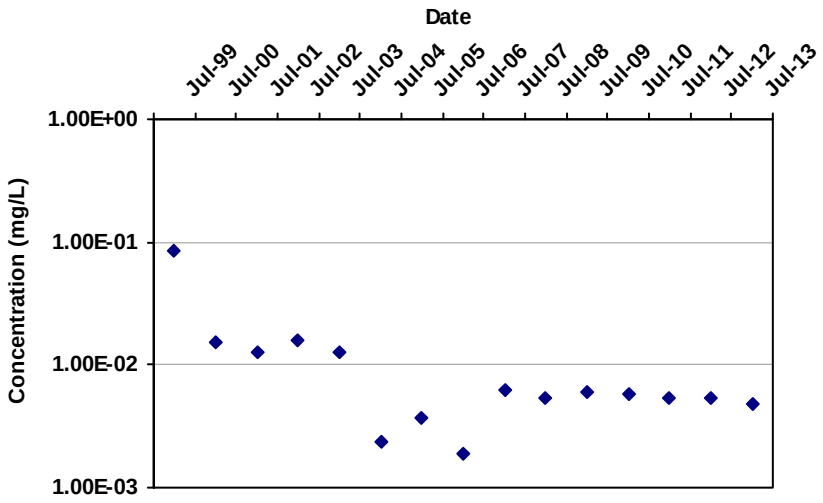
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-35	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-46

Confidence in Trend:

98.8%

Coefficient of Variation:

1.63

Mann Kendall Concentration Trend: (See Note)

D

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-35	T	7/1/1999	TRICHLOROETHYLEN	8.5E-02		6	6
MW-35	T	7/1/2000	TRICHLOROETHYLEN	1.5E-02		12	12
MW-35	T	7/1/2001	TRICHLOROETHYLEN	1.2E-02		12	11
MW-35	T	7/1/2002	TRICHLOROETHYLEN	1.6E-02		7	7
MW-35	T	7/1/2003	TRICHLOROETHYLEN	1.3E-02		3	3
MW-35	T	7/1/2004	TRICHLOROETHYLEN	2.4E-03		5	5
MW-35	T	7/1/2005	TRICHLOROETHYLEN	3.6E-03		4	4
MW-35	T	7/1/2006	TRICHLOROETHYLEN	1.9E-03		2	2
MW-35	T	7/1/2007	TRICHLOROETHYLEN	6.2E-03		2	2

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-35	T	7/1/2008	TRICHLOROETHYLEN	5.4E-03		2	2
MW-35	T	7/1/2009	TRICHLOROETHYLEN	6.1E-03		2	2
MW-35	T	7/1/2010	TRICHLOROETHYLEN	5.8E-03		2	2
MW-35	T	7/1/2011	TRICHLOROETHYLEN	5.4E-03		1	1
MW-35	T	7/1/2012	TRICHLOROETHYLEN	5.4E-03		1	1
MW-35	T	7/1/2013	TRICHLOROETHYLEN	4.8E-03		2	2

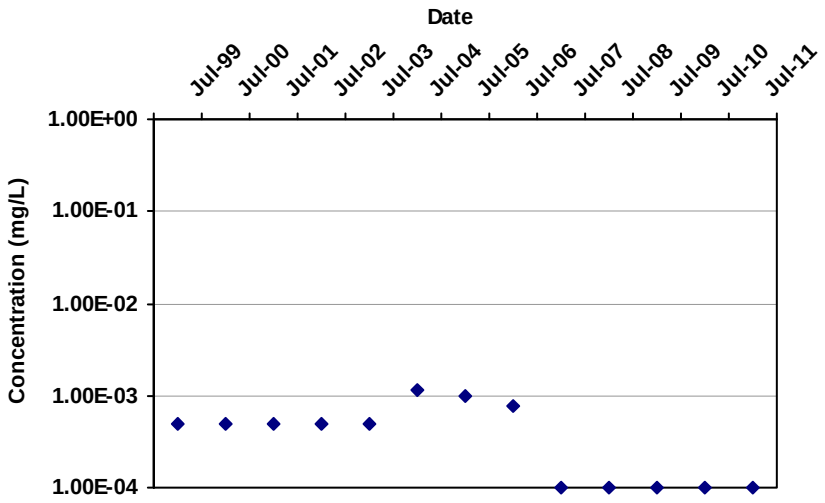
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well:	MW-41	**Time Period:**	1/19/1995 **to** 10/31/2013
Well Type:	T	**Consolidation Period:**	Yearly
COC:	TRICHLOROETHYLENE (TCE)	**Duplicate Consolidation:**	Geometric Mean
		Consolidation Type:	Maximum
		ND Values:	Detection Limit
		J Flag Values :	Actual Value



Mann Kendall S Statistic:

-26

Confidence in Trend:

93.6%

Coefficient of Variation:

0.78

Mann Kendall Concentration Trend: (See Note)

PD

Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-41	T	7/1/1999	TRICHLOROETHYLEN	5.0E-04	ND	9	0
MW-41	T	7/1/2000	TRICHLOROETHYLEN	5.0E-04	ND	13	0
MW-41	T	7/1/2001	TRICHLOROETHYLEN	5.0E-04	ND	4	0
MW-41	T	7/1/2002	TRICHLOROETHYLEN	5.0E-04	ND	4	0
MW-41	T	7/1/2003	TRICHLOROETHYLEN	5.0E-04	ND	3	0
MW-41	T	7/1/2004	TRICHLOROETHYLEN	1.1E-03		6	2
MW-41	T	7/1/2005	TRICHLOROETHYLEN	1.0E-03		5	4
MW-41	T	7/1/2006	TRICHLOROETHYLEN	7.9E-04		2	1
MW-41	T	7/1/2007	TRICHLOROETHYLEN	1.0E-04	ND	4	0

MAROS Mann-Kendall Statistics Summary

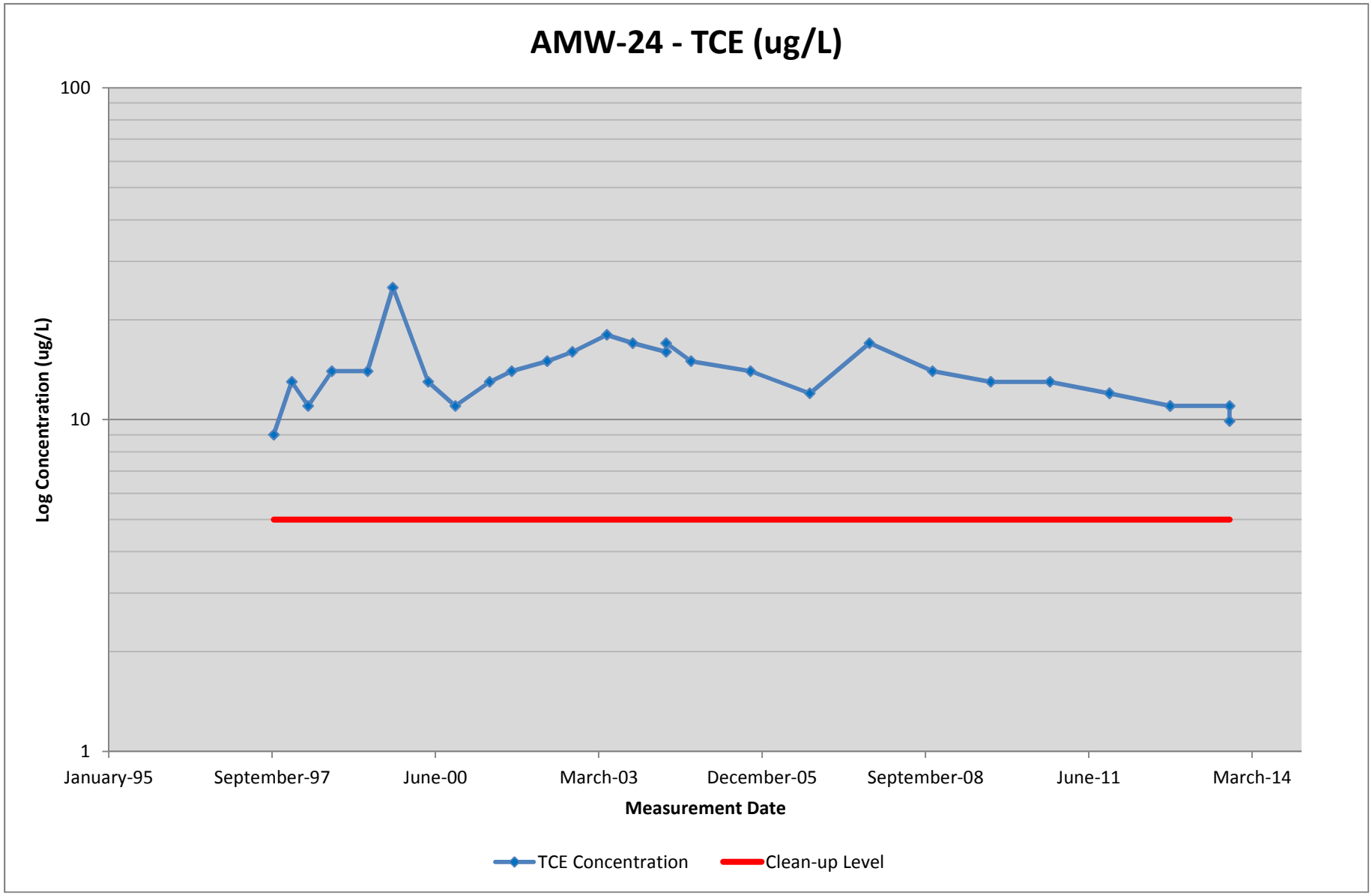
Project: Boomsnub/Airco Superfund Site **User Name:**

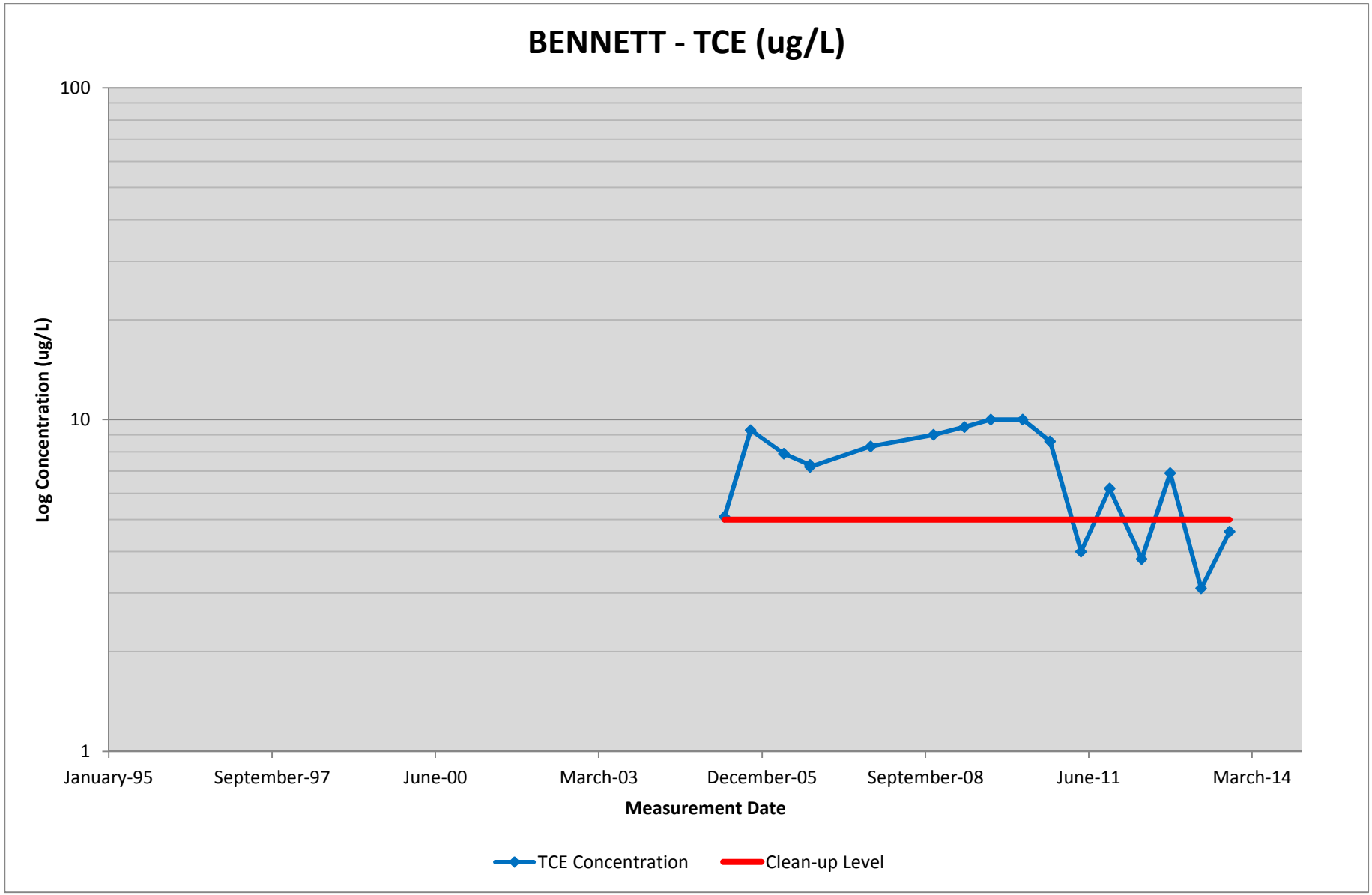
Location: Hazel Dell **State:** Washington

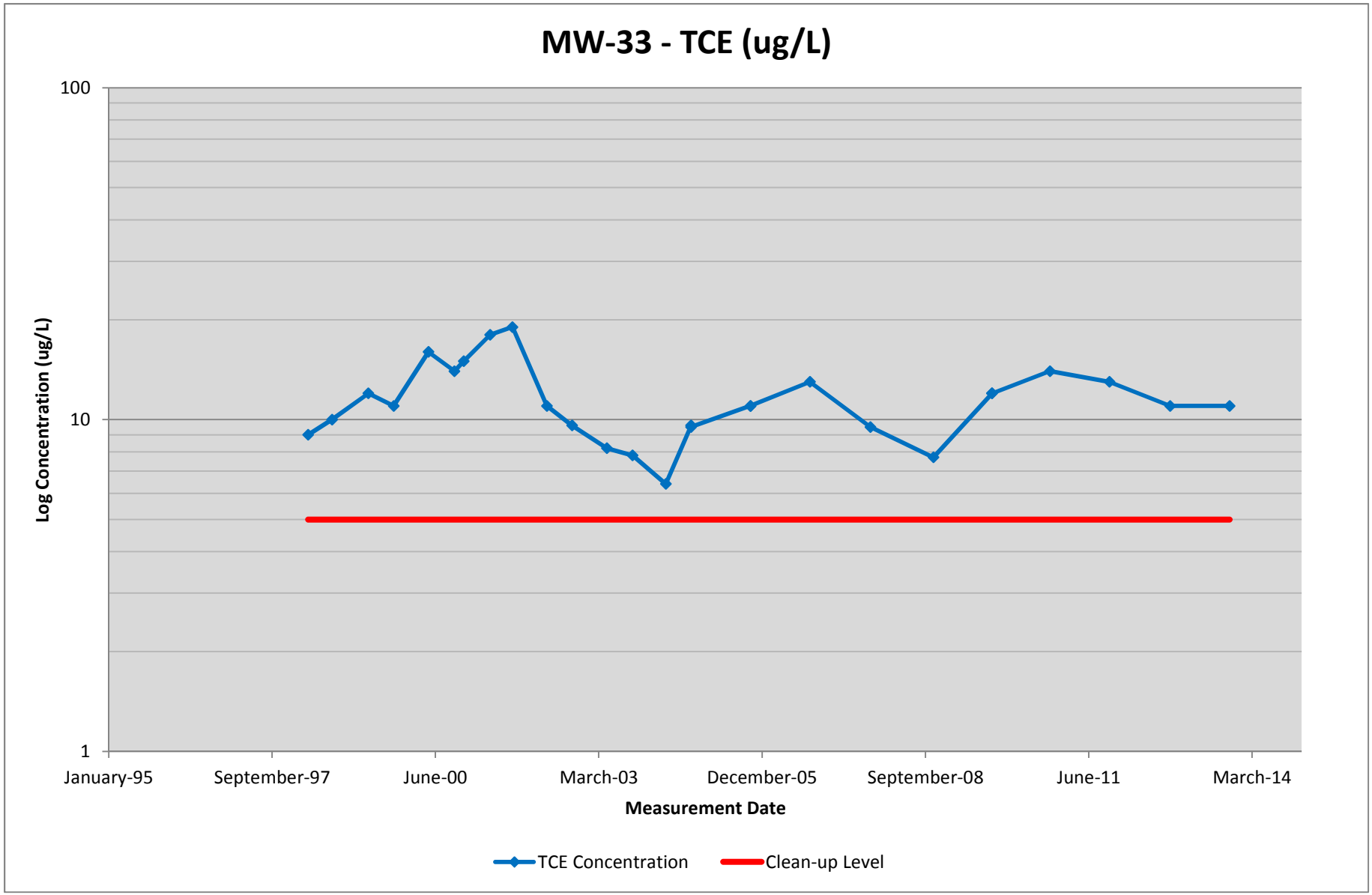
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-41	T	7/1/2008	TRICHLOROETHYLEN	1.0E-04	ND	2	0
MW-41	T	7/1/2009	TRICHLOROETHYLEN	1.0E-04	ND	2	0
MW-41	T	7/1/2010	TRICHLOROETHYLEN	1.0E-04	ND	1	0
MW-41	T	7/1/2011	TRICHLOROETHYLEN	1.0E-04	ND	1	0

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); ND = Non-detect

TROUTDALE WELLS


AMW-24 - TCE (ug/L)
100
10
1
Log Concentration (ug/L)
January-95
September-97
June-00
March-03
December-05
September-08
June-11
March-14
Measurement Date
TCE Concentration
Clean-up Level


BENNETT - TCE (ug/L)
100
10
1
Log Concentration (ug/L)
January-95
September-97
June-00
March-03
December-05
September-08
June-11
March-14
Measurement Date
TCE Concentration
Clean-up Level


