

**SIXTH FIVE-YEAR REVIEW REPORT FOR
TYSON'S DUMP SUPERFUND SITE
UPPER MERION TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA**



AUGUST 2024

Prepared by

**U.S. Environmental Protection Agency
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LIST OF ABBREVIATIONS AND ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
BTAG	Biological Technical Assistance Group
BTEX	benzene, toluene, ethylbenzene, and xylene
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIP	Community Involvement Plan
COC	Contaminant of Concern
CSM	Conceptual Site Model
DNAPL	Dense Nonaqueous Phase Liquid
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
ESL	Ecological Screening Level
EW	Extraction Well
FS	Feasibility Study
FYR	Five-Year Review
GAC	Granular Activated Carbon
GWTP	Groundwater Treatment Plan
HGL	HydroGeoLogic, Inc.
IC	Institutional Control
LTM	Long-term Monitoring
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MSC	Medium Specific Concentration
µg/kg	Microgram per Kilogram
µg/L	Microgram per Liter
mg/L	Milligram per Liter
NAPL	Non-aqueous Phase Liquid
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
ND	Not Detected
NOAEC	No Observed Adverse Effect Concentration
NOAEL	No Observed Adverse Effect Level
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NS	Not Sampled
O&M	Operations and Maintenance
OU	Operable Unit
PADEP	Pennsylvania Department of Environmental Protection
PADER	Pennsylvania Department of Environmental Resources
PCE	Tetrachloroethene
PCOR	Preliminary Close-out Report
PFAS	Per- and Polyfluoroalkyl Substances
PRP	Potentially Responsible Party

RAO	Remedial Action Objective
RBC	Risk-based Concentration
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
RSL	Regional Screening Level
SHS	Statewide Health Standard
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compound
TCE	Trichloroethene
TCP	Trichloropropane
TRV	Toxicity Reference Value
UU/UE	Unlimited Use and Unrestricted Exposure
VOC	Volatile Organic Compound
WSCS	Wet Soil Cover System

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 Oil and Hazardous Substances Pollution 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 TYSON'S DUMP Superfund site (Site). The triggering action for this statutory review is the completion date of the previous FYR, August 12, 2019. 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 was divided into five Operable Units (OUs) as follows:

- OU1 - onsite area that encompasses the lagoons;
- OU2 - contaminated groundwater in the bedrock aquifer up to the south bank of the Schuylkill River;
- OU3 - contaminated groundwater that has migrated beneath and as far as the north bank of the Schuylkill River;
- OU4 - contaminated groundwater on the north side of the Schuylkill River; and
- OU5 - lagoon area covered by the Wet Soil Cover System (WSCS).

All OUs are included in this FYR, however, the OUs identified at the Site cannot be evaluated individually for protectiveness due to significant overlap in the remedy components between OUs. Therefore, only a Site-wide protectiveness statement will be made for this FYR.

The EPA remedial project manager (RPM), Bob Stank led the FYR. Additional participants from EPA included the EPA community involvement coordinators Lisa Trakis and John Brakeall, Toxicologist, Martin Gelhaus, hydrogeologist, Leanne Wiskemann, Geologist, Emma Scott, biologist/ecological risk assessor Kimberly Hudson, and legal counsel, Ami Antoine. The Pennsylvania Department of Environmental Protection (PADEP) also participated in the review.

Site Background

The Site is located in Upper Merion Township, Montgomery County, Pennsylvania (Figure 1). The Site includes a 4-acre property that formerly was used as a sandstone quarry. The quarry operations excavated several bowl-like depressions into a bedrock terrace adjacent to the Schuylkill River. The Tyson's Dump was owned and operated by Franklin P. Tyson and Fast Pollution Treatment Inc. After the quarry was abandoned, the property was used to dispose of septic and chemical waste from

1962 to 1970. The liquid and sludge wastes were hauled to the property in bulk tank trucks and disposed of in these bowl-like depressions, forming unlined lagoons. The PRPs for the Site include Ciba-Geigy Corp., Wyeth Labs Inc., Essex Group Inc., and Smith Kline Beckman Corp. The Site is currently owned by BASF Corporation.

The property is bordered to the east and west by unnamed tributaries to the Schuylkill River, to the south by a steep 100-foot quarry wall, to the north by a railroad switching yard and the Schuylkill River and its floodplain, and to the south and west by a residential neighborhood. Barbadoes Island is located in the middle of the Schuylkill River in the area adjacent to the property and was once the location of a coal-fired electric power generating station operated by the Philadelphia Electric Company. The island is currently used for storage of building supplies and is owned by Barbadoes 83, LLC.

