SIXTH FIVE-YEAR REVIEW REPORT FOR DOUGLASSVILLE DISPOSAL SUPERFUND SITE BERKS COUNTY, PENNSYLVANIA

MARCH 2019

Prepared by

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LIST OF ABBREVIATIONS AND ACRONYMS

ACL	Alternate Concentration Limit
ARAR	Applicable or Relevant and Appropriate Requirement
bgs	Below Ground Surface
BTAG	Biological Technical Assistance Group
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
Cis-1,2-DCE	Cis-1,2-dichloroethene
COC	Contaminant of Concern
ESD	Explanation of Significant Differences
EPA	United States Environmental Protection Agency
FFS	Focused Feasibility Study
FS	Feasibility Study
FYR	Five-Year Review
HQ	Hazard Quotient
IC	Institutional Control
LIF	Laser-induced Fluorescence
LNAPL	Light Non-aqueous Phase Liquid
MCL	Maximum Contaminant Level
mg/L	Milligrams per Liter
µg/L	Micrograms per Liter
MW	Monitoring Well
NCP	National Contingency Plan
NAPL	Non-aqueous Phase Liquid
NPL	National Priorities List
O&M	Operation and Maintenance
ORC	Office of Regional Counsel
OU	Operable Unit
PADEP	Pennsylvania Department of Environmental Protection
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PRP	Potentially Responsible Party
RI	Remedial Investigation
RAO	Remedial Action Objective
ROD	Record of Decision
RPM	Remedial Project Manager
RSL	Regional Screening Level
SPLP	Synthetic Precipitation Leaching Procedure
SVOC	Semi-volatile Organic Compound
UU/UE	Unlimited Use/Unrestricted Exposure
VOC	Volatile Organic Compound

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings and conclusions of reviews are documented in FYR Reports such as this one. In addition, FYR Reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii)) and considering EPA policy.

This is the sixth FYR for the Douglassville Disposal Superfund Site (the Site). The triggering action for this statutory review is the completion date of the previous FYR. The FYR has been prepared because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of two operable units (OUs). OU1 addresses the former processing facility and tank farm area. OU2 addresses Site-wide soil, sediment and groundwater contamination. This FYR addresses both OUs.

The EPA remedial project manager (RPM) led the FYR with additional EPA participants including a hydrogeologist, geologist, biologist, toxicologist, community involvement coordinator (CIC), and an attorney in EPA's Office of Regional Counsel (ORC). Pennsylvania Department of Environmental Protection (PADEP) participants included the assigned project manager and section leader. Skeo provided EPA contractor support for this FYR. The review began on June 2, 2018.

Site Background

The Site is located in a rural area north of State Route 724 (also known as East Main Street) (Figure 1) in Union Township, Berks County, Pennsylvania, about 3 miles northwest of the borough of Pottstown (Figure 1).

The Site is an approximately 50-acre property that currently consists of grassy open spaces and wooded areas. The Thun Trail, part of the Schuylkill River Trail system, runs in an east-west direction along an abandoned railroad and through the center of the Site. The Schuylkill River borders the Site to the north and northeast. Agricultural land is located to the west. Residential and commercial properties are located adjacent to the Site to the south and southeast (Figure 2). The Site is about 4 miles upstream of the borough of Pottstown's drinking water intake on the Schuylkill River. Fishing occurs in the river and in a pond on a residential property southeast of the Site. The Site is located almost entirely within the 100-year floodplain of the Schuylkill River.

Groundwater occurs in both the overburden and bedrock, which are hydraulically connected. Groundwater generally flows in a north to northeast direction toward the Schuylkill River, into which it discharges. Nearby residents rely on well water. These residential wells are hydraulically upgradient of the Site.

Site geology generally consists of 10 to 20 feet of overburden and underlying bedrock. The Site is situated in the Triassic Lowland section of the Piedmont province. Bedrock in the general area of the Site is mapped as belonging to the Brunswick Formation which consists of Jurassic-Triassic aged, fine-to-coarse grained sedimentary rocks. Groundwater flow takes place along joints, faults and bedding planes in the bedrock Brunswick Formation. The Brunswick Formation is generally capable of yielding adequate water for household use.

Appendix A provides a list of references used for this FYR. Appendix B provides a chronology of major Site events.

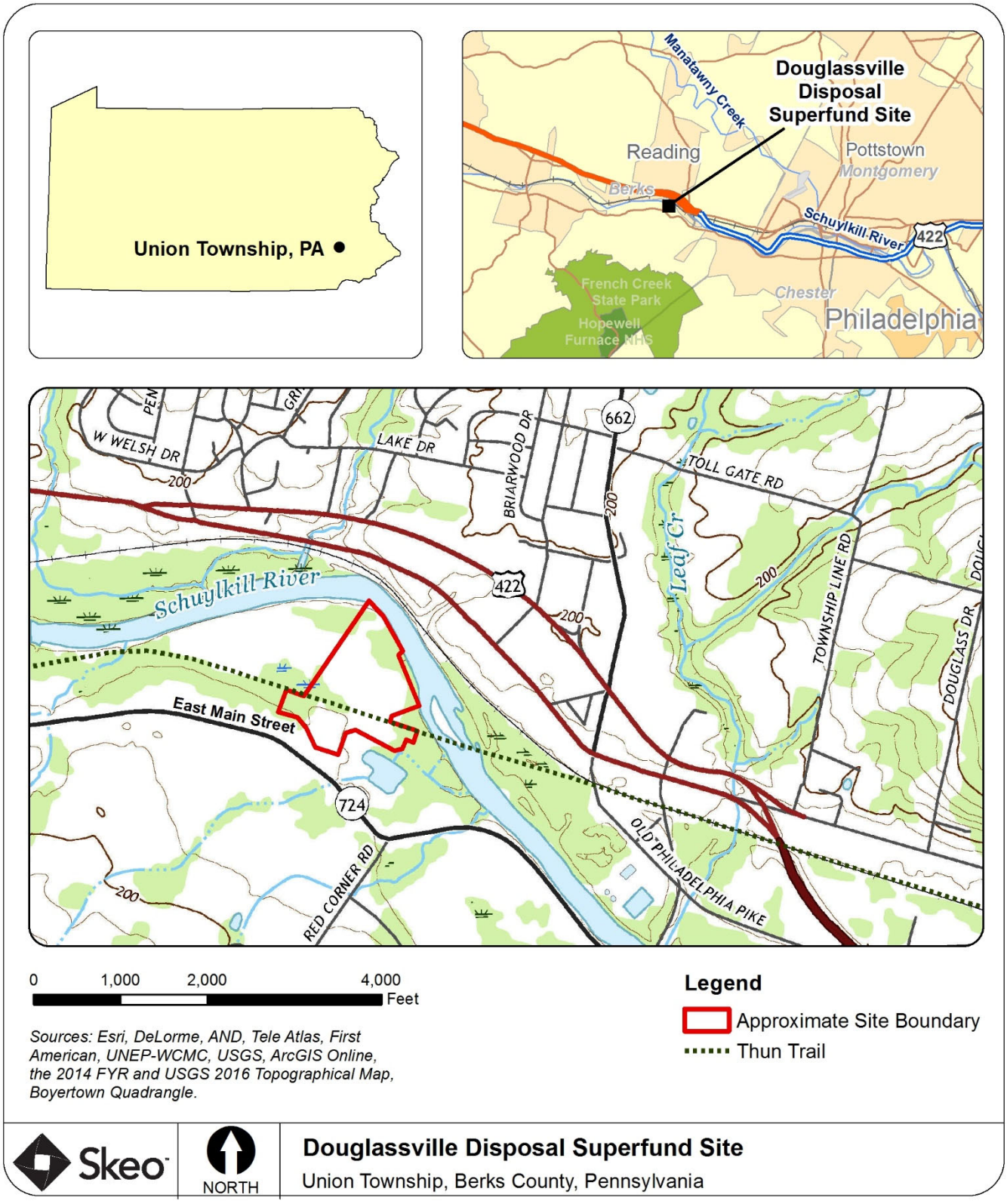
FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Douglassville Disposal		
EPA ID: PAD002384865		
Region: 3	**State:** PA	**City/County:** Douglassville / Berks

SITE STATUS	
NPL Status: Final	
Multiple OUs? Yes	**Has the Site achieved construction completion?** Yes

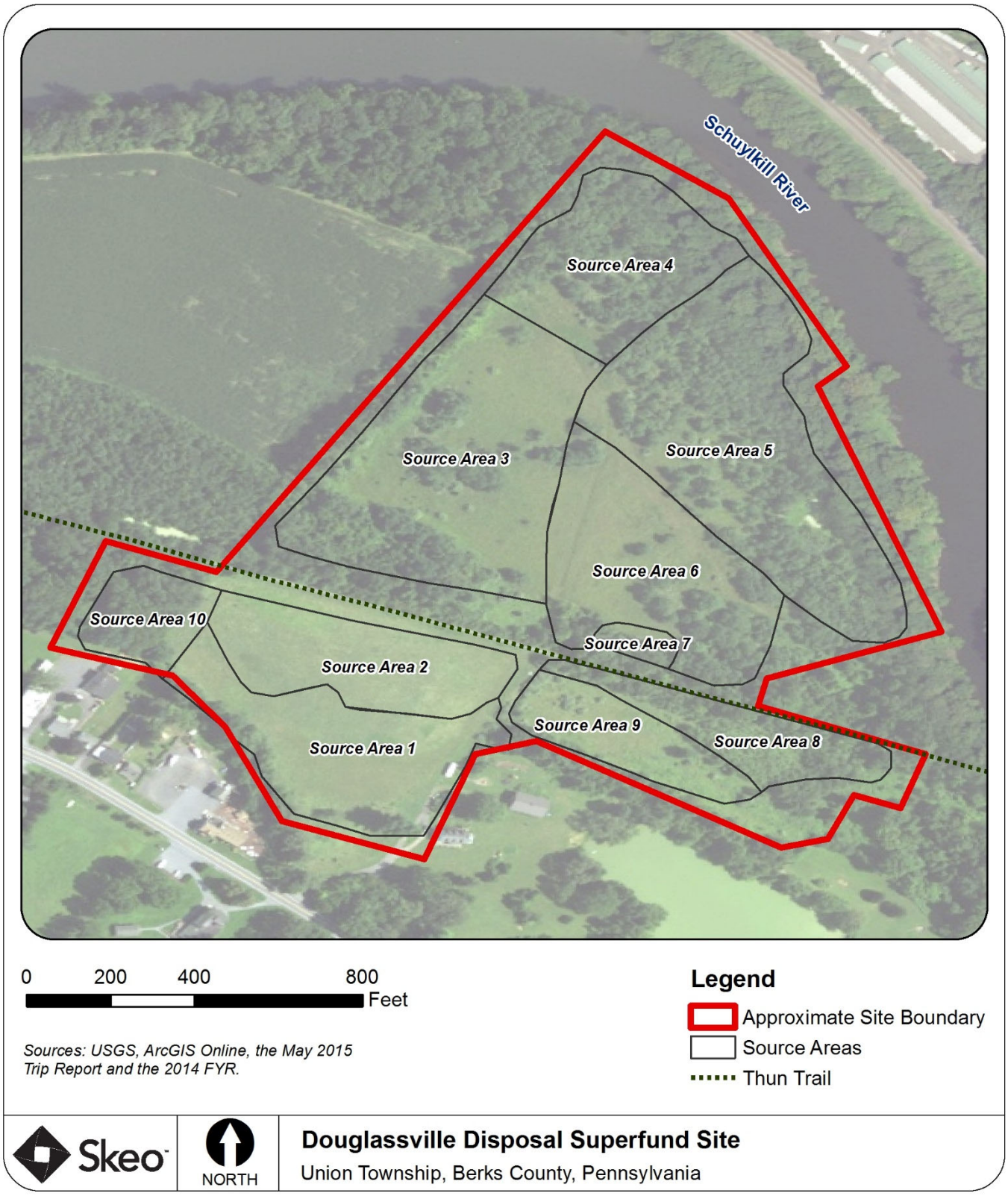
REVIEW STATUS
Lead agency: EPA
Author name: Stephen Tyahla, with additional support provided by Skeo
Author affiliation: EPA Region 3
Review period: 5/2/2018 – 4/10/2019
Date of Site inspection: 6/28/2018
Type of review: Statutory
Review number: 6
Triggering action date: 4/10/2014
Due date *(five years after triggering action date)*: 4/10/2019

Figure 1: Site Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

Figure 2: Source Areas



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

A waste oil recycling facility operated by Berks Associates, Inc. was active on Site from 1941 to 1986. Former Site features included processing facilities, waste oil storage lagoons, storage tanks, sludge disposal areas, land farming areas, an oily filter-cake waste pile and other waste disposal areas. Waste oil sludge was disposed of in the lagoons between 1941 and 1972. During floods in 1970 and 1972 (June 1972 – Hurricane Agnes), millions of gallons of waste oil sludge from the lagoons washed into the adjacent Schuylkill River. The flood events as well as waste disposal activities and operations at the Site contaminated soil, sediment and groundwater.

During a 1988 remedial investigation (RI), EPA divided the Site into ten source areas of contamination (Figure 2 and Table 1). The primary contaminants of concern (COCs) affecting soil, sediment and groundwater were volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and lead.

Based on the RI data, EPA determined that exposure to contaminants via direct dermal contact with contaminated soils, accidental ingestion of contaminated soils and inhalation of fugitive dust could result in unacceptable human health risks. EPA also determined that exposure to contaminants via hypothetical household use of the contaminated groundwater posed unacceptable human health risks.

Surface water and sediment samples were collected from the Schuylkill River and on-site drainage ditches during the RI. The data indicated that contaminants, including VOCs, semi-volatile organic compound (SVOCs), PCBs and inorganic constituents, were present in the drainage ditches. Several of these contaminants were detected in Schuylkill River sediments. However, the highest levels were detected in upstream samples. Therefore, at the time of the 1988 RI, there was no evidence that Site-related contamination impacted surface water or sediment quality of the river, either through overland migration or discharge of groundwater to the river.

Table 1: Source Areas (see Figure 2 for locations)

Source Area	Description*
Area 1	Processing facility and tank farm area
Area 2	Backfilled lagoon and filter cake disposal area
Area 3	Landfarm
Area 4	Former sludge disposal area A
Area 5	Former sludge disposal area B
Area 6	Possible landfarm
Area 7	Incinerator and surrounding area
Area 8	Drum and tanker area
Area 9	Backfilled lagoon area
Area 10	Drum, tank and refuse area
Notes: Source area descriptions are from the 1989 ROD, Table 2a.	

Source Area Details per the 1988 RI

Area 1 – Processing facility and tank farm area: location of concrete buildings, process equipment, 57 process tanks of various sizes, and above-ground and underground piping that was used in the oil recycling operation.

Area 2 – Backfilled lagoon and filter cake disposal area: this area contained an extensive pile of filter cake, about 8 feet thick, that extended over an area of at least 1 acre.

Area 3 – Landfarm: area was used for landfarming [mixing oily waste with underlying soil to help biologically degrade the waste].

Area 4 – Former sludge disposal area A: an area where waste material was deposited, then capped with a layer of fill derived from natural overburden material from adjacent areas. Prior to any remedial action, this area rose several feet above the original land surface.

Area 5 – Former sludge disposal area B: as with Area 4, this is another area where waste material was deposited, then capped, with a layer of fill derived from natural overburden material from adjacent areas. Prior to any remedial action, this area also rose several feet above the original land surface.

Area 6 – Possible Landfarm: this source area was most likely used primarily for bulk sludge disposal and possibly landfarming.

Area 7 – Incinerator and surrounding area: includes an incinerator and several empty 55-gallon drums.

Area 8 – Drum and tanker area: includes location of a concrete garage, tanker trailers and several empty 55-gallon drums.

Area 9 – Backfilled lagoon area: a triangular-shaped area, including a backfilled lagoon and two eastward flowing drainage channels which connect with the offsite pond outfall and meet to form one drainage channel.

Area 10 – Drum, tank and refuse area: an area that contained empty 55-gallon drums, empty storage tanks and general refuse. A portion of this area is a wetland.

Response Actions

Early Actions

After the flood event of 1972 (Hurricane Agnes), the lagoons were drained and backfilled as part of the facility's cleanup operations.

An investigation by EPA in April 1982 found VOC contamination in an on-site drinking water well used by facility workers. A filter was installed on the well and facility workers were supplied with bottled water. EPA also sampled the Schuylkill River, the facility discharge, the drainage swale sediment and a residential well upgradient of the Site. Results of the investigation led EPA to list the Site on the Superfund program's National Priorities List (NPL) in September 1983.

EPA conducted Phase I of the remedial investigation and feasibility study (RI/FS) from 1984 to 1985. The RI/FS did not include the processing facility and tank farm area that was still in operation at that time. EPA issued the Site's first Record of Decision (ROD) in September 1985; it identified a remedy of waste consolidation and capping to address certain areas not part of the ongoing facility operations. However, the 1985 ROD was not implemented as the facility ceased operations in early 1986. EPA conducted a Phase II RI/FS from 1987 to 1988 that addressed all Site contamination aside from the processing facility. In April 1988, EPA completed a Focused Feasibility Study (FFS) that specifically addressed the former processing facility and tank farm area (OU1).

OU1 Remedy Selection

EPA issued a second ROD in June 1988 to address cleanup of the former processing facility and tank farm area (OU1), located on the southernmost portion of the Site (Source Area 1). The 1988 ROD identified three major objectives:

- Minimize direct contact with contaminated oil sludge wastes.
- Eliminate various threats to public health and the environment posed by the combustible wastes remaining in tanks.

- Eliminate the buildings and tanks as impediments to future remediation of soils and groundwater.

The 1988 ROD selected the following major remedy components:

- Removal, off-site transport and incineration of the liquids and sludges remaining in the tanks of the former processing facility, as well as incidental tanks and trucks on other parts of the facility.
- Decontamination of tanks, piping and structures.
- Dismantlement of the entire former processing facility.
- Disposal of the uncontaminated tanks by sale as scrap.
- Disposal of rubble in an off-site disposal facility or permitted off-site hazardous waste disposal facility, if the rubble cannot be satisfactorily decontaminated.

In 1992, EPA issued an Explanation of Significant Differences (ESD) that noted a significant increase in the scope, performance timeframe and cost of the OU1 remedial action as compared with ROD estimates. The remedy selected in the 1988 ROD remained the same. The scope increase was due to the discovery of additional underground storage tanks and contaminated waste material, including asbestos, during remedial activities.

OU2 Remedy Selection

EPA issued a ROD in June 1989[1] to address cleanup of soil and groundwater contamination remaining after removal of the former processing facility, tank farm and associated wastes off site. The 1989 ROD identified the following remedial objectives for OU2:

- Reduce the risks associated with exposure to the contaminated materials identified in the 10 source areas.
- Prevent exposure to contaminated groundwater beneath the Site.

The 1989 ROD selected the following major components:

- Excavation and on-site thermal treatment of contaminated soils, sludges and oily sediment in Source Areas 2 and 9 (including oily sediment from the drainage ditch that ran from Source Area 9 to the river).
- Disposal of thermally treated materials by backfilling into Source Area 2.
- Covering the backfilled area with clean soil followed by revegetation.
- Capping of Source Areas 1, 4 and 5 with 1 foot of fly ash and 2 feet of soil followed by revegetation.
- Capping of Source Areas 3, 6 and 9 with 1 foot of topsoil followed by revegetation.
- Imposing of deed restrictions to prevent soil disturbance and well drilling.
- Establishment of alternate concentration limits (ACLs[2]) for groundwater that would not cause adverse effects to the Schuylkill River.

The 1989 ROD did not require remedial action at Source Areas 7, 8 and 10. However, the 1992 ESD modified the OU2 remedy to include a soil cover for Source Area 7. EPA included that change in the ESD because surface soil contamination (oil) was identified in a small area (8 feet by 20 feet) within Source Area 7 during remedial design activities.

Alternate Concentration Limits (ACLs)

The ACLs established for the contaminants of concern (COCs) are the concentrations listed in Table 3 of the 1989 ROD and summarized in Table 2 of this FYR. The 1989 ROD stated that the ACLs were established at levels that would not adversely affect human or environmental receptors associated with the Schuylkill River (e.g., aquatic life, downstream users of river water). During the Phase II RI, potential human health risks from river water

[1] The 1989 ROD superseded the 1985 ROD discussed above that was never implemented.

[2] CERCLA section 121 provides authority to use ACLs under certain circumstances. EPA's policy on the use of ACLs can be found at https://semspub.epa.gov/work/HQ/176388.pdf

considered exposures via ingestion, inhalation of vapors, and ingestion of fish. Although estimated non-cancer risks from river water exposure exceeded EPA's acceptable threshold, those risks are associated with Schuylkill River background conditions and are not Site-related. As stated in the 1989 ROD, groundwater modeling conducted as part of the Phase II RI/FS found that contaminant concentrations would decrease in the future through natural flushing and attenuation. The 1989 ROD stated that if the ACL is exceeded, some type of remediation may be necessary.

EPA also issued a ROD Amendment in 1999 to change the remedy selected for Source Areas 2 and 9 from on-site thermal treatment to lime-based stabilization. The stabilized waste would be disposed of in the Source Area 2 excavation. Performance standards established in the 1999 ROD Amendment required that the stabilized waste would meet the following criteria:

- No exceedances of toxicity characteristic limits, as determined using the Toxicity Characteristic Leaching Procedure.
- No exceedances of the toxicity characteristic limit for lead (5 milligrams per liter [mg/L]), as determined using the Synthetic Precipitation Leaching Procedure (SPLP).
- No exceedances of the toxicity characteristic limit for lead (5 mg/L), as determined using SPLP following wet/dry stress testing.
- No oil release of greater than 1 percent after applying 50 pounds per square inch pressure for 20 minutes during liquids releasing testing.
- No oil layer forming over a 24-day period of immersion in water.

None of the decision documents selected numeric soil or sediment cleanup levels.

Table 2: Groundwater ACLs

COC	1989 ROD ACL (µg/L)	COC	1989 ROD ACL (µg/L)
2-Butanone	17	Naphthalene	390
2-Hexanone	8.2	2-Methylnaphthalene	300
4-Methyl-2-pentanone	29	Phenanthrene	49
Benzene	2,000	Pyrene	31
Toluene	2,300	Alpha-BHC	6.3
Ethylbenzene	180	Gamma-BHC	0.049
Total Xylenes	840	Heptachlor	5.6
Chlorobenzene	17	4,4'-Dichlorodiphenyltrichloroethane (DDT)	0.25
Phenol	7.1	Endosulfan II	0.05
2-Methylphenol	29	Endosulfan sulfate	2
2,4-Dimethylphenol	10	Aroclor-1254	1.7
1,2-Dichlorobenzene	78	Aroclor-1260	430
1,3-Dichlorobenzene	6.1	Vinyl Acetate	2.2
1,4-Dichlorobenzene	15	Bis(2-chloroethyl) ether	44
1,2,4-Trichlorobenzene	20	Benzyl alcohol	32
Aniline	63	lsophorone	6
1,1,2,2-Tetrachloroethane	2.4	Aluminum	122,000
1,1,1-Trichloroethane	130	Antimony	228
1,1,2-Trichloroethane	2.3	Arsenic	188
1,1-Dichloroethane	470	Barium	1,080
1,2-Dichloroethane	330	Beryllium	28

COC	1989 ROD ACL (µg/L)	COC	1989 ROD ACL (µg/L)
Chloroethane	310	Cadmium	12
Tetrachloroethene	29	Calcium	367,000
Trichloroethene	88	Chromium	138
Trans-1,2-dichloroethene	990	Cobalt	512
Cis-1,2-dichloroethene	940	Copper	339
1,1-Dichloroethene	4.5	Iron	325,000
Vinyl chloride	1,200	Lead	227
Carbon tetrachloride	2.9	Magnesium	161,000
Chloroform	8	Manganese	162,000
Methylene chloride	320	Mercury	2
Chloromethane	0.66	Nickel	672
1,2-Dichloropropane	16	Potassium	15,000
Cis-1,3-dichloropropene	5.7	Selenium	5
Bis(2-ethylhexyl) phthalate	44	Sodium	288,000
Di-n-butyl phthalate	12	Vanadium	30
Diethyl phthalate	4.7	Zinc	5,910
Fluorene	30		
Notes: µg/L = micrograms per liter			

Status of Implementation

OU1 Remedy Implementation

EPA conducted the OU1 remedial action between July 1989 and June 1993. During the remedial action, approximately 123 tanks, vessels, or chambers were remediated, and 8 buildings were demolished. Major cleanup activities during the processing facility and tank farm remedial action included:

- Removal of all asbestos-containing materials from buildings, piping and surrounding areas.
- Drainage of free liquids and sludges from equipment, process and storage tanks, pipes and abandoned vehicles.
- Dismantlement, decontamination and removal of buildings, tanks, equipment, piping, abandoned vehicles, drums and miscellaneous materials.
- Collection, transportation and disposal of wastes to permitted off-site facilities.
- Recycling of steel from the dismantled tanks.
- Treatment and disposal of decontamination fluids at the Valley Forge Sewage Authority.
- Drainage of tank contents (waste oil) and off-site incineration
- Removal of 15 underground storage tanks.
- Backfilling, grading and seeding of affected areas.

OU2 Remedy Implementation

The OU2 remedial action consisted of two phases. In July 1991, EPA issued a Unilateral Administrative Order to potentially responsible parties (PRPs) to conduct Phase I of the OU2 remedial action. Phase I included capping of Source Areas 4 and 5 with 1 foot of fly ash and 2 feet of soil followed by revegetation. Phase I also included capping of Source Areas 3, 6 and 7 with clean soil and revegetation. The PRPs completed Phase I of the OU2 remedial action in May 1993.

In January 2001, EPA signed a Consent Decree under which the PRPs agreed to implement Phase II activities. Thee PRPs conducted Phase II of the OU2 remedial action between June 2001 and July 2002. The 1989 ROD did not require remedial action for Source Area 10. However, during the actual cleanup activities, it was discovered that a drainage ditch in this area was contaminated with oily sludges from the Site. Those sludges were excavated and included in the treatment/stabilization process.

Phase II activities included:

- Excavation of about 46,000 cubic yards of contaminated oily filter cake materials, sediments and sludges from Source Area 2, and from drainage ditches in Source Areas 9 and 10.
- On-site treatment of the oily wastes by mixing those materials with lime kiln dust in a pug mill.
- Landfilling of the treated materials into the Source Area 2 excavation. Figure C-1 in Appendix C shows the final grade of Source Area 2.
- Placement of soil covers over Source Areas 1, 2 and 9, and backfilling of the excavated area of Source Area 10 with clean soil.
- Establishment of vegetative covers over Source Areas 1, 2 and 9.

Institutional Control Review

The Site consists of portions of eight properties (Table 3, Figure 3). Property ownership has not changed since the previous FYR except for one parcel (H); ownership for Parcel H changed from one private owner to two private owners.

All necessary institutional controls (ICs) are in place. Institutional controls were implemented for five Site parcels in 2006 and for an additional Site parcel in 2015.

Table 3: Site Property Information

Parcel[a]	Property Number[b]	Owner[c]
A	88536413139425	Private Owner
B	88000000000028	Schuylkill River Greenway Association
C	88535420819505	Private Owner
D	88536413028931	Hopewell Non-Ferrous Foundry
E	88536413123891	Berks Associates, Inc.
F	88536413220735	Private Owner
G	88536413222677	Private Owner
H	88536417221375	Private Owners

Notes:
a) Parcel letters coincide with labels on Figure 3.
b) Property numbers obtained from the Berks County – Assessment Parcel Viewer: http://gis.co.berks.pa.us/parcelviewer/, accessed 9/26/18.
c) Ownership information obtained from Berks County online parcel viewer; current as of 9/26/18.

The 1989 ROD for OU2 called for deed restrictions to prevent soil disturbance and well drilling at the Site. In November 2006 and December 2006, Notices of Institutional Controls, Provisions of Access and Obligations (Notices) (instrument numbers 2006096612, 2006086851, 2006086852, 2006086853 and 2006086854) were recorded with the Berks County Recorder of Deeds office for five of the eight parcels that are part of the Site. The Notices detailed certain activities which should be prohibited in the portions of those parcels that fall within the "Restricted Areas" of the Site. The Notices specify that the Restricted Areas are based on the source areas identified in the RI/FS and the soil covers constructed during remedial actions at the Site. Use restrictions that apply to the Restricted Areas include disturbance of soil; well drilling for water extraction wells; residential use; objects stored that would interfere with the protectiveness of the soil covers; agricultural or mining/mineral activities; construction of buildings or structures; installation of subsurface utility lines or storage tanks; waste material deposits; and disturbance, destruction or obstruction of drainage pathways or groundwater monitoring wells.

In September 2015, EPA implemented an informational institutional control for a sixth parcel by sending a letter to the owner of the Schuylkill River Greenway Association, which owns a portion of the Thun Trail. The letter notes that although EPA is not aware of any contamination beneath the portion of the Thun Trail located on Site, EPA requests that the property owner contact EPA prior to any activities that may disturb the surface and subsurface soil or groundwater.