MW-33 - TCE (ug/L)
100
10
1
Log Concentration (ug/L)
January-95
September-97
June-00
March-03
December-05
September-08
June-11
March-14
Measurement Date
TCE Concentration
Clean-up Level

APPENDIX C

MAROS RESULTS SUMMARY
AND
ADDITIONAL OUTPUTS

APPENDIX C-1

MAROS RESULTS SUMMARY TABLE

TABLE C-1. 2013 MAROS RESULTS SUMMARY

Well Name	TCE									Chromium									MAROS Recommended Sampling Frequency	
	Sample Size	MK Trend	Coefficient of Variation (COV)	Sequential T-Test Result		Cleanup Status[1]	Conc. Below Cleanup Levels	Conc. Statistically Below Cleanup Levels	MAROS Statistically Redundant	Sample Size	MK Trend	Coefficient of Variation (COV)	Sequential T-Test Result		Cleanup Status[1]	Conc. Below Cleanup Levels	Conc. Statistically Below Cleanup Levels	MAROS Statistically Redundant	TCE	Chromium
				Normal Distribution	Lognormal Distribution								Normal Distribution	Lognormal Distribution						
Upgradient Wells																				
AMW-6A	9	NT	0.72	Attained	Cont Sampling	Attained	Yes	Yes		8	S	0.38	Attained	Attained	Attained	Yes	Yes		NFS	NFS
AMW-7A	14	I	0.84	Attained	Cont Sampling	Attained	Yes	Yes		9	S	0.45	Attained	Attained	Attained	Yes	Yes		NFS	NFS
AMW-8A	18	D	1.89	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
AMW-10A	8	NT	0.64	Attained	Cont Sampling	Attained	Yes	Yes		7	NT	0.69	Attained	Cont Sampling	Attained	Yes	Yes		NFS	NFS
AMW-11A	9	NT	0.75	Attained	Cont Sampling	Attained	Yes	Yes		8	NT	0.53	Attained	Cont Sampling	Attained	Yes	Yes		NFS	NFS
TCE Source Wells																				
AMW-1A	19	D	1.74	Cont Sampling	Cont Sampling	Cont Sampling	No	No											Biennial	NA
AMW-2A	19	D	1.33	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
AMW-2B	14	NT	1.23	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
AMW-3A	18	D	1.06	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
AMW-12A	19	D	1.65	Cont Sampling	Cont Sampling	Cont Sampling	No	No											Biennial	NA
AMW-13A	18	NT	2.17	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
AMW-19A	17	D	1.54	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
AMW-26	15	D	1.49	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
AMW-52A	10	D	1.00	Attained	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
AMW-53A	11	D	1.99	Cont Sampling	Cont Sampling	Cont Sampling	No	No											Biennial	NA
AMW-54A	10	D	1.56	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
AMW-55A	9	NT	1.75	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
AMW-56A	10	NT	2.69	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
MW-1A	19	D	1.07	Cont Sampling	Cont Sampling	Cont Sampling	No	No		13	I	1.93	Attained	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
Proximal Wells																				
MW-2A	15	D	0.66	Cont Sampling	Not Attained	Cont Sampling	Yes	No		18	NT	1.14	Cont Sampling	Not Attained	Not Attained	No	No		Biennial	Biennial
MW-3A										16	D	0.73	Cont Sampling	Not Attained	Cont Sampling	Yes	No		NA	Biennial
MW-3B	10	D	0.97	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
MW-4A								NA		14	D	0.94	Cont Sampling	Not Attained	Cont Sampling	No	No		NA	Biennial
MW-4B	10	NT	2.61	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		12	D	0.83	Cont Sampling	Not Attained	Cont Sampling	No	No		Biennial	Biennial
MW-4BShed	8	D	1.43	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		10	D	1.55	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
MW-6A										4	NT	1.27	Cont Sampling	Cont Sampling	Cont Sampling	No	No		NA	Biennial
MW-6B	19	D	1.50	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No	TRUE	19	D	2.11	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
MW-7B	5	D	0.97	Cont Sampling	Cont Sampling	Cont Sampling	No	No											Biennial	NA
MW-8B	9	D	1.90	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
MW-9B	10	D	1.54	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No	TRUE										Biennial	NA
MW-10B	19	D	1.73	Cont Sampling	Not Attained	Not Attained	No	No		19	D	1.00	Cont Sampling	Not Attained	Cont Sampling	Yes	No		Biennial	Biennial
MW-10C	19	D	1.81	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		19	D	2.05	Cont Sampling	Not Attained	Not Attained	Yes	No		Biennial	Biennial
MW-12C	17	D	2.61	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
MW-13C	17	D	0.77	Cont Sampling	Not Attained	Cont Sampling	No	No											Biennial	NA
PW-1B	19	D	1.34	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		19	D	1.73	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
Intermediate Wells																				
AMW-16	18	D	1.38	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
AMW-17	18	NT	1.93	Cont Sampling	Cont Sampling	Cont Sampling	No	No											Quarterly	NA
AMW-18	17	I	1.70	Cont Sampling	Cont Sampling	Cont Sampling	No	No											Quarterly	NA
AMW-59	7	PD	0.40	Cont Sampling	Not Attained	Cont Sampling	No	No											Biennial	NA
AMW-64	2	N/A	0.00	N/C	N/C	N/C	No	No											Quarterly	NA
CPU-14	19	D	0.73	Cont Sampling	Not Attained	Cont Sampling	No	No		19	D	1.00	Cont Sampling	Not Attained	Cont Sampling	Yes	No		Biennial	Biennial
MW-14C	19	D	1.78	Cont Sampling	Cont Sampling	Cont Sampling	No	No	TRUE	19	D	1.56	Cont Sampling	Not Attained	Not Attained	Yes	No		Biennial	Biennial
MW-14E	19	D	1.78	Cont Sampling	Not Attained	Not Attained	No	No		19	D	2.28	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
MW-15E	14	D	2.13	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA

TABLE C-1. 2013 MAROS RESULTS SUMMARY

Well Name	TCE									Chromium									MAROS Recommended Sampling Frequency	
	Sample Size	MK Trend	Coefficient of Variation (COV)	Sequential T-Test Result		Cleanup Status[1]	Conc. Below Cleanup Levels	Conc. Statistically Below Cleanup Levels	MAROS Statistically Redundant	Sample Size	MK Trend	Coefficient of Variation (COV)	Sequential T-Test Result		Cleanup Status[1]	Conc. Below Cleanup Levels	Conc. Statistically Below Cleanup Levels	MAROS Statistically Redundant	TCE	Chromium
				Normal Distribution	Lognormal Distribution								Normal Distribution	Lognormal Distribution						
MW-16E	12	NT	0.90	Attained	Cont Sampling	Attained	Yes	Yes											NFS	NA
MW-18D	19	D	1.61	Cont Sampling	Not Attained	Not Attained	No	No		19	D	1.82	Cont Sampling	Cont Sampling	Cont Sampling	No	No		Biennial	Biennial
MW-18E	18	D	1.14	Cont Sampling	Not Attained	Not Attained	No	No											Biennial	NA
MW-19D	19	D	1.72	Cont Sampling	Cont Sampling	Cont Sampling	No	No	TRUE	19	D	2.02	Cont Sampling	Cont Sampling	Cont Sampling	No	No	TRUE	Biennial	Biennial
MW-20D	19	D	1.48	Cont Sampling	Cont Sampling	Cont Sampling	No	No		19	D	2.01	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
Church of God Wells																				
AMW-27	16	D	0.56	Cont Sampling	Not Attained	Cont Sampling	No	No		16	D	1.22	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
AMW-61	6	D	1.06	Cont Sampling	Cont Sampling	Cont Sampling	No	No											Biennial	NA
CPU-12	19	NT	0.59	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
CPU-13	19	D	1.59	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		19	D	1.67	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No	TRUE	Biennial	Biennial
MW-21D	19	D	2.05	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		19	D	2.53	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
MW-22D	19	D	1.16	Cont Sampling	Not Attained	Not Attained	Yes	No	TRUE	19	D	1.69	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
MW-23D	19	D	1.19	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No											Biennial	NA
MW-25D	19	D	1.65	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		19	D	2.78	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
MW-26D	19	D	1.25	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		19	D	1.42	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
MW-27D	19	D	1.70	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		19	D	2.18	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
MW-49	14	D	1.05	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		14	D	1.24	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
Toe Wells																				
AMW-42	13	D	1.63	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		13	D	1.60	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
AMW-63	4	S	0.27	Attained	Cont Sampling	Attained	Yes	Yes		4	S	0.38	Attained	Cont Sampling	Attained	Yes	Yes		NFS	NFS
MW-31	14	D	2.12	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		14	D	2.41	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
MW-35	15	D	1.63	Cont Sampling	Not Attained	Not Attained	Yes	No		15	D	3.34	Cont Sampling	Cont Sampling	Cont Sampling	Yes	No		Biennial	Biennial
MW-41	13	PD	0.78	Attained	Cont Sampling	Attained	Yes	Yes		13	D	1.00	Attained	Cont Sampling	Attained	Yes	Yes		NFS	NFS

NOTES:

D = decreasing
I = increasing
MAROS = Monitoring and Remediation Optimization System
MK = Mann-Kendall
N/A = not applicable
N/C = not conducted due to small sample size (<4 samples)
NT = no trend
PD = probably decreasing
PI = probably increasing
S = stable
TCE = trichloroethene

[1] *Not Attained* indicates the mean concentration is higher than the cleanup goal. *Cont. Sampling* indicates that the mean concentration is below the cleanup goal, but additional sampling is required because the data are not statistically significant.
[2] The "concentration statistically below cleanup levels" determination is per the MAROS evaluation; this does not meet the EPA requirements for determining site closure.

APPENDIX C-2

CHROMIUM OUTPUTS

MAROS Site Results

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

User Defined Site and Data Assumptions:

Hydrogeology and Plume Information:

Groundwater Seepage Velocity:	180	ft/yr
Current Plume Length:	1800	ft
Current Plume Width:	100	ft
Number of Tail Wells:	28	
Number of Source Wells:	8	

Down Gradient Information:

Distance from Edge of Tail to Nearest:

Down-gradient Receptor:	7200 ft
Down-gradient Property:	1 ft

Distance from Source to Nearest:

Down Gradient Receptor:	9000 ft
Down Gradient Property:	1 ft

Source Information:

Source Treatment: Pump and Treat

NAPL is not observed at this site.

Data Consolidation Assumptions:

Time Period: 1/19/1995 **to** 10/18/2013

Consolidation Period: Yearly

Consolidation Type: Geometric Mean

Duplicate Consolidation: Maximum

ND Values: Detection Limit

J Flag Values: Actual Value

Plume Information Weighting Assumptions:

Consolidation Step 1. Weight Plume Information by Chemical

Summary Weighting:

Weighting Applied to All Chemicals Equally

Consolidation Step 2. Weight Well Information by Chemical

Well Weighting:

No Weighting of Wells was Applied.

Chemical Weighting:

No Weighting of Chemicals was Applied.

Note: These assumptions were made when consolidating the historical montoring data and lumping the Wells and COCs.

MAROS Site Results

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

1. Compliance Monitoring/Remediation Optimization Results:

Preliminary Monitoring System Optimization Results: Based on site classification, source treatment and Monitoring System Category the following suggestions are made for site Sampling Frequency, Duration of Sampling before reassessment, and Well Density. These criteria take into consideration: Plume Stability, Type of Plume, and Groundwater Velocity.

COC	Tail Stability	Source Stability	Level of Effort	Sampling Duration	Sampling Frequency	Sampling Density
CHROMIUM, HEXAVALENT	PD	PD	L	ı mechanism unitl reach stal	No Recommendation	32

Note

Plume Status: (I) Increasing; (PI)Probably Increasing; (S) Stable; (NT) No Trend; (PD) Probably Decreasing; (D) Decreasing

Design Categories: (E) Extensive; (M) Moderate; (L) Limited
(N/A) Not Applicable, Insufficient Data Available

Level of Monitoring Effort Indicated by Analysis: ***Limited***

2. Spatial Moment Analysis Results:

Spatial Moment Analysis Summary:

Moment Type	Constituent	Coefficient of Variation	Mann-Kendall S Statistic	Confidence in Trend	Moment Trend
0th Moment	CHROMIUM, HEXAVALENT	1.59	-163	100.0%	D
First Moment	CHROMIUM, HEXAVALENT	0.19	-127	100.0%	D
Second Moment X	CHROMIUM, HEXAVALENT	0.17	63	98.6%	I
Second Moment Y	CHROMIUM, HEXAVALENT	0.14	73	99.5%	I

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

Porosity: 0.30 **Saturated Thickness:** Uniform: 65 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); (ND) Non Detect.

MAROS Linear Regression Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Time Period: 1/19/1995 **to** 10/18/2013
Consolidation Period: Yearly
Consolidation Type: Geometric Mean
Duplicate Consolidation: Maximum
ND Values: Detection Limit
J Flag Values : Actual Value

Well	Source/Tail	Average Conc (mg/L)	Median Conc (mg/L)	Standard Deviation	All Samples "ND" ?	Ln Slope	Coefficient of Variation	Confidence in Trend	Concentration Trend
CHROMIUM, HEXAVALENT									
AMW-10A	T	7.5E-03	5.7E-03	5.2E-03	No	7.2E-05	0.69	71.9%	NT
AMW-11A	T	3.3E-03	3.5E-03	1.7E-03	No	9.7E-04	0.53	99.7%	I
AMW-14	T	5.0E-01	1.1E-01	1.3E+00	No	-5.1E-04	2.54	100.0%	D
AMW-27	T	1.7E+00	8.8E-01	2.1E+00	No	-1.2E-03	1.22	100.0%	D
AMW-42	T	9.4E-02	2.6E-02	1.5E-01	No	-6.6E-04	1.60	99.9%	D
AMW-63	T	5.1E-03	5.1E-03	3.3E-03	No	-2.0E-05	0.63	50.6%	S
AMW-6A	T	7.4E-03	6.4E-03	2.8E-03	No	4.6E-05	0.38	70.6%	NT
AMW-7A	T	2.8E-03	3.0E-03	1.3E-03	No	3.7E-04	0.45	98.7%	I
CPU-13	T	8.4E-01	1.2E-01	1.4E+00	No	-9.0E-04	1.67	100.0%	D
CPU-14	T	2.9E-01	1.4E-01	2.9E-01	No	-5.3E-04	1.00	100.0%	D
MW-10B	T	2.7E-01	1.6E-01	2.7E-01	No	-4.9E-04	1.00	100.0%	D
MW-10C	T	5.0E-01	1.8E-01	1.0E+00	No	-3.5E-04	2.05	100.0%	D
MW-14C	T	7.1E-01	3.4E-01	1.1E+00	No	-5.4E-04	1.56	100.0%	D
MW-14E	T	2.3E+00	1.2E-01	5.3E+00	No	-9.1E-04	2.28	100.0%	D
MW-18D	T	2.7E+00	5.0E-01	4.9E+00	No	-7.6E-04	1.82	100.0%	D
MW-19D	T	2.1E+00	3.0E-01	4.2E+00	No	-6.7E-04	2.02	100.0%	D
MW-1A	T	1.6E-02	3.1E-03	3.1E-02	No	8.1E-04	1.93	97.1%	I
MW-20D	T	5.2E+00	3.5E-01	1.0E+01	No	-1.0E-03	2.01	100.0%	D
MW-21D	T	2.5E+00	7.2E-02	6.3E+00	No	-1.2E-03	2.53	100.0%	D
MW-22D	T	1.3E+00	2.5E-01	2.3E+00	No	-9.1E-04	1.69	100.0%	D

MAROS Linear Regression Statistics Summary

Boomsnub/Airco Superfund Site **User Name:**

Hazel Dell **State:** Washington

CHROMIUM, HEXAVALENT

Well	Source/Tail	Average Conc (mg/L)	Median Conc (mg/L)	Standard Deviation	All Samples "ND" ?	Ln Slope	Coefficient of Variation	Confidence in Trend	Concentration Trend
MW-25D	T	9.7E-01	2.0E-02	2.7E+00	No	-1.2E-03	2.78	100.0%	D
MW-26D	T	8.2E-01	6.9E-02	1.2E+00	No	-1.1E-03	1.42	100.0%	D
MW-27D	T	6.4E-01	4.2E-02	1.4E+00	No	-1.0E-03	2.18	100.0%	D
MW-2A	S	5.9E-01	3.4E-01	6.7E-01	No	-5.6E-05	1.14	65.8%	NT
MW-31	T	4.0E-02	1.1E-02	9.6E-02	No	-4.5E-04	2.41	99.3%	D
MW-35	T	2.6E-01	2.9E-02	8.6E-01	No	-7.8E-04	3.34	99.9%	D
MW-3A	S	4.2E-01	3.7E-01	3.1E-01	No	-3.5E-04	0.73	100.0%	D
MW-41	T	8.0E-03	4.5E-03	8.0E-03	No	-3.7E-04	1.00	97.2%	D
MW-49	T	1.8E-01	8.7E-02	2.2E-01	No	-6.9E-04	1.24	99.7%	D
MW-4A	S	1.3E+00	8.5E-01	1.2E+00	No	-2.4E-04	0.94	99.6%	D
MW-4B	S	1.1E+00	7.1E-01	9.2E-01	No	-1.7E-04	0.83	99.0%	D
MW-4BSHED	S	1.3E+00	1.9E-01	2.0E+00	No	-7.4E-04	1.55	99.7%	D
MW-6A	S	6.3E-02	4.2E-02	8.0E-02	No	1.2E-03	1.27	93.5%	PI
MW-6B	S	2.0E-01	4.4E-02	4.3E-01	No	-4.9E-04	2.11	100.0%	D
PW-1B	S	8.3E-01	2.5E-01	1.4E+00	No	-7.2E-04	1.73	100.0%	D
PZ-39	T	5.9E-03	4.8E-03	4.6E-03	No	0.0E+00	0.00	0.0%	N/A