The direction of groundwater flow from the property is north toward the Schuylkill River. Groundwater exists in the bedrock aquifer which has been divided into three zones at varying depths (shallow, intermediate, and deep) and site impacts are present in all groundwater zones. The Schuylkill River to the north of the property acts as a discharge point for shallow groundwater. The bedrock aquifer is part of the Stockton Formation, which, in the vicinity of the Site, is predominantly sandstone. The bedrock aquifer has fractures that act as conduits for groundwater flow.

The Schuylkill River is a primary source of drinking water for Norristown and Philadelphia. The water intakes for Norristown are 2,000 feet downriver from the Site. The Schuylkill River is also used for recreation, boating, and fishing. Generally, groundwater is not used as a potable water source, except for wells located in Norristown, which is downgradient of the Site. The Schuylkill River is between the Site and Norristown. An estimated 26,000 people live in the residential area surrounding the Site.

Refer to Appendix A for additional resources and to Appendix B for the Site's chronology of events.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: TYSON'S DUMP		
EPA ID: PAD980692024		
Region: 3	State: Pennsylvania	City/County: Upper Merion Township / Montgomery County
SITE STATUS		
NPL Status: Final		

SITE IDENTIFICATION	
Multiple OUs? Yes	Has the Site achieved construction completion? Yes
REVIEW STATUS	
Lead agency: EPA	
Author name: Bob Stank	
Author affiliation: EPA Region 3	
Review period: 12/12/2023 - 8/12/2024	
Date of site inspection: 5/6/2024	
Type of review: Statutory	
Review number: 6	
Triggering action date: 8/12/2019	
Due date (<i>five years after triggering action date</i>): 8/12/2024	

Figure 1: Site Map



II. RESPONSE ACTION SUMMARY

Basis for Taking Action

The Pennsylvania Department of Environmental Resources (PADER), the predecessor to PADEP, ordered the facility closed in 1973. During closure, the lagoons were emptied of standing water, backfilled, and vegetated. Contaminated soils remained in the lagoons.

In January 1983, EPA investigated a citizen's complaint about noxious odors emanating from the Site. The investigation indicated that the soils in the lagoon area were contaminated with volatile organic compounds (VOCs), including trichloropropane (TCP), xylenes, and toluene.

A series of Remedial Investigations (RIs) and Feasibility Studies (FSs) were completed beginning as early as 1983 and ending in 1995. The RI and FS reports documented high concentrations of VOCs, the most prevalent being TCP, in property groundwater. The complete list of Contaminants of Concern (COCs) is listed in Table 4. It was found that contaminants in the lagoons had migrated to the groundwater aquifer that discharged directly to the Schuylkill River, resulting in an exposure pathway. Additionally, the deep aquifer consisting of fractured bedrock, was contaminated with dense nonaqueous phase liquids (DNAPLs). DNAPL was observed in groundwater wells on the south side of the Schuylkill River and in wells on Barbadoes Island, indicating that the contaminants had traveled from the property beneath the Schuylkill River. The DNAPL within the deep bedrock aquifer cannot be accessed and readily removed with current technology and acts as a long-term source of groundwater contamination.

Response Actions

In March and April of 1983, EPA implemented interim response actions to prevent the threat to public health posed by contaminant releases to the environment from the unsecured property. These actions included a security fence to eliminate uncontrolled access to the property; leachate collection and carbon adsorption treatment system to prevent uncontrolled contaminant discharges to the Schuylkill River; runoff diversions to divert uncontained runoff from the lagoon area; an air stripping system to remove VOCs from the leachate; and an extent of contamination survey to determine the need for additional interim response actions.

The Site was proposed for inclusion on the National Priorities List (NPL) on September 8, 1983, and was placed on the list on September 21, 1984.

For the purposes of managing the cleanup of the Site, EPA established the following OUs at the Site:

- OU1 - onsite area that encompasses the lagoons;
- OU2 - contaminated groundwater in the bedrock aquifer up to the south bank of the Schuylkill River;

- OU3 - contaminated groundwater that has migrated beneath and as far as the north bank of the Schuylkill River;
- OU4 - contaminated groundwater on the north side of the Schuylkill River; and
- OU5 - lagoon area covered by the WSCS.