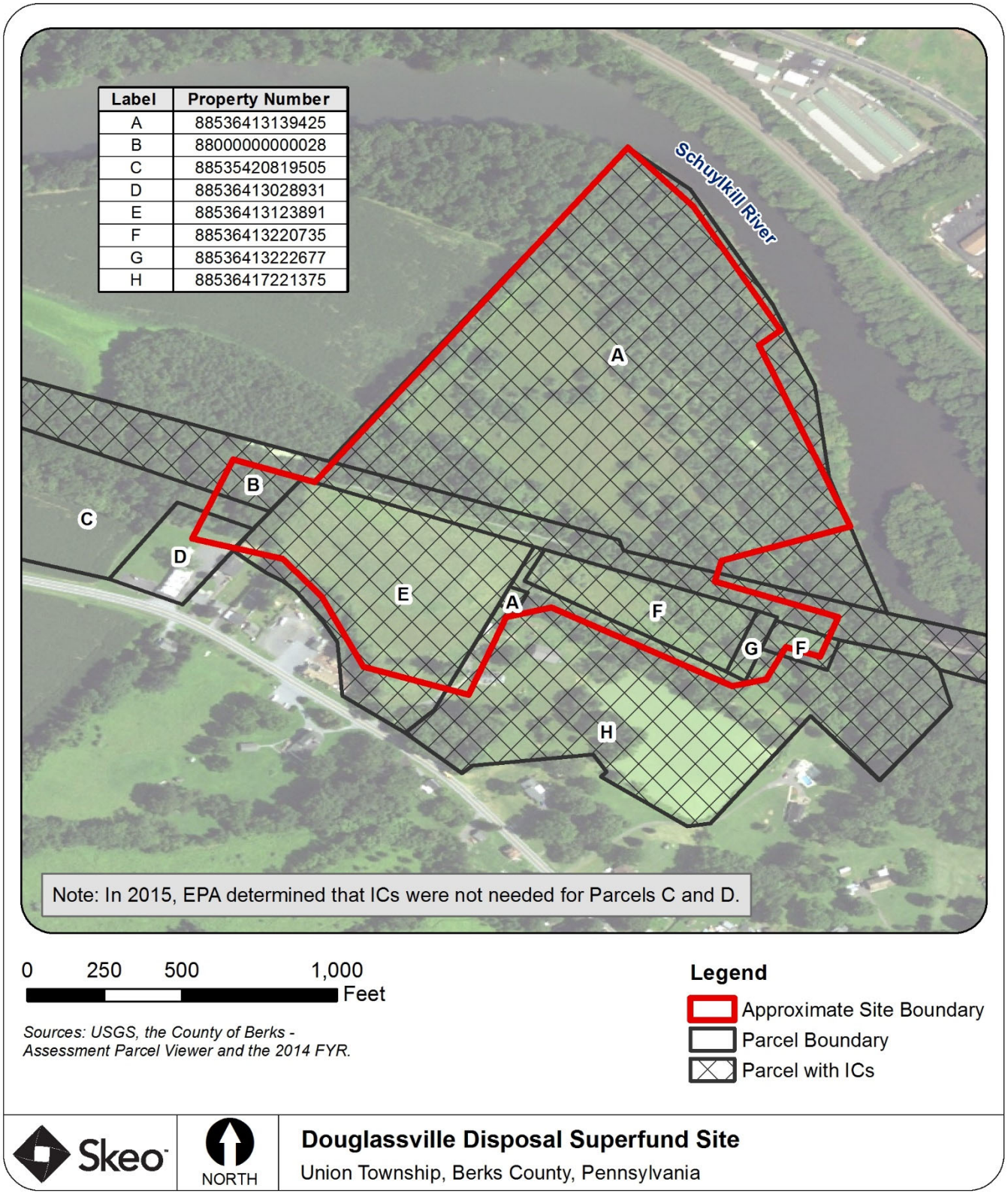
In response to a recommendation in the 5th Five-Year Review report, in September 2015, EPA evaluated the need for institutional controls at parcels that did not yet have ICs. EPA determined that institutional controls were not needed for the two remaining Site parcels (property numbers 88535420819505 [Parcel C] and 88536413028931 [Parcel D]), which together make up an area known as Source Area 10 in the southwest corner of the Site. EPA determined that the two parcels did not require institutional controls because relatively low levels of contaminants were detected in this area and the 1989 ROD did not require remedial action at Source Area 10.[3] Additionally, oily sludges identified in a Source Area 10 drainage ditch during the cleanup were removed and the excavation was backfilled with clean soil. Table 4 summarizes the implemented institutional controls at the Site. Figure 3 shows the parcels with implemented institutional controls.

Table 4: Summary of Implemented Institutional Controls (ICs)

Media, Engineered Controls, and Areas That Do Not Support UU/UE Based on Current Conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date
On-site groundwater, soil and sediment	Yes	Yes	Portions of parcels 88536413139425, 88536413123891, 88536413220735, 88536413222677 and 88536417221375	Restrict disturbance of the soil and soil cover; prohibit water well drilling; prohibit residential land use.	Notices of Institutional Controls, Provisions of Access and Obligations Regarding Successors-In-Interest (November and December 2006)
			Portions of parcel 88000000000028	Prevent exposure to contamination and protect human health and the environment.	Informational IC letter sent from EPA to the Schuylkill River Greenway Association (September 2015)

[3] In September 2015, EPA evaluated the existing institutional controls in response to an issue raised in the fifth FYR Report. Findings of the evaluation are documented in an EPA memorandum to the site file, dated September 29, 2015.

Figure 3: Institutional Control Map



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Systems Operations/Operation and Maintenance (O&M)

EPA regularly inspects the cap during groundwater monitoring events; however, there is no Site O&M plan. Prior to this FYR period, EPA mowed the capped areas. This practice was discontinued during this FYR period because the native grasses were well-established. While removing invasive autumn olive bushes from the Source Area 2 cap has been performed during this FYR period, EPA determined that allowing the vegetated areas to remain in their natural state provides wildlife habitat and soil stabilization.

The 1989 ROD required sampling of groundwater every five years at Site monitoring wells as part of the FYR process, sampling of residential wells, and sampling of surface water of the Schuylkill River, where practical.

In support of the FYR evaluation, EPA sampled groundwater monitoring wells and residential wells semi-annually between December 2013 and June 2016. Groundwater samples were analyzed for VOCs, SVOCs, PCBs as Aroclors, dissolved metals and cyanide. Monitoring wells MW-18-1 and MW-18-2 were also analyzed for pesticides. Prior to sampling, EPA measured light non-aqueous phase liquid (LNAPL) thickness in wells MW-18-1 and MW-18-2 and manually bailed any recoverable NAPL from the wells.

EPA documented in the 2014 FYR Report that sediment and surface water sampling could be discontinued because surface water data collected between 2009 and 2012 were below ACLs and ambient water quality criteria. Based on the results of river profiling and previously collected analytical data for surface water and sediment, including an evaluation of June 2013 groundwater and sediment data, EPA concluded that sediment sampling in the likely area of groundwater discharge demonstrated that contaminant concentrations are similar to upstream background locations. Surface water and sediment sampling of the Schuylkill River did not occur during this FYR period.

The 1989 ROD indicated that no annual O&M costs would be incurred for the source removals. However, the FYR would cost approximately $25,000 for water sampling and analysis. Site PRPs have contributed approximately $1.1 million to a special account to cover the future costs of maintenance for areas that underwent remedial activities. O&M costs for the past five years have totaled $206,691.

III. PROGRESS SINCE THE PREVIOUS REVIEW

Table 5 of this section includes the protectiveness determinations and statements from the 2014 FYR Report. Table 6 provides the recommendations from the 2014 FYR Report and the status of those recommendations.

Table 5: Protectiveness Determinations/Statements from the 2014 FYR Report

OU #	Protectiveness Determination	Protectiveness Statement
OU1	Protective	The OU1 remedy at the Site is protective of human health and the environment because structures in the former processing facility/tank farm area have been adequately removed.
OU2	Short-term Protective	The OU2 remedy at the Site is protective in the short term because there are currently no completed exposure pathways. However, in order for the remedy to be protective in the long term, follow-up actions need to be taken: prepare an O&M plan for the Site; identify if there is a need for additional institutional controls; evaluate options for addressing light non-aqueous phase liquid (LNAPL); assess next steps for contaminants identified that do not have ACLs; and remove the squatters living next to the river.
Sitewide	Short-term Protective	Because remedial actions at all OUs are protective in the short term, the Site's remedy is protective of human health and the environment in the short term. For long-term protectiveness, actions listed in the OU2 protectiveness statement need to be taken.

Table 6: Status of Recommendations from the 2014 FYR Report

OU #	Issue	Recommendation	Current Status	Current Implementation Status Description	Completion Date (if applicable)
OU2	The Site does not have an O&M Plan.	Prepare O&M Plan for ongoing site needs.	Ongoing	EPA will prepare an O&M Plan, if necessary based on the results of the recommended additional LNAPL investigation activities at the Site.	n/a
OU2	Several property parcels at the Site do not have institutional controls in place.	Identify if there is a need for land use controls on three parcels affected by the Site that do not currently have institutional controls.	Completed	In September 2015, EPA evaluated the need for institutional controls at the three parcels affected by the Site and identified in the 2014 FYR Report. Based on this review, EPA implemented an informational IC by sending a letter to the Schuylkill River Greenway Association (September 2015), which owns Parcel B (the Thun Trail). EPA also determined that institutional controls were not needed for the two remaining Site parcels (C and D).	9/29/2015
OU2	LNAPL continues to be detected in the MW-18 wells.	Evaluate options to address LNAPL accumulations in the MW-18 well cluster in the floodplain area.	Ongoing	In August and November 2017, EPA conducted a subsurface investigation of LNAPL at the Site. Additional information on the LNAPL investigation is presented after this table.	n/a
OU2	Chemicals that do not have ACLs have been identified in groundwater.	Consider evaluating the list of COCs for further sampling activities at the Site.	Ongoing	EPA plans to re-evaluate the list of COCs for further sampling pending the outcome of the additional LNAPL investigation.	n/a
OU2	Squatters are living on Site.	Remove the squatters.	Completed	No signs of squatters were observed during a Site visit in June 2015, or during the FYR Site inspection in 2018.	6/2015
Notes: n/a = not applicable					

LNAPL Investigation

An effort to determine the recoverability of the LNAPL in the MW-18 well cluster was attempted on MW-18-1 in August 2017 via a bail-down test. Due to the adherent nature of the LNAPL encountered in the well, the LNAPL coated the interface probe and resulted in persistent false positive LNAPL detection. As a result, reliable depth to LNAPL and depth to water measurements could not be obtained. Approximately two gallons of LNAPL were removed during this event.

In November 2017, a subsurface evaluation was performed to attempt to delineate the LNAPL near monitoring well cluster MW-18. Sixteen boreholes (LIF-1 through LIF-16) were installed and screened using laser-induced fluorescence (LIF) technology (specifically, the Tar-specific Green Optical Screening Tool®, "TarGOST®"). The investigation indicated that the LNAPL is not entering the Schuylkill River but the complete extent of LNAPL was not determined. Figure D-1 in Appendix D shows the locations of the LIF boreholes. Figure D-2 in Appendix

D shows the data from each boring. The subsurface evaluation coincided with another LNAPL recovery event with the removal of approximately seven gallons of product.

The investigation identified one, and potentially two, LNAPL plumes near monitoring well cluster MW-18. A shallow LNAPL plume may exist approximately 3 to 5 feet below ground surface (bgs) based on the LIF signals observed in borings LIF-13, LIF-14 and LIF-15 (Appendix D, Figure D-2). A deeper, and more expansive, LNAPL plume exists approximately 12 to 18 feet bgs. The horizontal extent of this deeper LNAPL plume was not fully delineated, particularly to the northwest, southwest and southeast of monitoring well cluster MW-18. EPA plans to further investigate the extent of the LNAPL and the need for further action to address the LNAPL, if any.

Data from the bail-down test, LNAPL recovery events, and subsurface TarGOST® evaluation are being reviewed and will help inform a more robust investigation of the LNAPL source material and groundwater in the area.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Community Involvement and Site Interviews

A public notice was published in the *Reading Eagle* newspaper stating that the FYR was underway and inviting the public to submit any comments to EPA. The results of the FYR and the report will be made available at the Site's information repository, Boone Area Library, located at 129 North Mill Street in Birdsboro, Pennsylvania, and online at https://www.epa.gov/superfund/douglassville. This information repository is in addition to the repository at the Union Township Municipal Building, located at 177 Center Road in Douglassville, Pennsylvania.

On June 28, 2018, EPA's CIC and RPM participated in a Site inspection along with PADEP and contractor representatives. The inspection included an overview of the remedy and O&M activities to ensure they are functioning as intended. Representatives of the Township and nearby residents interviewed expressed satisfaction with EPA's work and communication regarding the Site. There were no community concerns expressed.

As a part of the review, the EPA CIC and RPM met with the Manager of Union Township to provide an overview of Site history, Site work and community updates. The Manager of Union Township was new to his role and EPA provided him with information and EPA contacts in case there are any future concerns or questions about the Site. The Township rarely receives inquiries from residents but feel well prepared to address them if they do arise.

Data Review

This data review summarizes monitoring well and residential well groundwater quality data and LNAPL thickness measurements for monitoring wells MW-18-1 and MW-18-2 presented in event trip reports prepared by EPA's contractor. Tables of complete groundwater analytical results reviewed during this FYR are included as Appendix E.

Monitoring Well Results
EPA sampled groundwater in December 2013, June and December 2014, June and December 2015, and June 2016 at 17 to 18 monitoring wells. Four wells were also sampled in March 2015. The data from December 2013, although collected prior to signature date of the 2014 FYR Report, were not evaluated in the 2014 FYR Report as the data validation was not complete at the time and therefore are included in this review.

COCs detected above ACLs at least once during this FYR included 4,4'-DDT, Aroclor-1254, bis(2-ethylhexyl)phthalate, chlorobenzene, di-n-butylphthalate, endosulfan II, endosulfan sulfate, gamma-BHC (lindane), barium, lead, phenanthrene, selenium and vanadium. Figure 4 shows the locations of the eleven monitoring wells that had ACL exceedances during this FYR period. Most of the ACL exceedances occurred in wells along the river. The exception is a single Aroclor 1254 ACL exceedance in December 2014, which occurred

in MW-14-3, located south of former Source Areas 1 and 2. Aroclor 1254 was not detected in MW-14-3 during a resampling event in March 2015 or during subsequent sampling events.

Selenium and chlorobenzene were detected most frequently above ACLs (42 times and 14 times, respectively) in monitoring wells; all other COCs with exceedances were detected above ACLs between one and five times. The highest selenium concentration (122 µg/L) was reported in MW-8-1 in June 2014, compared to its ACL of 5 µg/L; selenium declined in MW-8-1 to below the ACL in June 2016. The highest chlorobenzene concentration (54 µg/L) was reported in MW-8-2 in December 2013, compared to its ACL of 17 µg/L. Chlorobenzene has declined in MW-8-2 but remained above the ACL during the most recent sampling event in June 2016 (19 µg/L). MW-18-1 had the greatest number of COCs above ACLs (13); however, results from this well may be affected by the LNAPL that is consistently observed in the well. The groundwater samples are likely impacted by entrained product increasing contaminant loading. Tables F-1 and F-2 in Appendix F summarize ACL exceedances during the FYR period by well and by COC, respectively. The results were similar to results reported during the 2014 FYR.

To evaluate contaminant concentrations over time, time-concentration graphs were prepared for those COCs that exceeded an ACL at least once during the FYR period (Appendix F, Figures F-1 through F-16). Graphs were prepared for MW-1-1, MW-1-2, MW-1-3, MW-2-1, MW-8-1, MW-8-2, MW-14-3, MW-18-1, MW-18-2, MW-19-1 and MW-19-2. Because selenium and chlorobenzene were detected most frequently above ACLs, trends associated with these COCs are discussed below.

Selenium concentrations in most wells have been variable over time with no consistent decreasing or increasing trends from 2011 to 2016 (Appendix F, time-concentration graphs). Several wells, including MW-8-1, had a notable increase in selenium concentrations in June 2014 but concentrations decreased in subsequent sampling events. During the most recent sampling event in June 2016, only three wells, MW-1-2, MW-8-2 and MW-19-2, had exceedances of the selenium ACL (5 µg/L); concentrations ranged from 5.7 µg/L to 7.4 µg/L.

Chlorobenzene in wells MW-2-1, MW-8-2, MW-18-1 and MW-18-2 has also been variable over the time evaluated (Appendix F, Figure F-2). Chlorobenzene consistently exceeded the ACL of 17 µg/L in MW-8-2 and MW-18-1, but MW-2-1 and MW-18-2 had only one and two ACL exceedances, respectively, during the time evaluated.

Several additional chemicals for which ACLs have not been established were also detected in Site monitoring wells. These chemicals include, but are not limited to, 1,4-dioxane, cis-1,2-dichloroethene (cis-1,2-DCE), acetone, 1,2,3-trimethylbenzene, carbon disulfide, methyl tertiary-butyl ether, methylcyclohexane, cyclohexane, tetrachloroethene, 4-chloro-3-methylphenol, 4-methylphenol, acetophenone, isopropylbenzene, anthracene acenaphthene, fluoranthene, dibenzofuran, cyanide, Aroclor 1248 and multiple pesticides. Except for 1,4-dioxane, cis-1,2-DCE and Aroclor 1248, most of the chemicals without ACLs were detected at low levels, generally below 3 µg/L, during the two most recent sampling events in December 2015 and June 2016. 1,4-Dioxane was detected as high as 130 µg/L in MW-1-2 (June 2016); cis-1,2-DCE was detected as high as an estimated 64 µg/L in MW-8-2 (December 2015) and Aroclor 1248 was detected at an estimated19 J µg/L in MW-18-1 (December 2015). Appendix E includes the results from residential well sampling performed during this five-year review period.

LNAPL Monitoring Results

MW-18-1 and MW-18-2 contained LNAPL during all monitoring events of this FYR period (Table 7). LNAPL thickness is several feet greater in MW-18-1 than in MW-18-2. MW-18-1 monitors the bedrock/overburden interface from 14 feet bgs to 25.2 feet bgs; MW-18-2 is a bedrock well with a monitored interval of 28 feet bgs to 49 feet bgs.[4]

[4] Well construction data obtained from Table 3-1 of the 1988 Final RI/FS Report.

EPA's 2017 LNAPL investigation identified one, and potentially two, LNAPL plumes near monitoring well cluster MW-18. EPA plans to further investigate the extent of the LNAPL and the need for further action to address the LNAPL.

Table 7: LNAPL Thickness (feet) – Wells MW-18-1 and MW-18-2

Date	MW-18-1	MW-18-2
June 2014	9.23	2.18
December 2014	4.75	0.25
June 2015	6.19	0.08
December 2015	8.46	0.04
June 2016	11.00	1.07

Residential Drinking Water Well Results

As discussed in the Site Background section, groundwater at the Site generally flows in a north to northeast direction toward the Schuylkill River, into which it discharges. Nearby residents rely on well water. These residential wells are hydraulically upgradient of the Site.

EPA sampled residential wells in June and December 2014, March 2015, June and December 2015, and June 2016. Samples were collected from residences RW-1, RW-2 or RW-8, depending on the sampling event (Figure 4). Residential well results were compared to federal drinking water maximum contaminant levels (MCLs) and EPA's regional screening levels (RSLs) for tapwater.[5] All results were below MCLs. Cyanide, arsenic and Aroclor 1260 were detected above RSLs during one or more sampling events, as summarized below.

During the June 2014 sampling event, cyanide was detected in samples collected from residential locations RW-2 and RW-8 at estimated concentrations of 2 µg/L and 2.8 µg/L, respectively, which exceed the RSL of 1.5 µg/L but are well below the free cyanide MCL of 200 µg/L. Cyanide was also detected at RW-2 in the primary and duplicate samples (2.1 B µg/L and 1.8 B, µg/L, respectively) in June 2016, but may be associated with laboratory contamination, as indicated by the B qualifiers.

Arsenic was detected above its RSL of 0.052 µg/L in RW-1, RW-2 and/or RW-8 during the December 2014, June and December 2015 sampling events at concentrations up to 1.1 µg/L. Arsenic was also detected in laboratory blank samples during these sampling events; therefore, the presence of arsenic in the water collected from RW-1, RW-2 and RW-8 may be attributable to laboratory contamination. Arsenic was detected above its RSL in RW-1 and RW-2 at estimated concentrations ranging from 0.24 µg/L to 0.69 µg/L during the June 2016 sampling. All arsenic concentrations in residential wells were below the MCL of 10 µg/L.

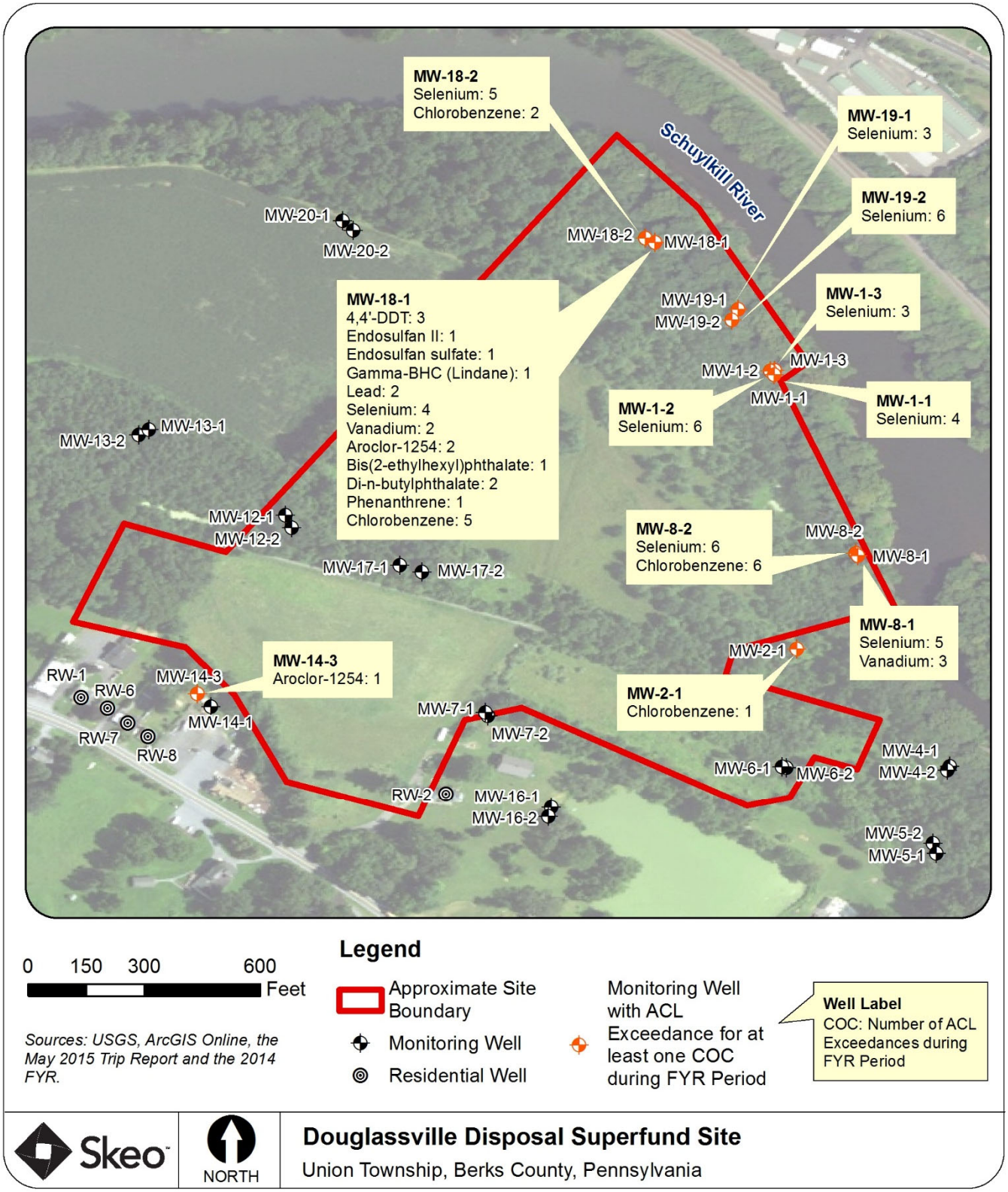
Aroclor-1260 was detected consistently above its RSL of 0.0078 µg/L in RW-2 during this FYR period at concentrations up to 0.41 µg/L (December 2015). All detected concentrations were below the MCL of 0.5 µg/L for PCBs. An evaluation of PCBs included in the 2014 FYR found that the PCBs detected in RW-2 were not believed to be Site-related.[6] As confirmed by the resident, well water at RW-2 is not used for drinking water.

In summary, the residential well sampling performed during this five-year review period did not detect constituent concentrations above the drinking water MCLs.

[5] RSLs based on target cancer risk of 1 x 10^{-6} and target hazard quotient (HQ) of 1.

[6] The June 2013 PCB evaluation included surface soil sampling for PCBs near residential well RW-2. An area near RW-2 was being used by the resident for storage of various machinery parts and compressors that EPA believes might be a localized, non-site-related source of the PCB contamination.

Figure 4: Well Map with ACL Exceedances



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

Site Inspection

The inspection took place on June 28, 2018. In attendance were the EPA RPM, CIC, and biologist; PADEP's project manager and section leader; and Skeo (EPA FYR contractor). The purpose of the inspection was to assess the protectiveness of the remedy. Appendix G includes photographs from the Site inspection.

Site inspection participants began the inspection on the Source Area 2 vegetated cap. The cap was in good condition, with no signs of erosion or animal burrows. Grasses appeared to be well-established. The EPA biologist noted the presence of invasive species on the cover, including several autumn olive bushes. She recommended removal of the autumn olive bushes and any woody vegetation that may compromise the integrity of the cap. EPA indicated that the cap's vegetation is not mowed.

Site inspection participants walked north through the Site, crossed the paved bike trail, and toward the Schuylkill River. Former source areas north of the bike trail (Source Areas 3 through 6) were observed and appeared well-vegetated. Site inspection participants observed several monitoring wells along the river, including MW-18-1 and MW-18-2, where LNAPL has been detected. The protective well cover for MW-18-1 was unsecured.

Site inspection participants observed the banks of the Schuylkill River northeast of the MW-18 well cluster. No signs of sheen were observed. Site inspection participants also observed an area along the river believed to have been used by a squatter during the previous FYR Site inspection. The area was vacant and did not appear to have been used for some time.

Following the Site inspection, EPA and Skeo personnel visited the local information repository for the Site, the Union Township Municipal Building, located at 1445 East Main Street in Douglassville, Pennsylvania. Township personnel indicated that paper copies of documents are available, but the township would prefer an electronic copy of the administrative record. EPA has since sent the Township an electronic copy of the administrative record.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Question A Summary:

The remedy is partially functioning as intended by the decision documents, but not fully. While most of the remedy has been successfully implemented and maintained, the expectation that Site groundwater quality would remain constant or improve with respect to the ACLs established by the 1989 ROD has not been borne out by the groundwater monitoring data. While ACLs were exceeded in 11 monitoring wells during this FYR period, the COC concentrations were not markedly different than they were at the time of the last FYR when it was determined that surface water and sediment monitoring could be discontinued.

Processing facility and tank farm removals, excavation and stabilization of contaminated soil and sludge, and capping eliminate any potential direct exposure to contaminated materials at the Site. The Site's 2002 Preliminary Close-out Report indicates that all treated, and subsequently landfilled materials, met the remedial action performance standards specified in the 1999 ROD Amendment. The caps are vegetated with native grasses and in good condition with no signs of erosion. EPA's biologist recommends that woody vegetation and invasive species, such as the autumn olive bushes, continue to be removed from the Source Area 2 cap to maintain its integrity.

Groundwater monitoring continues regularly at the Site and results are compared to the ACLs established in the 1989 ROD. Thirteen COCs were detected above ACLs at least once during this FYR, with selenium and chlorobenzene detected most frequently above their respective ACLs. Selenium and chlorobenzene concentrations in most wells have been variable over time with no statistically discernable trends. Most of the ACL exceedances

occurred in wells along the river. The proximity to the river raises the question whether ecological receptors might be exposed to COCs in groundwater that discharges from the Site through sediment or seeps and after mixing with Schuylkill River water. Ecological receptors (e.g., microbial communities, burrowing benthic organisms) in the hyporheic zone can be exposed to undiluted groundwater prior to mixing with river water. This exposure pathway needs further assessment based on current data.

Several additional chemicals for which no ACL has been established were detected in groundwater, including but not limited to, 1,4-dioxane, cis-1,2-DCE and Aroclor 1248. Residential well water monitoring did not identify Site-related contamination above MCLs.

LNAPL continues to be observed in monitoring wells MW-18-1 and MW-18-2. EPA's 2017 LNAPL investigation identified one, and potentially two, LNAPL plumes near the monitoring well cluster MW 18, the extent(s) of which have not been fully delineated. EPA plans to further investigate the extent of the LNAPL and the need for further action, if any, to address the LNAPL and assess its impacts to groundwater quality in the vicinity. Once a path forward is determined, if necessary, EPA will prepare and implement an O&M Plan for the Site. The O&M Plan, if necessary, may include a long-term monitoring plan for groundwater and possibly surface water that will specify which COCs and wells require monitoring. It may also specify an approach to statistically analyze the data to determine compliance with ACLs. In the interim, O&M of the capped area and groundwater monitoring in support of FYRs is ongoing.

Institutional controls are in place at the six parcels where EPA determined they are needed at the Site. The institutional controls prevent exposure to contaminated groundwater and soil and maintain the integrity of the remedy.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

Question B Summary:

Yes, the cleanup levels and RAOs used at the time of remedy selection remain valid. Changes to exposure assumptions and toxicity data have occurred since remedy selection; however, these changes do not call into question the protectiveness of the remedy because there are no known complete exposure pathways at the site.