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

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Time Period: 1/19/1995 **to** 10/18/2013
Consolidation Period: Yearly
Consolidation Type: Geometric Mean
Duplicate Consolidation: Maximum
ND Values: 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
CHROMIUM, HEXAVALENT								
AMW-10A	T	7	7	0.69	7	80.9%	No	NT
AMW-11A	T	8	7	0.53	4	64.0%	No	NT
AMW-14	T	14	14	2.54	-85	100.0%	No	D
AMW-27	T	16	16	1.22	-114	100.0%	No	D
AMW-42	T	13	13	1.60	-50	99.9%	No	D
AMW-63	T	4	3	0.63	0	37.5%	No	S
AMW-6A	T	8	8	0.38	0	45.2%	No	S
AMW-7A	T	9	8	0.45	-4	61.9%	No	S
CPU-13	T	19	19	1.67	-157	100.0%	No	D
CPU-14	T	19	19	1.00	-127	100.0%	No	D
MW-10B	T	19	19	1.00	-131	100.0%	No	D
MW-10C	T	19	19	2.05	-97	100.0%	No	D
MW-14C	T	19	19	1.56	-137	100.0%	No	D
MW-14E	T	19	19	2.28	-163	100.0%	No	D
MW-18D	T	19	19	1.82	-169	100.0%	No	D
MW-19D	T	19	19	2.02	-161	100.0%	No	D
MW-1A	T	13	9	1.93	28	95.0%	No	I
MW-20D	T	19	19	2.01	-165	100.0%	No	D
MW-21D	T	19	19	2.53	-169	100.0%	No	D
MW-22D	T	19	19	1.69	-167	100.0%	No	D
MW-25D	T	19	18	2.78	-133	100.0%	No	D
MW-26D	T	19	19	1.42	-161	100.0%	No	D
MW-27D	T	19	19	2.18	-129	100.0%	No	D
MW-2A	S	18	18	1.14	-19	75.0%	No	NT
MW-31	T	14	14	2.41	-38	97.9%	No	D
MW-35	T	15	14	3.34	-59	99.9%	No	D

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

CHROMIUM, HEXAVALENT

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
MW-3A	S	16	16	0.73	-86	100.0%	No	D
MW-41	T	13	7	1.00	-30	96.2%	No	D
MW-49	T	14	14	1.24	-59	100.0%	No	D
MW-4A	S	14	14	0.94	-43	99.0%	No	D
MW-4B	S	12	12	0.83	-34	99.0%	No	D
MW-4BSHED	S	10	10	1.55	-41	100.0%	No	D
MW-6A	S	4	3	1.27	2	62.5%	No	NT
MW-6B	S	19	19	2.11	-99	100.0%	No	D
PW-1B	S	19	19	1.73	-155	100.0%	No	D
PZ-39	T	3	2	0.00	0	0.0%	No	N/A

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)

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

MAROS Power Analysis for Individual Well Cleanup Status

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

From Period: 1/19/1995 **to** 10/18/2013

Well Name	Sample Size	Sample Mean	Sample Stdev.	Normal Distribution Cleanup Status	Lognormal Distribution Cleanup Status	Alpha Level	Expected Power
CHROMIUM, HEXAVALENT	Cleanup Goal (mg/L) = 0.08			Target Level (mg/L) = 0.064			
AMW-10A	7	7.91E-03	5.08E-03	Attained	Cont Sampling	0.05	0.8
AMW-11A	8	3.42E-03	1.84E-03	Attained	Cont Sampling	0.05	0.8
AMW-14	14	5.54E-01	1.46E+00	Cont Sampling	Cont Sampling	0.05	0.8
AMW-27	16	1.84E+00	2.22E+00	Cont Sampling	Cont Sampling	0.05	0.8
AMW-42	13	1.31E-01	2.43E-01	Cont Sampling	Cont Sampling	0.05	0.8
AMW-63	4	6.09E-03	2.96E-03	Attained	Cont Sampling	0.05	0.8
AMW-6A	8	7.64E-03	3.17E-03	Attained	Attained	0.05	0.8
AMW-7A	9	3.18E-03	7.80E-04	Attained	Attained	0.05	0.8
CPU-13	19	8.51E-01	1.41E+00	Cont Sampling	Cont Sampling	0.05	0.8
CPU-14	19	2.97E-01	2.96E-01	Cont Sampling	Not Attained	0.05	0.8
MW-10B	19	3.23E-01	3.50E-01	Cont Sampling	Not Attained	0.05	0.8
MW-10C	19	5.24E-01	1.07E+00	Cont Sampling	Not Attained	0.05	0.8
MW-14C	19	7.71E-01	1.30E+00	Cont Sampling	Not Attained	0.05	0.8
MW-14E	19	2.38E+00	5.31E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-18D	19	2.76E+00	5.02E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-19D	19	2.16E+00	4.29E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-1A	13	2.11E-02	3.24E-02	Attained	Cont Sampling	0.05	0.8
MW-20D	19	5.37E+00	1.07E+01	Cont Sampling	Cont Sampling	0.05	0.8
MW-21D	19	2.59E+00	6.50E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-22D	19	1.39E+00	2.34E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-25D	19	1.00E+00	2.79E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-26D	19	8.31E-01	1.18E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-27D	19	6.52E-01	1.43E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-2A	18	6.20E-01	6.91E-01	Cont Sampling	Not Attained	0.05	0.8
MW-31	14	4.16E-02	1.00E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-35	15	2.93E-01	8.81E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-3A	16	4.44E-01	3.42E-01	Cont Sampling	Not Attained	0.05	0.8
MW-41	13	2.22E-02	3.22E-02	Attained	Cont Sampling	0.05	0.8
MW-49	14	1.52E+00	4.86E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-4A	14	1.34E+00	1.24E+00	Cont Sampling	Not Attained	0.05	0.8

MAROS Power Analysis for Individual Well Cleanup Status

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

From Period: 1/19/1995 **to** 10/18/2013

Well Name	Sample Size	Sample Mean	Sample Stdev.	Normal Distribution Cleanup Status	Lognormal Distribution Cleanup Status	Alpha Level	Expected Power
MW-4B	12	1.49E+00	2.15E+00	Cont Sampling	Not Attained	0.05	0.8
MW-4BSHED	10	1.42E+00	2.22E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-6A	4	6.84E-02	7.74E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-6B	19	2.60E-01	6.25E-01	Cont Sampling	Cont Sampling	0.05	0.8
PW-1B	19	9.05E-01	1.63E+00	Cont Sampling	Cont Sampling	0.05	0.8
PZ-39	3	5.93E-03	4.61E-03	N/C	N/C	0.05	0.8

Note: N/C refers to "not conducted" because of insufficient data (N<4); S/E indicates the sample mean significantly exceeds the cleanup level and thus no analysis is conducted; Sample Size is the number of concentration data in a sampling location that are used in the analysis; Target Level is the expected mean concentration in wells after cleanup attainment, it is only used in individual well celanup status evaluation. The test for evaluating attainment status is from EPA (1992). Refer to Appendix A.6 of MAROS Manual for details.

Individual Well Cleanup Status - Optional Analysis Results

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

From Period: 1/19/1995 **to** 10/18/2013

				Normal Distribution Assumption			Lognormal Distribution Assumption		
Well	**Sample Size**	**Sample Mean**	**Sample Stdev.**	**Significantly < Cleanup Goal?**	**Power**	**Expected Sample**	**Significantly < Cleanup Goal?**	**Power**	**Expected Sample**
CHROMIUM, HEXAVALENT	Cleanup Goal (mg/L) =	0.08		Alpha Level =	0.05		Expected Power =	0.8	
AMW-10A	7	7.91E-03	5.08E-03	YES	1.000	<=3	YES	1.000	<=3
AMW-11A	8	3.42E-03	1.84E-03	YES	1.000	<=3	YES	0.638	12
AMW-14	14	5.54E-01	1.46E+00	NO	S/E	S/E	NO	S/E	S/E
AMW-27	16	1.84E+00	2.22E+00	NO	S/E	S/E	NO	S/E	S/E
AMW-42	13	1.31E-01	2.43E-01	NO	S/E	S/E	NO	S/E	S/E
AMW-63	4	6.09E-03	2.96E-03	YES	1.000	<=3	YES	1.000	<=3
AMW-6A	8	7.64E-03	3.17E-03	YES	1.000	<=3	YES	1.000	<=3
AMW-7A	9	3.18E-03	7.80E-04	YES	1.000	<=3	YES	1.000	<=3
CPU-13	19	8.51E-01	1.41E+00	NO	S/E	S/E	NO	S/E	S/E
CPU-14	19	2.97E-01	2.96E-01	NO	S/E	S/E	NO	S/E	S/E
MW-10B	19	3.23E-01	3.50E-01	NO	S/E	S/E	NO	S/E	S/E
MW-10C	19	5.24E-01	1.07E+00	NO	S/E	S/E	NO	S/E	S/E
MW-14C	19	7.71E-01	1.30E+00	NO	S/E	S/E	NO	S/E	S/E
MW-14E	19	2.38E+00	5.31E+00	NO	S/E	S/E	NO	S/E	S/E
MW-18D	19	2.76E+00	5.02E+00	NO	S/E	S/E	NO	S/E	S/E
MW-19D	19	2.16E+00	4.29E+00	NO	S/E	S/E	NO	S/E	S/E
MW-1A	13	2.11E-02	3.24E-02	YES	1.000	<=3	NO	S/E	S/E
MW-20D	19	5.37E+00	1.07E+01	NO	S/E	S/E	NO	S/E	S/E
MW-21D	19	2.59E+00	6.50E+00	NO	S/E	S/E	NO	S/E	S/E
MW-22D	19	1.39E+00	2.34E+00	NO	S/E	S/E	NO	S/E	S/E
MW-25D	19	1.00E+00	2.79E+00	NO	S/E	S/E	NO	S/E	S/E
MW-26D	19	8.31E-01	1.18E+00	NO	S/E	S/E	NO	S/E	S/E
MW-27D	19	6.52E-01	1.43E+00	NO	S/E	S/E	NO	S/E	S/E
MW-2A	18	6.20E-01	6.91E-01	NO	S/E	S/E	NO	S/E	S/E
MW-31	14	4.16E-02	1.00E-01	NO	0.402	43	YES	0.963	8
MW-35	15	2.93E-01	8.81E-01	NO	S/E	S/E	NO	S/E	S/E
MW-3A	16	4.44E-01	3.42E-01	NO	S/E	S/E	NO	S/E	S/E

Individual Well Cleanup Status - Optional Analysis Results

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

From Period: 1/19/1995 **to** 10/18/2013

				Normal Distribution Assumption			Lognormal Distribution Assumption		
Well Name	**Sample Size**	**Sample Mean**	**Sample Stdev.**	**Significantly < Cleanup Goal?**	**Power**	**Expected Sample**	**Significantly < Cleanup Goal?**	**Power**	**Expected Sample**
MW-41	13	2.22E-02	3.22E-02	YES	1.000	<=3	YES	0.880	11
MW-49	14	1.52E+00	4.86E+00	NO	S/E	S/E	NO	S/E	S/E
MW-4A	14	1.34E+00	1.24E+00	NO	S/E	S/E	NO	S/E	S/E
MW-4B	12	1.49E+00	2.15E+00	NO	S/E	S/E	NO	S/E	S/E
MW-4BSHE	10	1.42E+00	2.22E+00	NO	S/E	S/E	NO	S/E	S/E
MW-6A	4	6.84E-02	7.74E-02	NO	0.084	>100	NO	S/E	S/E
MW-6B	19	2.60E-01	6.25E-01	NO	S/E	S/E	NO	S/E	S/E
PW-1B	19	9.05E-01	1.63E+00	NO	S/E	S/E	NO	S/E	S/E
PZ-39	3	5.93E-03	4.61E-03	N/C	N/C	N/C	N/C	N/C	N/C

Note: N/C refers to "not conducted" because of insufficient data (N<4); S/E indicates the sample mean significantly exceeds the cleanup level and thus no analysis is conducted; Sample Size is the number of concentration data in a sampling location that are used in the power analysis; Expected Sample Size is the number of concentration data needed to reach the Expected Power under current sample variability; The Target Level is the expected mean concentration in wells after cleanup attainment, it is only used in individual well celanup status evaluation. The Student's t-test on mean difference is used in this analysis. Refer to Appendix A.6 of MAROS Manual for details.

MAROS Sampling Frequency Optimization Results

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

The Overall Number of Sampling Events: 274

"Recent Period" defined by events: **From** Sample Event 1 (1/19/1995) **To** Sample Event 274 (10/18/2013)

"Rate of Change" parameters used:

Constituent	Cleanup Goal	Low Rate	Medium Rate	High Rate
CHROMIUM, H	0.08	0.04	0.08	0.16

Units: Cleanup Goal is in mg/L; all rate parameters are in mg/L/year.

Well	Recommended Sampling	Frequency Based on	Frequency Based on
CHROMIUM, HEXAVALENT			
AMW-10A	Biennial	Biennial	Biennial
AMW-11A	Biennial	Biennial	Biennial
AMW-14	Biennial	Biennial	Biennial
AMW-27	Biennial	Biennial	Biennial
AMW-42	Biennial	Biennial	Biennial
AMW-63	Biennial	Biennial	Biennial
AMW-6A	Biennial	Biennial	Biennial
AMW-7A	Biennial	Biennial	Biennial
CPU-13	Biennial	Biennial	Biennial
CPU-14	Biennial	Biennial	Biennial
MW-10B	Biennial	Biennial	Biennial
MW-10C	Biennial	Biennial	Biennial
MW-14C	Biennial	Biennial	Biennial
MW-14E	Biennial	Biennial	Biennial
MW-18D	Biennial	Biennial	Biennial
MW-19D	Biennial	Biennial	Biennial
MW-1A	Biennial	Biennial	Biennial
MW-20D	Biennial	Biennial	Biennial
MW-21D	Biennial	Biennial	Biennial
MW-22D	Biennial	Biennial	Biennial
MW-25D	Biennial	Biennial	Biennial
MW-26D	Biennial	Biennial	Biennial
MW-27D	Biennial	Biennial	Biennial

MAROS Sampling Frequency Optimization Results

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Recommended Sampling	Frequency Based on	Frequency Based on
MW-2A	Biennial	Biennial	Biennial
MW-31	Biennial	Biennial	Biennial
MW-35	Biennial	Biennial	Biennial
MW-3A	Biennial	Biennial	Biennial
MW-41	Biennial	Biennial	Biennial
MW-49	Biennial	Biennial	Biennial
MW-4A	Biennial	Biennial	Biennial
MW-4B	Biennial	Biennial	Biennial
MW-4BSHED	Biennial	Biennial	Biennial
MW-6A	Biennial	Biennial	Biennial
MW-6B	Biennial	Biennial	Biennial
PW-1B	Biennial	Biennial	Biennial
PZ-39	Annual	Annual	Annual

Note: Sampling frequency is determined considering both recent and overall concentration trends. Sampling Frequency is the final recommendation; Frequency Based on Recent Data is the frequency determined using recent (short) period of monitoring data; Frequency Based on Overall Data is the frequency determined using overall (long) period of monitoring data. If the "recent period" is defined using a different series of sampling events, the results could be different.

MAROS Sampling Location Optimization Results

Boomsnub/Airco Superfund Site — **User Name:**

Hazel Dell — **State:** Washington

Sampling Events Analyzed: **From** Sample Event 1 (1/19/1995) **to** Sample Event 274 (10/18/2013)

Parameters used:

Constituent	Inside SF	Hull SF	Area Ratio	Conc. Ratio
CHROMIUM, HEXAVAL	0.3	0.1	0.9	0.85

Well Name	X (feet)	Y (feet)	Removable?	Average Slope Factor*	Minimum Slope Factor*	Maximum Slope Factor*	Eliminated?
CHROMIUM, HEXAVALENT							
AMW-10A	1098266.25	132923.33	☑	0.470	0.355	0.682	☐
AMW-11A	1098270.63	132756.36	☑	0.494	0.101	1.000	☐
AMW-14	1095174.75	133490.42	☑	0.331	0.017	0.586	☐
AMW-27	1094386.13	133515.81	☑	0.324	0.155	0.623	☐
AMW-42	1093570.50	133791.39	☑	0.331	0.066	0.923	☐
AMW-63	1093510.88	133815.56	☑	0.398	0.234	0.528	☐
AMW-6A	1098315.50	132581.84	☑	0.369	0.175	0.499	☐
AMW-7A	1098542.13	132679.81	☑	0.431	0.149	0.685	☐
CPU-13	1094877.75	133397.00	☑	0.130	0.002	0.656	☑
CPU-14	1096130.75	133152.42	☑	0.340	0.092	0.620	☐
MW-10B	1097254.00	132970.84	☑	0.314	0.001	0.912	☐
MW-10C	1097250.75	132971.34	☑	0.309	0.000	0.846	☐
MW-14C	1097053.75	133070.84	☑	0.202	0.013	0.952	☐
MW-14E	1097068.38	133032.61	☑	0.204	0.029	0.574	☐
MW-18D	1096779.50	133113.73	☑	0.193	0.012	0.691	☐
MW-19D	1096403.13	133254.94	☑	0.112	0.002	0.416	☑
MW-1A	1097744.75	132827.19	☑	0.802	0.763	0.824	☐
MW-20D	1095961.75	133409.30	☑	0.211	0.017	0.447	☐
MW-21D	1095489.38	133567.02	☑	0.218	0.010	0.665	☐
MW-22D	1095455.50	133368.55	☑	0.167	0.005	0.452	☐
MW-25D	1094389.25	133662.33	☑	0.418	0.047	0.868	☐
MW-26D	1094375.13	133433.91	☑	0.229	0.008	0.748	☐
MW-27D	1094883.88	133638.45	☑	0.225	0.008	0.855	☐
MW-2A	1097544.25	132767.69	☑	0.328	0.038	0.699	☐
MW-31	1093810.00	133700.70	☑	0.428	0.086	0.925	☐
MW-35	1093675.75	133745.42	☑	0.263	0.003	0.822	☐
MW-3A	1097456.25	132791.06	☑	0.124	0.005	0.395	☐

MAROS Sampling Location Optimization Results

Boomsnub/Airco Superfund Site — **User Name:**

Hazel Dell — **State:** Washington

Well Name	X (feet)	Y (feet)	Removable?	Average Slope Factor*	Minimum Slope Factor*	Maximum Slope Factor*	Eliminated?
MW-41	1093463.88	133848.02	☑	0.557	0.015	0.798	☐
MW-49	1094376.50	133503.09	☑	0.209	0.028	0.761	☐
MW-4A	1097458.00	132868.42	☑	0.153	0.054	0.297	☐
MW-4B	1097458.00	132868.41	☑	0.196	0.058	0.318	☐
MW-4BSHED	1097459.00	132864.77	☑	0.240	0.007	0.510	☐
MW-6A	1097386.13	132930.42	☑	0.589	0.589	0.589	☐
MW-6B	1097380.50	132929.25	☑	0.348	0.004	0.981	☐
PW-1B	1097467.75	132870.81	☑	0.246	0.001	0.754	☐
PZ-39	1096191.50	133375.19	☑	0.841	0.841	0.841	☐

Note: The Slope Factor indicates the relative importance of a well in the monitoring network at a given sampling event; the larger the SF value of a well, the more important the well is and vice versa; the Average Slope Factor measures the overall well importance in the selected time period; the State Plane (i.e., X and Y refer to Easting and Northing, respectively) or local coordinate systems may be used; wells that are NOT selected for analysis are not shown above.
* When the report is generated after running the Excel module, SF values will NOT be shown above.