EPA issued the following decision documents describing the Selected Remedy for the Site, as described below:

- December 21, 1984 Record of Decision (ROD) (OU1);
- March 31, 1988 ROD Amendment (OU1,2,3,4,5);
- September 30, 1988 ROD (OU2);
- September 28, 1990 ROD (OU3 and OU4);
- July 20, 1996 ROD Amendment (OU5); and
- August 16, 2012 Explanation of Significant Differences (ESD) (OU2);
- September 30, 2019 ESD (OU3)

Remedial Action Objectives (RAOs) were not formally established by the decision documents, however a summary of the inferred goals of the Selected Remedy are as follows:

- Prevent direct contact and ingestion exposure risks from the contaminated lagoon area soils and effectively eliminate VOC vapor emissions, thereby eliminating inhalation exposure risks;
- Eliminate the continued generation and off-site migration of leachate from the former lagoons;
- Prevent the continued contamination of both shallow and deep groundwater zones;
- Recover and treat groundwater discharging to the Schuylkill River to levels protective of human health and the environment;
- Capture groundwater affected by Site-related compounds emanating from sources on the south side of the Schuylkill River and beneath Barbadoes Island;
- Contain the dissolved plume immediately overlying DNAPL sources; and
- Restore the other contaminated portion of the aquifer to its beneficial use. The point of compliance extended throughout the contaminated plume outside the areas overlying known or suspected DNAPL sources.

The final Selected Remedy for the Site consists of the following components:

- Soil vapor extraction (SVE) to treat lagoon area soils. 50 parts per billion (micrograms per kilogram [$\mu\text{g}/\text{kg}$]) was established for four indicator organic compounds (1,2,3-Trichloropropane [1,2,3-TCP], benzene, trichloroethene [TCE], and tetrachloroethene [PCE]), with specific soil cleanup criteria established for

other contaminants;

- Installation of a WSCS over the lagoon area;
- Continued operation of the existing leachate collection system installed during the interim response action;
- Installation and operation of groundwater recovery systems to address deep and shallow groundwater;
- Monitoring of groundwater and surface water; and
- Institutional controls (ICs) to upgrade and extend the perimeter security fence to restrict unauthorized access, file deed restrictions, obtain easement agreements, and restrict groundwater use on Barbadoes Island and on the north side of the Schuylkill River.

Performance standards and cleanup levels for the various remedy components are shown in Tables 1 through 3.

Table 1. Air Discharge Regulation Established Limits

Compound	Air Toxic Substances (ATGS) (ug/m³)
Benzene	12.5
Chloroform	4.35
1,2-Dichloroethane (total)	3.85
Methylene Chloride	24.2
Tetrachloroethene	172
Trichloroethene	76.9
Phenol	461

Table 2. Surface Water Discharge Limits

Compound	Treated Groundwater Effluent Cleanup Level (ug/m³)
Aniline	100
Benzene	212
Chlorobenzene	16100
Chloroform*	61.1
Cis-1,3-Dichloropropene	4530
Cresol	22400
1,3-Dichlorobenzene	NA
1,4 Dichlorobenzene	NA
1,2-Dichlorobenzene	NA
1,1-Dichloroethane	37400
1,2-Dichloroethene (total)	2810
1,2-Dichloropropane	495
2,4-Dimethylphenol	NA
Di-n-butyl phthalate	28100
Ethylbenzene	450

Methylene Chloride	224
4-Methyl-2-pentanone	12000
Napthalene	NA
Nitrobenzene	6370000
N-Nitrosodiphenylamine	227
PCE	257
Toluene	4500000
1,2,4-Trichlorobenzene	5620
TCE	868
1,2,3-TCP	600
Phenol	30
Total Xylenes	500

Effluent limits for each compound from the groundwater treatment plant (GWTP) were evaluated based on National Pollutant Discharge Elimination System (NPDES) limitations.

The cleanup levels for the groundwater treatment system were based on the partial consent decree between EPA and the PRPs. In total, cleanup levels were established for 52 compounds in the 1988 ROD. For those compounds with no established limits, cleanup goals were developed based on risk-based concentrations (RBCs) for humans (Table 3).