The 1989 ROD for OU2 established Site-specific groundwater ACLs at levels that would not cause adverse effects on the Schuylkill River from groundwater discharge to the river.

Although several COCs in groundwater remain above ACLs, Site-related adverse effects on the Schuylkill River are not apparent. No exceedances of ambient water quality criteria were observed in surface water during five sampling events conducted between 2009 to 2012. Additionally, Site-related impacts to sediment were not observed. Although SVOCs, pesticides, metals and PCBs as Aroclors were detected above EPA's Biological Technical Assistance Group (BTAG) screening criteria in sediment samples collected adjacent to or downgradient of the Site in 2012 and 2013, these constituents were also detected at similar or lower concentrations several hundred feet upgradient of the Site. In additions, no sheens have been observed on the river adjacent to the Site during Site visits, including the June 2018 Site Inspection. Although Site-related impacts to the Schuylkill River are not currently apparent, in consideration of the LNAPL present near the MW-18 well cluster, this FYR recommends additional assessment of surface water quality to ensure Site contamination does not affect the river.

The RAOs for the Site – to reduce the risks associated with exposure to contaminated materials associated with the ten source areas and to prevent exposure to contaminated groundwater beneath the Site have been met.

The 1988 human health risk assessment did not evaluate the potential for vapor intrusion to indoor air. Between 2010 and 2011, EPA performed a vapor intrusion evaluation at two adjacent residences. Based on the

results of sub-slab, indoor air and ambient air sampling at the residences, there were no acute risks to receptors and vapor intrusion was not likely occurring. The 2014 FYR Report documented the results of the evaluation. Since the 2014 FYR, Site conditions have not changed, and VOCs were not detected in the wells closest to the residences during the most recent sampling event in 2016. Therefore, the findings of the vapor intrusion study remain valid.

QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?

No other information has come to light that could call into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the FYR:
OU1

Issues and Recommendations Identified in the FYR:

OU(s): OU2	**Issue Category: Operations and Maintenance**			
	Issue: The Site does not have an O&M Plan.			
	Recommendation: Prepare an O&M Plan, if necessary, that includes a long-term monitoring plan for groundwater; prepare the O&M plan either concurrent with or upon completion of the recommended investigation of LNAPL and related groundwater quality issues in Source Areas near the Schuylkill River.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	4/10/2020

OU(s): OU2	**Issue Category: Remedy Performance**			
	Issue: The extent of the LNAPL near the MW-18 well cluster has not been fully delineated and groundwater ACL exceedances exist, predominantly in Source Areas 4 and 5.			
	Recommendation: Complete characterization of the nature and extent of LNAPL at the Site, its impact to groundwater quality, and re-assess ecological risks related to groundwater discharge to the Schuylkill River.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	12/31/2021

OU(s): OU2	Issue Category: Monitoring			
	Issue: Chemicals that do not have ACLs have been identified in groundwater. These include, but are not limited to 1,4-dioxane, cis-1,2-DCE and Aroclor 1248.			
	Recommendation: Continue groundwater monitoring in accordance with the 1989 ROD. Determine the need to establish ACLs or other cleanup criteria for those chemicals identified in groundwater without ACLs based on a re-assessment of risks posed by groundwater discharge to the Schuylkill River.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	4/10/2023

OTHER FINDINGS

Additional recommendations were identified during the FYR. These recommendations do not affect current and/or future protectiveness.

- Ensure all monitoring wells at the Site are locked and secured.
- Remove autumn olive bushes and other woody vegetation from the Source Area 2 cap.
- Consider placing "No Trespassing" signs around the Source Area 2 cap.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)	
Operable Unit: OU1	*Protectiveness Determination:* Protective
Protectiveness Statement: The OU1 remedy at the Site is protective of human health and the environment because structures in the former processing facility/tank farm area and wastes associated with this area have been removed.	

Protectiveness Statement(s)	
Operable Unit: OU2	*Protectiveness Determination:* Short-term Protective
Protectiveness Statement: The OU2 remedy is currently protective of human health and the environment because there are no complete human exposure pathways between contaminated media and receptors, and there are no unacceptable risks to ecological receptors. The OU2 remedy ensures there no complete exposure pathways between contaminated media and receptors because the capped areas prevent direct exposure to contaminated soil and waste and institutional controls are in place to restrict current and future exposures at the Site. Groundwater monitoring and cap maintenance continue at the Site. Prior to the last FYR (April 10, 2014), analysis of surface water and sediment data led to the conclusion that there are no unacceptable risks to ecological receptors in the Schuylkill River from Site contaminants. To ensure long-term protectiveness, the following actions should be taken:	

- Complete characterization of the nature and extent of LNAPL at the Site, its impact to groundwater quality, and re-assess ecological risks related to groundwater discharge to the Schuylkill River to ensure continued protectiveness.
- Prepare an O&M Plan, if necessary, that includes a long-term monitoring plan for groundwater; prepare the O&M plan either concurrent with or upon completion of the recommended investigation of LNAPL and related groundwater quality issues in Source Areas near the Schuylkill River.
- Continue groundwater monitoring in according with the 1989 ROD. Determine the need to establish ACLs or other cleanup criteria for those chemicals identified in groundwater without ACLs based on a re-assessment of risks posed by groundwater discharge to the Schuylkill River.

Sitewide Protectiveness Statement
Protectiveness Determination: Short-term Protective
Protectiveness Statement: Because remedial actions at all OUs are protective in the short term, the Site's remedy is protective of human health and the environment in the short term. For long-term protectiveness, the actions listed in the OU2 protectiveness statement need to be taken.

VIII. GOVERNMENT PERFORMANCE AND RESULTS ACT MEASURES

As part of this five-year review, the Government Performance and Results Act (GPRA) Measures have been reviewed. The GPRA Measures and their status are as follows:

Environmental Indicators
Human Health: Human Exposure Controlled and Protective Remedy in Place
Groundwater Migration: Contaminated Groundwater Migration Under Control

Sitewide Ready for Anticipated Use (SWRAU)
The Site has achieved SWRAU (9/30/2015).

IX. NEXT REVIEW

The next FYR Report for the Douglassville Disposal Superfund Site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

Douglassville Disposal Superfund Site Final Remedial Action Report. Phase II of Operable Unit 2. Prepared by Barr Engineering Company for EPA Region 3. March 28, 2003.

Draft Trip Report, Douglassville Disposal Site, June 2014 Sampling Event, Union Township, Berks County, Pennsylvania. Prepared by Weston Solutions Inc. for EPA Reg 3. September 2014.

Explanation of Significant Differences, Douglassville Disposal Superfund Site. Prepared by EPA Region 3. April 22, 1992.

Explanation of Significant Differences, Douglassville Disposal Superfund Site. Prepared by EPA Region 3. 1992.

Fifth Five-Year Review Report for Douglassville Disposal Superfund Site, Berks County, Pennsylvania. Prepared by EPA Region 3. April 20, 2014.

Final Remedial Investigation/Feasibility Study. Douglassville Disposal Site. Berks County, Pennsylvania. Prepared by EBASCO Services, Incorporated for EPA Region 3. October 1988.

Final Trip Report, Douglassville Disposal Site, June 2015 Sampling Event, Union Township, Berks County, Pennsylvania. Prepared by Weston Solutions, Inc. for EPA Region 3. November 2015.

Final Trip Report, Douglassville Disposal Site, December 2015 Sampling Event, Union Township, Berks County, Pennsylvania. Prepared by Weston Solutions, Inc. for EPA Region 3. June 2016.

Final Trip Report, Douglassville Disposal Site, June 2016 Sampling Event, Union Township, Berks County, Pennsylvania. Prepared by Weston Solutions, Inc. for EPA Region 3. November 2016.

Memo to File. Evaluation of Institutional Controls, Douglassville Disposal Superfund Site. Prepared by Christopher J. Corbett, EPA Region 3. September 29, 2015.

Preliminary Close-Out Report. Douglassville Disposal Site. Union Township, Berks County, Pennsylvania. U.S. Environmental Protection Agency. July 2002.

Record of Decision, Douglassville Disposal Site, Berks County, Pennsylvania. Prepared by EPA Region 3. September 27, 1985.

Record of Decision, Douglassville Disposal Site – Union Township, Berks County, Pennsylvania. Prepared by EPA Region 3. June 24, 1988.

Record of Decision, Douglassville Disposal Site, Union Township, Berks County, Pennsylvania. Prepared by EPA Region 3. June 30, 1989.

Record of Decision Amendment, Douglassville Disposal Site, Operable Unit Two, Source Areas 2 and 9. Prepared by EPA Region 3. September 29, 1999.

Trip Report, Douglassville Disposal Site, December 2014 & March 2015 Sampling Events, Union Township, Berks County, Pennsylvania. Prepared by Weston Solutions, Inc. for EPA Region 3. May 2015.

Trip Report – LNAPL Investigation, Douglassville Disposal. Prepared by Weston Solutions, Inc. March 29, 2018.

APPENDIX B – SITE CHRONOLOGY

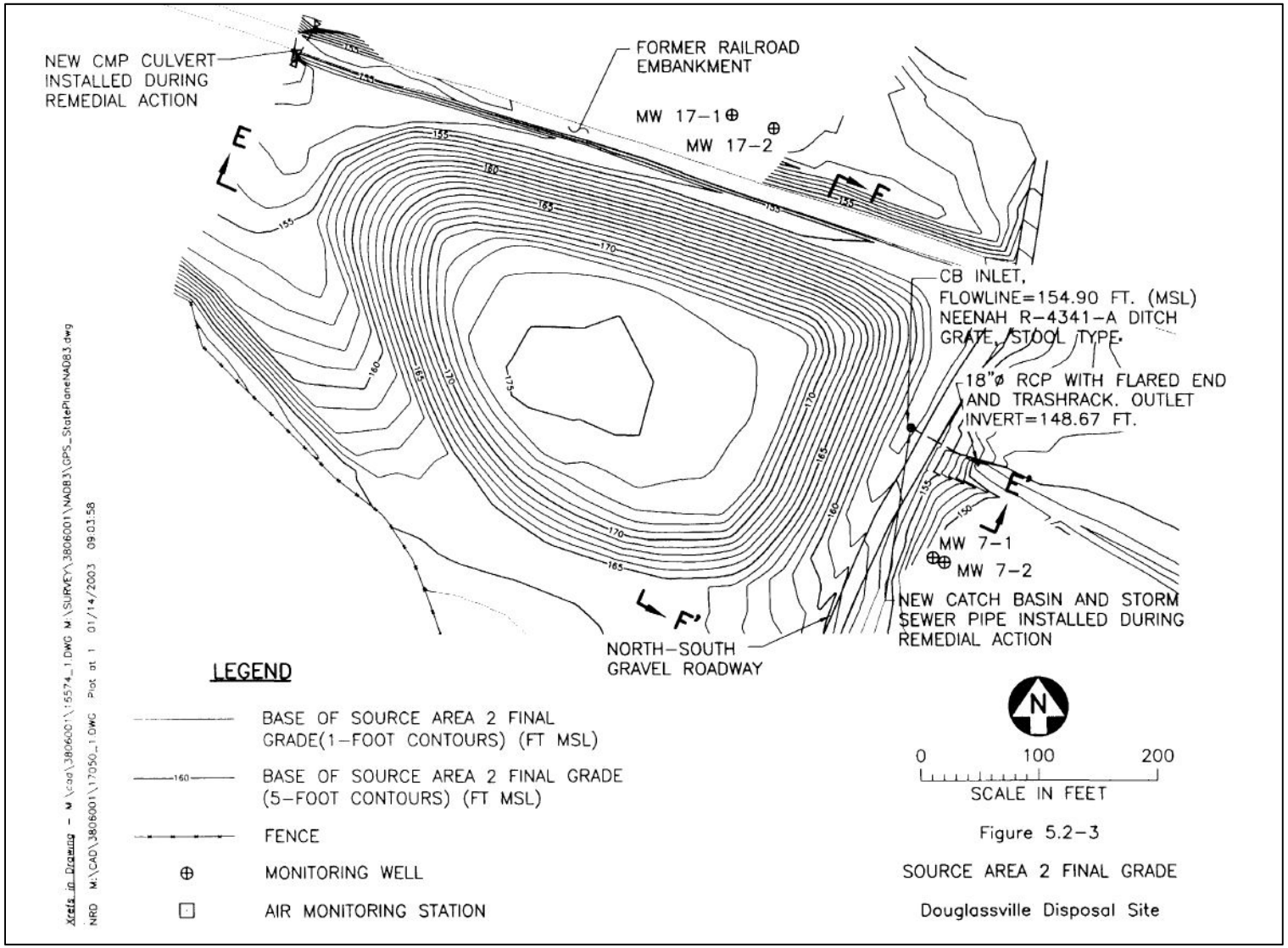
Table B-1: Site Chronology

Event	Date
A waste oil recycling facility began operations on Site	1941
EPA conducted a Site inspection	August 1982
EPA proposed the Site for listing on the NPL	December 30, 1982
EPA listed the Site on the NPL	September 8, 1983
EPA began the RI/FS	December 28, 1983
EPA completed the RI/FS (which did not include the tank farm/processing center); EPA signed the initial ROD, which was later superseded by 1988 and 1989 RODs	September 27, 1985
Waste oil recycling operations ceased on Site	1986
EPA began the remedial design for the landfarm/lagoon area	May 16, 1986
EPA began a combined Phase II RI/FS; the Phase II RI/FS divided the 10 source areas into four remedial response units	March 3, 1987
EPA completed the remedial design for the landfarm/lagoon area	March 15, 1988
EPA completed an FFS for the tank farm/processing area	April 1988
EPA signed a second ROD that addressed OU1 (tank farm/processing area)	June 24, 1988
EPA began the OU1 remedial design	September 28, 1988
EPA completed the combined Phase II RI/FS	October 25, 1988
EPA completed the OU1 remedial design	May 15, 1989
EPA signed a third ROD that addressed OU2 (sitewide soil and groundwater contamination)	June 30, 1989
EPA began OU1 remedial action construction (dismantling, decontamination and disposal of the processing facility and tank farm – Source Area 1)	July 1989
EPA began the remedial design for OU2	September 27, 1989
EPA completed the remedial design for Areas 3, 4, 5 and 6 of OU2	December 19, 1990
EPA issued Unilateral Administrative Order to PRPs to conduct Phase I of the OU2 remedial action	July 1991
EPA signed an ESD for OU1 that increased the scope, performance timeframe and cost from the ROD estimates	1992
EPA signed an ESD to add a soil cover for Area 7 of OU2	April 22, 1992
EPA completed the remedial design – thermal treatment and capping – for Areas 1, 2 and 9 of OU2	March 30, 1993
The PRP completed Phase 1 of the OU2 remedial action (covering Areas 3, 4, 5, 6 and 7)	May 1993
EPA completed the OU1 remedial action	June 7, 1993
EPA issued the first Consent Decree	January 11, 1994
EPA issued the first FYR Report	June 6, 1994
EPA issued an Administrative Order on Consent for a Focused Feasibility Study; the PRP began the OU2 focused FS for waste pile lime stabilization in place of thermal treatment	November 7, 1997
The PRP completed the OU2 FS	November 16, 1998
EPA issued the second FYR Report	April 27, 1999
EPA issued a second Consent Decree (de minimis parties settlement)	July 8, 1999
EPA signed a ROD Amendment for OU2; the ROD Amendment replaced on-site incineration with lime-based stabilization	September 29, 1999
EPA issued a third Consent Decree (remedial design/remedial action)	March 200l
The PRP completed the remedial design for lime-based stabilization at Areas 1, 2 and 9 of OU2	April 3, 2001
The PRP began Phase II of the OU2 remedial action (lime stabilization)	June 2001

Event	Date
The PRP completed Phase II of the OU2 remedial action; EPA issued the Preliminary Close-Out Report	July 17, 2002
EPA approved the OU2 Remedial Action Completion Report for the waste pile stabilization	March 27, 2003
EPA issued the third FYR Report	April 14, 2004
EPA issued the fourth FYR Report	April 14, 2009
EPA issued the fifth FYR Report	April 10, 2014
Informational institutional control issued to the Schuylkill River Greenway Association	September 29, 2015

APPENDIX C – SOURCE AREA 2 FINAL GRADE

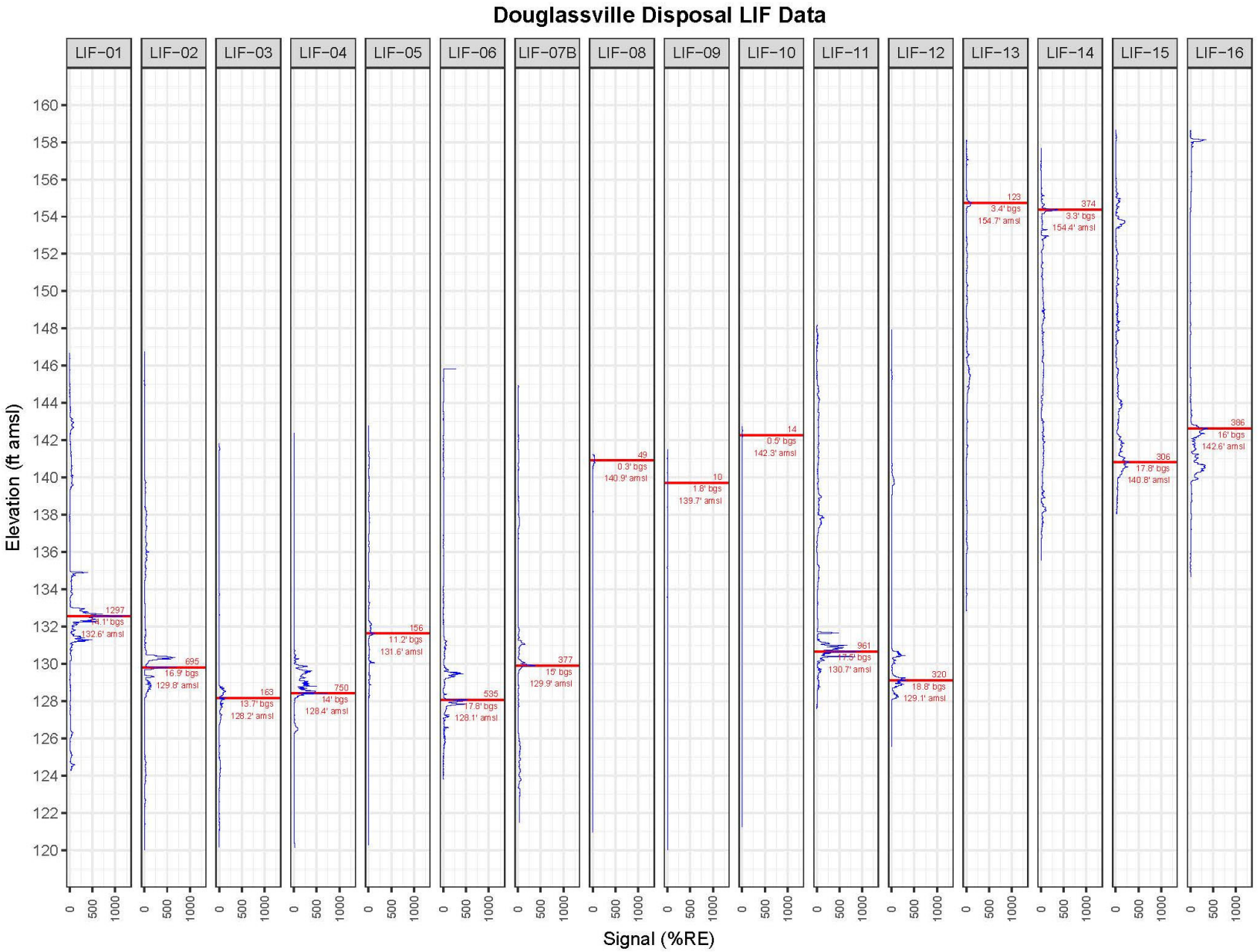
Figure C-1: Source Area 2 Final Grade
Source: Remedial Action Report, Phase II of Operable Unit 2, March 2003



APPENDIX D – 2017 NAPL INVESTIGATION

Figure D-1: NAPL Investigation Boring Locations

Figure D-2: LIF Data



APPENDIX E – COMPLETE GROUNDWATER ANALYTICAL DATA REVIEWED

Note: The groundwater analytical data summary tables include results only from wells with at least one detection for a specified parameter. All other parameters were not detected.

MW-1-1

Sampling Location:		MW-1-1		MW-1-1		MW-1-1		MW-1-1		MW-1-1	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/11/2013		6/11/2014		12/10/2014		6/3/2015		6/8/2016	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	Inorganics	20	U	20	U	20	U	236		20	U
Arsenic	Inorganics	4.8		7.8	J	6.6	J	8.6		1.7	
Barium	Inorganics	70.9		112		87.1		101		69.7	
Beryllium	Inorganics	1	U	1	U	1	U	0.36	J	1	U
Cadmium	Inorganics	1	U	1	U	0.1	J	0.14	J	1	UJ
Calcium	Inorganics	32600		94300		44000		89900		86800	
Chromium	Inorganics	2	U	2	U	2	UJ	3.3		2	U
Cobalt	Inorganics	12.9		14.3		19.1		15.2		7.9	
Copper	Inorganics	2	U	2	U	0.65	J	2	U	2	U
Cyanide	Inorganics	2	J	10	U	0.96	J	10	U	10	U
Iron	Inorganics	4250		5640	J	5600		5830		1880	
Lead	Inorganics	1	U	0.27	J	1	U	1	U	1	U
Magnesium	Inorganics	8930		27300		13900		27000		24400	
Manganese	Inorganics	5080		8940		7090		9080		5580	
Nickel	Inorganics	14.8		16.9		18.1	J+	15.1		10.3	
Potassium	Inorganics	1070		1620		1180		1320		1450	
Selenium	Inorganics	9.1		23.9		10.3		22.5		4.9	J
Sodium	Inorganics	17800		36000		26300		35700		28000	
Vanadium	Inorganics	5	U	5	U	0.31	J	5	U	0.19	J
Zinc	Inorganics	24.4	J	39.1	J	21.3	J	28.2	J+	32.3	
1,4-Dioxane	SVOCs									57	
1,1-Dichloroethane	VOCs	0.89		2		1.1		4.6		0.59	
1,1-Dichloroethene	VOCs	0.5	U	0.5	U	0.13	J	0.5	U	0.5	U
1,2,3-Trichlorobenzene	VOCs	0.5	U	0.5	U	0.5	U	5.3	NJ	0.5	U
1,2,4-Trichlorobenzene	VOCs	0.5	U	0.12	J	0.47	J	0.5	U	0.5	U
1,2-Dichlorobenzene	VOCs	3.8		2.7		5.1		3.4		0.37	J
1,2-Dichloroethane	VOCs	0.47	J	2.2		0.63	J	3.5	J	0.37	J
1,2-Dichloropropane	VOCs	0.5	U	0.16	J	0.18	J	0.5	U	0.5	U
1,3-Dichlorobenzene	VOCs	0.5	U	0.15	J	0.16	J	0.5	U	0.5	U
1,4-Dichlorobenzene	VOCs	0.46	J	0.54		0.65		0.75		0.5	U
Benzene	VOCs	1.1		0.92		1.7		0.96		0.5	U
Chlorobenzene	VOCs	0.65		1.6		1.1		2.8		0.35	J
cis-1,2-Dichloroethene	VOCs	11		25	J	17		26		4.7	J+
Cyclohexane	VOCs	0.21	J	0.5	U	0.41	J	0.5	U	0.5	U
Ethylbenzene	VOCs	0.5	U	0.21	J	0.5	U	0.5	U	0.5	U
Isopropylbenzene	VOCs	0.5	U	0.5	U	0.23	J	0.5	U	0.5	U
Methylcyclohexane	VOCs	0.5	U	0.5	U	0.18	J	0.5	U	0.5	U
Toluene	VOCs	0.51	U	0.5	U	0.2	J	0.5	U	0.5	U
trans-1,2-Dichloroethene	VOCs	0.23	J	0.25	J	0.24	J	0.4	J	0.5	U
Trichloroethene	VOCs	0.39	J	0.51		0.43	J	0.39	J	0.5	U
Vinyl chloride	VOCs	0.5	UJ	0.76		0.8		2.4		0.5	U

Notes:

Blank result cells indicate sample not analyzed for the analyte
J = analyte present, result value is estimated
J+ = result value is estimated, result may be biased high
J- = result value is estimated, result may be biased low
UL = analyte not detected, quantitation limit is probably higher
U = analyte not detected, CRQL value reported
UJ = analyte not detected, estimated CRQL value reported
µg/L = micrograms per liter
NJ = qualitative identification questionable due to poor resolution, presumptively present at approximate quantity
B = Analyte not detected substantially above the level reported in lab or field blanks

MW-1-2

Sampling Location:		MW-1-2		MW-1-2		MW-1-2		MW-1-2		MW-1-2	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/11/2013		6/11/2014		12/10/2014		6/3/2015		6/8/2016	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	Inorganics	20	U	20	U	20	U	5.2	J	20	U
Arsenic	Inorganics	12.5		7.1	J	11.9	J	8.7		1.2	
Barium	Inorganics	12.5		20.8		25.4		21.3		21.5	
Beryllium	Inorganics	1	U	1	U	0.066	J	1	U	1	U
Calcium	Inorganics	95300		136000		167000		130000		140000	
Chromium	Inorganics	2	U	2	U	2	UJ	11.1		0.37	J
Cobalt	Inorganics	36.9		4.9		12.1		4.5		5.5	
Copper	Inorganics	2	U	2	U	0.5	J-	2	U	2	U
Cyanide	Inorganics	10	U	10	U	1.9	J	10	U	10	U
Iron	Inorganics	810		2840	J	4700		3060		1170	
Magnesium	Inorganics	29800		37700		47900		40700		40000	
Manganese	Inorganics	5150		8110		11500		7840		7420	
Nickel	Inorganics	167		21.2		18.5	J+	19.5		21.5	
Potassium	Inorganics	1670		1690		1760		1670		1750	
Selenium	Inorganics	43.8		31.8		43.5		30		7.4	
Sodium	Inorganics	36800		35600		50000		39300		39600	
Vanadium	Inorganics	5	U	0.14	J	0.37	J	5	U	0.43	J
Zinc	Inorganics	15.5	J	7.5	J	4.5	J	5.4	U	7.3	
1,4-Dioxane	SVOCs									130	
Bis(2-chloroethyl)ether	SVOCs	5	U	5	U	1.3	J	5	U	10	U
1,1-Dichloroethane	VOCs	3.9		4.9		5.7		4.3		3.4	
1,2,4-Trichlorobenzene	VOCs	0.5	U	0.18	J	0.22	J	0.5	U	0.5	U
1,2-Dichlorobenzene	VOCs	2.6		2.8		3.1		2		1.5	
1,2-Dichloroethane	VOCs	2.7		3.9		2.7	J	3.1		2.3	
1,2-Dichloropropane	VOCs	0.5	U	0.5	U	0.53		0.5	U	0.5	U
1,3-Dichlorobenzene	VOCs	0.23	J	0.29	J	0.27	J	0.5	U	0.5	U
1,4-Dichlorobenzene	VOCs	0.8		0.92		1		0.8		0.49	J
Acetone	VOCs	11	J	5	U	5	UJ	3.1	J	11	U
Benzene	VOCs	1.3		0.66		2.1		0.5	U	0.5	U
Carbon disulfide	VOCs	0.32	J	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	VOCs	2.6		3.6		4.1		2.9		2.1	
cis-1,2-Dichloroethene	VOCs	27		47	J	53		39		32	J+
Cyclohexane	VOCs	0.5	U	0.5	U	0.23	J	0.5	U	0.5	U
Ethylbenzene	VOCs	0.5	U	0.13	J	0.5	U	0.5	U	0.5	U
o-Xylene	VOCs	0.5	U	0.16	J	0.5	U	0.5	U	0.5	U
Toluene	VOCs	0.5	U	0.89		0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	VOCs	0.53		0.52		1.1		0.5	U	0.3	J
Trichloroethene	VOCs	0.39	J	1.1		0.62		0.55		0.5	U
Vinyl chloride	VOCs	0.5	UJ	1.9		4.7		2.1		1.2	

Notes:

Blank cells indicate sample not analyzed for the analyte

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MW-1-3

Sampling Location:		MW-1-3		MW-1-3		MW-1-3		MW-1-3		MW-1-3	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/11/2013		6/11/2014		12/10/2014		6/3/2015		6/8/2016	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	Inorganics	20	U	20	U	20	U	3.4	J	20	U
Arsenic	Inorganics	3.1		1.4	J	3.3	J	8.2		1.6	
Barium	Inorganics	28.1		31.2		31.8		253		34	
Calcium	Inorganics	67900		73900		73700		59000		75300	
Chromium	Inorganics	2	U	2	U	3.2	J	2.1		2	U
Cobalt	Inorganics	1	U	0.33	J	4.2		1	U	0.25	J
Copper	Inorganics	2	U	2	U	2	J	2	U	2	U
Cyanide	Inorganics	10	U	10	U	2.4	J	10	U	10	U
Iron	Inorganics	264		325	J	342		14100		7.6	J
Lead	Inorganics	1	U	0.47	J	1	U	1	U	1	U
Magnesium	Inorganics	19800		22100		24100		18500		22600	
Manganese	Inorganics	1060		1040		1240		5020		1050	
Nickel	Inorganics	4.9		5.5		10.3	J+	1.4		4.4	
Potassium	Inorganics	1170		1450		1390		1620		1300	
Selenium	Inorganics	10.8		5	U	7.7		16.7		5	U
Sodium	Inorganics	15600		17200		19200		44000		17800	
Vanadium	Inorganics	5	U	0.41	J	0.94	J	5	UJ	1	J
Zinc	Inorganics	7.9	J	7.3	J	16.6	J	6.3	J+	4.1	
1,4-Dioxane	SVOCs									64	
1,1-Dichloroethane	VOCs	2.5		1.5		1.6		1.8		0.99	
1,1-Dichloroethene	VOCs	0.5	U	0.13	J	0.15	J	0.5	U	0.5	U
1,2,4-Trichlorobenzene	VOCs	0.5	U	0.14	J	0.5	U	0.5	U	0.5	U
1,2-Dichlorobenzene	VOCs	0.98		0.76		0.63		0.75		0.43	J
1,2-Dichloroethane	VOCs	3.1		0.5	U	1.6		2.5		1.2	
1,3-Dichlorobenzene	VOCs	0.22	J	0.15	J	0.13	J	0.5	U	0.5	U
1,4-Dichlorobenzene	VOCs	0.88		0.67		0.65		0.54		0.32	J
Acetone	VOCs	5	UJ	5	U	5	U	5.2		5	U
Benzene	VOCs	0.5	U	0.16	J	0.5	U	0.5	U	0.5	U
Chlorobenzene	VOCs	1.5		1.3		1		1.1		0.69	
cis-1,2-Dichloroethene	VOCs	14		13	J	11		15		9.9	
o-Xylene	VOCs	0.5	U	0.16	J	0.5	U	0.5	U	0.5	U
Tetrachloroethene	VOCs	0.5	U	0.18	J	0.5	U	0.5	U	0.5	U
Toluene	VOCs	0.5	U	0.76		0.5	U	0.5	U	0.5	U
Trichloroethene	VOCs	2.2		2.5		1.6		1.4		1.1	
Vinyl chloride	VOCs	0.5	UJ	0.51		0.27	J	0.5	U	0.5	U

Notes:

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MW-2-1

Sampling Location:		MW-2-1		MW-2-1		MW-2-1		MW-2-1	
Units:		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/10/2013		6/9/2014		12/8/2014		6/1/2015	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Antimony	Inorganics	2.8		2	U	2	U	2	U
Arsenic	Inorganics	15.1		4.2	J	1.9	J	3.2	
Barium	Inorganics	257		402		223		317	
Calcium	Inorganics	21700		26500		28300		23400	
Chromium	Inorganics	2	U	0.69	J	10.5	J	10.4	
Cobalt	Inorganics	30.8		5		6.4		4.6	
Copper	Inorganics	2	U	2	U	0.58	J	2	U
Iron	Inorganics	1240		9070	J	2450		5570	
Lead	Inorganics	1	U	0.15	J	1	U	0.076	J
Magnesium	Inorganics	8680		10100		11700		10000	
Manganese	Inorganics	11700		14000		13500		13200	
Nickel	Inorganics	89		3		13	J	2.5	
Potassium	Inorganics	2480		2540		2340		2320	
Selenium	Inorganics	1.4	J	5	U	5	U	5	U
Sodium	Inorganics	12300		13000		13800		14500	
Zinc	Inorganics	17.2	J	12.8	J	6.1	J	3.7	
1,1-Dichloroethane	VOCs	0.26	J	0.56		1.7		0.46	J
1,1-Dichloroethene	VOCs	0.5	U	0.5	U	0.23	J	0.5	U
1,2-Dichlorobenzene	VOCs	0.2	J	0.48	J	0.85		0.5	U
1,2-Dichloroethane	VOCs	0.5	U	0.5	UJ	3.1		0.5	U
1,3-Dichlorobenzene	VOCs	0.69		1.5		1.7		0.38	J
1,4-Dichlorobenzene	VOCs	1.5		2.7		3.9		0.77	
Acetone	VOCs	5	U	2.7	J	5	U	5	U
Benzene	VOCs	0.5	U	0.41	J	0.74		0.5	U
Carbon disulfide	VOCs	0.5	U	0.12	J	0.5	U	0.5	U
Chlorobenzene	VOCs	2.2		14		23		2	
cis-1,2-Dichloroethene	VOCs	0.23	J	0.21	J	20		0.5	U
Cyclohexane	VOCs	0.5	U	2.4		0.49	J	0.5	U
Isopropylbenzene	VOCs	0.5	U	1.2		0.5	U	0.5	U
Methylcyclohexane	VOCs	0.5	U	0.65		0.5	U	0.5	U
o-Xylene	VOCs	0.5	U	0.11	J	0.5	U	0.5	U
Toluene	VOCs	0.5	U	1.1		0.5	U	0.5	U
trans-1,2-Dichloroethene	VOCs	0.5	U	0.5	U	0.2	J	0.5	U
Trichloroethene	VOCs	0.5	U	0.15	J	0.8		0.5	U
Vinyl chloride	VOCs	0.5	U	0.2	J	3.2		0.5	U

Notes:

Blank cells indicate sample not analyzed for the analyte

B = Analyte not detected substantially above the level reported in lab or field blanks

J = analyte present, result value is estimated

J+ = result value is estimated, result may be biased high

J- = result value is estimated, result may be biased low

L = analyte present, reported value is estimated

NJ = qualitative identification questionable due to poor resolution, presumptively present at approximate quantity

µg/L = micrograms per liter

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UJ = analyte not detected, estimated CRQL value reported

UL = analyte not detected, quantitation limit is probably higher

MW-4-1

Sampling Location:		MW-4-1		MW-4-1		MW-4-1		MW-4-1	
Units:		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/10/2013		6/10/2014		12/9/2014		6/2/2015	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	Inorganics	20	U	20	U	20	U	3.5	J
Barium	Inorganics	104		103		125		114	
Calcium	Inorganics	18700		19300		21700		18500	
Chromium	Inorganics	2	U	2	U	16.3	J+	3	
Cobalt	Inorganics	0.52	J	0.35	J	1.9		0.48	J
Copper	Inorganics	2	U	2	U	4.1		0.62	J
Iron	Inorganics	8160		4660	J	10100		8360	
Lead	Inorganics	1	U	1	UJ	1	U	0.087	J
Magnesium	Inorganics	9800		9740		12400		10500	
Manganese	Inorganics	450		432		562		487	
Nickel	Inorganics	3.5		1.6		12.8	J+	1.4	
Potassium	Inorganics	3140		2960		3340		2700	
Sodium	Inorganics	7380		6580		8690		7940	
Zinc	Inorganics	6.6	J	4	J	37.5	J+	7.5	
Benzene	VOCs	0.5	U	0.19	J	0.5	U	0.5	U
Ethylbenzene	VOCs	0.5	U	0.18	J	0.5	U	0.5	U
m,p-Xylene	VOCs	0.5	U	0.64		0.5	U	0.5	U
o-Xylene	VOCs	0.5	U	0.19	J	0.5	U	0.5	U
Toluene	VOCs	0.5	U	1.7		0.5	U	0.5	U

Notes:

Blank cells indicate sample not analyzed for the analyte

B = Analyte not detected substantially above the level reported in lab or field blanks

J = analyte present, result value is estimated

J+ = result value is estimated, result may be biased high

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NJ = qualitative identification questionable due to poor resolution, presumptively present at approximate quantity

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U = analyte not detected, CRQL value reported

UJ = analyte not detected, estimated CRQL value reported

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MW-6-1

Sampling Location:		MW-6-1	
Units:		µg/L	
Date Sampled:		6/7/2016	
Parameter	Analysis	Result	Flag
Arsenic	Inorganics	0.22	J
Barium	Inorganics	172	
Calcium	Inorganics	23700	
Cobalt	Inorganics	1.9	
Copper	Inorganics	2.3	
Iron	Inorganics	4130	
Magnesium	Inorganics	8650	
Manganese	Inorganics	1990	
Nickel	Inorganics	5.9	
Potassium	Inorganics	1930	
Sodium	Inorganics	13100	
Zinc	Inorganics	20.4	

MW-6-2

Sampling Location:		**MW-6-2**	
Units:		µg/L	
Date Sampled:		6/7/2016	
Parameter	Analysis	Result	Flag
Aluminum	Inorganics	1.3	J
Arsenic	Inorganics	0.2	J
Barium	Inorganics	129	
Calcium	Inorganics	18600	
Cobalt	Inorganics	0.69	J
Magnesium	Inorganics	7950	
Manganese	Inorganics	1770	
Nickel	Inorganics	4.4	
Potassium	Inorganics	1790	
Sodium	Inorganics	9920	
Zinc	Inorganics	13.9	

Notes:

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MW-7-1

Sampling Location:		MW-7-1		MW-7-1		MW-7-1		MW-7-1		MW-7-1	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/10/2013		6/10/2014		12/9/2014		6/2/2015		6/8/2016	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	Inorganics	20	U	20	U	20	U	3.6	J	2.1	J
Barium	Inorganics	113		77		146		196		233	
Calcium	Inorganics	18100		13300		21600		24400		29400	
Chromium	Inorganics	2	U	2	U	2	UJ	4.1		2	U
Cobalt	Inorganics	0.76	J	0.081	J	4.5		1.7		2.2	
Copper	Inorganics	2	U	2	UJ	2	U	0.72	J	2	U
Cyanide	Inorganics	10	U	10	U	1.3	J	10	U	10	U
Iron	Inorganics	190	J	200	UJ	406		722		1660	
Lead	Inorganics	1	U	1	UJ	1	U	0.19	J	1	U
Magnesium	Inorganics	6370		5780		8390		9360		10400	
Manganese	Inorganics	1380		1.1		1980		2200		2470	
Nickel	Inorganics	3.4		1	U	27.1	J+	3.8		5	
Potassium	Inorganics	3740		3070		4170		3780		4140	
Selenium	Inorganics	0.79	J	5	U	5	U	5	U	5	U
Sodium	Inorganics	13800		11800		15500		15800		16800	
Zinc	Inorganics	6.1	J	4.9	J	6.1	J+	7		5.2	U
Bis(2-ethylhexyl)phthalate	SVOCs	5	U	5	U	5	UJ	6.4		5	U
1,2-Dichlorobenzene	VOCs	0.5	U	0.47	J	0.5	U	0.5	U	0.5	U
1,3-Dichlorobenzene	VOCs	0.5	U	0.13	J	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	VOCs	0.5	U	0.41	J	0.5	U	0.5	U	0.5	U
Chlorobenzene	VOCs	0.5	U	0.83		0.5	U	0.5	U	0.5	U

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MW-7-2

Sampling Location:		MW-7-2		MW-7-2		MW-7-2		MW-7-2	
Units:		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/9/2014		3/16/2015		6/2/2015		6/8/2016	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	Inorganics	20	U			8.4	J	2.1	J
Arsenic	Inorganics	1	UJ			1	UJ	0.28	J
Barium	Inorganics	78.6				45.9		56.3	
Cadmium	Inorganics	1	U			0.12	J	1	UJ
Calcium	Inorganics	83400				54800		94300	
Chromium	Inorganics	2	UJ			3.4		9.5	
Cobalt	Inorganics	4.3				1	U	0.3	J
Copper	Inorganics	1	J			1.7	J	3	
Cyanide	Inorganics	1.2	J			10	U	10	U
Iron	Inorganics	1250				170	J	200	U
Lead	Inorganics	1	U			0.33	J	0.27	J
Magnesium	Inorganics	17100				14300		17200	
Manganese	Inorganics	244				1350		410	
Mercury	Inorganics	0.2	UJ			0.2	UJ	0.2	U
Nickel	Inorganics	3.9	UJ			2.6		7.2	
Potassium	Inorganics	2050				1550		2300	
Sodium	Inorganics	3910				7700		4050	
Vanadium	Inorganics	0.2	J			5	U	5	U
Zinc	Inorganics	8	J+			8		19.1	
Aroclor 1260	PCBs	0.4	J	1	U	1	U		U
Bis(2-ethylhexyl)phthalate	SVOCs	5	UJ			7.1		2.3	J
Caprolactam	SVOCs	1.1	J			5	U	10	U
Isophorone	SVOCs	3.4	J			5	U	5	U
1,2-Dichlorobenzene	VOCs	0.13	J			0.23	J	0.5	U
1,3-Dichlorobenzene	VOCs	0.12	J			0.5	U	0.5	U
1,4-Dichlorobenzene	VOCs	0.4	J			0.71		0.5	U
Chlorobenzene	VOCs	1.7				3.7		0.5	U
o-Xylene	VOCs	0.13	J			0.5	U	0.5	U
Toluene	VOCs	0.8				0.5	U	0.5	U

Notes:

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MW-8-1

Sampling Location:		MW-8-1		MW-8-1		MW-8-1		MW-8-1		MW-8-1	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/10/2013		6/10/2014		12/9/2014		6/2/2015		6/7/2016	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	Inorganics	15700		56300		32400		10200		32200	
Arsenic	Inorganics	7.9		24.6	J	22.4	J	3.6		2	J
Barium	Inorganics	12.7		21.4		11.2		12.6		13.2	
Beryllium	Inorganics	2.5		5.1		3.8		1.8		2.9	
Cadmium	Inorganics	1.6		3		1.8		0.9	J	0.83	J-
Calcium	Inorganics	25500		57000		31800		16600		18700	
Chromium	Inorganics	5		7.6		13.8	J+	8.3		21	
Cobalt	Inorganics	123		266		137		83.5		110	
Copper	Inorganics	13.6		39.2		7.5		6.6		8.5	
Iron	Inorganics	50500		44700	J	105000		36200		56700	
Lead	Inorganics	1	U	2	J	1	U	0.46	J	0.53	J
Magnesium	Inorganics	18900		35000		29700		10800		13500	
Manganese	Inorganics	20300		58800		30200		13200		14000	
Mercury	Inorganics	0.2	UJ	0.2	UJ	0.23		0.054	J-	0.14	J
Nickel	Inorganics	109		219		140	J	55.5		117	
Potassium	Inorganics	2630		2090		5310		2200		3570	
Selenium	Inorganics	32.8		122		78.4		10.4		5	U
Sodium	Inorganics	29200		50800		56800		11500		10600	
Thallium	Inorganics	1	U	0.13	J	1	U	1	U	0.13	J
Vanadium	Inorganics	8		5	U	40.9		5.1		42.4	
Zinc	Inorganics	1790	J	2940	J	2690	J	1200		2610	
1,4-Dioxane	SVOCs									28	
2,4-Dimethylphenol	SVOCs	5	U	5	U	1.4	J	5	U	5	U
4-Methylphenol	SVOCs	5	U	5	U	1.1	J	5	U	10	U
1,1,1-Trichloroethane	VOCs	1.2		0.83		1		0.51		0.4	J
1,1-Dichloroethane	VOCs	8.8		6.6		13		1.8		0.53	
1,1-Dichloroethene	VOCs	0.5	U	0.1	J	0.23	J	0.5	U	0.5	U
1,2,4-Trichlorobenzene	VOCs	0.47	J	0.21	J	0.62		0.5	U	0.5	U
1,2-Dibromoethane	VOCs	0.5	U	0.5	U	0.16	J	0.5	U	0.5	U
1,2-Dichlorobenzene	VOCs	1.8		2.3		2.8		2.5		1.3	
1,2-Dichloroethane	VOCs	5.9		4.9		9.4		1.4		0.32	J
1,2-Dichloropropane	VOCs	0.4	J	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichlorobenzene	VOCs	0.25	J	0.25	J	0.37	J	0.27	J	0.5	U
1,4-Dichlorobenzene	VOCs	0.6		0.45	J	0.69		0.5	U	0.5	U
2-Butanone	VOCs	5	U	5	U	5	U	5	U	4.6	J
Acetone	VOCs	130	U	5	U	5	U	20		18	U
Benzene	VOCs	1.6		2.2		3.9		1.3		0.73	
Chlorobenzene	VOCs	4.6		2.5		7.7		3.5		1.4	
Chloroethane	VOCs	3.1		4		4.3		0.5	U	0.5	U
Chloroform	VOCs	0.69		0.36	J	0.37	J	0.5	U	0.5	U
cis-1,2-Dichloroethene	VOCs	28		19		49		8.3		2.2	
Cyclohexane	VOCs	0.5	U	0.5	U	1.8		0.5	U	0.5	U
Ethylbenzene	VOCs	0.5	U	0.38	J	0.96		0.25	J	0.5	U
Isopropylbenzene	VOCs	0.28	J	0.45	J	0.44	J	0.31	J	0.5	U
m,p-Xylene	VOCs	1.8	U	0.5	U	1		0.5	U	0.5	U
Methyl tert-butyl ether	VOCs	0.5	U	0.12	J	0.5	U	0.5	U	0.5	U
Methylcyclohexane	VOCs	0.21	J	0.31	J	0.5	U	0.22	J	0.5	U
Methylene chloride	VOCs	1.2		0.9		2.1		0.5	U	0.5	U
o-Xylene	VOCs	1.2	U	0.69		1.4		0.36	J	0.5	U
Tetrachloroethene	VOCs	3		2.2		2.2		1.3		0.84	
Toluene	VOCs	5.2	U	1.2		2.9		0.5	U	0.5	U
trans-1,2-Dichloroethene	VOCs	0.44	J	0.26	J	0.65		0.5	U	0.5	U
Trichloroethene	VOCs	7		6.2		8.3		3.3		3.3	
Vinyl chloride	VOCs	1.1		1.7		2		0.5	U	0.5	U

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MW-8-2

Sampling Location:		MW-8-2		MW-8-2		MW-8-2		MW-8-2		MW-8-2	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/10/2013		6/10/2014		12/9/2014		6/2/2015		6/7/2016	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	Inorganics	20	U	20	U	20	U	14.3	J	9.5	J
Arsenic	Inorganics	7.4		7.2	J	11.1	J	6.9		2.6	
Barium	Inorganics	27.2		30		30.5		27.2		31.7	
Beryllium	Inorganics	1	U	0.07	J	0.086	J	1	U	1	U
Calcium	Inorganics	44100		42500		53600		42700		41300	
Chromium	Inorganics	2	U	2	U	15.2	J+	0.97	J	0.19	J
Cobalt	Inorganics	3.5		5.4		6.5		4.4		4.6	
Copper	Inorganics	2	U	2	U	1.1	J	0.93	J	2	U
Cyanide	Inorganics	10	U	10	U	1.2	J	10	U	10	U
Iron	Inorganics	27400		23400	J	30600		33800		33600	
Lead	Inorganics	1	U	1	UJ	1	U	0.18	J	1	U
Magnesium	Inorganics	17800		17600		25100		20200		17700	
Manganese	Inorganics	9230		10000		12900		12200		10600	
Nickel	Inorganics	3.9		5.5		21.7	J+	3.9		3.8	
Potassium	Inorganics	2660		2820		3040		2700		2680	
Selenium	Inorganics	26.7		22.1		35.2		22.6		5.7	
Sodium	Inorganics	59100		57700		73500		62600		58000	
Vanadium	Inorganics	5	U	5	U	0.48	J	5	U	5	U
Zinc	Inorganics	9	J	6.1	J	11.4	J+	3.3		5.2	U
1,4-Dioxane	SVOCs									39	
Bis(2-ethylhexyl)phthalate	SVOCs	5	U	5	U	5	U	15		5	U
Fluorene	SVOCs	5	U	5	U	0.77	J	5	U	5	U
1,1-Dichloroethane	VOCs	26		20		14		16		12	
1,1-Dichloroethene	VOCs	0.5	U	0.23	J	0.24	J	0.5	U	0.5	U
1,2,3-Trichlorobenzene	VOCs	3	J	2.6		2.7		1.8	J	1.4	
1,2,4-Trichlorobenzene	VOCs	18	J	16		17		12	J	9.6	
1,2-Dichlorobenzene	VOCs	6.5		5.2		5.1		3.1	J	2.2	
1,2-Dichloroethane	VOCs	12		9.2	J	8.1		8.3		5.3	
1,2-Dichloropropane	VOCs	0.54		0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichlorobenzene	VOCs	1.7		1.3		1.4		0.83	J	0.62	
1,4-Dichlorobenzene	VOCs	6		4.9		4.7		3	J	2.2	
Benzene	VOCs	5.4		4.2		3.8		3.2		2	
Chlorobenzene	VOCs	54		48		43		29		19	
Chloroethane	VOCs	0.85		0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	VOCs	110		80		78		58		40	
Cyclohexane	VOCs	0.72		1.3		1.2		0.34	J	0.5	U
Ethylbenzene	VOCs	0.5	U	0.23	J	0.11	J	0.5	U	0.5	U
Isopropylbenzene	VOCs	0.58		0.41	J	0.3	J	0.5	U	0.5	U
m,p-Xylene	VOCs	0.5	U	0.65		0.5	U	0.5	U	0.5	U
Methylcyclohexane	VOCs	0.69		0.42	J	0.39	J	0.27	J	0.5	U
Methylene chloride	VOCs	0.5	U	0.12	J	0.5	U	0.5	U	0.5	U
o-Xylene	VOCs	0.5	U	0.2	J	0.5	U	0.5	U	0.5	U
Tetrachloroethene	VOCs	0.68		0.59		0.45	J	0.43	J	0.5	U
Toluene	VOCs	5.2	U	1.6		0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	VOCs	5.4		3.8		3.5		2.4		1.4	
Trichloroethene	VOCs	1.1		0.83		0.63		0.52		0.5	U
Vinyl chloride	VOCs	16		15		7		6.6		3.5	

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MW-14-1

Sampling Location:		MW-14-1		MW-14-1		MW-14-1		MW-14-1		MW-14-1	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/9/2013		6/9/2014		12/8/2014		6/1/2015		6/6/2016	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	Inorganics	20	U	20	U	3.6	J	20	U	6.2	
Antimony	Inorganics	2	U	2	U	2	U	2	U	2	J
Arsenic	Inorganics	0.42	J	1	UJ	1	UJ	1	U	0.47	U
Barium	Inorganics	112		140		128		140		142	J
Beryllium	Inorganics	1	U	0.13	J	0.07	J	1	U	0.06	
Cadmium	Inorganics	1	U	1	U	1	U	1	U	1	J
Calcium	Inorganics	18600		16300		17200		19100		19000	UJ
Chromium	Inorganics	2	U	1.2	J	5.4	J	4.1		0.5	
Cobalt	Inorganics	1	U	0.06	J	1		0.086	J	1	J
Copper	Inorganics	2	U	2	U	1.5	J	0.82	J	2	U
Iron	Inorganics	80.3	J	200	UJ	200	U	40.6	J	200	U
Lead	Inorganics	1	U	0.27	J	1	U	0.11	J	1	U
Magnesium	Inorganics	7200		7000		7760		8390		7830	U
Manganese	Inorganics	3.7		1.5		2		1.5		1.3	
Mercury	Inorganics	0.2	UJ	0.2	UJ	0.2	UJ	0.2	UJ	0.2	
Nickel	Inorganics	3.1		5.5		8	J	4.1		6.6	U
Potassium	Inorganics	1660		1860		1580		1890		1720	
Selenium	Inorganics	3	J	5	U	5	U	5	U	5	
Sodium	Inorganics	17300		17900		19000		22100		20300	U
Thallium	Inorganics	1	U	1	U	1	U	1	U	1	
Zinc	Inorganics	18	J	6.9	J	8	J	5.6		58.2	U
Benzo(k)fluoranthene	SVOCs	5	U	5	UJ	5	U	5	U	5	
2-Butanone	VOCs	5	U	5	U	5	U	5	U	5	
Benzene	VOCs	0.5	U	0.22	J	0.5	U	0.5	U	0.5	U
Ethylbenzene	VOCs	0.5	U	0.22	J	0.5	U	0.5	U	0.5	U
m,p-Xylene	VOCs	0.5	U	0.98		0.5	U	0.5	U	0.5	U
Methyl tert-butyl ether	VOCs	0.64		0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	VOCs	0.5	U	0.3	J	0.5	U	0.5	U	0.5	U
Toluene	VOCs	0.5	U	2.1		0.5	U	0.5	U	0.5	U

Notes:

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MW-14-3

Sampling Location:		MW-14-3		MW-14-3		MW-14-3		MW-14-3		MW-14-3		MW-14-3	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/9/2013		6/9/2014		12/8/2014		3/16/2015		6/1/2015		6/6/2016	
Parameter		Result	F	Result	F	Result	F	Result	F	Result	F	Result	F
Aluminum	Inorg.	20	U	20	U	7.8	J			25.6		9.7	J
Arsenic	Inorg.	1	U	1	UJ	1	UJ			1	U	0.19	J
Barium	Inorg.	133		150		147				157		154	
Beryllium	Inorg.	0.17	J	0.21	J	0.26	J			0.24	J	0.16	J
Cadmium	Inorg.	1	U	1	U	0.051	J			1	U	1	UJ
Calcium	Inorg.	17900		23000		19600				23500		22800	
Chromium	Inorg.	28.9		2.2		3.6	J			4.6		0.55	J
Cobalt	Inorg.	0.28	J	0.21	J	1.2				0.19	J	0.1	J
Copper	Inorg.	2.2		2	U	1.1	J			1.6	J	2	U
Cyanide	Inorg.	10	U	10	U	1.9	J			10	U	10	U
Iron	Inorg.	160	J	200	UJ	200	U			44.1	J	200	U
Lead	Inorg.	1	U	0.31	J	1	U			0.2	J	1	U
Magnesium	Inorg.	8290		9140		9560				9980		9290	
Manganese	Inorg.	3.9		2.8		4.3				2.4		2.2	
Nickel	Inorg.	18		13.1		19.6	J			11.2		12.2	
Potassium	Inorg.	1880		2170		1830				2010		1960	
Selenium	Inorg.	2.7	J	5	U	5	U			5	U	5	U
Silver	Inorg.	1	U	1	U	0.064	J			1	U	1	U
Sodium	Inorg.	18800		20300		20700				23500		21900	
Zinc	Inorg.	11.2	J	14.2	J	11.8	J			8.9		30.4	
Aroclor 1248	PCBs	1	U	1	U	18	J	1	U	1	U		U
Aroclor 1254	PCBs	1	U	1	U	8.1	J	1	U	1	U		U
1,1'-Biphenyl	SVOCs	5	U	5	NJ	5	U			5	U	5	U
1,2,4,5-Tetrachlorobenzene	SVOCs	5	U	5	NJ	5	U			5	U	5	U
2,2'-Oxybis(1-chloropropane)	SVOCs	5	U	5	NJ	5	U			5	U	10	U
2,3,4,6-Tetrachlorophenol	SVOCs	5	U	5	NJ	5	U			5	U	5	U
2,4,5-Trichlorophenol	SVOCs	5	U	5	NJ	5	U			5	U	5	U
2,4,6-Trichlorophenol	SVOCs	5	U	5	NJ	5	U			5	U	5	U
2,4-Dichlorophenol	SVOCs	5	U	5	NJ	5	U			5	U	5	U
2,4-Dimethylphenol	SVOCs	5	U	5	NJ	5	U			5	U	5	U
2,4-Dinitrophenol	SVOCs	10	UJ	10	NJ	10	U			10	U	10	U
2,4-Dinitrotoluene	SVOCs	5	U	5	NJ	5	U			5	U	5	U
2,6-Dinitrotoluene	SVOCs	5	U	5	NJ	5	U			5	U	5	U
2-Chloronaphthalene	SVOCs	5	U	5	NJ	5	U			5	U	5	U
2-Chlorophenol	SVOCs	5	U	5	NJ	5	U			5	U	5	U
2-Methylnaphthalene	SVOCs	5	U	5	NJ	5	U			5	U	5	U
2-Methylphenol	SVOCs	5	U	5	NJ	5	U			5	U	10	U
2-Nitroaniline	SVOCs	10	UJ	10	NJ	10	U			10	U	5	U
2-Nitrophenol	SVOCs	5	U	5	NJ	5	U			5	U	5	U
3,3'-Dichlorobenzidine	SVOCs	5	U	5	NJ	5	U			5	U	10	U
3-Nitroaniline	SVOCs	10	UJ	10	NJ	10	U			10	U	10	U
4,6-Dinitro-2-methylphenol	SVOCs	10	U	10	NJ	10	U			10	U	10	U
4-Bromophenyl-phenylether	SVOCs	5	U	5	NJ	5	U			5	U	5	U
4-Chloro-3-methylphenol	SVOCs	5	U	5	NJ	5	U			5	U	5	U
4-Chloroaniline	SVOCs	5	U	5	NJ	5	U			5	U	10	U
4-Chlorophenyl-phenylether	SVOCs	5	U	5	NJ	5	U			5	U	5	U
4-Methylphenol	SVOCs	5	U	5	NJ	5	U			5	U	10	U
4-Nitroaniline	SVOCs	10	UJ	10	NJ	10	U			10	U	10	U
4-Nitrophenol	SVOCs	10	UJ	10	NJ	10	U			10	U	10	U
Acenaphthene	SVOCs	5	U	5	NJ	5	U			5	U	5	U
Acenaphthylene	SVOCs	5	U	5	NJ	5	U			5	U	5	U
Acetophenone	SVOCs	5	U	5	NJ	5	U			5	U	10	U
Anthracene	SVOCs	5	U	5	NJ	5	U			5	U	5	U
Atrazine	SVOCs	5	U	5	NJ	5	U			5	U	10	U
Benzaldehyde	SVOCs	5	UJ	5	NJ	5	U			5	U	10	U
Benzo(a)anthracene	SVOCs	5	U	5	NJ	5	U			5	U	5	U