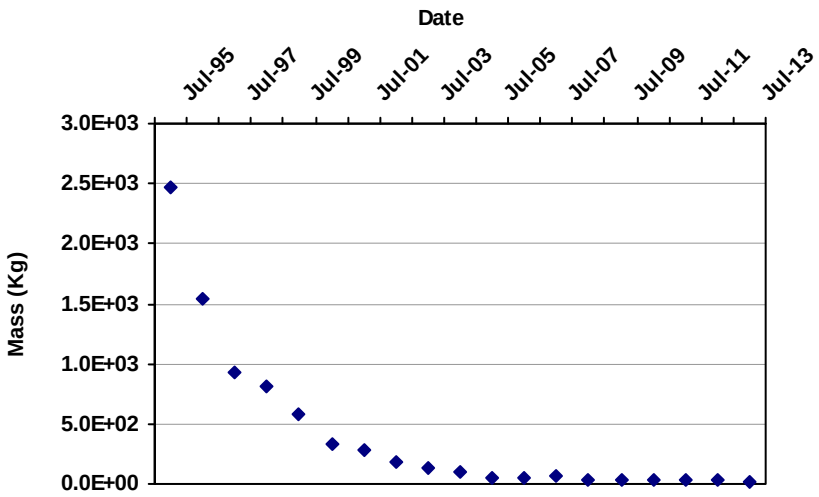
MAROS Zeroth Moment Analysis

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Change in Dissolved Mass Over Time

COC: CHROMIUM, HEXAVALENT



Porosity: 0.30

Saturated Thickness:
Uniform: 65 ft

Mann-Kendall S Statistic:
-163

Confidence in Trend:
100.0%

Coefficient of Variation:
1.59

Zeroth Moment Trend:
D

Data Table:

Effective Date	Constituent	Estimated Mass (Kg)	Number of Wells
7/1/1995	CHROMIUM, HEXAVALENT	2.5E+03	27
7/1/1996	CHROMIUM, HEXAVALENT	1.5E+03	19
7/1/1997	CHROMIUM, HEXAVALENT	9.4E+02	24
7/1/1998	CHROMIUM, HEXAVALENT	8.1E+02	24
7/1/1999	CHROMIUM, HEXAVALENT	5.8E+02	27
7/1/2000	CHROMIUM, HEXAVALENT	3.3E+02	28
7/1/2001	CHROMIUM, HEXAVALENT	2.8E+02	28
7/1/2002	CHROMIUM, HEXAVALENT	1.9E+02	28
7/1/2003	CHROMIUM, HEXAVALENT	1.4E+02	29
7/1/2004	CHROMIUM, HEXAVALENT	9.7E+01	29
7/1/2005	CHROMIUM, HEXAVALENT	4.9E+01	25
7/1/2006	CHROMIUM, HEXAVALENT	5.7E+01	30
7/1/2007	CHROMIUM, HEXAVALENT	5.8E+01	29
7/1/2008	CHROMIUM, HEXAVALENT	3.8E+01	32
7/1/2009	CHROMIUM, HEXAVALENT	3.6E+01	35
7/1/2010	CHROMIUM, HEXAVALENT	2.8E+01	34
7/1/2011	CHROMIUM, HEXAVALENT	2.6E+01	25

MAROS Zeroth Moment Analysis

Boomsnub/Airco Superfund Site **User Name:**

Hazel Dell **State:** Washington

Effective Date	Constituent	Estimated Mass (Kg)	Number of Wells
7/1/2012	CHROMIUM, HEXAVALENT	2.6E+01	31
7/1/2013	CHROMIUM, HEXAVALENT	1.9E+01	25

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); ND = Non-detect. Moments are not calculated for sample events with less than 6 wells.

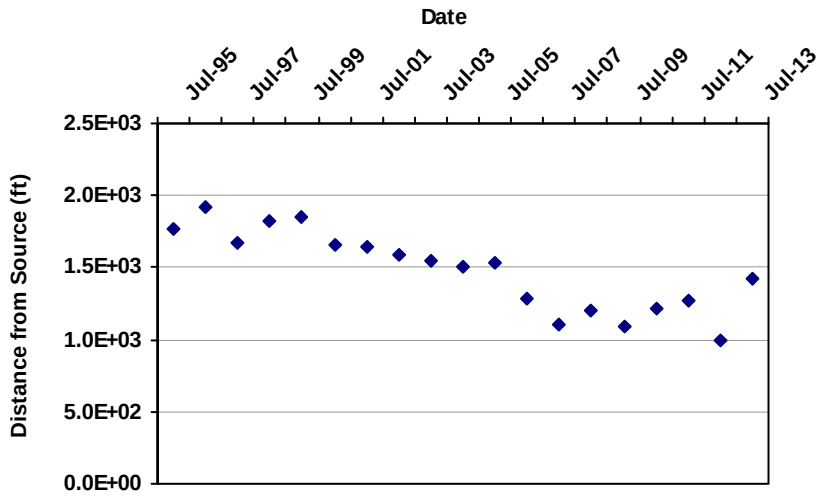
MAROS First Moment Analysis

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

COC: CHROMIUM, HEXAVALENT

Distance from Source to Center of Mass



Mann-Kendall S Statistic:
-127

Confidence in Trend:
100.0%

Coefficient of Variation:
0.19

First Moment Trend:
D

DATA TABLE

Effective Date	Constituent	Xc (ft)	Yc (ft)	Distance from Source	Number of Wells
7/1/1995	CHROMIUM, HEXAVALENT	1,095,767	133,347	1,763	27
7/1/1996	CHROMIUM, HEXAVALENT	1,095,612	133,374	1,920	19
7/1/1997	CHROMIUM, HEXAVALENT	1,095,849	133,295	1,670	24
7/1/1998	CHROMIUM, HEXAVALENT	1,095,698	133,301	1,818	24
7/1/1999	CHROMIUM, HEXAVALENT	1,095,666	133,319	1,853	27
7/1/2000	CHROMIUM, HEXAVALENT	1,095,851	133,268	1,662	28
7/1/2001	CHROMIUM, HEXAVALENT	1,095,871	133,255	1,639	28
7/1/2002	CHROMIUM, HEXAVALENT	1,095,925	133,250	1,586	28
7/1/2003	CHROMIUM, HEXAVALENT	1,095,959	133,250	1,553	29
7/1/2004	CHROMIUM, HEXAVALENT	1,096,002	133,233	1,506	29
7/1/2005	CHROMIUM, HEXAVALENT	1,095,987	133,256	1,527	25
7/1/2006	CHROMIUM, HEXAVALENT	1,096,222	133,191	1,283	30

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). Moments are not calculated for sample events with less than 6 wells.

MAROS COC Assessment

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Effective Date	Constituent	Xc (ft)	Yc (ft)	Distance from Source	Number of Wells
7/1/2007	CHROMIUM, HEXAVALENT	1,096,400	133,141	1,098	29
7/1/2008	CHROMIUM, HEXAVALENT	1,096,305	133,190	1,202	32
7/1/2009	CHROMIUM, HEXAVALENT	1,096,403	133,139	1,095	35
7/1/2010	CHROMIUM, HEXAVALENT	1,096,285	133,173	1,218	34
7/1/2011	CHROMIUM, HEXAVALENT	1,096,231	133,175	1,271	25
7/1/2012	CHROMIUM, HEXAVALENT	1,096,507	133,147	997	31
7/1/2013	CHROMIUM, HEXAVALENT	1,096,079	133,211	1,426	25

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). Moments are not calculated for sample events with less than 6 wells.

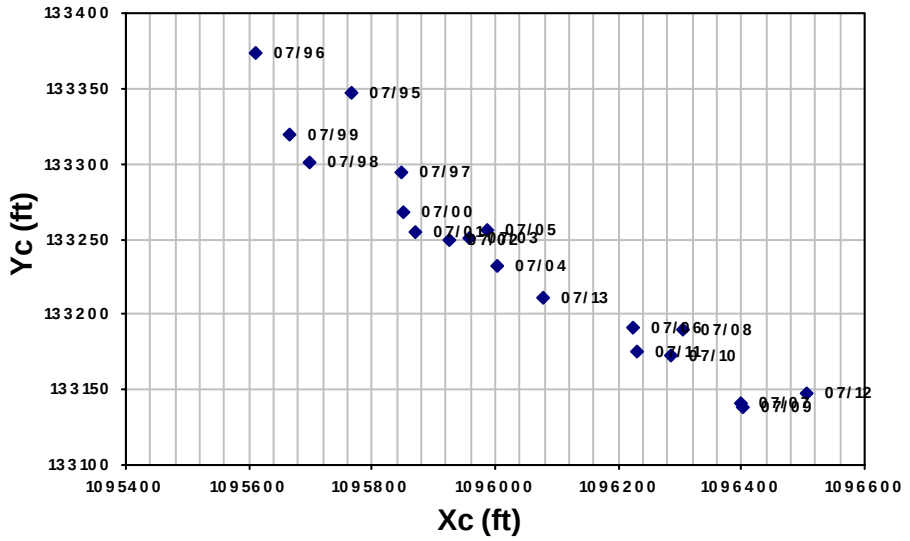
MAROS First Moment Analysis

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

COC: CHROMIUM, HEXAVALENT

Change in Location of Center of Mass Over Time



Groundwater Flow Direction:

Source Coordinates

X: 1,097,463

Y: 132,865

Effective Date	Constituent	Xc (ft)	Yc (ft)	Distance from Source (ft)	Number of Wells
7/1/1995	CHROMIUM, HEX	1,095,767	133,347	1,763	27
7/1/1996	CHROMIUM, HEX	1,095,612	133,374	1,920	19
7/1/1997	CHROMIUM, HEX	1,095,849	133,295	1,670	24
7/1/1998	CHROMIUM, HEX	1,095,698	133,301	1,818	24
7/1/1999	CHROMIUM, HEX	1,095,666	133,319	1,853	27
7/1/2000	CHROMIUM, HEX	1,095,851	133,268	1,662	28
7/1/2001	CHROMIUM, HEX	1,095,871	133,255	1,639	28
7/1/2002	CHROMIUM, HEX	1,095,925	133,250	1,586	28
7/1/2003	CHROMIUM, HEX	1,095,959	133,250	1,553	29
7/1/2004	CHROMIUM, HEX	1,096,002	133,233	1,506	29
7/1/2005	CHROMIUM, HEX	1,095,987	133,256	1,527	25
7/1/2006	CHROMIUM, HEX	1,096,222	133,191	1,283	30
7/1/2007	CHROMIUM, HEX	1,096,400	133,141	1,098	29
7/1/2008	CHROMIUM, HEX	1,096,305	133,190	1,202	32
7/1/2009	CHROMIUM, HEX	1,096,403	133,139	1,095	35
7/1/2010	CHROMIUM, HEX	1,096,285	133,173	1,218	34
7/1/2011	CHROMIUM, HEX	1,096,231	133,175	1,271	25
7/1/2012	CHROMIUM, HEX	1,096,507	133,147	997	31
7/1/2013	CHROMIUM, HEX	1,096,079	133,211	1,426	25

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). Moments are not calculated for sample events with less than 6 wells.

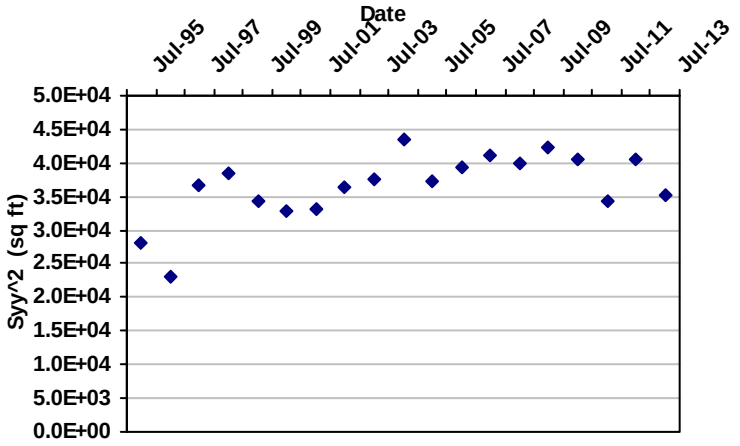
MAROS Second Moment Analysis

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Change in Plume Spread Over Time

COC: CHROMIUM, HEXAVALENT



Mann-Kendall S Statistic:

73

Confidence in Trend:

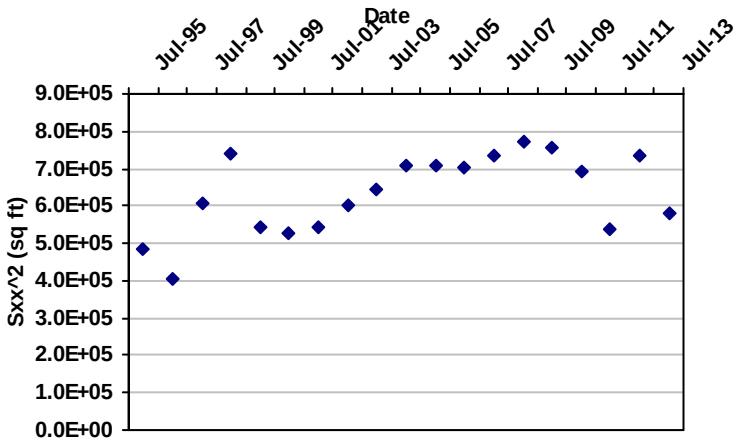
99.5%

Coefficient of Variation:

0.14

Second Moment Trend:

I



Mann-Kendall S Statistic:

63

Confidence in Trend:

98.6%

Coefficient of Variation:

0.17

Second Moment Trend:

I

Data Table:

Effective Date	Constituent	Sigma XX (sq ft)	Sigma YY (sq ft)	Number of Wells
7/1/1995	CHROMIUM, HEXAVALEN	485,178	28,152	27
7/1/1996	CHROMIUM, HEXAVALEN	402,748	22,933	19
7/1/1997	CHROMIUM, HEXAVALEN	606,756	36,814	24
7/1/1998	CHROMIUM, HEXAVALEN	741,160	38,509	24

MAROS Second Moment Analysis

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Data Table:

Effective Date	Constituent	Sigma XX (sq ft)	Sigma YY (sq ft)	Number of Wells
7/1/1999	CHROMIUM, HEXAVALEN	544,645	34,202	27
7/1/2000	CHROMIUM, HEXAVALEN	529,547	32,801	28
7/1/2001	CHROMIUM, HEXAVALEN	542,647	33,222	28
7/1/2002	CHROMIUM, HEXAVALEN	601,665	36,402	28
7/1/2003	CHROMIUM, HEXAVALEN	644,642	37,631	29
7/1/2004	CHROMIUM, HEXAVALEN	707,831	43,622	29
7/1/2005	CHROMIUM, HEXAVALEN	710,220	37,423	25
7/1/2006	CHROMIUM, HEXAVALEN	704,868	39,341	30
7/1/2007	CHROMIUM, HEXAVALEN	735,905	41,062	29
7/1/2008	CHROMIUM, HEXAVALEN	770,260	39,945	32
7/1/2009	CHROMIUM, HEXAVALEN	758,692	42,201	35
7/1/2010	CHROMIUM, HEXAVALEN	693,362	40,603	34
7/1/2011	CHROMIUM, HEXAVALEN	535,595	34,448	25
7/1/2012	CHROMIUM, HEXAVALEN	736,831	40,614	31
7/1/2013	CHROMIUM, HEXAVALEN	581,125	35,167	25

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)

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.