The 1990 ROD established groundwater cleanup levels for Contaminants of Concern (COCs) as the lowest of EPA Maximum Contaminant Levels (MCLs), non-zero Maximum Contaminant Level Goals (MCLGs), or background levels (Table 3). Subsequent to the issuance of the 1990 ROD, the Commonwealth of Pennsylvania repealed its groundwater cleanup level of natural background and established a new cleanup level set forth in the Pennsylvania Land Recycling and Environmental Remediation Standards Act, 35 P.S. §§ 6026.101 et seq. (July 18, 1995) (Act 2). Additionally, some of the COCs established in the 1990 ROD are no longer detected at the Site. The list of COCs and associated cleanup levels were revised to more accurately reflect current Site conditions and current groundwater ARARs in the 2019 ESD.

Table 3. Groundwater Cleanup Levels

Compound	Groundwater Cleanup Level (mg/L)		
	1988 ROD Risk-Based	1990 ROD Clean-up Levels	
		MCL	MCLG
Aniline	0.13	NE*	NE
Anthracene	7	NE	NE
Benzene	0.00022	0.005	0
Benzoic Acid	0.07	NE	NE
Bis(2-ethylhexyl) phthalate	0.51	NE	NE
2-Butanone	1.8	NE	NE
Chlorobenzene	0.06	0.1	0.1
2-Chloronapthalene	0.11	NE	NE
2-Chlorophenol	0.10	NE	NE
Chrysene	0.0000015	NE	NE
Cycloheptatriene	0.020	NE	NE

Cyclohexanone	23	NE	NE
Di-a-butyl phthalate	3.5	NE	NE
Dioctyl phthalate	0.63	NE	NE
2,4-Dimethylphenol	0.28	NE	NE
N,N-Dimethyi-1,3-propanediamine	0.65	NE	NE
Dodecane	3.9	NE	NE
Ethyl benzene	0.68	0.7	0.7
1-Ethyl-2methylbenzene	0.12	NE	NE
Fluoranthene	0.21	NE	NE
Hexadecane	22	NE	NE
Hexadecanoic acid	0.02	NE	NE
Methylene Chloride (Dichloromethane)	0.0016	0.005	0
2-Methylenaphthalene	0.53	NE	NE
N-Methylphenol/4-Methyl phenol	1	NE	NE
4-Methyl-2-Pentanone	1.8	NE	NE
N-Nitrosodiphenylamine	0.0071	NE	NE
Naphthalene	0.62	NE	NE
Nitrobenzene	0.018	NE	NE
1,1-Oxybis (2-Ethoxyetnane)	0.85	NE	NE
Phenanthrene	0.25	NE	NE
Phenol	3.5	NE	NE
Pyrene	0.70	NE	NE
Tetrachloroethane	0.00023	NE	NE
Tetramethylurea	0.76	NE	NE
Toluene	2	I	I
1,2,4-Trichlorobenzene	0.23	0.07	0.07
1,3,5-Trichlorobenzene	0.23	NE	NE
TCE	0.0011	0.005	0
1,2,3-TCP	0.00035	NE	NE
1,2,4-Trimethylbenzene	3	NE	NE
Tridecane	0.41	NE	NE
Undecane	0,18	NE	NE
o-Xylene	0.12	10	10
I,1-Dichloroethane	0.007	NE	NE
Trans-1,2-dichloroethene (Dichloroethylene)	0.07	0.1	0.1
1,2-Dichloropropane	0.006	0.005	0
1,2-Dichlorobenzene (o-Dichloropropane)	0.62	0.6	0.6

1,4-Dichlorobenzene (p-Dichlorobenzene)	0.075	0.075	0.075
Chloroform	0.1	NE	NE
Cis-1,3-Dichloropropene	0.875	NE	NE

* NE = Not Established

On September 30, 2019, EPA issued an ESD changed the groundwater cleanup levels from natural background, as selected in the 1990 ROD, to MCLs, non-zero MCLGs, or Statewide Health Standard (SHS) Medium Specific Concentrations (MSCs) for each COC, whichever is more stringent (with the exception on 1,2,3 TCP as described in the 2019 ESD). MCLs are the maximum permissible levels of a contaminant in public water supplies under the federal Safe Drinking Water Act. Non-zero MCLGs are non-enforceable health benchmark goals which are set at levels at which no known or anticipated adverse effect on the health of persons is expected to occur and which allow an adequate margin of safety. As indicated above, Act 2 established SHS MSCs as groundwater cleanup levels, which are considered ARARs when they are more stringent than MCLs and non-zero MCLGs or when no MCL or non-zero MCLG exists.