Sampling Location:		MW-14-3		MW-14-3		MW-14-3		MW-14-3		MW-14-3		MW-14-3	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/9/2013		6/9/2014		12/8/2014		3/16/2015		6/1/2015		6/6/2016	
Parameter		Result	F	Result	F	Result	F	Result	F	Result	F	Result	F
Benzo(a)pyrene	SVOC	5	U	5	NJ	5	U			5	U	5	U
Benzo(b)fluoranthene	SVOC	5	U	5	NJ	5	U			5	U	5	U
Benzo(g,h,i)perylene	SVOC	5	U	5	NJ	5	U			5	U	5	U
Benzo(k)fluoranthene	SVOC	5	U	5	NJ	5	U			5	U	5	U
Bis(2-chloroethoxy)methane	SVOC	5	U	5	NJ	5	U			5	U	5	U
Bis(2-ethylhexyl)phthalate	SVOC	5	U	5	NJ	5	U			5	U	5	U
Butylbenzylphthalate	SVOC	5	U	5	NJ	5	U			5	U	5	U
Caprolactam	SVOC	5	U	5	NJ	5	U			5	U	10	U
Carbazole	SVOC	5	U	5	NJ	5	U			5	U	10	U
Chrysene	SVOC	5	U	5	NJ	5	U			5	U	5	U
Dibenzo(a,h)anthracene	SVOC	5	U	5	NJ	5	U			5	U	5	U
Dibenzofuran	SVOC	5	U	5	NJ	5	U			5	U	5	U
Diethylphthalate	SVOC	5	U	5	NJ	5	U			5	U	5	U
Dimethylphthalate	SVOC	5	U	5	NJ	5	U			5	U	5	U
Di-n-butylphthalate	SVOC	5	U	5	NJ	5	U			5	U	5	U
Di-n-octylphthalate	SVOC	5	U	5	NJ	5	U			5	U	10	U
Fluoranthene	SVOC	5	U	5	NJ	5	U			5	U	10	U
Fluorene	SVOC	5	U	5	NJ	5	U			5	U	5	U
Hexachlorobenzene	SVOC	5	U	5	NJ	5	U			5	U	5	U
Hexachlorobutadiene	SVOC	5	U	5	NJ	5	U			5	U	5	U
Hexachlorocyclopentadiene	SVOC	5	U	5	NJ	5	U			5	U	10	U
Hexachloroethane	SVOC	5	U	5	NJ	5	U			5	U	5	U
Indeno(1,2,3-cd)pyrene	SVOC	5	U	5	NJ	5	U			5	U	5	U
Isophorone	SVOC	5	U	5	NJ	5	U			5	U	5	U
Naphthalene	SVOC	5	U	5	NJ	5	U			5	U	5	U
Nitrobenzene	SVOC	5	U	5	NJ	5	U			5	U	5	U
N-Nitroso-di-n-propylamine	SVOC	5	U	5	NJ	5	U			5	U	5	U
N-Nitrosodiphenylamine	SVOC	5	U	5	NJ	5	U			5	U	5	U
Pentachlorophenol	SVOC	10	U	10	NJ	10	U			10	UJ	10	U
Phenanthrene	SVOC	5	U	5	NJ	5	U			5	U	5	U
Phenol	SVOC	5	UJ	5	NJ	5	U			5	U	10	U
Pyrene	SVOC	5	U	5	NJ	5	U			5	U	5	U
1,1,1-Trichloroethane	VOC	0.5	U	0.5	U	0.5	U			0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	VOC	0.5	U	0.5	U	0.5	U			0.5	U	0.5	U
1,1,2-Trichloro-1,2,2-trifluoroethane	VOC	0.5	U	0.5	U	0.5	U			0.5	U	0.5	U
Benzene	VOC	0.5	U	0.13	J	0.5	U			0.5	U	0.5	U
Ethylbenzene	VOC	0.5	U	0.16	J	0.5	U			0.5	U	0.5	U
m,p-Xylene	VOC	0.5	U	0.71		0.5	U			0.5	U	0.5	U
Methyl tert-butyl ether	VOC	2		0.76		0.9				0.56		0.5	U
o-Xylene	VOC	0.5	U	0.2	J	0.5	U			0.5	U	0.5	U
Toluene	VOC	0.5	U	1.3		0.5	U			0.5	U	0.5	U

Notes:

Blank cells indicate sample not analyzed for the analyte
B = Analyte not detected substantially above the level reported in lab or field blanks
J = analyte present, result value is estimated
UJ = analyte not detected, estimated CRQL value reported
J+ = result value is estimated, result may be biased high
UL = analyte not detected, quantitation limit is probably higher
J- = result value is estimated, result may be biased low
U = analyte not detected, CRQL value reported
L = analyte present, reported value is estimated
µg/L = micrograms per liter
F = Flag
Inorg. = Inorganics
NJ = qualitative identification questionable due to poor resolution, presumptively present at approximate quantity

MW-16-1

Sampling Location:		MW-16-1		MW-16-1		MW-16-1	
Units:		µg/L		µg/L		µg/L	
Date Sampled:		12/10/2013		6/3/2015		6/8/2016	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag
Aluminum	Inorganics	20	U	3.3	J	3.7	J
Arsenic	Inorganics	1	U	1	U	0.2	J
Barium	Inorganics	45.6		81.7		92.9	
Calcium	Inorganics	8140		13700		15800	
Chromium	Inorganics	2	U	4.2		0.22	J
Cobalt	Inorganics	0.053	J	1	U	0.06	J
Iron	Inorganics	49.2	J	200	U	5.8	J
Magnesium	Inorganics	3580		6680		6920	
Manganese	Inorganics	1.5		1.7		2.4	
Potassium	Inorganics	2380		3010		3310	
Sodium	Inorganics	8270		14900		15100	
Vanadium	Inorganics	5	U	5	UJ	0.17	J
Zinc	Inorganics	4.5	J	5.9	J+	4.6	
Dimethylphthalate	SVOCs	7		5	U	5	U

Notes:

Blank cells indicate sample not analyzed for the analyte

B = Analyte not detected substantially above the level reported in lab or field blanks

J = analyte present, result value is estimated

J+ = result value is estimated, result may be biased high

J- = result value is estimated, result may be biased low

L = analyte present, reported value is estimated

NJ = qualitative identification questionable due to poor resolution, presumptively present at approximate quantity

µg/L = micrograms per liter

U = analyte not detected, CRQL value reported

UJ = analyte not detected, estimated CRQL value reported

UL = analyte not detected, quantitation limit is probably higher

MW-16-2

Sampling Location:		MW-16-2		MW-16-2		MW-16-2		MW-16-2		MW-16-2	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/10/2013		6/11/2014		12/10/2014		6/3/2015		6/8/2016	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	Inorganics	20	U	20	U	20	U	4.6	J	1.9	J
Arsenic	Inorganics	0.34	J	1	UJ	1	UJ	1	U	0.21	J
Barium	Inorganics	53.8		86.8		63.1		92.4		99.5	
Calcium	Inorganics	9040		15300		10800		15100		16500	
Chromium	Inorganics	2	U	2	U	2	UJ	3.9		0.46	J
Cobalt	Inorganics	0.099	J	0.092	J	0.61	J	1	U	0.07	J
Copper	Inorganics	2	U	2	U	1.4	J	2	U	2	U
Cyanide	Inorganics	2.9	J	10	U	10	U	10	U	10	U
Iron	Inorganics	33.7	J	200	UJ	200	U	200	U	4.4	J
Lead	Inorganics	1	U	0.078	J	1	U	1	U	1	U
Magnesium	Inorganics	3900		6590		5150		7200		7130	
Manganese	Inorganics	1.9		1		2.7		1.8		1.4	
Nickel	Inorganics	1.6		1		2.3	UJ	1.3		1	U
Potassium	Inorganics	2840		3630		3380		3490		3690	
Selenium	Inorganics	1	J	5	U	5	U	5	U	2	J
Sodium	Inorganics	9920		14200		12600		17100		15600	
Vanadium	Inorganics	5	U	5	U	0.34	J	5	UJ	0.19	J
Zinc	Inorganics	6.8	J	9	J	7	J	12.5	J+	5.5	
1,1'-Biphenyl	SVOCs	5	U	5	NJ	5	U	5	U	5	U
1,2,4,5-Tetrachlorobenzene	SVOCs	5	U	5	NJ	5	U	5	U	5	U
2,2'-Oxybis(1-chloropropane)	SVOCs	5	U	5	NJ	5	U	5	U	10	U
2,3,4,6-Tetrachlorophenol	SVOCs	5	U	5	NJ	5	U	5	U	5	U
2,4,5-Trichlorophenol	SVOCs	5	U	5	NJ	5	U	5	U	5	U
2,4,6-Trichlorophenol	SVOCs	5	U	5	NJ	5	U	5	U	5	U
2,4-Dichlorophenol	SVOCs	5	U	5	NJ	5	U	5	U	5	U
2,4-Dimethylphenol	SVOCs	5	UJ	5	NJ	5	U	5	U	5	U
2,4-Dinitrophenol	SVOCs	10	UJ	10	NJ	10	U	10	U	10	U
2,4-Dinitrotoluene	SVOCs	5	U	5	NJ	5	U	5	U	5	U
2,6-Dinitrotoluene	SVOCs	5	U	5	NJ	5	U	5	U	5	U
2-Chloronaphthalene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U
2-Chlorophenol	SVOCs	5	UJ	5	NJ	5	U	5	U	5	U
2-Methylnaphthalene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U
2-Methylphenol	SVOCs	5	UJ	5	NJ	5	U	5	U	10	U
2-Nitroaniline	SVOCs	10	UJ	10	NJ	10	U	10	U	5	U
2-Nitrophenol	SVOCs	5	U	5	NJ	5	U	5	U	5	U
3,3'-Dichlorobenzidine	SVOCs	5	UJ	5	NJ	5	U	5	U	10	U
3-Nitroaniline	SVOCs	10	UJ	10	NJ	10	U	10	U	10	U
4,6-Dinitro-2-methylphenol	SVOCs	10	U	10	NJ	10	U	10	U	10	U
4-Bromophenyl-phenylether	SVOCs	5	U	5	NJ	5	U	5	U	5	U
4-Chloro-3-methylphenol	SVOCs	5	U	5	NJ	5	U	5	U	5	U
4-Chloroaniline	SVOCs	5	UJ	5	NJ	5	U	5	U	10	U
4-Chlorophenyl-phenylether	SVOCs	5	U	5	NJ	5	U	5	U	5	U
4-Methylphenol	SVOCs	5	UJ	5	NJ	5	U	5	U	10	U
4-Nitroaniline	SVOCs	10	UJ	10	NJ	10	U	10	U	10	U
4-Nitrophenol	SVOCs	10	UJ	10	NJ	10	U	10	U	10	U
Acenaphthene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U
Acenaphthylene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U
Acetophenone	SVOCs	5	U	5	NJ	5	U	5	U	10	U
Anthracene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U
Atrazine	SVOCs	5	U	5	NJ	5	UJ	5	U	10	U
Benzaldehyde	SVOCs	5	UJ	5	NJ	5	UJ	5	U	10	U
Benzo(a)anthracene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U
Benzo(a)pyrene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U
Benzo(b)fluoranthene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U
Benzo(g,h,i)perylene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U
Benzo(k)fluoranthene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U

Sampling Location:		MW-16-2		MW-16-2		MW-16-2		MW-16-2		MW-16-2	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/10/2013		6/11/2014		12/10/2014		6/3/2015		6/8/2016	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Bis(2-chloroethoxy)methane	SVOCs	5	U	5	NJ	5	U	5	U	5	U
Bis(2-chloroethyl)ether	SVOCs	5	U	5	NJ	5	U	5	U	10	U
Bis(2-ethylhexyl)phthalate	SVOCs	5	U	5	NJ	5	U	5	U	5	U
Butylbenzylphthalate	SVOCs	5	U	5	NJ	5	U	5	U	5	U
Caprolactam	SVOCs	5	U	5	NJ	5	U	5	U	10	U
Carbazole	SVOCs	5	U	5	NJ	5	U	5	U	10	U
Chrysene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U
Dibenzo(a,h)anthracene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U
Dibenzofuran	SVOCs	5	U	5	NJ	5	U	5	U	5	U
Diethylphthalate	SVOCs	5	U	5	NJ	5	U	5	U	5	U
Dimethylphthalate	SVOCs	4.5	J	5	NJ	5	U	5	U	5	U
Di-n-butylphthalate	SVOCs	5	U	5	NJ	0.5	U	5	U	5	U
Di-n-octylphthalate	SVOCs	5	U	5	NJ	5	U	5	U	10	U
Fluoranthene	SVOCs	5	U	5	NJ	5	UJ	5	U	10	U
Fluorene	SVOCs	5	U	5	NJ	5	U	5	U	5	U
Hexachlorobenzene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U
Hexachlorobutadiene	SVOCs	5	U	5	NJ	5	U	5	U	5	U
Hexachlorocyclopentadiene	SVOCs	5	UJ	5	NJ	5	U	5	U	10	U
Hexachloroethane	SVOCs	5	U	5	NJ	5	U	5	U	5	U
Indeno(1,2,3-cd)pyrene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U
Isophorone	SVOCs	5	U	5	NJ	5	U	5	U	5	U
Naphthalene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U
Nitrobenzene	SVOCs	5	U	5	NJ	5	U	5	U	5	U
N-Nitroso-di-n-propylamine	SVOCs	5	U	5	NJ	5	U	5	U	5	U
N-Nitrosodiphenylamine	SVOCs	5	U	5	NJ	5	U	5	U	5	U
Pentachlorophenol	SVOCs	10	U	10	NJ	10	U	10	UJ	10	U
Phenanthrene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U
Phenol	SVOCs	5	UJ	5	NJ	5	UJ	5	U	10	U
Pyrene	SVOCs	5	U	5	NJ	5	UJ	5	U	5	U

Notes:

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J = analyte present, result value is estimated

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J- = result value is estimated, result may be biased low

L = analyte present, reported value is estimated

NJ = qualitative identification questionable due to poor resolution, presumptively present at approximate quantity

ug/L = micrograms per liter

U = analyte not detected, CRQL value reported

UJ = analyte not detected, estimated CRQL value reported

UL = analyte not detected, quantitation limit is probably higher

MW-18-1

Sampling Location:		MW-18-1		MW-18-1		MW-18-1		MW-18-1		MW-18-1	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/12/2013		6/12/2014		12/11/2014		6/4/2015		6/9/2016	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
4,4'-DDD	CPEST	0.1	U	8.5	J	0.94	J	0.1	U		U
4,4'-DDE	CPEST			1.1	J	0.18	J	0.1	U		U
4,4'-DDT	CPEST			12	J	1.3	J	0.1	U		U
Aldrin	CPEST			0.5	U	0.1	J	0.05	U		U
alpha-BHC	CPEST	0.05	U	0.5	U	0.034	J	0.05	U		U
alpha-Chlordane	CPEST	0.05	U	0.73	J	0.2	J	0.05	U		U
beta-BHC	CPEST	0.05	U	0.5	UJ	0.22	J	0.05	U		U
delta-BHC	CPEST	0.05	U	2.7		0.62	J	0.05	U		U
Dieldrin	CPEST			4.9	J	0.59	J	0.1	U		U
Endosulfan sulfate	CPEST			4.6	J	0.1	UJ	0.1	U		U
Endrin	CPEST			1	U	0.14	J	0.1	U		U
Endrin aldehyde	CPEST	0.1	U	2.5	J	0.33	J	0.1	U		U
gamma-BHC (Lindane)	CPEST			0.5	UJ	0.04	J	0.05	U		U
gamma-Chlordane	CPEST			0.19	J	0.2	J	0.05	U		U
Heptachlor	CPEST			0.8	J	0.2	J	0.05	U		U
Heptachlor epoxide	CPEST			0.5	U	0.066	J	0.05	U		U
Aluminum	Inorganics	1050		164		622		495		2100	
Antimony	Inorganics	2	U	2	U	2	U	2	U	4.2	
Arsenic	Inorganics	17.9		23.3		21.7	J	13.6	J	39.5	
Barium	Inorganics	340		348		515	J	328		878	
Beryllium	Inorganics	0.22	J	0.13	J	1	U	1	U	1	U
Cadmium	Inorganics	1	U	0.15	J	1	U	1	U	0.3	J
Calcium	Inorganics	35200		42100		48200	J	39000		33100	
Chromium	Inorganics	3.5		22.4		2.9	J	2	U	53.3	
Cobalt	Inorganics	3.8		1.4		1.5		1.1		8.3	
Copper	Inorganics	3.7		4.4		2	U	2		16.9	
Cyanide	Inorganics	10	U	0.87	J	1.6	J	10	U	10	UJ
Iron	Inorganics	47800		63500		47600	J	58000		64100	
Lead	Inorganics	8.1		73.4		17.3	J	14.7		640	
Magnesium	Inorganics	11800		14600		16200	J	14900		11000	
Manganese	Inorganics	11200		9830		13000		10800		9740	
Mercury	Inorganics	0.2	UJ	0.21		0.2	U	0.2	UJ	0.1	J
Nickel	Inorganics	5.5		24.9		6.1	J	1.5	J+	8.9	
Potassium	Inorganics	1250		1260		1520	J	1120	J	1170	
Selenium	Inorganics	8.3		35.3		18.3	J	15		4.4	J
Sodium	Inorganics	11200		21500		28200	J	19400		9290	
Thallium	Inorganics	1	U	0.15	J	1	U	1	U	1	U
Vanadium	Inorganics	5	U	5	J	5	U	5	U	66	
Zinc	Inorganics	85.4		138		37.8	J	38.4	J	482	
Aroclor 1016	PCBs	1	UJ	1	U	1	U	1	U	23.2	
Aroclor 1254	PCBs	1	UJ	1	U	1	U	1	U	62.6	
Aroclor 1260	PCBs	1.5	J	8.1	J	1	U	1	U	62	
Acenaphthene	SVOCs	2.4	J	3.2	J	0.82	J	5	U	50	U
Anthracene	SVOCs	5	U	3.2	J	5	U	5	U	50	U
Benzo(a)anthracene	SVOCs	5	U	12		5	U	5	U	50	U
Benzo(a)pyrene	SVOCs	5	U	8.6		5	U	5	U	50	U
Benzo(b)fluoranthene	SVOCs	5	U	12		5	U	5	U	50	U
Benzo(g,h,i)perylene	SVOCs	5	U	6.1		5	U	5	U	50	U
Benzo(k)fluoranthene	SVOCs	5	U	4.7	J	5	U	5	U	50	U
Bis(2-ethylhexyl)phthalate	SVOCs	5.8		5	U	5	U	5	U	63	
Chrysene	SVOCs	5	U	13		5	U	5	U	50	U
Dibenzo(a,h)anthracene	SVOCs	5	U	1.8	J	5	U	5	U	50	U
Dibenzofuran	SVOCs	5	U	5	U	0.58	J	5	U	50	U
Dimethylphthalate	SVOCs	2.9	J	5	U	5	U	5	U	50	U
Di-n-butylphthalate	SVOCs	5.5		18		4	J	3.7	J	46	J
Fluoranthene	SVOCs	5	U	6.3		5	U	5	U	100	U
Fluorene	SVOCs	3.7	J	7.9		1.4	J	5	U	50	U
Indeno(1,2,3-cd)pyrene	SVOCs	5	U	5.7		5	U	5	U	50	U

Sampling Location:		MW-18-1		MW-18-1		MW-18-1		MW-18-1		MW-18-1	
Units:		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled:		12/12/2013		6/12/2014		12/11/2014		6/4/2015		6/9/2016	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
N-Nitrosodiphenylamine	SVOCs	2.8	J	5	U	5	U	5	U	50	U
Phenanthrene	SVOCs	6.9		23		1.5	J	5	U	69	
Pyrene	SVOCs	2.6	J	15		5	U	5	U	28	J
1,2-Dichlorobenzene	VOCs	4.8	J	5.4		9.9		5	U	5	U
1,3-Dichlorobenzene	VOCs	5	U	5	U	2.2	J	5	U	2.5	J
1,4-Dichlorobenzene	VOCs	4.3	J	3.4	J	8.6		5	U	7.9	
Benzene	VOCs	4.8	J	5	U	5	U	4	J	5.9	
Chlorobenzene	VOCs	28		17		28		18		37	
Cyclohexane	VOCs	5	U	5	U	5	U	5	U	4.4	J
Isopropylbenzene	VOCs	5.8		5.4		6.7		4.8	J	14	
m,p-Xylene	VOCs	5	U	5	U	5	U	5	U	4.4	J
Methylcyclohexane	VOCs	5	U	5	U	2.1	J	5	U	10	
o-Xylene	VOCs	2.6	J	5	U	2.4	J	5	U	5	U

Notes:

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MW-18-2

Sampling Location:		MW-18-2		MW-18-2		MW-18-2		MW-18-2		MW-18-2	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/12/2013		6/12/2014		12/11/2014		6/4/2015		6/9/2016	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	Inorganics	20	U	20	U	38.1		20	U	22.3	
Arsenic	Inorganics	13.8		15.6		12.4	J	12.4	J	13.7	
Barium	Inorganics	442		386		391	J	389		636	
Calcium	Inorganics	43100		45400		45900	J	43600		49200	
Chromium	Inorganics	2	U	2	U	2	UJ	2	U	0.92	J
Cobalt	Inorganics	0.3	J	0.48	J	1.1		1	U	0.54	J
Copper	Inorganics	2	U	2	U	2	U	0.91	J	2	U
Cyanide	Inorganics	10	U	4	J	3.3	J	10	U	10	UJ
Iron	Inorganics	9740		13300		5560	J	7420		20800	
Lead	Inorganics	1	U	0.59	J	1	UJ	1	U	14	
Magnesium	Inorganics	13300		13800		13700	J	13900		13900	
Manganese	Inorganics	8000		6450		7190		6720		7860	
Nickel	Inorganics	1.9		1.8		4.4	J	1.8	J+	2.1	
Potassium	Inorganics	1190		1160		1300	J	1140	J	1270	
Selenium	Inorganics	18.7		39.6		8.8	J	19.8		5.4	
Sodium	Inorganics	32900		48400		39800	J	47200		37600	
Vanadium	Inorganics	5	U	0.42	J	5	U	5	UJ	1.6	J
Zinc	Inorganics	8.7	J+	2.4		4.3	J	18.5	J+	19.9	
Aroclor 1260	PCBs	1	U	1	U	1	U	0.26	J		U
1,4-Dioxane	SVOCs	100	R							4.5	
Di-n-butylphthalate	SVOCs	2.1	J	5	U	1.7	J	5	U	2.1	J
1,2-Dichlorobenzene	VOCs	5.5		5.8		5.3		5	U	5	U
1,4-Dichlorobenzene	VOCs	3.6	J	3.5	J	4.5	J	5	U	5	U
Benzene	VOCs	2.9	J	6.3		5	U	5	U	3.9	J
Chlorobenzene	VOCs	16		13		24		8.9		17	
cis-1,2-Dichloroethene	VOCs	2.4	J	2.8	J	5	U	3.2	J	2.1	J
Isopropylbenzene	VOCs	5	U	3.2	J	5	J	5	U	5	U
Vinyl chloride	VOCs			4.6	J	5	U	5	U	5	U

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MW-19-1

Sampling Location:		MW-19-1		MW-19-1		MW-19-1		MW-19-1		MW-19-1	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/11/2013		6/11/2014		12/10/2014		6/3/2015		6/8/2016	
Parameter	Analysis	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	Inorganics	20	U	20	U	20	U	20	U	4.5	J
Arsenic	Inorganics	9.2		1	UJ	9.3	J	2.7		5.9	
Barium	Inorganics	192		237		205		33.1		290	
Calcium	Inorganics	45300		30600		48800		77000		60800	
Chromium	Inorganics	2	U	2	U	2.2	J	2	U	0.07	J
Cobalt	Inorganics	1.6		1.4		5.2		1	U	1.4	
Copper	Inorganics	2	U	2	U	0.32	J-	2	U	2	U
Cyanide	Inorganics	10	U	10	U	0.84	J	10	U	10	U
Iron	Inorganics	14700		12300	J	15100		200	U	16400	
Magnesium	Inorganics	13100		10800		15500		24400		17300	
Manganese	Inorganics	10700		3300		11400		1310		11300	
Mercury	Inorganics	0.2	UJ	0.2	UJ	0.2	UJ	0.2	UJ	0.14	J
Nickel	Inorganics	2.1		3.4		4.4	J+	5.3		1	U
Potassium	Inorganics	1370		3980		1480		1240		1690	
Selenium	Inorganics	12.3		5	UJ	12.1		8.3		4.6	J
Sodium	Inorganics	29400		15400		34700		19600		39300	
Vanadium	Inorganics	5	U	0.063	J	0.31	J	5	UJ	0.37	J
Zinc	Inorganics	3.7	J	18.1	J	5.1	J	5.4	U	5.3	
1,4-Dioxane	SVOCs									22	
1,1-Dichloroethane	VOCs	1.2		1.5		0.79		1.5		0.98	
1,2,4-Trichlorobenzene	VOCs	0.93		0.49	J	0.47	J	0.5	U	0.5	UJ
1,2-Dichlorobenzene	VOCs	5.7		5.4		3.8		3.8		2.2	J-
1,2-Dichloroethane	VOCs	0.28	J	0.5	U	0.22	J	0.5	U	0.5	U
1,3-Dichlorobenzene	VOCs	1.8		1.5		1.1		1		0.64	J-
1,4-Dichlorobenzene	VOCs	10		8.6		6.3		5.8		3.7	J-
Benzene	VOCs	2.3		2.7		1.6		2.1		1.3	
cis-1,2-Dichloroethene	VOCs	19		30	NJ	18		21		18	
Cyclohexane	VOCs	0.59		0.79		0.47	J	0.5	U	0.5	U
Ethylbenzene	VOCs	0.5	U	0.12	J	0.5	U	0.5	U	0.5	U
Isopropylbenzene	VOCs	0.5	U	0.18	J	0.5	U	0.5	U	0.5	U
m,p-Xylene	VOCs	0.22	J	0.5	U	0.5	U	0.5	U	0.5	U
Methylcyclohexane	VOCs	0.38	J	0.32	J	0.2	J	0.5	U	0.5	U
o-Xylene	VOCs	0.5	U	0.13	J	0.5	U	0.5	U	0.5	U
Toluene	VOCs	0.5	U	0.66		0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	VOCs	0.32	J	0.31	J	0.23	J	0.5	U	0.5	U
Trichloroethene	VOCs	0.21	J	0.13	J	0.5	U	0.5	U	0.5	U
Vinyl chloride	VOCs	7.8	J	6.8		5.1		6.3		5	

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MW-19-2

Sampling Location:		MW-19-2		MW-19-2		MW-19-2		MW-19-2		MW-19-2	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/11/2013		6/11/2014		12/10/2014		6/3/2015		6/8/2016	
Parameter	Analysis	Result	F	Result	F	Result	F	Result	F	Result	F
Aluminum	Inorganics	20	U	20	U	20	U	20	U	6.8	J
Arsenic	Inorganics	12.6		13.4	J	11.8	J	13.9		7.4	
Barium	Inorganics	21.2		22.4		23.5		24.5		24.2	
Beryllium	Inorganics	0.21	J	0.27	J	0.32	J	0.19	J	1	U
Calcium	Inorganics	61200		66500		63200		69500		63800	
Chromium	Inorganics	2	U	2	U	8.2	J	2	U	0.28	J
Cobalt	Inorganics	7.2		10		11.1		8.9		10.1	
Copper	Inorganics	2	U	2	U	0.28	J	2	U	2	U
Cyanide	Inorganics	10	U	10	U	2.5	J	59.8		10	U
Iron	Inorganics	1650		1810	J	1550		2150		1240	
Lead	Inorganics	1	U	0.16	J	1	U	1	U	1	U
Magnesium	Inorganics	19600		21300		22200		26000		20300	
Manganese	Inorganics	9630		10900		10000		11700		9490	
Nickel	Inorganics	14.3		19.7		26.2	J	16.9		18.4	
Potassium	Inorganics	2030		2130		2120		2170		1980	
Selenium	Inorganics	35.6		31.7		21.2		33.6	J	6.8	
Sodium	Inorganics	44800		49700		49000		55500		49600	
Vanadium	Inorganics	5	U	0.26	J	0.24	J	5	UJ	0.23	J
Zinc	Inorganics	12.6	J	12.5	J	6.5	J	19.5	J+	6.7	
1,4-Dioxane	SVOCs									43	
1,1,1-Trichloroethane	VOCs	0.5	U	0.5	NJ	0.5	UJ	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	VOCs	0.5	U	0.5	NJ	0.5	UJ	0.5	U	0.5	U
1,1,2-Trichloro-1,2,2-trifluoroethane	VOCs	0.5	U	0.5	NJ	0.5	UJ	0.5	U	0.5	U
1,1,2-Trichloroethane	VOCs	0.5	UJ	0.5	NJ	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	VOCs	7.4		6.2	NJ	3.7		7.6		2.9	
1,1-Dichloroethene	VOCs	0.5	U	0.14	NJ	0.25	J	0.5	U	0.5	U
1,2,3-Trichlorobenzene	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	VOCs	0.48	J	0.51	NJ	0.37	J	0.5	U	0.5	U
1,2-Dibromo-3-chloropropane	VOCs	0.5	U	0.5	NJ	0.5	UJ	0.5	U	0.5	U
1,2-Dibromoethane	VOCs	0.5	U	0.5	NJ	0.5	UJ	0.5	U	0.5	U
1,2-Dichlorobenzene	VOCs	5.2		5	NJ	3.6		4.1		2	
1,2-Dichloroethane	VOCs	2.6		2.4	NJ	1.6	J	3.3		1	
1,2-Dichloropropane	VOCs	0.5	U	0.15	NJ	0.13	J	0.5	U	0.5	U
1,3-Dichlorobenzene	VOCs	0.43	J	0.38	NJ	0.25	J	0.5	U	0.5	U
1,4-Dichlorobenzene	VOCs	1.5		1.4	NJ	0.82		0.96		0.51	
2-Butanone	VOCs	5	U	5	NJ	5	UJ	5	U	5	U
2-Hexanone	VOCs	5	U	5	NJ	5	U	5	U	5	U
4-Methyl-2-pentanone	VOCs	5	U	5	NJ	5	U	5	U	5	U
Acetone	VOCs	5	UJ	5	NJ	5	UJ	5	U	5	U
Benzene	VOCs	3.2		2.7	NJ	1.6		0.5	U	1.2	
Bromochloromethane	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	U
Bromodichloromethane	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	U
Bromoform	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	U
Bromomethane	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	U
Carbon tetrachloride	VOCs	0.5	U	0.5	NJ	0.5	UJ	0.5	U	0.5	U
Chlorobenzene	VOCs	3.1		2.6	NJ	2.2		2.3		1.1	
Chloroethane	VOCs	0.43	J	0.5	NJ	0.5	U	0.5	U	0.5	U
Chloroform	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	U
Chloromethane	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	VOCs	56		56	J	47		45		27	
cis-1,3-Dichloropropene	VOCs	0.5	UJ	0.5	NJ	0.5	U	0.5	U	0.5	U
Cyclohexane	VOCs	0.51		0.75	NJ	0.53		0.5	U	0.5	U
Dibromochloromethane	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	U
Ethylbenzene	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	U
Isopropylbenzene	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	U
m,p-Xylene	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	U