MAROS Individual Well Summary Report

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

COC	Priority COC for Well?	Detection Frequency	Recent Sample Above Goal?	MK Trend	COV	95% UCL	Outlier	Distribution Assumption	Attained Cleanup?	
									Normal	Lognormal
AMW-10A										
CR6	YES	88 %	NO	NT	0.70	0.0123	YES	Lognormal	YES	NO
AMW-11A										
CR6	YES	76 %	NO	NT	0.54	0.0047	NO	Normal	YES	NO
AMW-14										
CR6	YES	100 %	NO	D	2.22	1.2359	YES	No distribution	NO	NO
AMW-27										
CR6	YES	100 %	NO	D	0.99	2.7761	NO	Lognormal	NO	NO
AMW-42										
CR6	YES	98 %	NO	D	1.01	0.1846	YES	Lognormal	NO	NO
AMW-63										
CR6	YES	67 %	NO	S	0.56	0.0103	NO	Normal	YES	NO
AMW-6A										
CR6	YES	100 %	NO	S	0.31	0.0097	NO	Normal	YES	YES
AMW-7A										
CR6	YES	72 %	NO	S	0.66	0.0038	NO	Normal	YES	YES
CPU-13										
CR6	YES	100 %	NO	D	1.28	1.5227	NO	No distribution	NO	NO
CPU-14										
CR6	YES	100 %	NO	D	0.81	0.4343	NO	No distribution	NO	NO
MW-10B										
CR6	YES	100 %	NO	D	0.76	0.3974	NO	Lognormal	NO	NO
MW-10C										
CR6	YES	100 %	YES	D	1.33	1.0015	YES	No distribution	NO	NO
MW-14C										
CR6	YES	100 %	NO	D	1.21	1.2446	YES	Lognormal	NO	NO
MW-14E										
CR6	YES	100 %	NO	D	1.55	4.8494	NO	No distribution	NO	NO
MW-18D										

MAROS Individual Well Summary Report

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

COC	Priority COC for Well?	Detection Frequency	Recent Sample Above Goal?	MK Trend	COV	95% UCL	Outlier	Distribution Assumption	Attained Cleanup?	
									Normal	Lognormal
CR6	YES	100 %	YES	D	1.01	5.0225	NO	No distribution	NO	NO
MW-19D										
CR6	YES	100 %	YES	D	1.15	4.0952	YES	No distribution	NO	NO
MW-1A										
CR6	YES	57 %	NO	I	2.14	0.0345	YES	Lognormal	YES	NO
MW-20D										
CR6	YES	100 %	NO	D	1.11	10.2011	NO	No distribution	NO	NO
MW-21D										
CR6	YES	100 %	NO	D	1.27	5.4939	NO	No distribution	NO	NO
MW-22D										
CR6	YES	100 %	NO	D	1.01	2.4394	NO	Lognormal	NO	NO
MW-25D										
CR6	YES	96 %	NO	D	1.38	2.2728	YES	No distribution	NO	NO
MW-26D										
CR6	YES	100 %	NO	D	0.80	1.3765	NO	No distribution	NO	NO
MW-27D										
CR6	YES	100 %	NO	D	1.41	1.3075	NO	No distribution	NO	NO
MW-2A										
CR6	YES	100 %	YES	NT	1.02	0.9238	NO	Lognormal	NO	NO
MW-31										
CR6	YES	98 %	NO	D	1.62	0.0956	YES	No distribution	NO	NO
MW-35										
CR6	YES	96 %	NO	D	2.89	0.7309	YES	No distribution	NO	NO
MW-3A										
CR6	YES	100 %	NO	D	0.66	0.5876	NO	Normal	NO	NO
MW-41										
CR6	YES	51 %	NO	D	1.57	0.0128	NO	No distribution	YES	NO
MW-49										
CR6	YES	97 %	NO	D	1.07	0.3042	NO	Lognormal	NO	NO

MAROS Individual Well Summary Report

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

COC	Priority COC for Well?	Detection Frequency	Recent Sample Above Goal?	MK Trend	COV	95% UCL	Outlier	Distribution Assumption	Attained Cleanup?	
									Normal	Lognormal
MW-4A										
CR6	YES	100 %	YES	D	0.87	1.9916	NO	Lognormal	NO	NO
MW-4B										
CR6	YES	100 %	YES	D	0.89	1.6934	YES	Lognormal	NO	NO
MW-4BSHED										
CR6	YES	100 %	NO	D	1.38	2.7785	NO	No distribution	NO	NO
MW-6A										
CR6	YES	67 %	YES	NT	1.29	0.1898	NO	Normal	NO	NO
MW-6B										
CR6	YES	100 %	NO	D	1.29	0.4071	YES	No distribution	NO	NO
PW-1B										
CR6	YES	100 %	NO	D	1.03	1.5184	YES	Lognormal	NO	NO
PZ-39										
CR6	YES	67 %	NO	N/A	1.21	0.0174	NO	Normal	NO	NO

APPENDIX C-3

TCE OUTPUTS

MAROS Site Results

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

User Defined Site and Data Assumptions:

Hydrogeology and Plume Information:

Groundwater Seepage Velocity:	180	ft/yr
Current Plume Length:	2700	ft
Current Plume Width:	300	ft
Number of Tail Wells:	53	
Number of Source Wells:	13	

Down Gradient Information:

Distance from Edge of Tail to Nearest:

Down-gradient Receptor:	7200 ft
Down-gradient Property:	1 ft

Distance from Source to Nearest:

Down Gradient Receptor:	9000 ft
Down Gradient Property:	1 ft

Source Information:

Source Treatment: Pump and Treat

NAPL is not observed at this site.

Data Consolidation Assumptions:

Time Period: 1/19/1995 **to** 10/31/2013

Consolidation Period: Yearly

Consolidation Type: Geometric Mean

Duplicate Consolidation: Maximum

ND Values: Detection Limit

J Flag Values: Actual Value

Plume Information Weighting Assumptions:

Consolidation Step 1. Weight Plume Information by Chemical

Summary Weighting:

Weighting Applied to All Chemicals Equally

Consolidation Step 2. Weight Well Information by Chemical

Well Weighting:

No Weighting of Wells was Applied.

Chemical Weighting:

No Weighting of Chemicals was Applied.

Note: These assumptions were made when consolidating the historical montoring data and lumping the Wells and COCs.

MAROS Site Results

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

1. Compliance Monitoring/Remediation Optimization Results:

Preliminary Monitoring System Optimization Results: Based on site classification, source treatment and Monitoring System Category the following suggestions are made for site Sampling Frequency, Duration of Sampling before reassessment, and Well Density. These criteria take into consideration: Plume Stability, Type of Plume, and Groundwater Velocity.

COC	Tail Stability	Source Stability	Level of Effort	Sampling Duration	Sampling Frequency	Sampling Density
TRICHLOROETHYLENE (TCE)	PD	PD	L	ı mechanism unitl reach stal	No Recommendation	38

Note

Plume Status: (I) Increasing; (PI)Probably Increasing; (S) Stable; (NT) No Trend; (PD) Probably Decreasing; (D) Decreasing

Design Categories: (E) Extensive; (M) Moderate; (L) Limited
(N/A) Not Applicable, Insufficient Data Available

Level of Monitoring Effort Indicated by Analysis: ***Limited***

2. Spatial Moment Analysis Results:

Spatial Moment Analysis Summary:

Moment Type	Constituent	Coefficient of Variation	Mann-Kendall S Statistic	Confidence in Trend	Moment Trend
0th Moment	TRICHLOROETHYLENE (TCE)	1.13	-143	100.0%	D
First Moment	TRICHLOROETHYLENE (TCE)	0.09	5	55.5%	NT
Second Moment X	TRICHLOROETHYLENE (TCE)	0.28	-81	99.8%	D
Second Moment Y	TRICHLOROETHYLENE (TCE)	0.32	-83	99.8%	D

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

Porosity: 0.30 **Saturated Thickness:** Uniform: 65 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); (ND) Non Detect.

MAROS Linear Regression Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Time Period: 1/19/1995 **to** 10/31/2013
Consolidation Period: Yearly
Consolidation Type: Geometric Mean
Duplicate Consolidation: Maximum
ND Values: Detection Limit
J Flag Values : Actual Value

Well	Source/Tail	Average Conc (mg/L)	Median Conc (mg/L)	Standard Deviation	All Samples "ND" ?	Ln Slope	Coefficient of Variation	Confidence in Trend	Concentration Trend
TRICHLOROETHYLENE (TCE)									
AMW-10A	T	2.4E-04	2.5E-04	1.5E-04	No	4.2E-04	0.64	98.7%	I
AMW-11A	T	4.1E-04	4.8E-04	3.0E-04	No	5.9E-04	0.75	99.8%	I
AMW-12A	S	1.4E+00	3.6E-01	2.3E+00	No	-9.8E-04	1.65	100.0%	D
AMW-13A	S	3.8E-03	1.9E-04	8.2E-03	No	-9.8E-05	2.17	64.0%	NT
AMW-14	T	2.3E-02	3.4E-03	6.4E-02	No	-8.2E-04	2.81	100.0%	D
AMW-16	T	1.8E-02	5.1E-03	2.5E-02	No	-6.7E-04	1.38	100.0%	D
AMW-17	T	3.3E-02	3.4E-03	6.4E-02	No	1.0E-04	1.93	68.0%	NT
AMW-18	T	8.2E-02	1.1E-03	1.4E-01	No	1.4E-03	1.70	100.0%	I
AMW-19A	S	7.4E-02	1.6E-02	1.1E-01	No	-1.1E-03	1.54	100.0%	D
AMW-1A	S	1.3E-01	2.0E-02	2.3E-01	No	-7.4E-04	1.74	99.6%	D
AMW-26	S	1.7E-02	5.6E-04	2.5E-02	No	-9.9E-04	1.49	99.8%	D
AMW-27	T	4.2E-02	4.8E-02	2.4E-02	No	-4.2E-04	0.56	100.0%	D
AMW-2A	S	1.1E+00	5.6E-01	1.4E+00	No	-1.1E-03	1.33	100.0%	D
AMW-2B	S	5.9E-04	4.5E-04	7.2E-04	No	1.1E-04	1.23	72.9%	NT
AMW-3A	S	5.8E-03	5.6E-03	6.2E-03	No	-6.6E-04	1.06	100.0%	D
AMW-42	T	3.7E-03	1.2E-03	6.0E-03	No	-5.7E-04	1.63	98.9%	D
AMW-52A	S	3.1E-04	1.5E-04	3.1E-04	No	-5.5E-04	1.00	99.3%	D
AMW-53A	S	3.6E-02	8.3E-03	7.2E-02	No	-8.0E-04	1.99	99.3%	D
AMW-54A	S	3.5E-02	2.1E-03	5.5E-02	No	-1.2E-03	1.56	99.2%	D
AMW-55A	S	7.8E-03	1.1E-03	1.4E-02	No	-9.1E-04	1.75	98.6%	D

MAROS Linear Regression Statistics Summary

Boomsnub/Airco Superfund Site **User Name:**

Hazel Dell **State:** Washington

TRICHLOROETHYLENE (TCE)

Well	Source/Tail	Average Conc (mg/L)	Median Conc (mg/L)	Standard Deviation	All Samples "ND" ?	Ln Slope	Coefficient of Variation	Confidence in Trend	Concentration Trend
AMW-56A	T	7.1E-02	2.4E-03	1.9E-01	No	-1.2E-03	2.69	97.6%	D
AMW-58	T	1.4E-03	8.9E-04	1.8E-03	No	-1.6E-03	1.24	99.5%	D
AMW-59	T	1.3E-01	1.2E-01	5.3E-02	No	-2.9E-04	0.40	94.6%	PD
AMW-61	T	1.4E-02	6.3E-03	1.5E-02	No	-6.6E-04	1.06	98.4%	D
AMW-63	T	1.1E-04	1.2E-04	3.8E-05	No	-1.1E-04	0.34	56.6%	S
AMW-64	T	1.2E-01	1.2E-01	4.6E-02	No	0.0E+00	0.00	0.0%	N/A
AMW-6A	T	3.7E-04	4.3E-04	2.7E-04	No	7.6E-04	0.72	100.0%	I
AMW-7A	T	2.7E-04	1.9E-04	2.2E-04	No	5.2E-04	0.84	99.7%	I
AMW-8A	T	7.8E-02	3.7E-02	1.5E-01	No	-1.1E-03	1.89	100.0%	D
CPU-12	T	4.1E-03	4.0E-03	2.4E-03	No	2.2E-04	0.59	97.2%	I
CPU-13	T	1.8E-02	3.4E-03	2.9E-02	No	-6.5E-04	1.59	100.0%	D
CPU-14	T	2.4E-02	1.6E-02	1.7E-02	No	-3.5E-04	0.73	100.0%	D
MW-10B	T	9.9E-02	4.7E-02	1.7E-01	No	-2.9E-04	1.73	99.3%	D
MW-10C	T	1.7E-01	5.6E-02	3.1E-01	No	-8.2E-04	1.81	100.0%	D
MW-12C	T	7.9E-01	4.9E-02	2.1E+00	No	-1.0E-03	2.61	100.0%	D
MW-13C	T	8.8E-03	5.8E-03	6.8E-03	No	-3.1E-04	0.77	100.0%	D
MW-14C	T	2.3E-01	5.7E-02	4.2E-01	No	-6.2E-04	1.78	100.0%	D
MW-14E	T	8.6E-01	1.9E-01	1.5E+00	No	-6.4E-04	1.78	100.0%	D
MW-15E	T	1.3E-01	1.5E-02	2.7E-01	No	-7.3E-04	2.13	100.0%	D
MW-16E	T	2.3E-03	1.9E-03	2.0E-03	No	3.0E-04	0.90	85.0%	NT
MW-18D	T	8.5E-01	2.3E-01	1.4E+00	No	-7.0E-04	1.61	100.0%	D
MW-18E	T	6.0E-01	3.0E-01	6.8E-01	No	-3.5E-04	1.14	100.0%	D
MW-19D	T	3.7E-01	7.5E-02	6.3E-01	No	-5.8E-04	1.72	100.0%	D
MW-1A	S	1.1E+00	9.0E-01	1.2E+00	No	-1.2E-03	1.07	100.0%	D
MW-20D	T	7.9E-01	1.3E-01	1.2E+00	No	-7.6E-04	1.48	100.0%	D
MW-21D	T	2.6E-01	2.7E-02	5.4E-01	No	-9.0E-04	2.05	100.0%	D
MW-22D	T	7.1E-02	3.2E-02	8.2E-02	No	-6.3E-04	1.16	100.0%	D

MAROS Linear Regression Statistics Summary

Boomsnub/Airco Superfund Site **User Name:**

Hazel Dell **State:** Washington

TRICHLOROETHYLENE (TCE)

Well	Source/Tail	Average Conc (mg/L)	Median Conc (mg/L)	Standard Deviation	All Samples "ND" ?	Ln Slope	Coefficient of Variation	Confidence in Trend	Concentration Trend
MW-23D	T	1.6E-02	5.9E-03	1.9E-02	No	-5.6E-04	1.19	100.0%	D
MW-25D	T	1.5E-02	3.6E-03	2.4E-02	No	-5.9E-04	1.65	100.0%	D
MW-26D	T	9.1E-03	2.3E-03	1.1E-02	No	-4.7E-04	1.25	100.0%	D
MW-27D	T	4.2E-02	2.2E-03	7.2E-02	No	-9.7E-04	1.70	100.0%	D
MW-2A	T	6.0E-03	4.7E-03	4.0E-03	No	-2.6E-04	0.66	100.0%	D
MW-31	T	2.7E-03	4.9E-04	5.7E-03	No	-7.9E-04	2.12	100.0%	D
MW-35	T	1.3E-02	5.8E-03	2.1E-02	No	-3.4E-04	1.63	99.1%	D
MW-38	T	2.5E-02	1.1E-02	3.0E-02	No	1.4E-03	1.21	81.7%	NT
MW-3B	T	9.5E-03	7.6E-03	9.3E-03	No	-3.9E-04	0.97	99.9%	D
MW-41	T	4.5E-04	5.0E-04	3.5E-04	No	-4.9E-04	0.78	99.7%	D
MW-49	T	7.0E-03	4.0E-03	7.4E-03	No	-2.1E-04	1.05	83.1%	NT
MW-4B	T	5.7E-02	6.6E-03	1.5E-01	No	-5.2E-05	2.61	58.1%	NT
MW-4BSHED	T	4.1E-02	1.2E-02	5.8E-02	No	-6.9E-04	1.43	97.3%	D
MW-6B	T	1.6E-01	1.2E-01	2.4E-01	No	-7.4E-04	1.50	100.0%	D
MW-7B	T	1.6E-01	1.1E-01	1.5E-01	No	-6.3E-04	0.97	97.3%	D
MW-8B	T	4.9E-01	2.8E-02	9.4E-01	No	-9.4E-04	1.90	99.9%	D
MW-9B	T	3.4E-01	5.8E-02	5.3E-01	No	-9.0E-04	1.54	100.0%	D
PW-1B	T	1.4E-01	4.4E-02	1.8E-01	No	-8.1E-04	1.34	100.0%	D
PZ-39	T	4.1E-01	7.7E-02	8.3E-01	No	-7.7E-04	2.03	100.0%	D

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

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Time Period: 1/19/1995 **to** 10/31/2013
Consolidation Period: Yearly
Consolidation Type: Geometric Mean
Duplicate Consolidation: Maximum
ND Values: 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
TRICHLOROETHYLENE (TCE)								
AMW-10A	T	8	6	0.64	10	86.2%	No	NT
AMW-11A	T	9	7	0.75	6	69.4%	No	NT
AMW-12A	S	19	19	1.65	-123	100.0%	No	D
AMW-13A	S	18	16	2.17	-1	50.0%	No	NT
AMW-14	T	14	13	2.81	-83	100.0%	No	D
AMW-16	T	18	18	1.38	-140	100.0%	No	D
AMW-17	T	18	18	1.93	-34	89.3%	No	NT
AMW-18	T	17	16	1.70	67	99.8%	No	I
AMW-19A	S	17	17	1.54	-100	100.0%	No	D
AMW-1A	S	19	19	1.74	-77	99.7%	No	D
AMW-26	S	15	13	1.49	-50	99.3%	No	D
AMW-27	T	16	16	0.56	-100	100.0%	No	D
AMW-2A	S	19	19	1.33	-139	100.0%	No	D
AMW-2B	S	14	13	1.23	-4	56.4%	No	NT
AMW-3A	S	18	18	1.06	-109	100.0%	No	D
AMW-42	T	13	13	1.63	-35	98.2%	No	D
AMW-52A	S	10	8	1.00	-21	96.4%	No	D
AMW-53A	S	11	11	1.99	-27	98.0%	No	D
AMW-54A	S	10	10	1.56	-20	95.5%	No	D
AMW-55A	S	9	9	1.75	-6	69.4%	No	NT
AMW-56A	T	10	10	2.69	-15	89.2%	No	NT
AMW-58	T	5	4	1.24	-10	99.2%	No	D
AMW-59	T	7	7	0.40	-11	93.2%	No	PD
AMW-61	T	6	6	1.06	-13	99.2%	No	D
AMW-63	T	4	2	0.34	-2	62.5%	No	S
AMW-64	T	2	2	0.00	0	0.0%	No	N/A

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

TRICHLOROETHYLENE (TCE)