Table 4 lists, for each site-related COC, the current MCL, MCLG, SHS MSC, and the final groundwater cleanup level, based on the most stringent of the three standards. It also lists the RSL-based final groundwater cleanup level for 1,2,3-TCP.

Due to the presence of multiple COCs at the Site, once the cleanup level for each Site COC has been achieved, the groundwater may nonetheless present an unacceptable cumulative human health risk. Therefore, the 2019 ESD also added the requirement for a cumulative risk evaluation of the groundwater after individual cleanup levels have been achieved. The cumulative risk evaluation will consider risks posed by all Site-related COCs in accordance with the NCP at 40 C.F.R. § 300.430(e)(2)(i). The Selected Remedy, as modified by the 2019 ESD, shall continue to be implemented until the cumulative risk evaluation indicates that the cancer risk posed by the groundwater COCs is at or below the 1×10^{-4} risk level and the non-cancer hazard posed by the groundwater COCs is less than or equal to a hazard index of 1. The hazard index comprises the sum of the chemical-specific, target-organ-specific, and hazard quotients for the contaminants.

Table 4. Site-Related COCs and Groundwater Cleanup Levels

Compound	Groundwater Cleanup Level (mg/L)			Final Cleanup Level (mg/L)
	MCL	MCLG	MSC	
Aniline	NE*	NE	0.0021	0.0021
Anthracene	NE	NE	0.066	0.066
Benzene	0.005	0	0.005	0.005
Benzoic Acid	NE	NE	170	170
Bis(2-ethylhexyl) phthalate	NE	NE	0.006	0.006
2-Butanone (Methyl ethyl ketone)	NE	NE	4	4
Chlorobenzene	0.1	0.1	0.1	0.1
2-Chloronaphthalene	NE	NE	3.3	3.3
2-Chlorophenol	NE	NE	0.04	0.04
Chrysene	NE	NE	0.0019	0.0019
Cycloheptatriene	NE	NE	NE	NE
Cyclohexanone	NE	NE	1.5	1.5
Di-n-butyl phthalate	NE	NE	4.2	4.2
Diocetylphthalate (Bis [2-ethylhexyl] phthalate)	NE	NE	0.006	0.006
2,4-Dimethylphenol	NE	NE	0.83	0.83
N,N-Dimethyl-1,3-propanediamine	NE	NE	NE	NE
Dodecane	NE	NE	NE	NE
Ethylbenzene	0.7	0.7	0.7	0.7
1-Ethyl-2methylbenzene	NE	NE	NE	NE
Fluoranthene	NE	NE	0.26	0.26
Hexadecane	NE	NE	NE	NE
Hexadecanoic acid	NE	NE	NE	NE
Methylene Chloride (Dichloromethane)	0.005	0	0.005	0.005
2-Methylenaphthalene	NE	NE	0.17	0.17
N-Methylphenol/4-Methylphenol (p-Cresol)	NE	NE	0.21	0.21
4-Methyl-2-Pentanone (Methyl isobutyl ketone)	NE	NE	3.3	3.3
N-Nitrosodiphenylamine	NE	NE	0.15	0.15
Naphthalene	NE	NE	0.1	0.1
Nitrobenzene	NE	NE	0.083	0.083
1,1-Oxybis (2-Ethoxyethane)	NE	NE	NE	NE

Phenanthrene	NE	NE	1.1	1.1
Phenol	NE	NE	2	2
Pyrene	NE	NE	0.13	0.13
Tetrachloroethane (1,1,2,2-)	NE	NE	0.00084	0.00084
Tetramethylurea	NE	NE	NE	NE
Toluene	1	1	1	1
1,2,4-Trichlorobenzene	0.07	0.07	0.07	0.07
1,3,5-Trichlorobenzene	NE	NE	0.04	0.04
TCE	0.005	0	0.005	0.005
1,2,3-TCP	NE	NE	0.04	0.000075**
1,2,4-Trimethylbenzene	NE	NE	0.015	0.015
Tridecane	NE	NE	NE	NE
Undecane	NE	NE	NE	NE
o-Xylene	10	10	10	10
1,1-Dichloroethane	NE	NE	0.031	0.031
Trans-1,2-dichloroethene (Dichloroethylene)	0.1	0.1	0.1	0.1
1,2-Dichloropropane	0.005	0	0.005	0.005
1,2-Dichlorobenzene (o- Dichloropropane)	0.6	0.6	0.6	0.6
1,4-Dichlorobenzene (p- Dichlorobenzene)	0.075	0.075	0.075	0.075
Chloroform	NE	NE	0.080	0.080
Cis-1,3-Dichloropropene	NE	NE	0.0073	0.0073