Sampling Location:		MW-19-2		MW-19-2		MW-19-2		MW-19-2		MW-19-2	
Units:		µg/L		µg/L		µg/L		µg/L		µg/L	
Date Sampled:		12/11/2013		6/11/2014		12/10/2014		6/3/2015		6/8/2016	
Parameter	Analysis	Result	F	Result	F	Result	F	Result	F	Result	F
Methyl acetate	VOCs	0.5	U	0.5	NJ	0.5	UJ	0.5	U	0.5	U
Methyl tert-butyl ether	VOCs	0.5	U	0.5	NJ	0.5	UJ	0.5	U	0.5	U
Methylcyclohexane	VOCs	0.5	U	0.15	NJ	0.5	U	0.5	U	0.5	U
Methylene chloride	VOCs	0.5	U	0.5	NJ	0.5	UJ	0.5	U	0.5	U
o-Xylene	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	UJ
Styrene	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	U
Tetrachloroethene	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	U
Toluene	VOCs	0.5	U	0.5	NJ	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	VOCs	1.7		1	NJ	1		0.86		0.46	J
trans-1,3-Dichloropropene	VOCs	0.5	UJ	0.5	NJ	0.5	U	0.5	U	0.5	U
Trichloroethene	VOCs	1.6		1.3	NJ	1.1		0.99		0.5	U
Trichlorofluoromethane	VOCs	0.5	U	0.5	NJ	0.5	UJ	0.5	U	0.5	U
Vinyl chloride	VOCs	4.6	J	4	NJ	2.2		3.9		1.7	

Notes:
Blank cells indicate sample not analyzed for the analyte
B = Analyte not detected substantially above the level reported in lab or field blanks
J = analyte present, result value is estimated
J+ = result value is estimated, result may be biased high
J- = result value is estimated, result may be biased low
L = analyte present, reported value is estimated
NJ = qualitative identification questionable due to poor resolution, presumptively present at approximate quantity
µg/L = micrograms per liter
U = analyte not detected, CRQL value reported
UJ = analyte not detected, estimated CRQL value reported
UL = analyte not detected, quantitation limit is probably higher

MW-20-1

Sampling Location:		MW-20-1	
Units:		µg/L	
Date Sampled:		6/6/2016	
Parameter	Analysis	Result	Flag
Aluminum	Inorganics	4.3	J
Arsenic	Inorganics	0.24	J
Barium	Inorganics	85.5	
Calcium	Inorganics	18700	
Chromium	Inorganics	0.18	J
Cobalt	Inorganics	0.2	J
Magnesium	Inorganics	7130	
Potassium	Inorganics	1190	
Sodium	Inorganics	4350	
Zinc	Inorganics	15	

Notes:
Blank cells indicate sample not analyzed for the analyte
B = Analyte not detected substantially above the level reported in lab or field blanks
J = analyte present, result value is estimated
J+ = result value is estimated, result may be biased high
J- = result value is estimated, result may be biased low
L = analyte present, reported value is estimated
NJ = qualitative identification questionable due to poor resolution, presumptively present at approximate quantity
µg/L = micrograms per liter
U = analyte not detected, CRQL value reported
UJ = analyte not detected, estimated CRQL value reported
UL = analyte not detected, quantitation limit is probably higher

Note: Residential well data were extracted from the 2014 through 2016 Douglassville Disposal Trip Reports.

Residential Well Samples
Detected Analytical Results
June 2014

			CLP Sample Number:	C0CB3	C0CB2	C0CB4	C0CB5	C0CB1
			Sample Number:	DD-RW-2-N-061214	DD-RW-2-D-061214	DD-RW-2-N2-061214	DD-RW-8-M-061214	DD-MW-TB-061214
			Sampling Location:	Field Sample	Field Duplicate	Field Sample	Field Sample/Lab QC	Trip Blank
			Matrix:	Water	Water	Water	Water	Water
			Units:	ug/L	ug/L	ug/L	ug/L	ug/L
			Date Sampled:	6/12/2014	6/12/2014	6/12/2014	6/12/2014	6/12/2014
			Time Sampled:	13:00	13:10	10:56	10:28	11:30
Inorganic Compounds	CRQL	MCL	RSL					
Aluminum	200	No MCL	2,000	--	32.5	--	--	NA
Barium	200	2,000	380	166	164	165	141	NA
Beryllium	5	4	2.5	--	--	--	0.23 J	NA
Calcium	5,000	No MCL	No RSL	45,000	44,500	44,600	15,300	NA
Cobalt	50	No MCL	0.6	0.093 J	0.081 J	0.17 J	0.11 J	NA
Copper	25	1300	80	**222**	**173**	28.4	59.1	NA
Iron	100	No MCL	1,400	195 J	186 J	193 J	63.7 J	NA
Lead	10	15	No RSL	0.27 J	0.3 J	0.38 J	2.2	NA
Magnesium	5,000	No MCL	No RSL	12,800	12,700	12,800	7,090	NA
Manganese	15	No MCL	43	--	--	--	2.2	NA
Nickel	40	No MCL	No RSL	1.8	1	3.4	9.5	NA
Potassium	5,000	No MCL	No RSL	1700	1670	1650	1860	NA
Sodium	5,000	No MCL	No RSL	21900	21600	21600	15100	NA
Vanadium	5	No MCL	8.6	--	--	0.65 J	--	NA
Zinc	60	No MCL	600	10.1	13.7	116	47.2	NA
Cyanide	10	200	0.15	--	**2 J**	--	**2.8 J**	NA
Volatile Organic Compounds								
NO DETECTIONS								
Semivolatile Organic Compounds								
NO DETECTIONS								
Aroclor Compounds								
NO DETECTIONS								

Notes:
-- Indicates that the analyte was not detected.
Values that are **bold** and highlighted yellow exceed the MCL/RSL.
To calculate sample quantitation limits: (CRQL * Dilution Factor)
µg/L = micrograms per liter
MCL = Maximum Contaminant Level *National Primary and Secondary Drinking Water Regulations* (EPA, May 2009)
CRQL = contract required quanitation limit
J = Analye present; value many not be accurate or precise
MW = monitoring well
NA = not applicable
RSL = regional screening level, based on the cancer (target risk of 1E-06) or noncancer (hazard index = 1), whichever is lower
RW = residential well

Residential Well Groundwater Samples
Detected Analytical Results
December 2014

				CLP Sample Number	C0CE1	C0CE2	C0CE3	C0CE4	C0CE0
				Sample Number:	DD-RW-2-N-121114	DD-RW-2-D-121114	DD-RW-2-N2-121114	DD-RW-8-N-121114	DD-MW-TB-121114
				Sample Type	Field Sample	Field Duplicate	Field Sample	Field Sample	Trip Blank
				Matrix:	Water	Water	Water	Water	Water
				Units:	µg/L	µg/L	µg/L	µg/L	µg/L
				Date Sampled:	12/11/2014	12/11/2014	12/11/2014	12/11/2014	12/11/2014
				Time Sampled	14:57	14:52	9:54	10:48	14:55
Inorganics	**CRQL**	**MCL**	**RSL**						
Aluminum	20	No MCL	2,000		4.7 B	7.1 B	4.3 B	4.9 B	NA
Antimony	2	6	0.78		0.076 B	0.12 B	0.088 B	0.067 B	NA
Arsenic	1	10	0.052		0.98 B	0.39 B	**1.1**	0.2 B	NA
Barium	10	2,000	380		136	128	132	146	NA
Beryllium	1	4	4		--	--	--	0.24 B	NA
Calcium	500	No MCL	No RSL		32100	30200	32300	15000	NA
Chromium	2	100	No RSL		2.5	1.7 B	5	2.5	NA
Cobalt	1	No MCL	0.6		0.7 B	0.65 B	0.7 B	0.71 B	NA
Copper	2	1300	80		**373**	**340**	59.4	79.2	NA
Iron	200	No MCL	1,400		97.8 B	85.9 B	101 B	40.8 B	NA
Lead	1	15	15		0.44 B	0.38 B	0.53 B	2.6	NA
Magnesium	500	No MCL	No RSL		9250	8670	9420	6820	NA
Manganese	1	No MCL	43		3.2	2.8	1.7	3.6	NA
Nickel	1	No MCL	No RSL		3.6	2.5	4.1	12.6	NA
Potassium	500	No MCL	No RSL		1900	1760	1940	2000	NA
Selenium	5	50	10		1.5 B	1.3 B	1.2 B	1.9 B	NA
Sodium	500	No MCL	No RSL		17300	16300	17700	14500	NA
Zinc	2	No MCL	600		18.3	19	144	41.7	NA
Mercury	0.2	2	0.063		0.026 B	0.022 B	0.03 B	0.038 B	NA
Volatile Organic Compounds	**CRQL**	**MCL**	**RSL**						
1,1-Dichloroethene	0.5	7	28		0.14 J	--	--	--	--
Carbon disulfide	0.5	No MCL	81		0.17 J	--	--	--	--
m,p-Xylene	0.5	No MCL	19		--	--	--	--	0.16 J
Methylene Chloride	0.5	5	11		--	--	--	--	0.52
Toluene	0.5	1000	110		--	--	--	--	0.64
Trichloroethene	0.5	5	0.28		--	0.14 J	0.18 J	--	--
Aroclor Compounds	**CRQL**	**MCL**	**RSL**						
Aroclor-1260	0.05	No MCL	0.039		**0.066 J**	**0.06 J**	**0.073 J**	--	NA
Semivolatilve Organic Compounds	**CRQL**	**MCL**	**RSL**						
Di-n-butylphthalate	5	No MCL	No RSL		1.1 J	--	--	--	NA

Notes:
-- Indicates that the analyte was not detected.
Values that are **bold** and highlighted yellow exceed the MCL/RSL.
Values highlight green exceeds CRQL in blanks
µg/L = micrograms per liter
MCL = Maximum Contaminant Level *National Primary and Secondary Drinking Water Regulations* (EPA, May 2009)
CRQL = contract required quanitation limit
B = Analyte is presumed to be a blank contamination artifact
J = Analye present; value many not be accurate or precise
MW = monitoring well
NA = not applicable
RSL = regional screening level, based on the cancer (target risk of 1E-06) or noncancer (hazard index = 1), whichever is lower
RW = residential well

Monitoring Well Groundwater and Residential Well Samples
Detected Analytical Results
March 2015

				CLP Sample Number	C0CF0	C0CE9	C0CE8	C0CF1	C0CF2	C0CF3	C0CF4	C0CF5
				Sample Number:	DD-MW-7-1-N-031615	DD-MW-7-2-N-031615	DD-MW-14-1-031615	DD-MW-14-3-031615	DD-MW-RW-2-N-031615	DD-RW-2-D-031615	DD-RW-M2-031615	DD-MW-RB-031615
				Sample Type	Field Sample	Field Sample	Field Sample	Field Sample	Field Sample	Field Duplicate	Field Sample	Rinsate Blank
				Matrix:	Water	Water	Water	Water	Water	Water	Water	Water
				Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
				Date Sampled:	3/16/2015	3/16/2015	3/16/2015	3/16/2015	3/16/2015	3/16/2015	3/16/2015	3/16/2015
				Time Sampled	11:52	12:35	9:59	8:42	14:10	14:14	14:30	12:55
Aroclor Compounds	**CRQL**	**MCL**	**RSL**	**ACL**								
Aroclor-1260	1 or 0.05	No MCL	0.039	430	--	--	--	--	**0.053**	--	**0.039 J**	--

Notes:
-- Indicates that the analyte was not detected.
Values that are **bold** and highlighted yellow exceed the MCL/RSL.
CRQL for monitoring well (MW) samples is 1 µg/L, CRQL for residential wells (RW) is 0.05 µg/L
µg/L = micrograms per liter
MCL = Maximum Contaminant Level *National Primary and Secondary Drinking Water Regulations* (EPA, May 2009)
ACL = alternate concentration limit
CRQL = contract required quanitation limit
J = Analye present; value many not be accurate or precise
MW = monitoring well
RSL = regional screening level, based on the cancer (target risk of 1E-06) or noncancer (hazard index = 1), whichever is lower
RW = residential well

Residential Well Samples
Detected Analytical Results
June 2015

		CLP Sample Number:	MC0CJ5	MC0CJ4	MC0CJ6	MC0CJ8	C0CJ0
		Sample Number:	DD-RW-2-N-060115	DD-RW-2-D-060115	DD-RW-2-N2-060115	DD-RW-FB-060115	DD-MW-TB-060115
		Sample Type:	Field Sample	Field Duplicate of M/C0CJ5	Field Sample/Lab QC	Field Blank	Trip Blank
		Matrix:	Water	Water	Water	Water	Water
		Units:	ug/L	ug/L	ug/L	ug/L	ug/L
		Date Sampled:	6/1/2015	6/1/2015	6/1/2015	6/1/2015	6/1/2015
		Time Sampled:	13:40	13:45	13:41	13:00	10:25
Inorganics	**ACL (µg/L)**	**MCL (µg/L)**					
Aluminum	122,000	50-200*	20 U	5.6 J	5.4 J	20 U	NA
Antimony	228	6	0.087 B	0.26 B	0.23 B	2 U	NA
Arsenic	188	10	1 UJ	1 UJ	0.35 B	1 UJ	NA
Barium	1,080	2,000	156	156	159	10 U	NA
Calcium	367,000	No MCL	41,100	41,000	41,900	500 U	NA
Chromium	138	100	3.2	4.4	3.8	2 U	NA
Cobalt	512	No MCL	0.12 J	0.39 J	0.1 J	1 U	NA
Copper	339	1,300	112	180	25.1	2 U	NA
Iron	325,000	300*	73.4 J	80.7 J	139 J	200 UJ	NA
Lead	227	15	0.34 J	0.39 J	0.42 J	1 U	NA
Magnesium	161,000	No MCL	12,300	12,400	12,700	500 U	NA
Manganese	162,000	50*	1.2	8.4	1.1	1 U	NA
Nickel	672	No MCL	1	1.4	1.1	1 U	NA
Potassium	15,000	No MCL	1,610	1,630	1,650	500 UJ	NA
Selenium	5	50	1 B	0.89 B	1.2 B	5 UJ	NA
Silver	No ACL	100*	1 U	0.056 J	1 U	1 U	NA
Sodium	288,000	No MCL	22,200	22,300	23,000	500 U	NA
Vanadium	30	No MCL	5 UJ	5 UJ	5 UJ	0.14 J-	NA
Zinc	5,910	5,000*	7	14.4	79.3	2 U	NA
Volatile Organic Compounds	**ACL (µg/L)**	**MCL (µg/L)**					
Acetone	No ACL	No MCL	5 U	5 U	5 U	20	22
Carbon disulfide	No ACL	No MCL	0.5 U	0.5 U	0.5 U	0.68	0.65
m,p-Xylene	840	10,000	0.5 U	0.5 U	0.5 U	0.35 J	0.37 J
o-Xylene	840	10,000	0.5 U	0.5 U	0.5 U	0.22 J	0.23 J
Toluene	2,300	1,000	0.5 U	0.5 U	0.5 U	0.55	0.55
Semivolatile Organic Compounds	**ACL (µg/L)**	**MCL (µg/L)**					
2-Methylnaphthalene	300	No MCL	0.1 U	0.1 U	0.1 U	0.17	NA
Diethylphthalate	4.7	No MCL	2.1	0.26	0.1 U	0.1 U	NA
Naphthalene	390	No MCL	0.1 U	0.1 U	0.1 U	0.82	NA
Polychlorinated Biphenyls	**ACL (µg/L)**	**MCL (µg/L)**					
Aroclor-1260	430	0.5	0.097 B	0.12 B	0.13 J	0.12	NA

Notes:
NA = not applicable
ACL = Alternate Concentration Limits (as per the 1989 EPA ROD)
MCL = Maximum Contaminant Level
J = analyte present, result value is estimated
J- = result value is estimated, result may be biased low
B = Result is presumed to be a blank contaminant
RW = residential well
µg/L = micrograms per liter
U = analyte not detected, CRQL value reported
UJ = analyte not detected, estimated CRQL value reported
* Secondary Drinking Water Standard

Residential Well Samples
Detected Analytical Results
December 2015

				CLP Sample Number:	M/C0AD1	M/C0AA3	M/C0AA5	M/C0AA4	C0AC3	C0AC2
				Sample Location:	DD-RW-1-M-120715	DD-RW-2-N-120715	DD-RW-2-N2-120715	DD-RW-2-D-120715	DD-RW-FB-120715	DD-MW-TB-120715
				Sample Type:	Field Sample/Lab QC	Field Sample	Field Sample	Field Duplicate of M/C0AA5	Field Blank	Water
				Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
				Date Sampled:	12/7/2015	12/7/2015	12/7/2015	12/7/2015	12/7/2015	12/7/2015
				Time Sampled:	14:12	13:35	13:30	13:33	15:50	13:00
Inorganics	**CAS Number**	**ACL (µg/L)**	**MCL (µg/L)**							
Aluminum	7429-90-5	122,000	50-200*		3.8 B	20 U	2.4 B	1.7 B	N/A	N/A
Antimony	7440-36-0	228	6		0.24 B	0.12 B	0.18 B	0.27 B	N/A	N/A
Arsenic	7440-38-2	188	10		0.33 B	0.63 B	0.59 B	0.61 B	N/A	N/A
Barium	7440-39-3	1,080	2,000		165	178	172	173	N/A	N/A
Beryllium	7440-41-7	28	4		0.16 B	1 U	1 U	1 U	N/A	N/A
Calcium	7440-70-2	367,000	No MCL		22,000	45,200	44,400	43,900	N/A	N/A
Chromium	7440-47-3	138	100		0.54 B	0.1 B	0.64 B	0.13 B	N/A	N/A
Cobalt	7440-48-4	512	No MCL		1 U	0.06 J	1 U	1 U	N/A	N/A
Copper	7440-50-8	339	1,300		23.6	112	21.6	18.6	N/A	N/A
Iron	7439-89-6	325,000	300*		9 B	15.6 J	32.2 J	18.5 J	N/A	N/A
Lead	7439-92-1	227	15		0.42 B	1 U	0.59 B	0.19 B	N/A	N/A
Magnesium	7439-95-4	161,000	No MCL		7,650	12,400	12,200	12,000	N/A	N/A
Manganese	7439-96-5	162,000	50*		8	2.5 B	20	3.5	N/A	N/A
Nickel	7440-02-0	672	No MCL		9.1	0.89 B	1.2	0.92 B	N/A	N/A
Potassium	7740-09-7	15,000	No MCL		1,830	1,730	1,720	1,700	N/A	N/A
Selenium	7782-49-2	5	50		2.5 J	5 U	5 U	5 U	N/A	N/A
Silver	7440-22-4	No ACL	100*		0.12 B	0.11 B	0.09 B	0.1 B	N/A	N/A
Sodium	7440-23-5	288,000	No MCL		19,500	22,200	22,000	21,600	N/A	N/A
Vanadium	7440-62-2	30	No MCL		0.33 B	1.1 B	1.1 B	1.1 B	N/A	N/A
Zinc	7440-66-6	5,910	5,000*		15.4	13.6	173	121	N/A	N/A
Volatile Organic Compounds	**CAS Number**	**ACL (µg/L)**	**MCL (µg/L)**							
Acetone	67-64-1	No ACL	No MCL		2.2 B	5 U	5 U	2.7 B	63	61
Carbon disulfide	75-15-0	No ACL	No MCL		0.5 U	0.5 U	0.5 U	0.5 U	0.19 J	0.19 J
Ethylbenzene	100-41-4	180	700		0.5 U	0.5 U	0.5 U	0.5 U	0.16 J	0.15 J
m, p-Xylene	179601-23-1	840	10,000		0.5 U	0.5 U	0.5 U	0.5 U	0.54	0.58
Methylene chloride	75-09-2	320	No MCL		0.5 U	0.5 U	0.5 U	0.5 U	0.56	0.55
o-Xylene	95-47-6	840	10,000		0.5 U	0.5 U	0.5 U	0.5 U	0.44 J	0.45 J
Toluene	108-88-3	2,300	1,000		0.5 U	0.5 U	0.5 U	0.5 U	0.3 J	0.28 J
Trichloroethene	79-01-6	88	5		0.5 U	0.23 J	0.22 J	0.23 J	0.5 U	0.5 U
Polychlorinated Biphenyls	**CAS Number**	**ACL (µg/L)**	**MCL (µg/L)**							
Aroclor-1260	11096-82-5	430	0.5		0.0097 U	0.41	0.29	0.21	N/A	N/A
Semivolatile Organic Compounds	**CAS Number**	**ACL (µg/L)**	**MCL (µg/L)**							
Naphthalene	91-20-3	390	No MCL		0.011 J	0.097 U	0.0098 J	0.013 J	N/A	N/A

* Secondary Drinking Water Standard

Notes:

NA = not applicable
ACL = Alternate Concentration Limits (as per the 1989 EPA ROD)
CAS = chemical abstract service
MCL = Maximum Contaminant Level
J = analyte present, result value is estimated
B = Result is presumed to be a blank contaminant
RW = residential well
µg/L = micrograms per liter
U = analyte not detected, CRQL value reported

Residential Well Samples Analytical Results
June 2016

			CLP Sample Number:	M/C0AF8	M/C0AG1	M/C0AG0	M/C0AF9	C0AG2	C0AF4
			Sample Location:	DD-RW-1-M-060616	DD-RW-2-N-060616	DD-RW-2-N2-060616	DD-RW-2-D2-060616	DD-RW-FB-060616	DD-MW-TB-060616
			Sample Type:	Field Sample/Lab QC	Field Sample	Field Sample	Field Duplicate of M/C0AG0	Field Blank	Water
			Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
			Date Sampled:	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016
			Time Sampled:	15:15	15:55	16:00	16:05	13:30	13:05
Volatile Organic Compounds	**CAS Number**	**ACL (µg/L)**	**MCL (µg/L)**						
1,1,1-Trichloroethane	71-55-6	130	200	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	79-34-5	2.4	No MCL	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane	79-00-5	2.3	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	75-34-3	470	No MCL	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	75-35-4	4.5	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-Trichlorobenzene	120-82-1	20	70	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	95-50-1	78	600	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	107-06-2	330	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloropropane	78-87-5	16	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3-Dichlorobenzene	541-73-1	6.1	No MCL	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-Dichlorobenzene	106-46-7	15	75	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Butanone	78-93-3	17	No MCL	5 U	5 U	5 U	5 U	5 U	5 U
2-Hexanone	591-78-6	8.2	No MCL	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	108-10-1	29	No MCL	5 U	5 U	5 U	5 U	5 U	5 U
Aniline	62-53-3	63	No MCL	N/A	N/A	N/A	N/A	N/A	N/A
Benzene	71-43-2	2000	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Benzyl Alcohol (Phenylmethanol)	100-51-6	32	No MCL	N/A	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	56-23-5	2.9	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	71-43-2	17	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroethane	75-00-3	310	No MCL	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	67-66-3	8	70	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloromethane	74-87-3	1	No MCL	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	156-59-2	940	70	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,3-Dichloropropene	10061-01-5	6	No MCL	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	100-41-4	180	700	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene Chloride	75-09-2	320	No MCL	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethane	127-18-4	29	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	108-88-3	2300	1000	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2,-Dichloroethene	156-60-5	990	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	79-01-6	88	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl Acetate	108-05-4	2.2	No MCL	N/A	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	75-01-4	1,200	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylenes (total)	179601-23-1 95-47-6	840	10000	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Polychlorinated Biphenyls	**CAS Number**	**ACL (µg/L)**	**MCL (µg/L)**						
Aroclor-1254	11097-69-1	1.7	0.5	0.05 U	0.05 U	0.05 U	0.05 U	N/A	N/A
Aroclor-1260	11096-82-5	430	0.5	0.05 U	**0.068**	**0.12**	**0.092**	N/A	N/A

Residential Well Samples Analytical Results
June 2016

			CLP Sample Number:	M/C0AF8	M/C0AG1	M/C0AG0	M/C0AF9	C0AG2	C0AF4
			Sample Location:	DD-RW-1-M-060616	DD-RW-2-N-060616	DD-RW-2-N2-060616	DD-RW-2-D2-060616	DD-RW-FB-060616	DD-MW-TB-060616
			Sample Type:	Field Sample/Lab QC	Field Sample	Field Sample	Field Duplicate of M/C0AG0	Field Blank	Water
			Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
			Date Sampled:	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016
			Time Sampled:	15:15	15:55	16:00	16:05	13:30	13:05
Semivolatile Organic Compounds	**CAS Number**	**ACL (µg/L)**	**MCL (µg/L)**						
1,4-Dioxane	123-91-1	No ACL	No MCL	2.0 U	2.0 U	2.0 U	2.0 U	N/A	N/A
2,4-Dimethylphenol	105-67-9	10	No MCL	5.0 U	5.0 U	5.0 U	5.0 U	N/A	N/A
2-Methylnaphthalene	91-57-6	300	No MCL	5.0 U	5.0 U	5.0 U	5.0 U	N/A	N/A
2-Methylphenol	95-48-7	29	No MCL	10 U	10 U	10 U	10 U	N/A	N/A
bis-(2-Chloroethyl) ether	111-44-4	44	No MCL	10 U	10 U	10 U	10 U	N/A	N/A
bis(2-Ethylhexyl)phthalate	117-81-7	44	No MCL	5.0 U	5.0 U	5.0 U	5.0 U	N/A	N/A
Diethylphthalate	84-66-2	4.7	No MCL	5.0 U	5.0 U	5.0 U	5.0 U	N/A	N/A
Di-n-butylphthalate	84-74-2	12	No MCL	5.0 U	5.0 U	5.0 U	5.0 U	N/A	N/A
Fluorene	86-73-7	30	No MCL	5.0 U	5.0 U	5.0 U	5.0 U	N/A	N/A
Isophorone	78-59-1	6	No MCL	5.0 U	5.0 U	5.0 U	5.0 U	N/A	N/A
Naphthalene	91-20-3	390	No MCL	5.0 U	5.0 U	5.0 U	5.0 U	N/A	N/A
Phenanthrene	85-01-8	49	No MCL	5.0 U	5.0 U	5.0 U	5.0 U	N/A	N/A
Phenol	108-95-2	7.1	No MCL	10 U	10 U	10 U	10 U	N/A	N/A
Pyrene	129-00-0	31	No MCL	5.0 U	5.0 U	5.0 U	5.0 U	N/A	N/A
Inorganics	**CAS Number**	**ACL (µg/L)**	**MCL (µg/L)**						
Aluminum	7429-90-5	122,000	50-200*	**2.4 J**	20 U	20 U	20 U	N/A	N/A
Antimony	7440-36-0	228	6	**0.31 B**	**0.33 B**	**0.32 B**	**0.29 B**	N/A	N/A
Arsenic	7440-38-2	188	10	**0.24 J**	**0.64 J**	**0.69 J**	**0.64 J**	N/A	N/A
Barium	7440-39-3	1,080	2,000	**127**	**172**	**169**	**172**	N/A	N/A
Beryllium	7440-41-7	28	4	**0.15 J**	1 U	1 U	1 U	N/A	N/A
Cadmium	7440-43-9	12	5	1 UJ	1 UJ	1 UJ	1 UJ	N/A	N/A
Calcium	7440-70-2	367,000	No MCL	**16,800**	**46,700**	**46,400**	**47,100**	N/A	N/A
Chromium	7440-47-3	138	100	**0.41 J**	**0.16 J**	**0.18 J**	**0.08 J**	N/A	N/A
Cobalt	7440-48-4	512	No MCL	1 U	1 U	1 U	1 U	N/A	N/A
Copper	7440-50-8	339	1,000*	**223**	**177**	**42.8**	**440**	N/A	N/A
Iron	7439-89-6	325,000	300*	**10.7 J**	**13 J**	**9.4 J**	**5.6 J**	N/A	N/A
Lead	7439-92-1	227	15	**1.3**	1 U	**1.4**	**0.07 J**	N/A	N/A
Magnesium	7439-95-4	161,000	No MCL	**6,290**	**12,900**	**13,800**	**12,800**	N/A	N/A
Manganese	7439-96-5	162,000	50*	**3.7**	**0.56 B**	**0.72 B**	**0.51 B**	N/A	N/A
Mercury	7439-97-6	2	2	0.2 U	0.2 U	0.2 U	0.2 U	N/A	N/A
Nickel	7440-02-0	672	No MCL	**24.3**	**0.48 J**	**0.59 J**	**0.42 J**	N/A	N/A
Potassium	7740-09-7	15,000	No MCL	**1,750**	**1,620**	**1,760**	**1,620**	N/A	N/A
Selenium	7782-49-2	5	50	**6.3**	**3.5 B**	**4.7 B**	**1.7 B**	N/A	N/A
Silver	7440-22-4	No ACL	100*	**0.07 B**	**0.05 B**	**0.05 B**	**0.06 B**	N/A	N/A
Sodium	7440-23-5	288,000	No MCL	**14,800**	**22,700**	**24,400**	**22,800**	N/A	N/A
Vanadium	7440-62-2	30	No MCL	**0.23 J**	**1.3 J**	**1.3 J**	**1.3 J**	N/A	N/A
Zinc	7440-66-6	5,910	5,000*	**115**	**20.2**	**105**	**18.6**	N/A	N/A
Cyanide	57-12-5	No ACL	200	**1.4 B**	10 U	**2.1 B**	**1.8 B**	N/A	N/A