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
AMW-6A	T	9	6	0.72	9	79.2%	No	NT
AMW-7A	T	14	7	0.84	51	99.8%	No	I
AMW-8A	T	18	18	1.89	-151	100.0%	No	D
CPU-12	T	19	19	0.59	30	84.3%	No	NT
CPU-13	T	19	19	1.59	-161	100.0%	No	D
CPU-14	T	19	19	0.73	-128	100.0%	No	D
MW-10B	T	19	19	1.73	-83	99.8%	No	D
MW-10C	T	19	19	1.81	-129	100.0%	No	D
MW-12C	T	17	17	2.61	-116	100.0%	No	D
MW-13C	T	17	17	0.77	-84	100.0%	No	D
MW-14C	T	19	19	1.78	-149	100.0%	No	D
MW-14E	T	19	19	1.78	-159	100.0%	No	D
MW-15E	T	14	14	2.13	-91	100.0%	No	D
MW-16E	T	12	10	0.90	9	70.4%	No	NT
MW-18D	T	19	19	1.61	-161	100.0%	No	D
MW-18E	T	18	18	1.14	-106	100.0%	No	D
MW-19D	T	19	19	1.72	-134	100.0%	No	D
MW-1A	S	19	19	1.07	-133	100.0%	No	D
MW-20D	T	19	19	1.48	-155	100.0%	No	D
MW-21D	T	19	19	2.05	-171	100.0%	No	D
MW-22D	T	19	19	1.16	-159	100.0%	No	D
MW-23D	T	19	19	1.19	-129	100.0%	No	D
MW-25D	T	19	19	1.65	-138	100.0%	No	D
MW-26D	T	19	19	1.25	-101	100.0%	No	D
MW-27D	T	19	19	1.70	-128	100.0%	No	D
MW-2A	T	15	15	0.66	-62	99.9%	No	D
MW-31	T	14	14	2.12	-85	100.0%	No	D
MW-35	T	15	15	1.63	-46	98.8%	No	D
MW-38	T	4	4	1.21	0	37.5%	No	NT
MW-3B	T	10	10	0.97	-32	99.9%	No	D
MW-41	T	13	3	0.78	-26	93.6%	No	PD
MW-49	T	14	14	1.05	-41	98.7%	No	D
MW-4B	T	10	10	2.61	-9	75.8%	No	NT

MAROS Mann-Kendall Statistics Summary

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

TRICHLOROETHYLENE (TCE)

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
MW-4BSHED	T	8	8	1.43	-22	99.8%	No	D
MW-6B	T	19	19	1.50	-113	100.0%	No	D
MW-7B	T	5	5	0.97	-8	95.8%	No	D
MW-8B	T	9	9	1.90	-34	100.0%	No	D
MW-9B	T	10	10	1.54	-43	100.0%	No	D
PW-1B	T	19	19	1.34	-129	100.0%	No	D
PZ-39	T	6	6	2.03	-15	99.9%	No	D

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)

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

MAROS Power Analysis for Individual Well Cleanup Status

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

From Period: 1/19/1995 **to** 10/31/2013

Well Name	Sample Size	Sample Mean	Sample Stdev.	Normal Distribution Cleanup Status	Lognormal Distribution Cleanup Status	Alpha Level	Expected Power
TRICHLOROETHYLENE (TCE)	Cleanup Goal (mg/L) = 0.005				Target Level (mg/L) = 0.004		
AMW-10A	8	2.87E-04	1.59E-04	Attained	Cont Sampling	0.05	0.8
AMW-11A	9	4.40E-04	3.21E-04	Attained	Cont Sampling	0.05	0.8
AMW-12A	19	1.67E+00	2.95E+00	Cont Sampling	Cont Sampling	0.05	0.8
AMW-13A	18	4.80E-03	1.07E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-14	14	2.77E-02	8.19E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-16	18	1.81E-02	2.49E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-17	18	3.49E-02	6.47E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-18	17	8.31E-02	1.41E-01	Cont Sampling	Cont Sampling	0.05	0.8
AMW-19A	17	8.16E-02	1.18E-01	Cont Sampling	Cont Sampling	0.05	0.8
AMW-1A	19	1.49E-01	2.42E-01	Cont Sampling	Cont Sampling	0.05	0.8
AMW-26	15	1.75E-02	2.46E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-27	16	4.30E-02	2.40E-02	Cont Sampling	Not Attained	0.05	0.8
AMW-2A	19	1.10E+00	1.44E+00	Cont Sampling	Cont Sampling	0.05	0.8
AMW-2B	14	1.67E-03	4.02E-03	Cont Sampling	Cont Sampling	0.05	0.8
AMW-3A	18	6.01E-03	6.47E-03	Cont Sampling	Cont Sampling	0.05	0.8
AMW-42	13	4.15E-03	7.34E-03	Cont Sampling	Cont Sampling	0.05	0.8
AMW-52A	10	1.00E-03	2.27E-03	Attained	Cont Sampling	0.05	0.8
AMW-53A	11	3.97E-02	7.14E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-54A	10	3.66E-02	5.70E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-55A	9	8.11E-03	1.35E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-56A	10	7.49E-02	1.91E-01	Cont Sampling	Cont Sampling	0.05	0.8
AMW-58	5	1.64E-03	2.20E-03	Cont Sampling	Cont Sampling	0.05	0.8
AMW-59	7	1.34E-01	5.63E-02	Cont Sampling	Not Attained	0.05	0.8
AMW-61	6	1.46E-02	1.52E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-63	4	1.11E-04	3.89E-05	Attained	Cont Sampling	0.05	0.8
AMW-64	2	1.24E-01	4.72E-02	N/C	N/C	0.05	0.8
AMW-6A	9	3.87E-04	2.79E-04	Attained	Cont Sampling	0.05	0.8
AMW-7A	14	2.80E-04	2.25E-04	Attained	Cont Sampling	0.05	0.8
AMW-8A	18	8.07E-02	1.49E-01	Cont Sampling	Cont Sampling	0.05	0.8
CPU-12	19	4.43E-03	2.14E-03	Cont Sampling	Cont Sampling	0.05	0.8

MAROS Power Analysis for Individual Well Cleanup Status

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

From Period: 1/19/1995 **to** 10/31/2013

Well Name	Sample Size	Sample Mean	Sample Stdev.	Normal Distribution Cleanup Status	Lognormal Distribution Cleanup Status	Alpha Level	Expected Power
CPU-13	19	1.99E-02	3.01E-02	Cont Sampling	Cont Sampling	0.05	0.8
CPU-14	19	2.37E-02	1.73E-02	Cont Sampling	Not Attained	0.05	0.8
MW-10B	19	1.12E-01	1.96E-01	Cont Sampling	Not Attained	0.05	0.8
MW-10C	19	1.83E-01	3.20E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-12C	17	8.30E-01	2.10E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-13C	17	9.01E-03	6.92E-03	Cont Sampling	Not Attained	0.05	0.8
MW-14C	19	2.65E-01	4.77E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-14E	19	8.72E-01	1.53E+00	Cont Sampling	Not Attained	0.05	0.8
MW-15E	14	1.35E-01	2.87E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-16E	12	2.32E-03	2.01E-03	Attained	Cont Sampling	0.05	0.8
MW-18D	19	9.11E-01	1.46E+00	Cont Sampling	Not Attained	0.05	0.8
MW-18E	18	6.25E-01	7.13E-01	Cont Sampling	Not Attained	0.05	0.8
MW-19D	19	3.84E-01	6.70E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-1A	19	1.13E+00	1.21E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-20D	19	8.05E-01	1.19E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-21D	19	2.72E-01	5.60E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-22D	19	7.31E-02	8.48E-02	Cont Sampling	Not Attained	0.05	0.8
MW-23D	19	1.70E-02	1.87E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-25D	19	1.58E-02	2.64E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-26D	19	9.72E-03	1.20E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-27D	19	4.39E-02	7.25E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-2A	15	6.37E-03	4.45E-03	Cont Sampling	Not Attained	0.05	0.8
MW-31	14	2.84E-03	6.14E-03	Cont Sampling	Cont Sampling	0.05	0.8
MW-35	15	1.39E-02	2.11E-02	Cont Sampling	Not Attained	0.05	0.8
MW-38	4	2.50E-02	3.01E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-3B	10	9.65E-03	9.37E-03	Cont Sampling	Cont Sampling	0.05	0.8
MW-41	13	9.09E-04	1.19E-03	Attained	Cont Sampling	0.05	0.8
MW-49	14	1.58E-02	2.90E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-4B	10	5.80E-02	1.52E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-4BSHED	8	4.37E-02	6.27E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-6B	19	1.93E-01	2.70E-01	Cont Sampling	Cont Sampling	0.05	0.8

MAROS Power Analysis for Individual Well Cleanup Status

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

From Period: 1/19/1995 **to** 10/31/2013

Well Name	Sample Size	Sample Mean	Sample Stdev.	Normal Distribution Cleanup Status	Lognormal Distribution Cleanup Status	Alpha Level	Expected Power
MW-7B	5	1.92E-01	2.24E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-8B	9	5.37E-01	1.00E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-9B	10	3.65E-01	5.63E-01	Cont Sampling	Cont Sampling	0.05	0.8
PW-1B	19	1.43E-01	1.91E-01	Cont Sampling	Cont Sampling	0.05	0.8
PZ-39	6	4.09E-01	8.29E-01	Cont Sampling	Cont Sampling	0.05	0.8

Note: N/C refers to "not conducted" because of insufficient data (N<4); S/E indicates the sample mean significantly exceeds the cleanup level and thus no analysis is conducted; Sample Size is the number of concentration data in a sampling location that are used in the analysis; Target Level is the expected mean concentration in wells after cleanup attainment, it is only used in individual well celanup status evaluation. The test for evaluating attainment status is from EPA (1992). Refer to Appendix A.6 of MAROS Manual for details.

Individual Well Cleanup Status - Optional Analysis Results

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

From Period: 1/19/1995 **to** 10/31/2013

Well	Sample Size	Sample Mean	Sample Stdev.	Normal Distribution Assumption: Significantly < Cleanup Goal?	Normal Distribution Assumption: Power	Normal Distribution Assumption: Expected Sample	Lognormal Distribution Assumption: Significantly < Cleanup Goal?	Lognormal Distribution Assumption: Power	Lognormal Distribution Assumption: Expected Sample
TRICHLOROETHYLENE (TCE) Cleanup Goal (mg/L) = 0.005				Alpha Level = 0.05			Expected Power = 0.8		
AMW-10A	8	2.87E-04	1.59E-04	YES	1.000	<=3	YES	1.000	<=3
AMW-11A	9	4.40E-04	3.21E-04	YES	1.000	<=3	YES	0.988	5
AMW-12A	19	1.67E+00	2.95E+00	NO	S/E	S/E	NO	S/E	S/E
AMW-13A	18	4.80E-03	1.07E-02	NO	0.058	>100	NO	S/E	S/E
AMW-14	14	2.77E-02	8.19E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-16	18	1.81E-02	2.49E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-17	18	3.49E-02	6.47E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-18	17	8.31E-02	1.41E-01	NO	S/E	S/E	NO	S/E	S/E
AMW-19A	17	8.16E-02	1.18E-01	NO	S/E	S/E	NO	S/E	S/E
AMW-1A	19	1.49E-01	2.42E-01	NO	S/E	S/E	NO	S/E	S/E
AMW-26	15	1.75E-02	2.46E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-27	16	4.30E-02	2.40E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-2A	19	1.10E+00	1.44E+00	NO	S/E	S/E	NO	S/E	S/E
AMW-2B	14	1.67E-03	4.02E-03	YES	0.916	10	YES	0.828	13
AMW-3A	18	6.01E-03	6.47E-03	NO	S/E	S/E	NO	S/E	S/E
AMW-42	13	4.15E-03	7.34E-03	NO	0.107	>100	NO	0.124	>100
AMW-52A	10	1.00E-03	2.27E-03	YES	1.000	<=3	YES	0.990	5
AMW-53A	11	3.97E-02	7.14E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-54A	10	3.66E-02	5.70E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-55A	9	8.11E-03	1.35E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-56A	10	7.49E-02	1.91E-01	NO	S/E	S/E	NO	S/E	S/E
AMW-58	5	1.64E-03	2.20E-03	YES	0.932	4	NO	0.157	65
AMW-59	7	1.34E-01	5.63E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-61	6	1.46E-02	1.52E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-63	4	1.11E-04	3.89E-05	YES	1.000	<=3	YES	1.000	<=3
AMW-64	2	1.24E-01	4.72E-02	N/C	S/E	S/E	N/C	S/E	S/E
AMW-6A	9	3.87E-04	2.79E-04	YES	1.000	<=3	YES	0.893	7

Individual Well Cleanup Status - Optional Analysis Results

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

From Period: 1/19/1995 **to** 10/31/2013

				Normal Distribution Assumption			Lognormal Distribution Assumption		
Well Name	**Sample Size**	**Sample Mean**	**Sample Stdev.**	**Significantly < Cleanup Goal?**	**Power**	**Expected Sample**	**Significantly < Cleanup Goal?**	**Power**	**Expected Sample**
AMW-7A	14	2.80E-04	2.25E-04	YES	1.000	<=3	YES	1.000	<=3
AMW-8A	18	8.07E-02	1.49E-01	NO	S/E	S/E	NO	S/E	S/E
CPU-12	19	4.43E-03	2.14E-03	NO	0.304	89	NO	0.350	73
CPU-13	19	1.99E-02	3.01E-02	NO	S/E	S/E	NO	S/E	S/E
CPU-14	19	2.37E-02	1.73E-02	NO	S/E	S/E	NO	S/E	S/E
MW-10B	19	1.12E-01	1.96E-01	NO	S/E	S/E	NO	S/E	S/E
MW-10C	19	1.83E-01	3.20E-01	NO	S/E	S/E	NO	S/E	S/E
MW-12C	17	8.30E-01	2.10E+00	NO	S/E	S/E	NO	S/E	S/E
MW-13C	17	9.01E-03	6.92E-03	NO	S/E	S/E	NO	S/E	S/E
MW-14C	19	2.65E-01	4.77E-01	NO	S/E	S/E	NO	S/E	S/E
MW-14E	19	8.72E-01	1.53E+00	NO	S/E	S/E	NO	S/E	S/E
MW-15E	14	1.35E-01	2.87E-01	NO	S/E	S/E	NO	S/E	S/E
MW-16E	12	2.32E-03	2.01E-03	YES	0.998	5	NO	S/E	S/E
MW-18D	19	9.11E-01	1.46E+00	NO	S/E	S/E	NO	S/E	S/E
MW-18E	18	6.25E-01	7.13E-01	NO	S/E	S/E	NO	S/E	S/E
MW-19D	19	3.84E-01	6.70E-01	NO	S/E	S/E	NO	S/E	S/E
MW-1A	19	1.13E+00	1.21E+00	NO	S/E	S/E	NO	S/E	S/E
MW-20D	19	8.05E-01	1.19E+00	NO	S/E	S/E	NO	S/E	S/E
MW-21D	19	2.72E-01	5.60E-01	NO	S/E	S/E	NO	S/E	S/E
MW-22D	19	7.31E-02	8.48E-02	NO	S/E	S/E	NO	S/E	S/E
MW-23D	19	1.70E-02	1.87E-02	NO	S/E	S/E	NO	S/E	S/E
MW-25D	19	1.58E-02	2.64E-02	NO	S/E	S/E	NO	S/E	S/E
MW-26D	19	9.72E-03	1.20E-02	NO	S/E	S/E	NO	S/E	S/E
MW-27D	19	4.39E-02	7.25E-02	NO	S/E	S/E	NO	S/E	S/E
MW-2A	15	6.37E-03	4.45E-03	NO	S/E	S/E	NO	S/E	S/E
MW-31	14	2.84E-03	6.14E-03	NO	0.358	51	YES	0.636	22
MW-35	15	1.39E-02	2.11E-02	NO	S/E	S/E	NO	S/E	S/E
MW-38	4	2.50E-02	3.01E-02	NO	S/E	S/E	NO	S/E	S/E
MW-3B	10	9.65E-03	9.37E-03	NO	S/E	S/E	NO	S/E	S/E

Individual Well Cleanup Status - Optional Analysis Results

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

From Period: 1/19/1995 **to** 10/31/2013

Well Name	Sample Size	Sample Mean	Sample Stdev.	Normal Distribution Assumption: Significantly < Cleanup Goal?	Normal Distribution Assumption: Power	Normal Distribution Assumption: Expected Sample	Lognormal Distribution Assumption: Significantly < Cleanup Goal?	Lognormal Distribution Assumption: Power	Lognormal Distribution Assumption: Expected Sample
MW-41	13	9.09E-04	1.19E-03	YES	1.000	<=3	YES	0.995	6
MW-49	14	1.58E-02	2.90E-02	NO	S/E	S/E	NO	S/E	S/E
MW-4B	10	5.80E-02	1.52E-01	NO	S/E	S/E	NO	S/E	S/E
MW-4BSHE	8	4.37E-02	6.27E-02	NO	S/E	S/E	NO	S/E	S/E
MW-6B	19	1.93E-01	2.70E-01	NO	S/E	S/E	NO	S/E	S/E
MW-7B	5	1.92E-01	2.24E-01	NO	S/E	S/E	NO	S/E	S/E
MW-8B	9	5.37E-01	1.00E+00	NO	S/E	S/E	NO	S/E	S/E
MW-9B	10	3.65E-01	5.63E-01	NO	S/E	S/E	NO	S/E	S/E
PW-1B	19	1.43E-01	1.91E-01	NO	S/E	S/E	NO	S/E	S/E
PZ-39	6	4.09E-01	8.29E-01	NO	S/E	S/E	NO	S/E	S/E

Note: N/C refers to "not conducted" because of insufficient data (N<4); S/E indicates the sample mean significantly exceeds the cleanup level and thus no analysis is conducted; Sample Size is the number of concentration data in a sampling location that are used in the power analysis; Expected Sample Size is the number of concentration data needed to reach the Expected Power under current sample variability; The Target Level is the expected mean concentration in wells after cleanup attainment, it is only used in individual well celanup status evaluation. The Student's t-test on mean difference is used in this analysis. Refer to Appendix A.6 of MAROS Manual for details.

MAROS Sampling Frequency Optimization Results

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

The Overall Number of Sampling Events: 351

"Recent Period" defined by events: **From** Sample Event 1 (1/19/1995) **To** Sample Event 351 (10/31/2013)

"Rate of Change" parameters used:

Constituent	Cleanup Goal	Low Rate	Medium Rate	High Rate
TRICHLOROETH	0.005	0.0025	0.005	0.01

Units: Cleanup Goal is in mg/L; all rate parameters are in mg/L/year.

Well	Recommended Sampling	Frequency Based on	Frequency Based on
TRICHLOROETHYLENE (TCE)			
AMW-10A	Biennial	Biennial	Biennial
AMW-11A	Biennial	Biennial	Biennial
AMW-12A	Biennial	Biennial	Biennial
AMW-13A	Biennial	Biennial	Biennial
AMW-14	Biennial	Biennial	Biennial
AMW-16	Biennial	Biennial	Biennial
AMW-17	Quarterly	Quarterly	SemiAnnual
AMW-18	Quarterly	Quarterly	Quarterly
AMW-19A	Biennial	Biennial	Biennial
AMW-1A	Biennial	Biennial	Biennial
AMW-26	Biennial	Biennial	Biennial
AMW-27	Biennial	Biennial	Biennial
AMW-2A	Biennial	Biennial	Biennial
AMW-2B	Biennial	Biennial	Biennial
AMW-3A	Biennial	Biennial	Biennial
AMW-42	Biennial	Biennial	Biennial
AMW-52A	Biennial	Biennial	Biennial
AMW-53A	Biennial	Biennial	Biennial
AMW-54A	Biennial	Biennial	Biennial
AMW-55A	Biennial	Biennial	Biennial
AMW-56A	Biennial	Biennial	Biennial
AMW-58	Biennial	Biennial	Biennial
AMW-59	Biennial	Biennial	Biennial

MAROS Sampling Frequency Optimization Results

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Recommended Sampling	Frequency Based on	Frequency Based on
AMW-61	Biennial	Biennial	Biennial
AMW-63	Biennial	Biennial	Biennial
AMW-64	Quarterly	Quarterly	Quarterly
AMW-6A	Biennial	Biennial	Biennial
AMW-7A	Biennial	Biennial	Biennial
AMW-8A	Biennial	Biennial	Biennial
CPU-12	Biennial	Biennial	Biennial
CPU-13	Biennial	Biennial	Biennial
CPU-14	Biennial	Biennial	Biennial
MW-10B	Biennial	Biennial	Biennial
MW-10C	Biennial	Biennial	Biennial
MW-12C	Biennial	Biennial	Biennial
MW-13C	Biennial	Biennial	Biennial
MW-14C	Biennial	Biennial	Biennial
MW-14E	Biennial	Biennial	Biennial
MW-15E	Biennial	Biennial	Biennial
MW-16E	Biennial	Biennial	Biennial
MW-18D	Biennial	Biennial	Biennial
MW-18E	Biennial	Biennial	Biennial
MW-19D	Biennial	Biennial	Biennial
MW-1A	Biennial	Biennial	Biennial
MW-20D	Biennial	Biennial	Biennial
MW-21D	Biennial	Biennial	Biennial
MW-22D	Biennial	Biennial	Biennial
MW-23D	Biennial	Biennial	Biennial
MW-25D	Biennial	Biennial	Biennial
MW-26D	Biennial	Biennial	Biennial
MW-27D	Biennial	Biennial	Biennial
MW-2A	Biennial	Biennial	Biennial
MW-31	Biennial	Biennial	Biennial
MW-35	Biennial	Biennial	Biennial
MW-38	Quarterly	Quarterly	Quarterly
MW-3B	Biennial	Biennial	Biennial
MW-41	Biennial	Biennial	Biennial
MW-49	Biennial	Biennial	Biennial

MAROS Sampling Frequency Optimization Results

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Well	Recommended Sampling	Frequency Based on	Frequency Based on
MW-4B	Biennial	Biennial	Biennial
MW-4BSHED	Biennial	Biennial	Biennial
MW-6B	Biennial	Biennial	Biennial
MW-7B	Biennial	Biennial	Biennial
MW-8B	Biennial	Biennial	Biennial
MW-9B	Biennial	Biennial	Biennial
PW-1B	Biennial	Biennial	Biennial
PZ-39	Biennial	Biennial	Biennial

Note: Sampling frequency is determined considering both recent and overall concentration trends. Sampling Frequency is the final recommendation; Frequency Based on Recent Data is the frequency determined using recent (short) period of monitoring data; Frequency Based on Overall Data is the frequency determined using overall (long) period of monitoring data. If the "recent period" is defined using a different series of sampling events, the results could be different.

MAROS Sampling Location Optimization Results

Boomsnub/Airco Superfund Site — **User Name:**

Hazel Dell — **State:** Washington

Sampling Events Analyzed: **From** Sample Event 1 (1/19/1995) **to** Sample Event 351 (10/31/2013)

Parameters used:

Constituent	Inside SF	Hull SF	Area Ratio	Conc. Ratio
TRICHLOROETHYLENE	0.3	0.1	0.9	0.85

Well Name	X (feet)	Y (feet)	Removable?	Average Slope Factor*	Minimum Slope Factor*	Maximum Slope Factor*	Eliminated?
TRICHLOROETHYLENE (TCE)							
AMW-10A	1098266.25	132923.33	☑	0.513	0.000	1.000	☐
AMW-11A	1098270.63	132756.36	☑	0.265	0.000	1.000	☐
AMW-12A	1097891.63	132766.36	☑	0.375	0.041	0.709	☐
AMW-13A	1097844.38	133039.89	☑	0.537	0.000	1.000	☐
AMW-14	1095174.75	133490.42	☑	0.359	0.087	0.862	☐
AMW-16	1095978.38	133652.16	☑	0.351	0.023	0.908	☐
AMW-17	1096562.13	133519.91	☑	0.477	0.047	0.888	☐
AMW-18	1096976.25	133403.75	☑	0.536	0.149	1.000	☐
AMW-19A	1097961.38	132745.06	☑	0.188	0.007	0.705	☐
AMW-1A	1097845.25	132893.08	☑	0.324	0.015	1.000	☐
AMW-26	1097846.25	132924.05	☑	0.430	0.025	1.000	☐
AMW-27	1094386.13	133515.81	☑	0.313	0.051	0.693	☐
AMW-2A	1097832.00	132820.73	☑	0.421	0.033	0.895	☐
AMW-2B	1097831.75	132828.42	☑	0.682	0.119	1.000	☐
AMW-3A	1097892.63	132637.25	☑	0.518	0.212	1.000	☐
AMW-42	1093570.50	133791.39	☑	0.389	0.001	0.937	☐
AMW-52A	1097747.50	132981.05	☑	0.812	0.519	1.000	☐
AMW-53A	1097744.75	132910.84	☑	0.359	0.001	0.922	☐
AMW-54A	1097745.50	132769.86	☑	0.208	0.014	0.490	☐
AMW-55A	1097744.50	132704.05	☑	0.236	0.076	0.489	☐
AMW-56A	1097844.25	132760.16	☑	0.370	0.008	0.708	☐
AMW-58	1097533.63	132838.81	☑	0.787	0.480	1.000	☐
AMW-59	1097015.63	133051.66	☑	0.239	0.146	0.501	☐
AMW-61	1094367.25	133467.44	☑	0.312	0.116	0.719	☐
AMW-63	1093510.88	133815.56	☑	0.841	0.708	1.000	☐
AMW-64	1096435.88	133689.47	☑	0.508	0.150	0.748	☐
AMW-6A	1098315.50	132581.84	☑	0.271	0.000	1.000	☐

MAROS Sampling Location Optimization Results

Boomsnub/Airco Superfund Site — **User Name:**

Hazel Dell — **State:** Washington

Well Name	X (feet)	Y (feet)	Removable?	Average Slope Factor*	Minimum Slope Factor*	Maximum Slope Factor*	Eliminated?
AMW-7A	1098542.13	132679.81	☑	0.491	0.000	1.000	☐
AMW-8A	1098555.38	133089.64	☑	0.299	0.016	0.825	☐
CPU-12	1095433.88	133157.64	☑	0.438	0.020	1.000	☐
CPU-13	1094877.75	133397.00	☑	0.242	0.009	0.867	☐
CPU-14	1096130.75	133152.42	☑	0.318	0.003	0.753	☐
MW-10B	1097254.00	132970.84	☑	0.267	0.003	0.713	☐
MW-10C	1097250.75	132971.34	☑	0.269	0.003	0.679	☐
MW-12C	1097182.25	133074.94	☑	0.313	0.094	0.773	☐
MW-13C	1097114.13	132873.94	☑	0.286	0.001	0.697	☐
MW-14C	1097053.75	133070.84	☑	0.154	0.001	0.513	☑
MW-14E	1097068.38	133032.61	☑	0.199	0.025	0.593	☐
MW-15E	1096785.25	133249.44	☑	0.259	0.011	0.718	☐
MW-16E	1096698.50	133044.53	☑	0.650	0.124	1.000	☐
MW-18D	1096779.50	133113.73	☑	0.210	0.026	0.524	☐
MW-18E	1096799.50	133118.36	☑	0.374	0.038	0.721	☐
MW-19D	1096403.13	133254.94	☑	0.094	0.000	0.502	☑
MW-1A	1097744.75	132827.19	☑	0.293	0.023	0.652	☐
MW-20D	1095961.75	133409.30	☑	0.200	0.002	0.424	☐
MW-21D	1095489.38	133567.02	☑	0.162	0.002	0.654	☐
MW-22D	1095455.50	133368.55	☑	0.146	0.000	0.818	☑
MW-23D	1095517.38	133765.05	☑	0.258	0.065	0.894	☐
MW-25D	1094389.25	133662.33	☑	0.370	0.001	1.000	☐
MW-26D	1094375.13	133433.91	☑	0.475	0.014	1.000	☐
MW-27D	1094883.88	133638.45	☑	0.241	0.007	1.000	☐
MW-2A	1097544.25	132767.69	☑	0.462	0.146	0.977	☐
MW-31	1093810.00	133700.70	☑	0.454	0.097	0.832	☐
MW-35	1093675.75	133745.42	☑	0.397	0.056	1.000	☐
MW-38	1096184.13	133439.30	☑	0.369	0.218	0.657	☐
MW-3B	1097456.25	132791.05	☑	0.325	0.082	0.813	☐
MW-41	1093463.88	133848.02	☑	0.566	0.000	1.000	☐
MW-49	1094376.50	133503.09	☑	0.254	0.071	1.000	☐
MW-4B	1097458.00	132868.41	☑	0.443	0.239	0.807	☐
MW-4BSHED	1097459.00	132864.77	☑	0.243	0.022	0.551	☐
MW-6B	1097380.50	132929.25	☑	0.138	0.016	0.753	☑
MW-7B	1097465.63	132874.84	☑	0.271	0.112	0.429	☐

MAROS Sampling Location Optimization Results

Boomsnub/Airco Superfund Site **User Name:**

Hazel Dell **State:** Washington

Well Name	X (feet)	Y (feet)	Removable?	Average Slope Factor*	Minimum Slope Factor*	Maximum Slope Factor*	Eliminated?
MW-8B	1097500.63	133005.73	☑	0.204	0.009	0.418	☐
MW-9B	1097327.25	133029.19	☑	0.143	0.011	0.478	☑
PW-1B	1097467.75	132870.81	☑	0.231	0.004	0.780	☐
PZ-39	1096191.50	133375.19	☑	0.269	0.007	0.355	☐

Note: The Slope Factor indicates the relative importance of a well in the monitoring network at a given sampling event; the larger the SF value of a well, the more important the well is and vice versa; the Average Slope Factor measures the overall well importance in the selected time period; the State Plane (i.e., X and Y refer to Easting and Northing, respectively) or local coordinate systems may be used; wells that are NOT selected for analysis are not shown above.
* When the report is generated after running the Excel module, SF values will NOT be shown above.

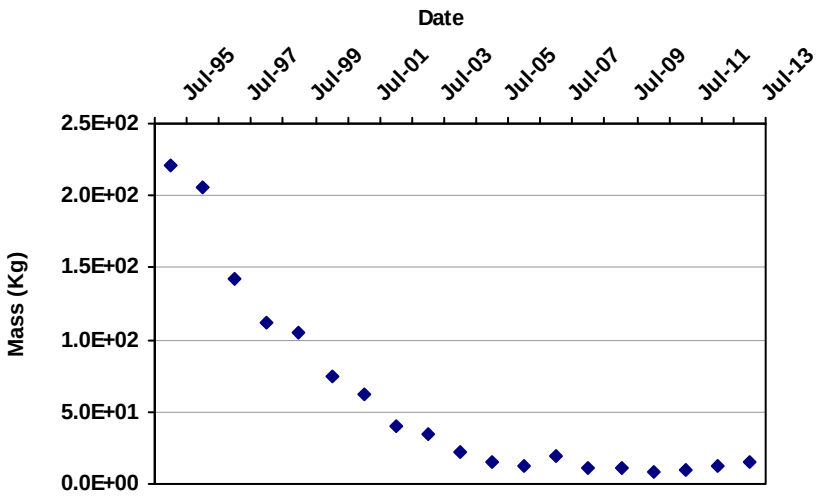
MAROS Zeroth Moment Analysis

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Change in Dissolved Mass Over Time

COC: TRICHLOROETHYLENE (TCE)



Porosity: 0.30

Saturated Thickness:
Uniform: 65 ft

Mann-Kendall S Statistic:
-143

Confidence in Trend:
100.0%

Coefficient of Variation:
1.13

Zeroth Moment Trend:
D

Data Table:

Effective Date	Constituent	Estimated Mass (Kg)	Number of Wells
7/1/1995	TRICHLOROETHYLENE (TCE)	2.2E+02	45
7/1/1996	TRICHLOROETHYLENE (TCE)	2.1E+02	36
7/1/1997	TRICHLOROETHYLENE (TCE)	1.4E+02	48
7/1/1998	TRICHLOROETHYLENE (TCE)	1.1E+02	44
7/1/1999	TRICHLOROETHYLENE (TCE)	1.0E+02	45
7/1/2000	TRICHLOROETHYLENE (TCE)	7.5E+01	40
7/1/2001	TRICHLOROETHYLENE (TCE)	6.2E+01	44
7/1/2002	TRICHLOROETHYLENE (TCE)	4.0E+01	46
7/1/2003	TRICHLOROETHYLENE (TCE)	3.5E+01	50
7/1/2004	TRICHLOROETHYLENE (TCE)	2.2E+01	56
7/1/2005	TRICHLOROETHYLENE (TCE)	1.5E+01	51
7/1/2006	TRICHLOROETHYLENE (TCE)	1.3E+01	56
7/1/2007	TRICHLOROETHYLENE (TCE)	1.9E+01	52
7/1/2008	TRICHLOROETHYLENE (TCE)	1.1E+01	60
7/1/2009	TRICHLOROETHYLENE (TCE)	1.1E+01	58
7/1/2010	TRICHLOROETHYLENE (TCE)	8.2E+00	63
7/1/2011	TRICHLOROETHYLENE (TCE)	1.0E+01	39

MAROS Zeroth Moment Analysis

Boomsnub/Airco Superfund Site **User Name:**

Hazel Dell **State:** Washington

Effective Date	Constituent	Estimated Mass (Kg)	Number of Wells
7/1/2012	TRICHLOROETHYLENE (TCE)	1.2E+01	62
7/1/2013	TRICHLOROETHYLENE (TCE)	1.5E+01	44

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); ND = Non-detect. Moments are not calculated for sample events with less than 6 wells.

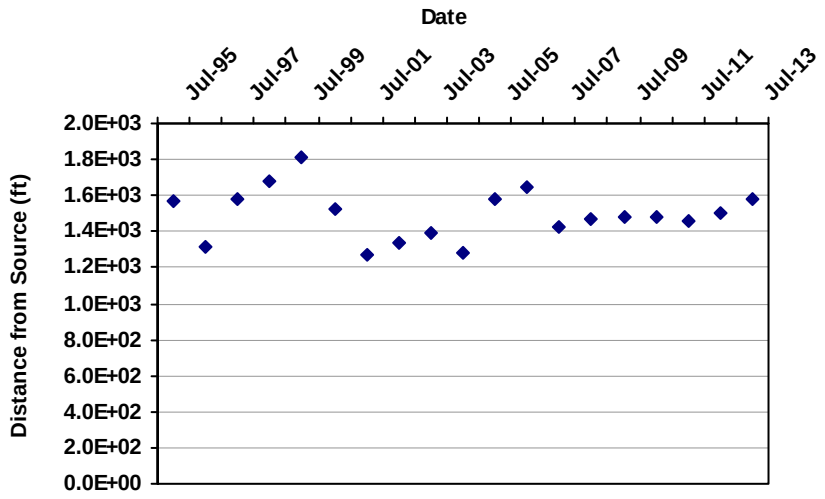
MAROS First Moment Analysis

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

COC: TRICHLOROETHYLENE (TCE)

Distance from Source to Center of Mass



Mann-Kendall S Statistic:
5

Confidence in Trend:
55.5%

Coefficient of Variation:
0.09

First Moment Trend:
NT

DATA TABLE

Effective Date	Constituent	Xc (ft)	Yc (ft)	Distance from Source	Number of Wells
7/1/1995	TRICHLOROETHYLENE (TCE)	1,096,411	133,292	1,572	45
7/1/1996	TRICHLOROETHYLENE (TCE)	1,096,655	133,226	1,320	36
7/1/1997	TRICHLOROETHYLENE (TCE)	1,096,396	133,262	1,578	48
7/1/1998	TRICHLOROETHYLENE (TCE)	1,096,294	133,272	1,678	44
7/1/1999	TRICHLOROETHYLENE (TCE)	1,096,166	133,298	1,808	45
7/1/2000	TRICHLOROETHYLENE (TCE)	1,096,437	133,231	1,530	40
7/1/2001	TRICHLOROETHYLENE (TCE)	1,096,684	133,161	1,272	44
7/1/2002	TRICHLOROETHYLENE (TCE)	1,096,624	133,181	1,335	46
7/1/2003	TRICHLOROETHYLENE (TCE)	1,096,572	133,189	1,388	50
7/1/2004	TRICHLOROETHYLENE (TCE)	1,096,673	133,173	1,286	56
7/1/2005	TRICHLOROETHYLENE (TCE)	1,096,380	133,230	1,583	51
7/1/2006	TRICHLOROETHYLENE (TCE)	1,096,325	133,276	1,650	56

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). Moments are not calculated for sample events with less than 6 wells.