Residential Well Samples Analytical Results
June 2016

CLP Sample Number:	M/C0AF8	M/C0AG1	M/C0AG0	M/C0AF9	C0AG2	C0AF4
Sample Location:	DD-RW-1-M-060616	DD-RW-2-N-060616	DD-RW-2-N2-060616	DD-RW-2-D2-060616	DD-RW-FB-060616	DD-MW-TB-060616
Sample Type:	Field Sample/Lab QC	Field Sample	Field Sample	Field Duplicate of M/C0AG0	Field Blank	Water
Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Date Sampled:	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016
Time Sampled:	15:15	15:55	16:00	16:05	13:30	13:05

Notes:
* Secondary Drinking Water Standard
Bold values indicate analyte was detected
Values that are **bold and highlighted yellow** exceed the ACL value
N/A = not applicable or not analyzed
ACL = Alternate Concentration Limits (according to the 1989 EPA ROD)
B = Result is presumed to be a blank contaminant
CAS = Chemical Abstract Service
CRQL = contract-required quantitation limit
EPA = U.S. Environmental Protection Agency
MCL = Maximum Contaminant Level
J = analyte present, result value is estimated
QC = quality control
ROD = Record of Decision
RW = residential well
µg/L = micrograms per liter
U = analyte not detected, CRQL value reported
UJ = analyte not detected, estimated CRQL value reported

APPENDIX F – DATA REVIEW SUPPORTING DOCUMENTATION

Table F-1: Wells with ACL Exceedances During FYR Period (December 2013 through June 2016)

Well ID	Sample Date	COC	Concentration (µg/L)	ACL (µg/L)
MW-1-1	12/11/2013	Selenium	9.1	5
	6/11/2014	Selenium	23.9	5
	12/10/2014	Selenium	10.3	5
	6/3/2015	Selenium	22.5	5
MW-1-2	12/11/2013	Selenium	43.8	5
	6/11/2014	Selenium	31.8	5
	12/10/2014	Selenium	43.5	5
	6/3/2015	Selenium	30	5
	12/9/2015	Selenium	9.5	5
	6/8/2016	Selenium	7.4	5
MW-1-3	6/11/2014	Selenium	10.8	5
	12/10/2014	Selenium	7.7	5
	6/3/2015	Selenium	16.7	5
MW-2-1	12/8/2014	Chlorobenzene	23	17
MW-8-1	12/10/2013	Selenium	32.8	5
	6/10/2014	Selenium	122	5
	12/9/2014	Selenium	78.4	5
	6/2/2015	Selenium	10.4	5
	12/8/2015	Selenium	9.4 J	5
	12/9/2014	Vanadium	40.9	30
	12/8/2015	Vanadium	32.7	30
	6/7/2016	Vanadium	42.4	30
MW-8-2	12/10/2013	Selenium	26.7	5
	6/10/2014	Selenium	22.1	5
	12/9/2014	Selenium	35.2	5
	6/2/2015	Selenium	22.6	5
	12/8/2015	Selenium	6.2	5
	6/7/2016	Selenium	5.7	5
	12/10/2013	Chlorobenzene	54	17
	6/10/2014	Chlorobenzene	48	17
	12/9/2014	Chlorobenzene	43	17
	6/2/2015	Chlorobenzene	29	17
	12/8/2015	Chlorobenzene	38	17
	6/7/2016	Chlorobenzene	19	17
MW-14-3	12/8/2014	Aroclor 1254	8.1 J	1.7

Well ID	Sample Date	COC	Concentration (µg/L)	ACL (µg/L)
MW-18-1	6/12/2014	4,4'-DDT	12 J	0.25
	12/11/2014	4,4'-DDT	1.3 J	0.25
	12/10/2015	4,4'-DDT	0.26 J	0.25
	12/10/2015	Endosulfan II	0.61 J	0.05
	6/12/2014	Endosulfan sulfate	4.6 J	2
	12/10/2015	Gamma-BHC (Lindane)	0.053 J	0.049
	12/10/2015	Barium	1,280	1,080
	12/10/2015	Lead	1,500	227
	6/9/2016	Lead	640	227
	12/12/2013	Selenium	8.3	5
	6/12/2014	Selenium	35.3	5
	12/11/2014	Selenium	18.3 J	5
	6/4/2015	Selenium	15	5
	12/10/2015	Vanadium	120	30
	6/9/2016	Vanadium	66	30
	12/10/2015	Aroclor 1254	32 J	1.7
	6/9/2016	Aroclor 1254	62.6	1.7
	6/9/2016	Bis(2-ethylhexyl)phthalate	63	44
	6/12/2014	Di-n-butylphthalate	18	12
	6/9/2016	Di-n-butylphthalate	46 J	12
	6/9/2016	Phenanthrene	69	49
	12/12/2013	Chlorobenzene	28	17
	12/11/2014	Chlorobenzene	28	17
	6/4/2015	Chlorobenzene	18	17
	12/10/2015	Chlorobenzene	28	17
	6/9/2016	Chlorobenzene	37	17
MW-18-2	12/12/2013	Selenium	18.7	5
	6/12/2014	Selenium	39.6	5
	12/11/2014	Selenium	8.8 J	5
	6/4/2015	Selenium	19.8	5
	6/9/2016	Selenium	5.4	5
	12/11/2014	Chlorobenzene	24	17
	12/10/2015	Chlorobenzene	20	17
MW-19-1	12/11/2013	Selenium	12.3	5
	12/10/2014	Selenium	12.1	5
	6/3/2015	Selenium	8.3	5
MW-19-2	12/11/2013	Selenium	35.6	5
	6/11/2014	Selenium	31.7	5
	12/10/2014	Selenium	21.2	5
	6/3/2015	Selenium	33.6 J	5
	12/9/2015	Selenium	7.9	5
	6/8/2016	Selenium	6.8	5

J = analyte present, result value is estimated

Table F-2: ACL Exceedances During FYR Period (December 2013 through 2016), by COC

COC	Total Number of ACL Exceedances	Sample Date	Well ID	Concentration (µg/L)	ACL (µg/L)
4,4'-DDT	3	6/12/2014	MW-18-1	12 J	0.25
		12/11/2014	MW-18-1	1.3 J	0.25
		12/10/2015	MW-18-1	0.26 J	0.26
Aroclor 1254	3	12/8/2014	MW-14-3	8.1 J	1.7
		12/10/2015	MW-18-1	32 J	1.7
		6/9/2016	MW-18-1	62.6 J	1.7
Bis(2-ethylhexyl)phthalate	1	6/9/2016	MW-18-1	63	44
Chlorobenzene	14	12/8/2014	MW-2-1	23	17
		12/10/2013	MW-8-2	54	17
		6/10/2014	MW-8-2	48	17
		12/9/2014	MW-8-2	43	17
		6/2/2015	MW-8-2	29	17
		12/8/2015	MW-8-2	38	17
		6/7/2016	MW-8-2	19	17
		12/12/2013	MW-18-1	28	17
		12/11/2014	MW-18-1	28	17
		6/4/2015	MW-18-1	18	17
		12/10/2015	MW-18-1	28	17
		6/9/2016	MW-18-1	37	17
		12/11/2014	MW-18-2	24	17
		12/10/2015	MW-18-2	20	17
Di-n-butylphthalate	2	6/12/2014	MW-18-1	18	12
		6/9/2016	MW-18-1	46 J	12
Endosulfan II	1	12/10/2015	MW-18-1	0.61 J	0.05
Endosulfan sulfate	1	6/12/2014	MW-18-1	4.6 J	2
Gamma-BHC (Lindane)	1	12/10/2015	MW-18-1	0.053 J	0.049
Barium	1	12/10/2015	MW-18-1	1,280	1,080
Lead	2	12/10/2015	MW-18-1	1,500	227
		6/9/2016	MW-18-1	640	227
Phenanthrene	1	6/9/2016	MW-18-1	69	49
Selenium	42	12/11/2013	MW-1-1	9.1	5
		6/11/2014	MW-1-1	23.9	5
		12/10/2014	MW-1-1	10.3	5
		6/3/2015	MW-1-1	22.5	5
		12/11/2013	MW-1-2	43.8	5
		6/11/2014	MW-1-2	31.8	5
		12/10/2014	MW-1-2	43.5	5
		6/3/2015	MW-1-2	30	5
		12/9/2015	MW-1-2	9.5	5

COC	Total Number of ACL Exceedances	Sample Date	Well ID	Concentration (µg/L)	ACL (µg/L)
		6/8/2016	MW-1-2	7.4	5
		6/11/2014	MW-1-3	10.8	5
		12/10/2014	MW-1-3	7.7	5
		6/3/2015	MW-1-3	16.7	5
		12/10/2013	MW-8-1	32.8	5
		6/10/2014	MW-8-1	122	5
		12/9/2014	MW-8-1	78.4	5
		6/2/2015	MW-8-1	10.4	5
		12/8/2015	MW-8-1	9.4 J	5
		12/10/2013	MW-8-2	26.7	5
		6/10/2014	MW-8-2	22.1	5
		12/9/2014	MW-8-2	35.2	5
		6/2/2015	MW-8-2	22.6	5
		12/8/2015	MW-8-2	6.2	5
		6/7/2016	MW-8-2	5.7	5
		12/12/2013	MW-18-1	8.3	5
		6/12/2014	MW-18-1	35.3	5
		12/11/2014	MW-18-1	18.3 J	5
		6/4/2015	MW-18-1	15	5
		12/12/2013	MW-18-2	18.7	5
		6/12/2014	MW-18-2	39.6	5
		12/11/2014	MW-18-2	8.8 J	5
		6/4/2015	MW-18-2	19.8	5
		6/9/2016	MW-18-2	5.4	5
		12/11/2013	MW-19-1	12.3	5
		12/10/2014	MW-19-1	12.1	5
		6/3/2015	MW-19-1	8.3	5
		12/11/2013	MW-19-2	35.6	5
		6/11/2014	MW-19-2	31.7	5
		12/10/2014	MW-19-2	21.2	5
		6/3/2015	MW-19-2	33.6 J	5
		12/9/2015	MW-19-2	7.9	5
		6/8/2016	MW-19-2	6.8	5
Vanadium	5	12/9/2014	MW-8-1	40.9	30
		12/8/2015	MW-8-1	32.7	30
		6/7/2016	MW-8-1	42.4	30
		12/10/2015	MW-18-1	120	30
		6/9/2016	MW-18-1	66	30