MAROS COC Assessment

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Effective Date	Constituent	Xc (ft)	Yc (ft)	Distance from Source	Number of Wells
7/1/2007	TRICHLOROETHYLENE (TCE)	1,096,558	133,257	1,422	52
7/1/2008	TRICHLOROETHYLENE (TCE)	1,096,505	133,253	1,471	60
7/1/2009	TRICHLOROETHYLENE (TCE)	1,096,493	133,252	1,482	58
7/1/2010	TRICHLOROETHYLENE (TCE)	1,096,494	133,263	1,484	63
7/1/2011	TRICHLOROETHYLENE (TCE)	1,096,524	133,265	1,457	39
7/1/2012	TRICHLOROETHYLENE (TCE)	1,096,508	133,362	1,506	62
7/1/2013	TRICHLOROETHYLENE (TCE)	1,096,440	133,379	1,575	44

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). Moments are not calculated for sample events with less than 6 wells.

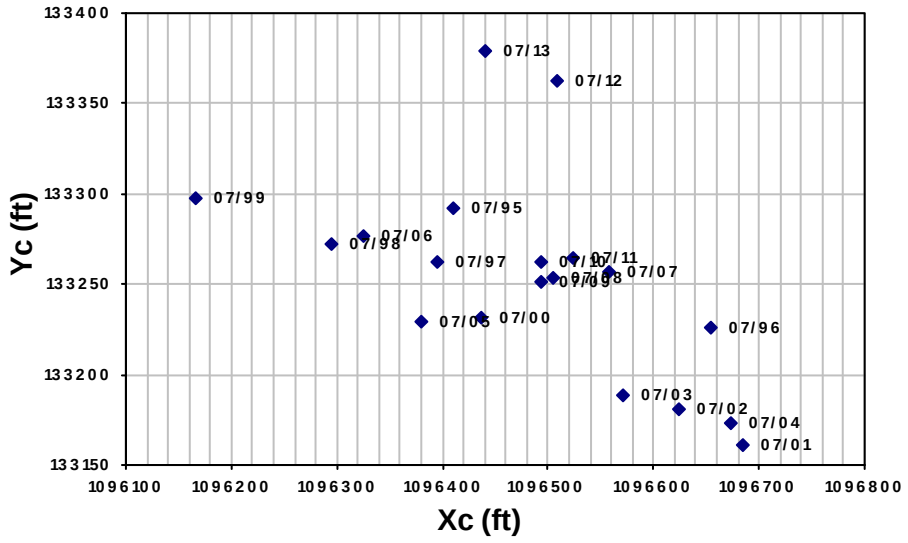
MAROS First Moment Analysis

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

COC: TRICHLOROETHYLENE (TCE)

Change in Location of Center of Mass Over Time



Groundwater Flow Direction:

Source Coordinates

X: 1,097,901

Y: 132,790

Effective Date	Constituent	Xc (ft)	Yc (ft)	Distance from Source (ft)	Number of Wells
7/1/1995	TRICHLOROETHYL	1,096,411	133,292	1,572	45
7/1/1996	TRICHLOROETHYL	1,096,655	133,226	1,320	36
7/1/1997	TRICHLOROETHYL	1,096,396	133,262	1,578	48
7/1/1998	TRICHLOROETHYL	1,096,294	133,272	1,678	44
7/1/1999	TRICHLOROETHYL	1,096,166	133,298	1,808	45
7/1/2000	TRICHLOROETHYL	1,096,437	133,231	1,530	40
7/1/2001	TRICHLOROETHYL	1,096,684	133,161	1,272	44
7/1/2002	TRICHLOROETHYL	1,096,624	133,181	1,335	46
7/1/2003	TRICHLOROETHYL	1,096,572	133,189	1,388	50
7/1/2004	TRICHLOROETHYL	1,096,673	133,173	1,286	56
7/1/2005	TRICHLOROETHYL	1,096,380	133,230	1,583	51
7/1/2006	TRICHLOROETHYL	1,096,325	133,276	1,650	56
7/1/2007	TRICHLOROETHYL	1,096,558	133,257	1,422	52
7/1/2008	TRICHLOROETHYL	1,096,505	133,253	1,471	60
7/1/2009	TRICHLOROETHYL	1,096,493	133,252	1,482	58
7/1/2010	TRICHLOROETHYL	1,096,494	133,263	1,484	63
7/1/2011	TRICHLOROETHYL	1,096,524	133,265	1,457	39
7/1/2012	TRICHLOROETHYL	1,096,508	133,362	1,506	62
7/1/2013	TRICHLOROETHYL	1,096,440	133,379	1,575	44

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). Moments are not calculated for sample events with less than 6 wells.

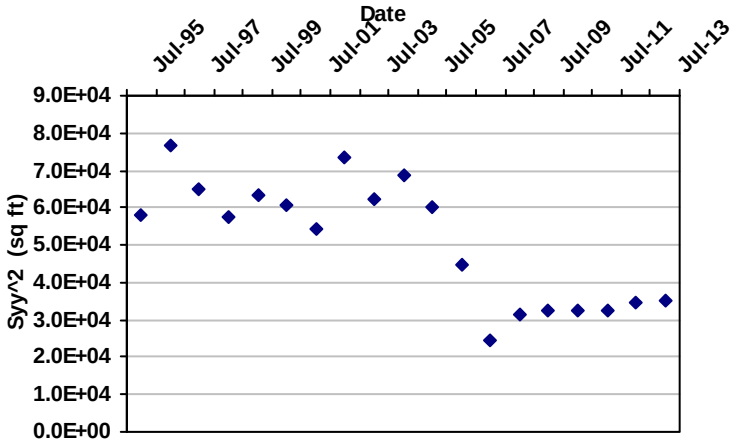
MAROS Second Moment Analysis

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Change in Plume Spread Over Time

COC: TRICHLOROETHYLENE (TCE)



Mann-Kendall S Statistic:

-83

Confidence in Trend:

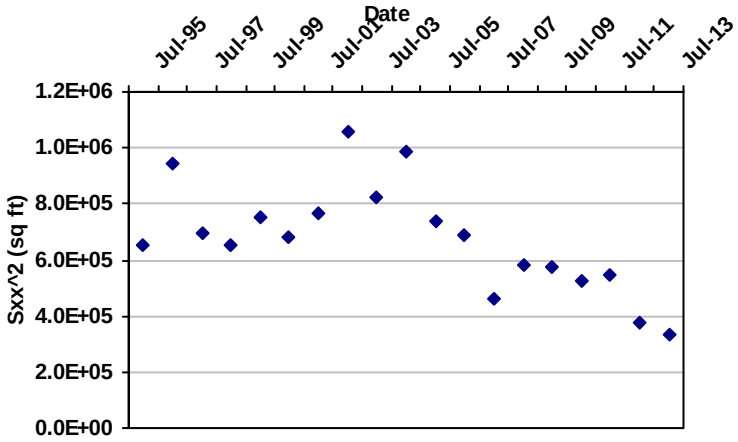
99.8%

Coefficient of Variation:

0.32

Second Moment Trend:

D



Mann-Kendall S Statistic:

-81

Confidence in Trend:

99.8%

Coefficient of Variation:

0.28

Second Moment Trend:

D

Data Table:

Effective Date	Constituent	Sigma XX (sq ft)	Sigma YY (sq ft)	Number of Wells
7/1/1995	TRICHLOROETHYLENE (T	656,036	57,894	45
7/1/1996	TRICHLOROETHYLENE (T	942,123	76,870	36
7/1/1997	TRICHLOROETHYLENE (T	693,084	65,166	48
7/1/1998	TRICHLOROETHYLENE (T	654,905	57,357	44

MAROS Second Moment Analysis

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

Data Table:

Effective Date	Constituent	Sigma XX (sq ft)	Sigma YY (sq ft)	Number of Wells
7/1/1999	TRICHLOROETHYLENE (T	755,774	63,113	45
7/1/2000	TRICHLOROETHYLENE (T	680,301	60,696	40
7/1/2001	TRICHLOROETHYLENE (T	768,227	54,480	44
7/1/2002	TRICHLOROETHYLENE (T	1,055,297	73,330	46
7/1/2003	TRICHLOROETHYLENE (T	826,978	62,134	50
7/1/2004	TRICHLOROETHYLENE (T	988,981	68,565	56
7/1/2005	TRICHLOROETHYLENE (T	735,266	60,211	51
7/1/2006	TRICHLOROETHYLENE (T	691,895	44,557	56
7/1/2007	TRICHLOROETHYLENE (T	461,969	24,763	52
7/1/2008	TRICHLOROETHYLENE (T	581,384	31,473	60
7/1/2009	TRICHLOROETHYLENE (T	574,298	32,622	58
7/1/2010	TRICHLOROETHYLENE (T	525,484	32,478	63
7/1/2011	TRICHLOROETHYLENE (T	548,104	32,358	39
7/1/2012	TRICHLOROETHYLENE (T	378,207	34,720	62
7/1/2013	TRICHLOROETHYLENE (T	335,762	35,384	44

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)

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.

MAROS Individual Well Summary Report

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

COC	Priority COC for Well?	Detection Frequency	Recent Sample Above Goal?	MK Trend	COV	95% UCL	Outlier	Distribution Assumption	Attained Cleanup?	
									Normal	Lognormal
AMW-10A										
TCE	YES	59 %	NO	NT	0.90	0.0004	NO	Normal	YES	NO
AMW-11A										
TCE	YES	78 %	NO	NT	0.67	0.0006	NO	Normal	YES	NO
AMW-12A										
TCE	YES	100 %	YES	D	1.85	2.4493	NO	No distribution	NO	NO
AMW-13A										
TCE	YES	67 %	NO	NT	2.30	0.0078	YES	Lognormal	NO	NO
AMW-14										
TCE	YES	90 %	NO	D	2.40	0.0594	YES	Lognormal	NO	NO
AMW-16										
TCE	YES	100 %	NO	D	1.14	0.0303	NO	Lognormal	NO	NO
AMW-17										
TCE	YES	100 %	YES	NT	1.33	0.0646	NO	No distribution	NO	NO
AMW-18										
TCE	YES	91 %	YES	I	1.21	0.1543	NO	Lognormal	NO	NO
AMW-19A										
TCE	YES	100 %	NO	D	1.64	0.1319	NO	No distribution	NO	NO
AMW-1A										
TCE	YES	98 %	YES	D	1.96	0.2434	NO	Lognormal	NO	NO
AMW-26										
TCE	YES	85 %	NO	D	1.47	0.0303	YES	No distribution	NO	NO
AMW-27										
TCE	YES	100 %	YES	D	0.49	0.0548	NO	Normal	NO	NO
AMW-2A										
TCE	YES	100 %	YES	D	1.48	1.7540	NO	No distribution	NO	NO
AMW-2B										
TCE	YES	88 %	NO	NT	0.98	0.0010	YES	No distribution	NO	NO
AMW-3A										

MAROS Individual Well Summary Report

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

COC	Priority COC for Well?	Detection Frequency	Recent Sample Above Goal?	MK Trend	COV	95% UCL	Outlier	Distribution Assumption	Attained Cleanup?	
									Normal	Lognormal
TCE	YES	100 %	NO	D	1.15	0.0089	NO	No distribution	NO	NO
AMW-42										
TCE	YES	92 %	NO	D	0.84	0.0073	NO	Lognormal	NO	NO
AMW-52A										
TCE	YES	65 %	NO	D	1.13	0.0005	NO	Lognormal	YES	NO
AMW-53A										
TCE	YES	100 %	YES	D	1.87	0.0839	YES	Lognormal	NO	NO
AMW-54A										
TCE	YES	100 %	NO	D	1.47	0.0743	NO	No distribution	NO	NO
AMW-55A										
TCE	YES	100 %	NO	NT	1.97	0.0182	NO	No distribution	NO	NO
AMW-56A										
TCE	YES	100 %	NO	NT	3.44	0.2075	YES	No distribution	NO	NO
AMW-58										
TCE	YES	88 %	NO	D	0.98	0.0036	NO	Normal	NO	NO
AMW-59										
TCE	YES	100 %	YES	PD	0.37	0.1801	NO	Normal	NO	NO
AMW-61										
TCE	YES	100 %	NO	D	0.98	0.0306	YES	No distribution	NO	NO
AMW-63										
TCE	YES	33 %	NO	S	1.60	0.0002	NO	Normal	YES	NO
AMW-64										
TCE	YES	100 %	YES	N/A	0.20	#Error	NO	No distribution	NO	NO
AMW-6A										
TCE	YES	72 %	NO	NT	0.83	0.0006	NO	Normal	YES	NO
AMW-7A										
TCE	YES	52 %	NO	I	1.20	0.0004	NO	Normal	YES	NO
AMW-8A										
TCE	YES	100 %	NO	D	1.79	0.1510	YES	No distribution	NO	NO

MAROS Individual Well Summary Report

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

COC	Priority COC for Well?	Detection Frequency	Recent Sample Above Goal?	MK Trend	COV	95% UCL	Outlier	Distribution Assumption	Attained Cleanup?	
									Normal	Lognormal
CPU-12										
TCE	YES	93 %	NO	NT	0.63	0.0053	NO	Normal	NO	NO
CPU-13										
TCE	YES	100 %	NO	D	1.22	0.0319	NO	No distribution	NO	NO
CPU-14										
TCE	YES	100 %	YES	D	0.62	0.0320	NO	Lognormal	NO	NO
MW-10B										
TCE	YES	100 %	YES	D	1.69	0.1823	YES	Lognormal	NO	NO
MW-10C										
TCE	YES	100 %	NO	D	1.27	0.3255	NO	Lognormal	NO	NO
MW-12C										
TCE	YES	100 %	NO	D	2.14	1.8537	NO	Lognormal	NO	NO
MW-13C										
TCE	YES	100 %	YES	D	0.69	0.0122	NO	Lognormal	NO	NO
MW-14C										
TCE	YES	100 %	YES	D	1.22	0.4350	NO	Lognormal	NO	NO
MW-14E										
TCE	YES	100 %	YES	D	1.30	1.5907	YES	No distribution	NO	NO
MW-15E										
TCE	YES	100 %	NO	D	1.92	0.2808	NO	No distribution	NO	NO
MW-16E										
TCE	YES	86 %	NO	NT	0.97	0.0036	NO	Normal	YES	NO
MW-18D										
TCE	YES	100 %	YES	D	0.99	1.5142	NO	Lognormal	NO	NO
MW-18E										
TCE	YES	100 %	YES	D	0.99	0.9427	NO	No distribution	NO	NO
MW-19D										
TCE	YES	100 %	YES	D	1.00	0.6705	YES	Lognormal	NO	NO
MW-1A										

MAROS Individual Well Summary Report

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

COC	Priority COC for Well?	Detection Frequency	Recent Sample Above Goal?	MK Trend	COV	95% UCL	Outlier	Distribution Assumption	Attained Cleanup?	
									Normal	Lognormal
TCE	YES	100 %	YES	D	1.19	1.6704	NO	No distribution	NO	NO
MW-20D										
TCE	YES	100 %	YES	D	0.86	1.3621	NO	No distribution	NO	NO
MW-21D										
TCE	YES	100 %	NO	D	1.11	0.5227	NO	Lognormal	NO	NO
MW-22D										
TCE	YES	100 %	NO	D	0.74	0.1107	NO	Lognormal	NO	NO
MW-23D										
TCE	YES	97 %	NO	D	0.99	0.0245	NO	Lognormal	NO	NO
MW-25D										
TCE	YES	100 %	NO	D	1.15	0.0266	YES	No distribution	NO	NO
MW-26D										
TCE	YES	99 %	NO	D	1.05	0.0146	NO	No distribution	NO	NO
MW-27D										
TCE	YES	98 %	NO	D	1.27	0.0767	NO	No distribution	NO	NO
MW-2A										
TCE	YES	100 %	NO	D	0.60	0.0082	NO	Normal	NO	NO
MW-31										
TCE	YES	100 %	NO	D	1.26	0.0060	YES	No distribution	NO	NO
MW-35										
TCE	YES	98 %	NO	D	0.00	0.0239	YES	Lognormal	NO	NO
MW-38										
TCE	YES	100 %	YES	NT	1.22	0.0728	YES	Normal	NO	NO
MW-3B										
TCE	YES	100 %	NO	D	0.85	0.0162	YES	Lognormal	NO	NO
MW-41										
TCE	YES	12 %	NO	PD	4.26	0.0007	NO	No distribution	YES	NO
MW-49										
TCE	YES	91 %	NO	D	1.03	0.0113	NO	Lognormal	NO	NO

MAROS Individual Well Summary Report

Project: Boomsnub/Airco Superfund Site **User Name:**

Location: Hazel Dell **State:** Washington

COC	Priority COC for Well?	Detection Frequency	Recent Sample Above Goal?	MK Trend	COV	95% UCL	Outlier	Distribution Assumption	Attained Cleanup?	
									Normal	Lognormal
MW-4B										
TCE	YES	100 %	NO	NT	2.08	0.1627	YES	Lognormal	NO	NO
MW-4BSHED										
TCE	YES	100 %	NO	D	1.24	0.0894	NO	Lognormal	NO	NO
MW-6B										
TCE	YES	100 %	NO	D	1.28	0.2758	YES	No distribution	NO	NO
MW-7B										
TCE	YES	100 %	YES	D	0.78	0.3441	NO	Normal	NO	NO
MW-8B										
TCE	YES	100 %	NO	D	1.45	1.2140	NO	Lognormal	NO	NO
MW-9B										
TCE	YES	100 %	NO	D	1.20	0.7245	NO	Lognormal	NO	NO
PW-1B										
TCE	YES	100 %	NO	D	1.06	0.2268	NO	No distribution	NO	NO
PZ-39										
TCE	YES	100 %	YES	D	2.34	1.2787	YES	No distribution	NO	NO