J = analyte present, result value is estimated

Figure F-1: Time-Concentration Graph – Selenium in Select Wells

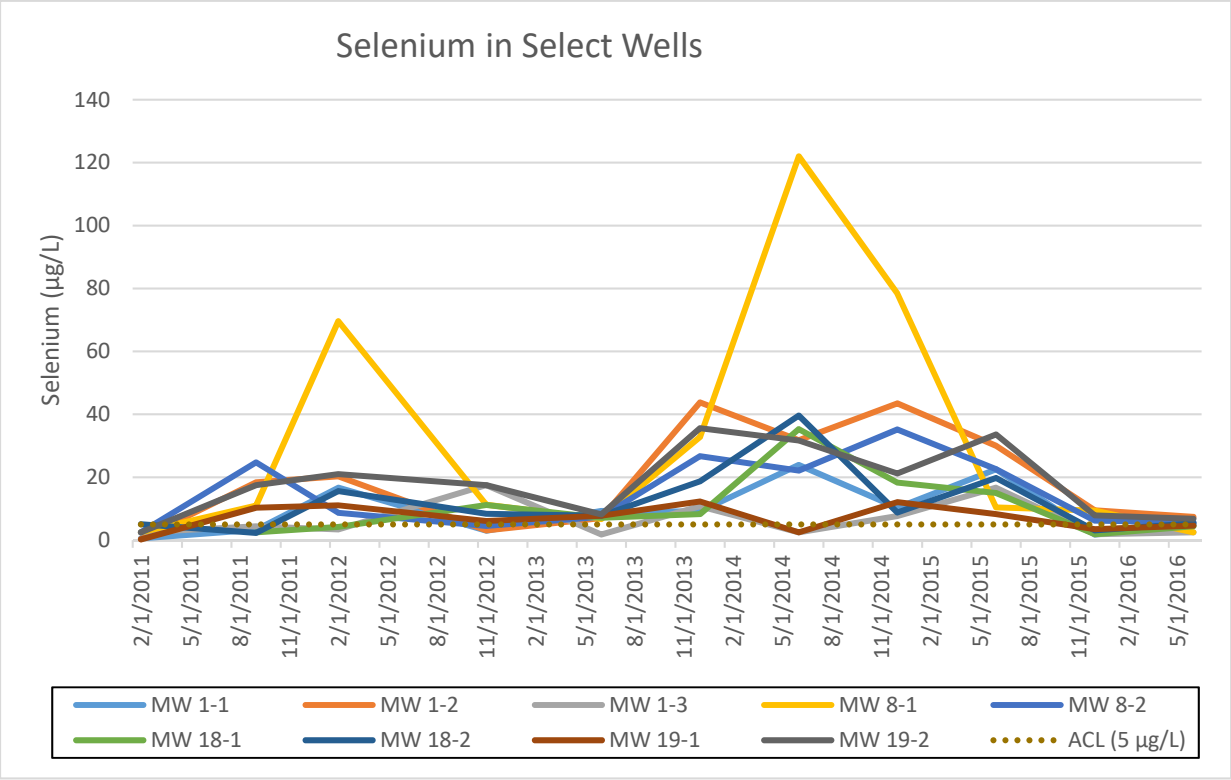


Figure F-2: Time-Concentration Graph – Chlorobenzene in Select Wells

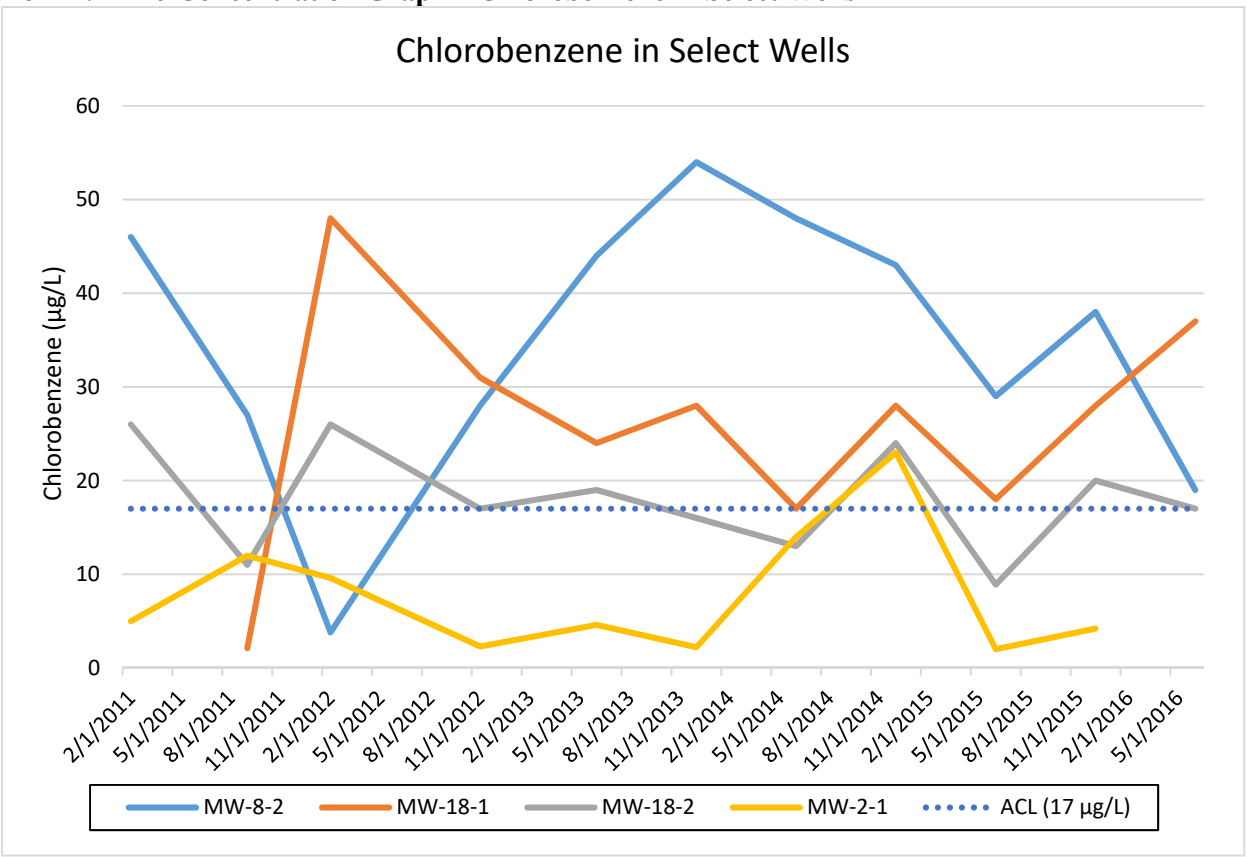


Figure F-3: Time-Concentration Graph – Selenium in MW-1-1

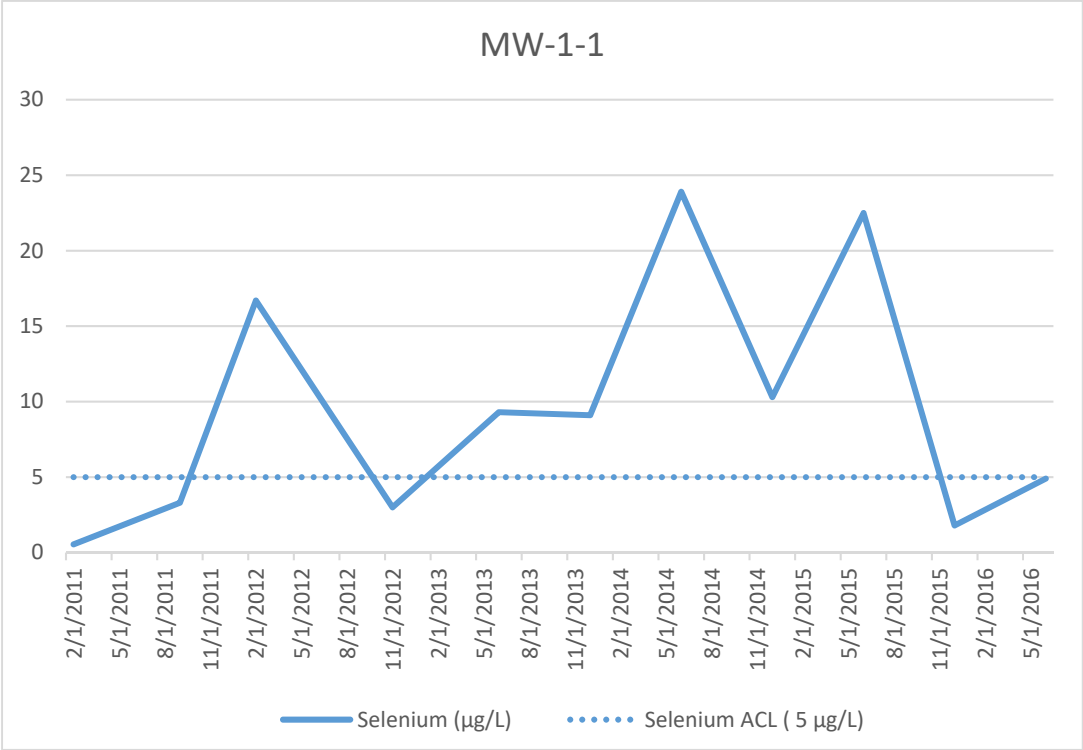


Figure F-4: Time-Concentration Graph – Selenium in MW-1-2

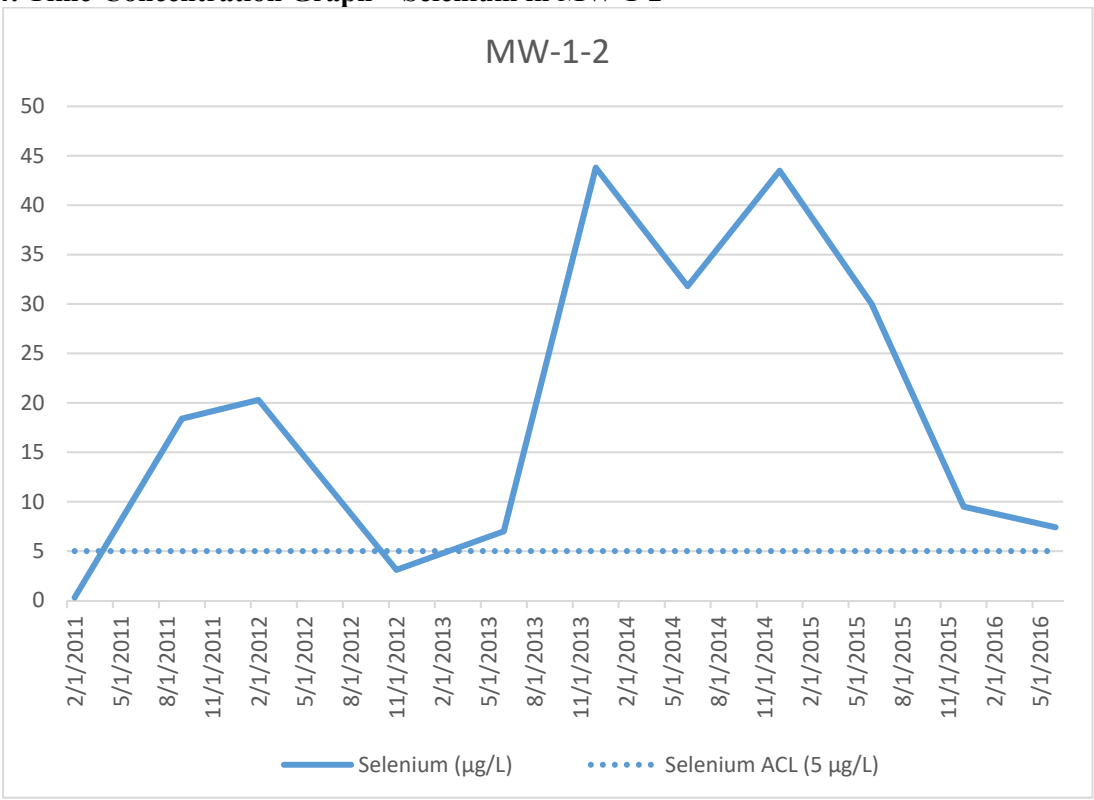


Figure F-5: Time-Concentration Graph – Selenium in MW-1-3

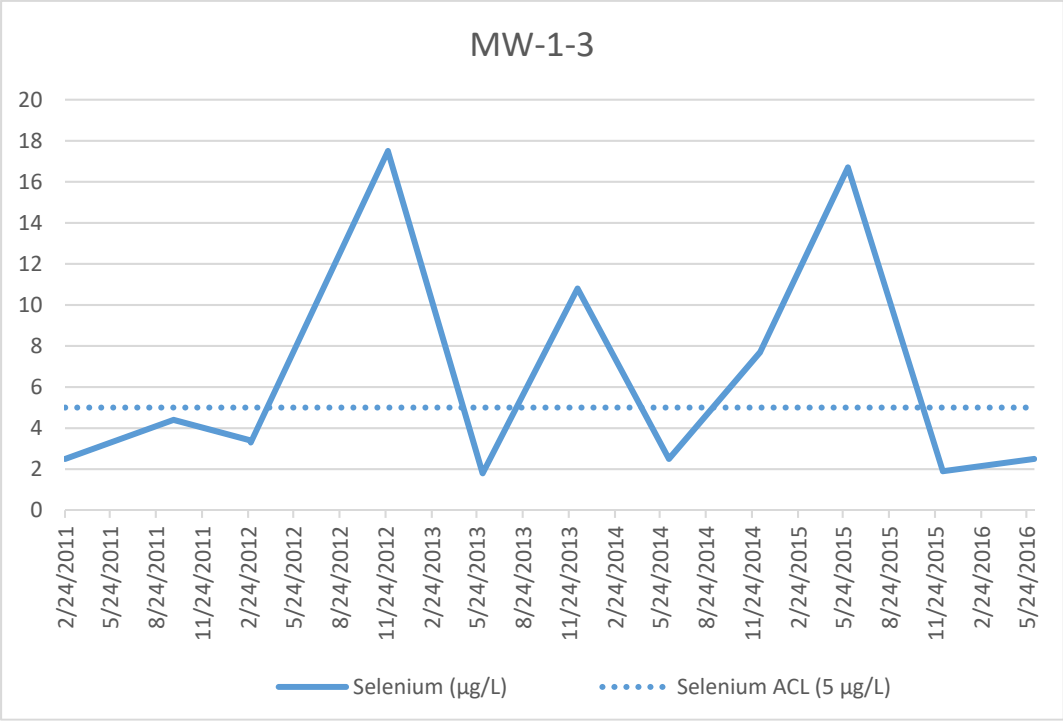


Figure F-6: Time-Concentration Graph – Chlorobenzene in MW-2-1

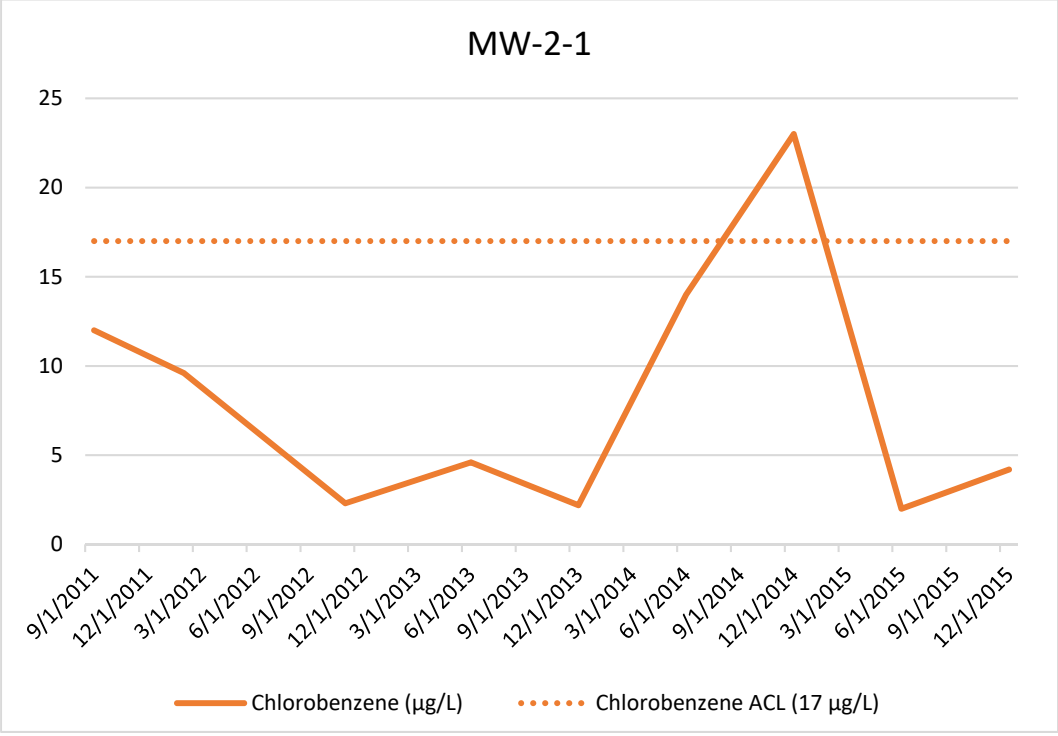


Figure F-7: Time-Concentration Graph – Selenium and Vanadium in MW-8-1

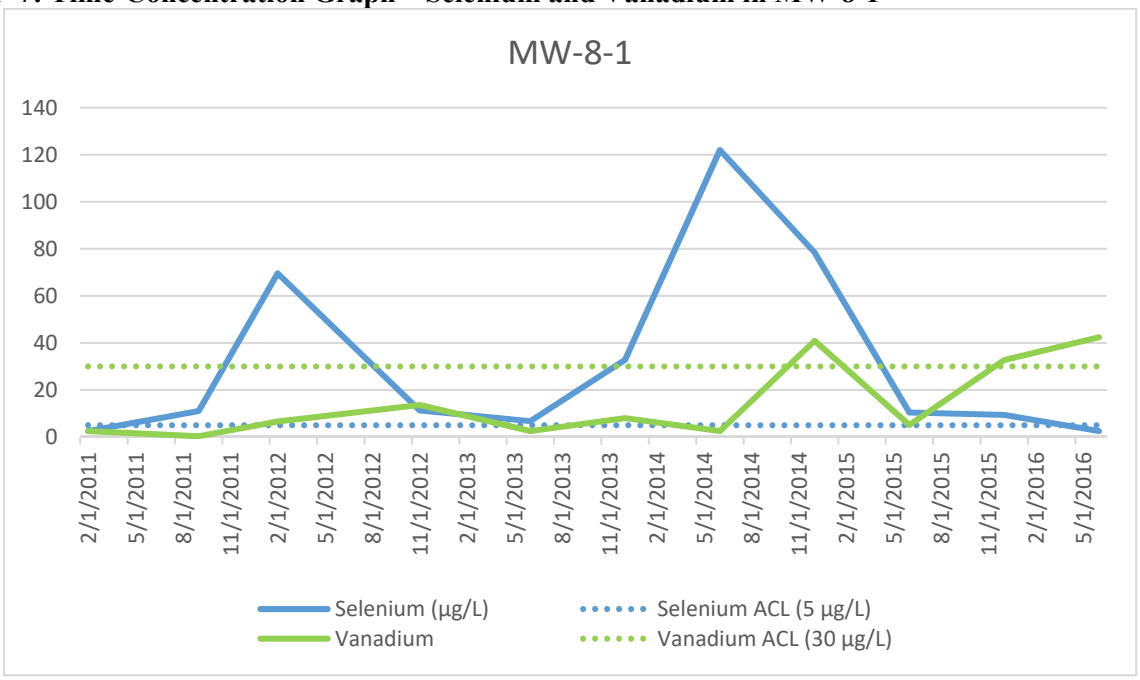


Figure F-8: Time-Concentration Graph – Selenium and Chlorobenzene in MW-8-2

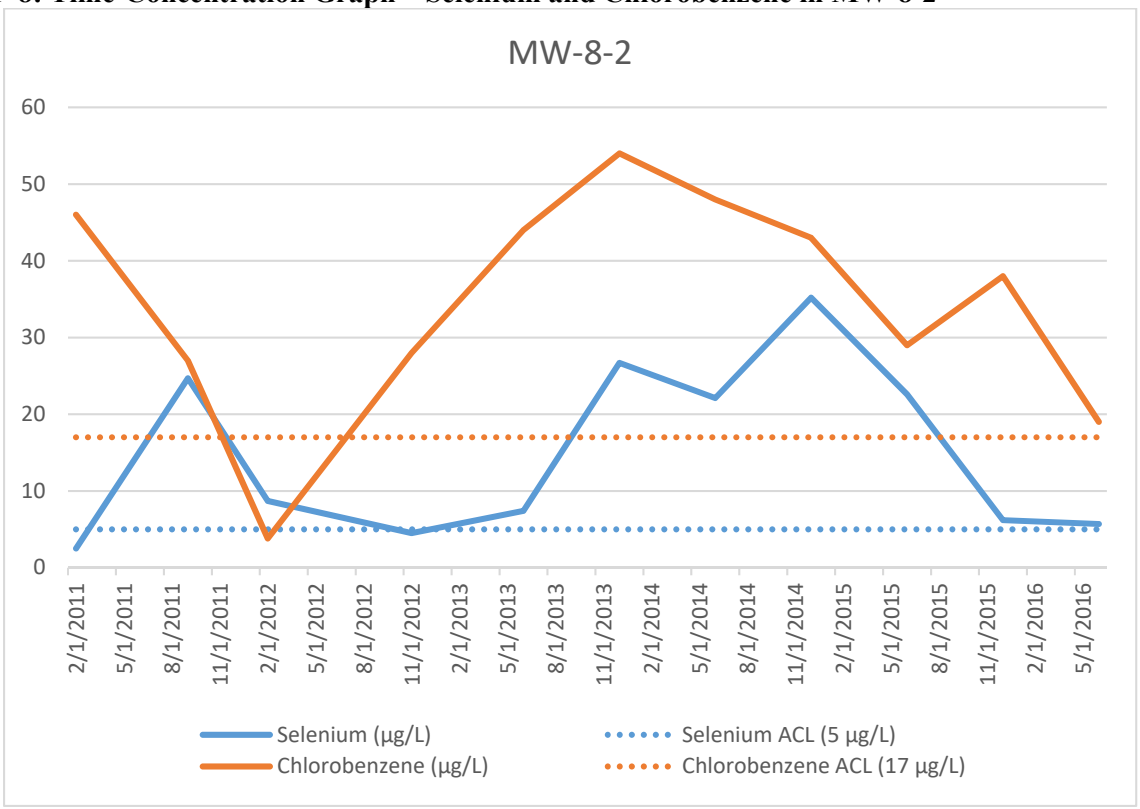


Figure F-9: Time-Concentration Graph – Aroclor 1254 in MW-14-3

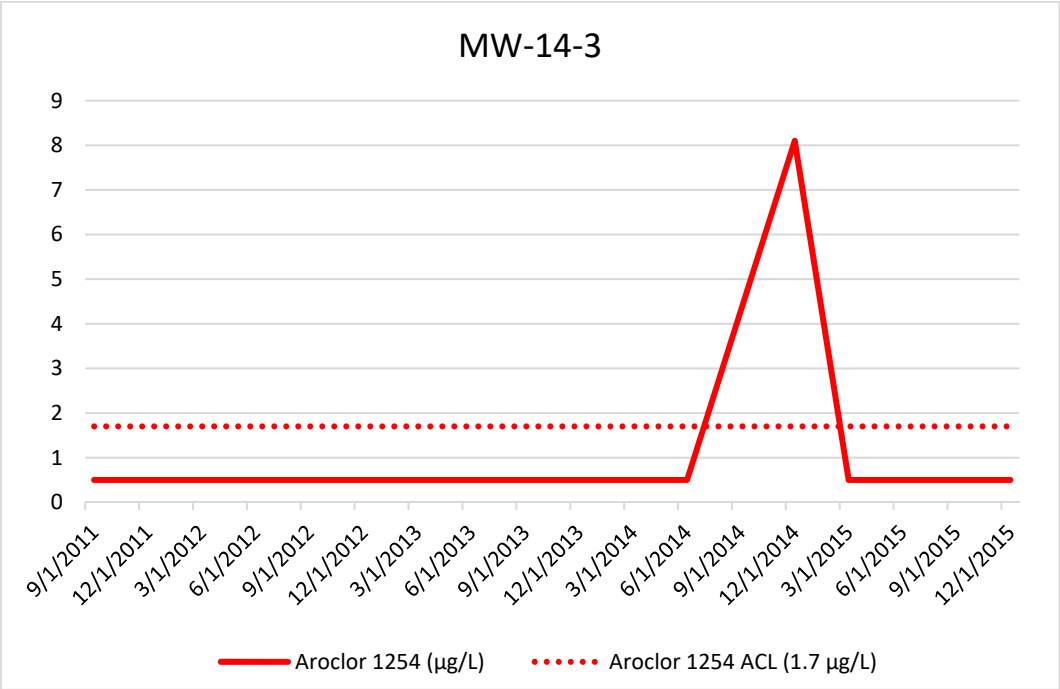


Figure F-10: Time-Concentration Graph – Select Inorganics in MW-18-1

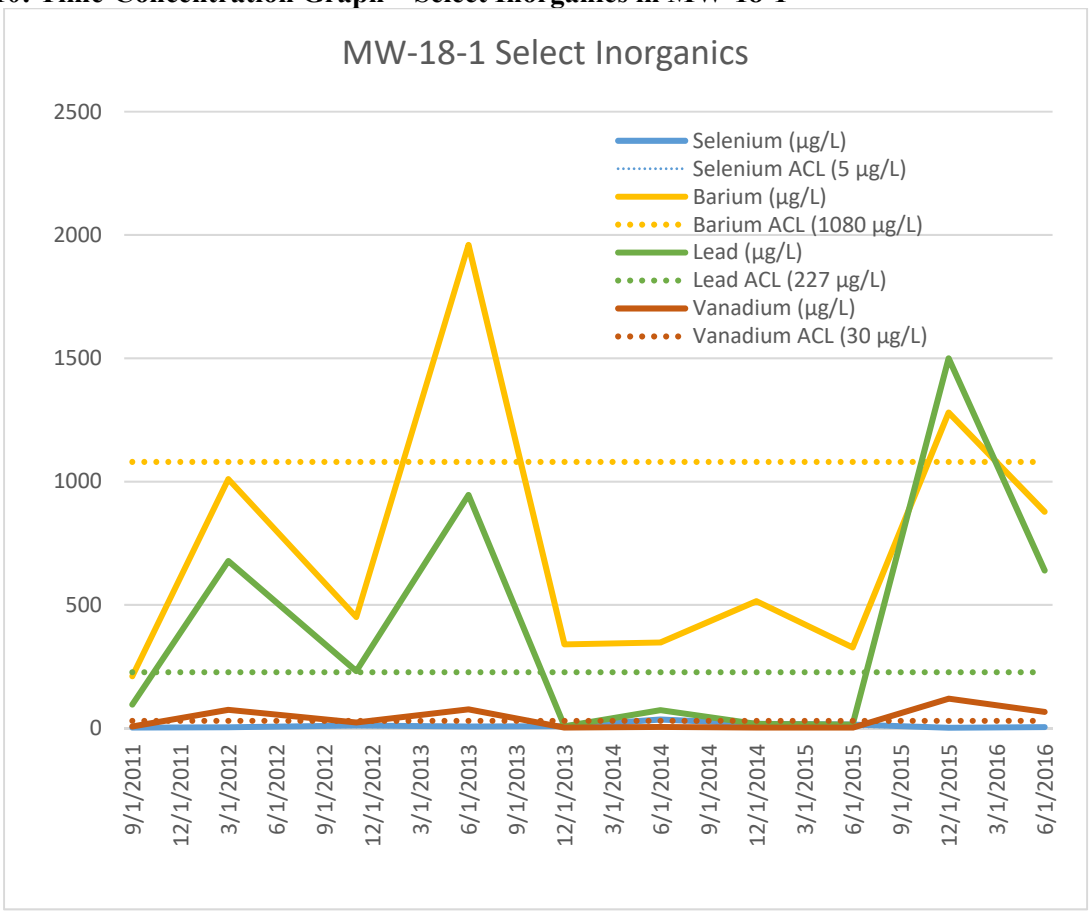


Figure F-11: Time-Concentration Graph – Select Pesticides in MW-18-1

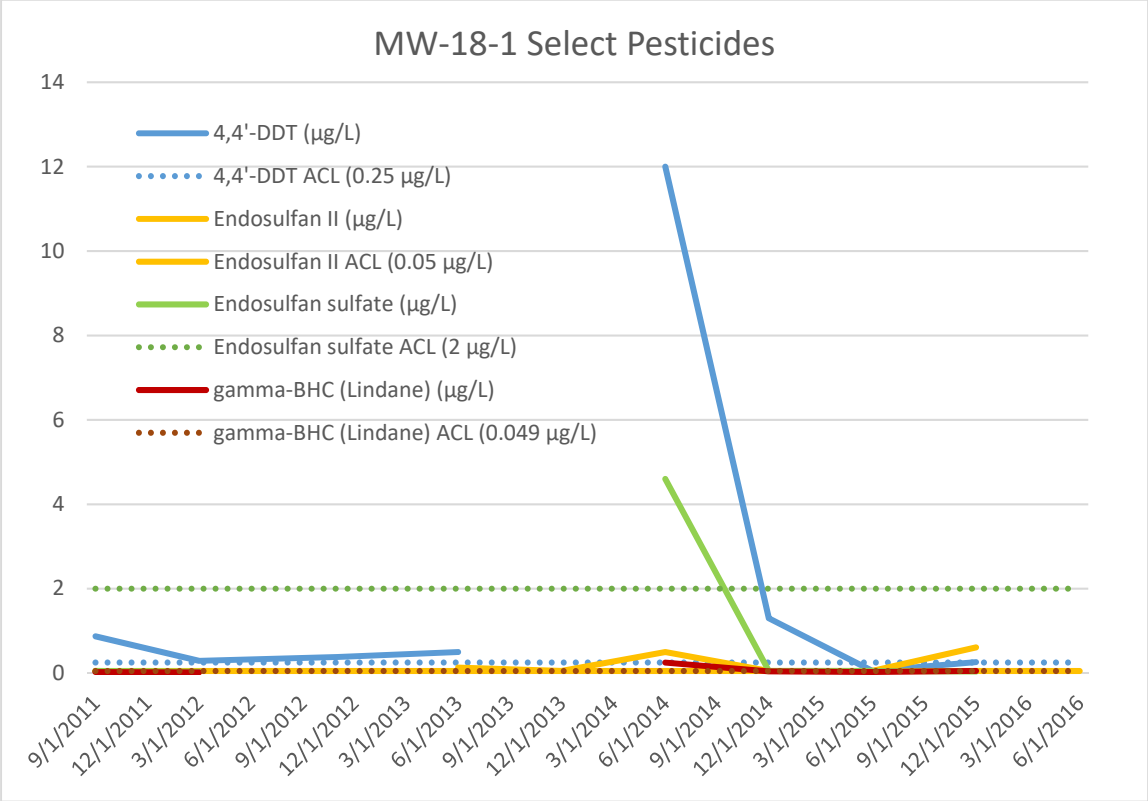


Figure F-12: Time-Concentration Graph – Select SVOCs in MW-18-1

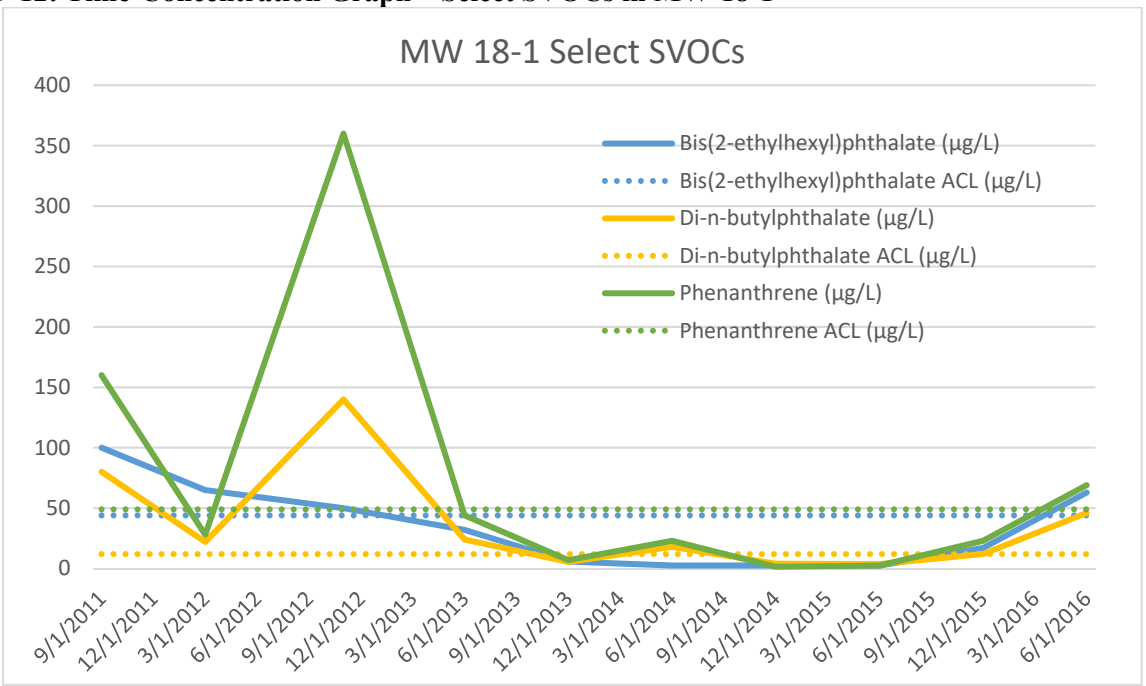


Figure F-13: Time-Concentration Graph – Chlorobenzene and Aroclor 1254 in MW-18-1

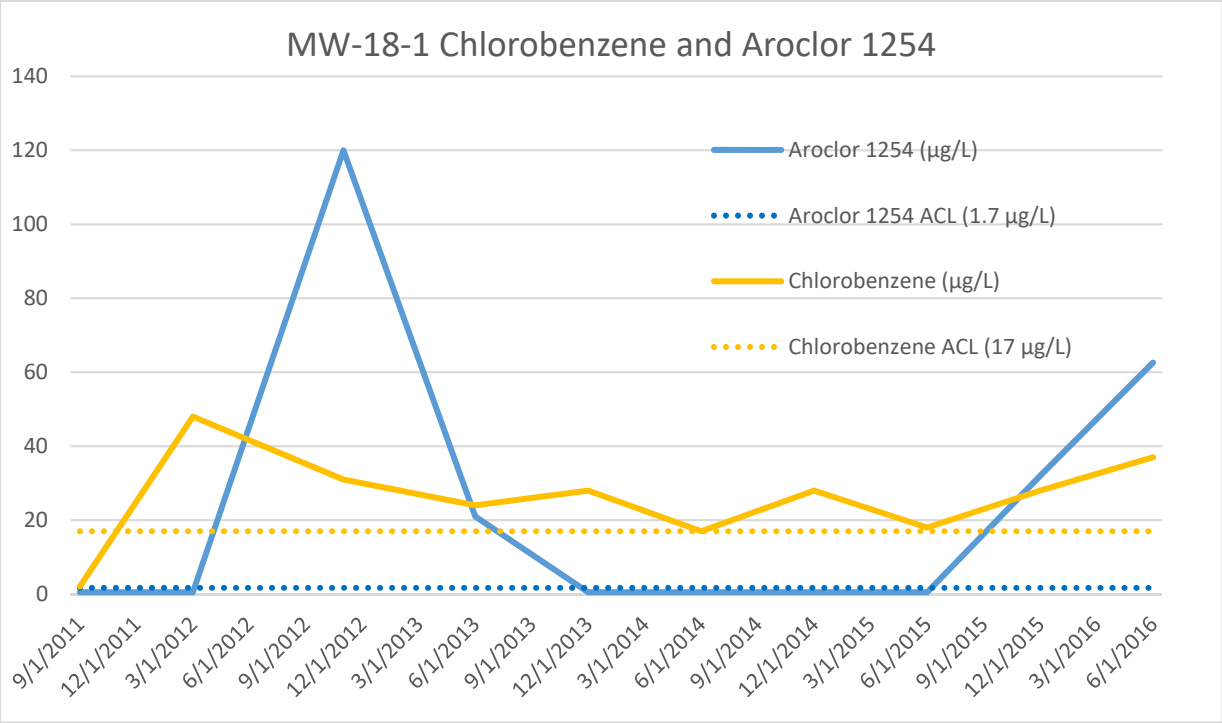


Figure F-14: Time-Concentration Graph – Selenium and Chlorobenzene in MW-18-2

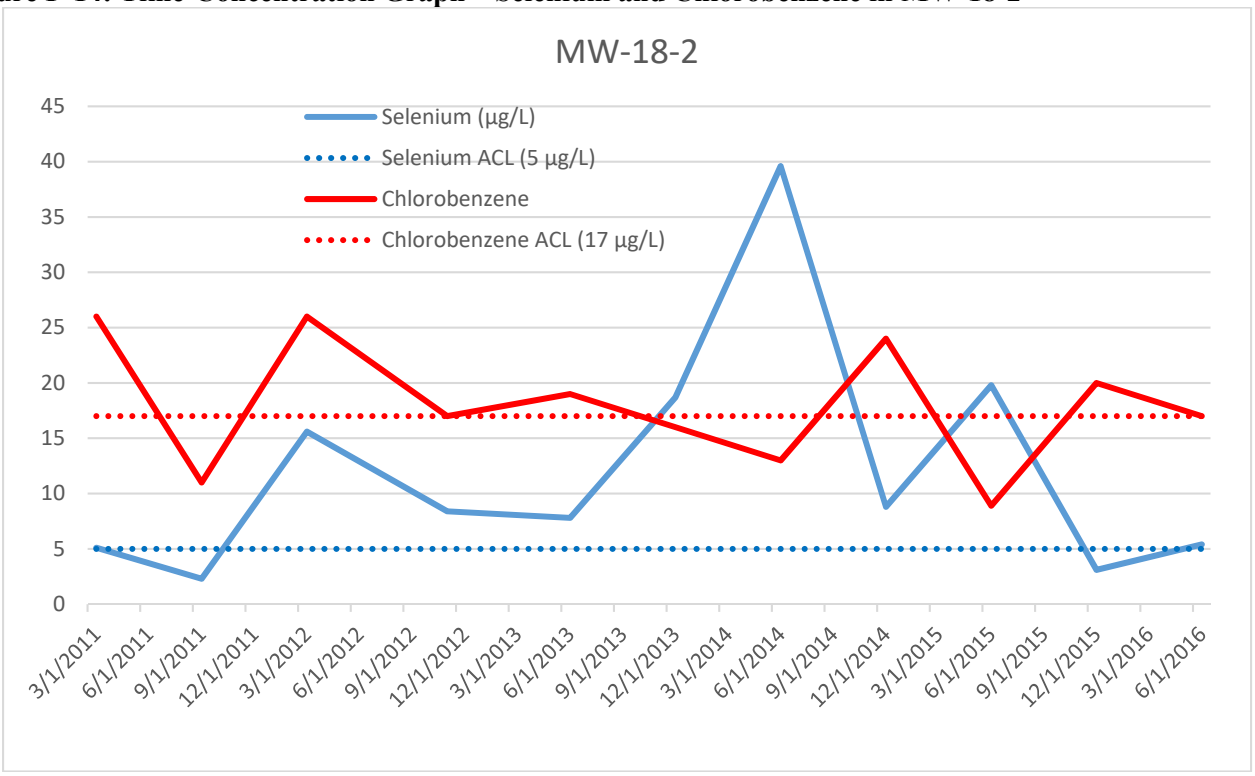


Figure F-15: Time-Concentration Graph – Selenium in MW-19-1

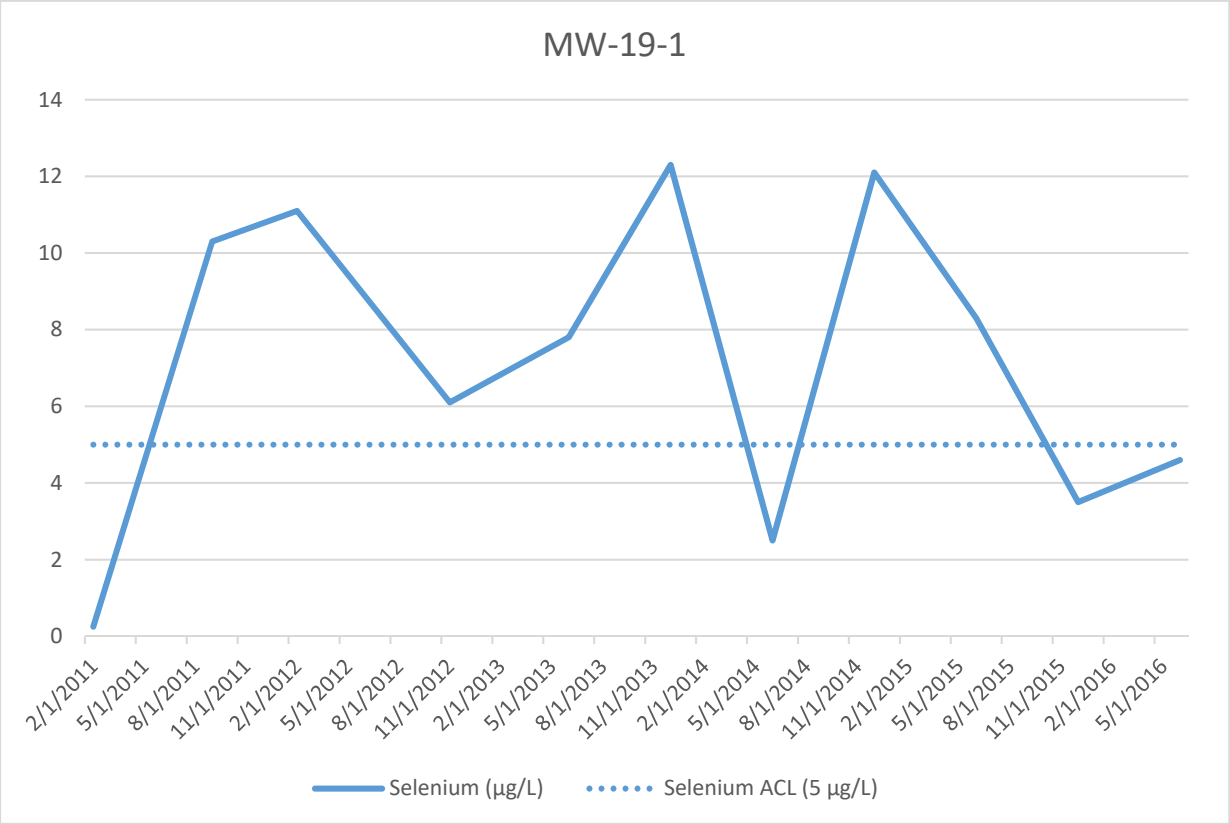
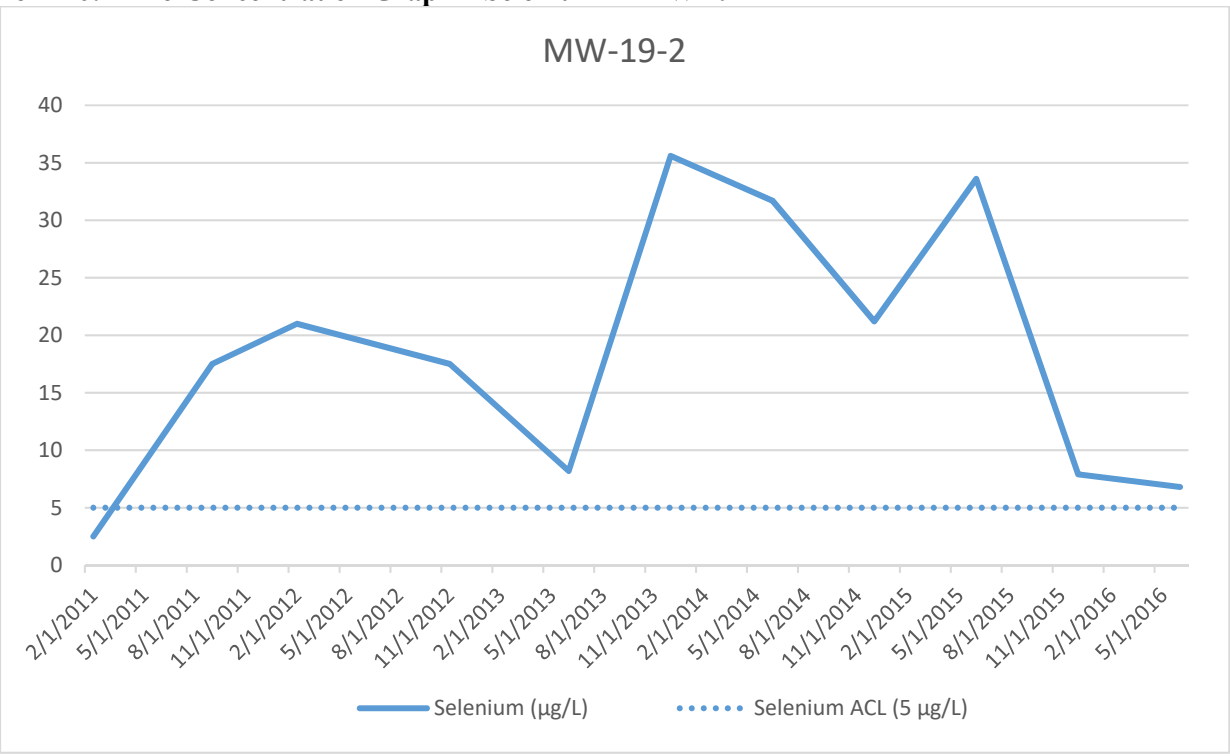


Figure F-16: Time-Concentration Graph – Selenium in MW-19-2



APPENDIX G – SITE INSPECTION PHOTOS

Source Area 2 cap in background; view from residential driveway, facing northwest

Invasive autumn olive bush on top of Source Area 2 cap, facing north

Autumn olive bushes on top of Source Area 2 cap, facing north

Thun bike trail with Source Area 2 cap in the background, facing southwest

Sign posted north of bike trail

Former Source Area 3 area, facing west

Former Source Areas 6 and 5, facing east

Monitoring well MW 18-1 with unsecured well stickup lid

Former Source Area 4 area, facing south

Schuylkill River and bank northeast of MW-18 well cluster

Monitoring wells MW 8-1 and MW 8-2 secured with bike locks, facing southeast

Former squatter area along bank of Schuylkill River, southeast of MW-8 well cluster