* NE = Not Established

** RSL-based cleanup concentration

Status of Implementation

On June 20, 1988, the PRPs entered into a Consent Decree (CD) (Civil Action No. 84-2663) with EPA to address the contamination at the Site. The CD required the PRPs to install a soil vapor extraction (SVE) system and groundwater recovery wells to capture and treat contaminated groundwater, excavate sediment and soil from the tributary that had received effluent from an air stripper that was installed during the initial response, and perform operation and maintenance (O&M).

Soil Vapor Extraction Remedy (OU5)

The SVE system operated from November 1988 to September 1996. During that time approximately 200,000 pounds of VOCs were removed from the soils in the lagoon area. However, it became apparent the SVE system would not achieve the cleanup goals established in the 1988 ROD amendment in a timely and cost-effective way, as it had reached a low asymptotic limit of mass removal. The SVE system was dismantled during late 1996 and early 1997 with EPA approval.

Wet Soil Cover Remedy (OU5)

Construction of the WSCS was completed in August 1997. A series of 10 terraces exist on the Site (Figure 7), each with the WSCS constructed on top. The WSCS remedy includes the following components from top to bottom (Figure 8):

- A vegetated cover;
- A barrier layer of low permeable soil material to be maintained at saturated conditions by either natural precipitation or irrigation to control and eliminate the upward migration of vapors; and
- A vent layer of high permeable material to control lateral migration of vapors.

Water in the vegetated cover percolates through and saturates the low permeability layer through either precipitation or irrigation to create a wet soil barrier layer to control and virtually eliminate upward migration of VOC vapors from the lower layers of the lagoon area soils. The vent layer consisting of high permeable material was constructed to provide a base layer at proper grade for the top two components of the WSCS and control the lateral migration of vapors, if necessary.

Water levels within the barrier layer are monitored continually with a moisture meter / piezometer to ensure that saturation conditions are maintained at all times. Automated water sprinklers are present on each terrace and are used to supplement natural precipitation to maintain saturation of the barrier layer. There is overland flow of water from seeps and the oversaturation of the WSCS terraces. This overland flow is not contaminated by the Site and, therefore, poses no risk to ecological receptors.

Groundwater Extraction and Treatment Remedy

The 1984 ROD for OU1 recommended that additional investigative activities be conducted in support of the off-site RI/FS. This RI/FS work included a detailed investigation of the Schuylkill River and installation of wells on the north side of the river. The results of the report indicated that much of the Site contamination, specifically DNAPLs, were in the underlying bedrock aquifer. It also indicated that the dissolved portion of the DNAPL was discharging into the Schuylkill River.

In 1989, seven groundwater extraction wells were installed along the south bank of the Schuylkill River to prevent contaminated shallow groundwater from entering the Schuylkill River. Extracted groundwater is treated in the on-site GWTP, which has two 20,000-pound Granulated Activated Carbon (GAC) units. The GWTP was installed in 1996 and replaced the air stripper system that was installed as an interim response action. Treated groundwater is discharged to the Schuylkill River in compliance with NPDES permit equivalency requirements (Table 2). Additional extraction wells were installed in 1991 to augment the original seven-well system. There are currently 13 shallow extraction wells along the south bank of the Schuylkill River to prevent contaminated groundwater from discharging to the river. In 2017, the PRPs conducted a Remedial System Evaluation and in 2018, with EPA approval, six of the extraction wells were idled as part of the system optimization.

In response to the 1990 OU3 ROD, the PRPs completed additional groundwater studies on the deep aquifer. The results indicated that contaminated groundwater had migrated beneath Barbadoes Island under the Schuylkill River to the north bank of the river. The study determined that additional

extraction wells were necessary to contain the contaminated groundwater plume in the deep aquifer. Deep extraction well DB-14 (Figure 2) was installed in December 1997. This well recovers contaminated groundwater from the deep aquifer and is treated through the GWTP.

EPA documented the construction completion in a Preliminary Close-Out Report (PCOR) dated December 22, 1997.

Institutional Control (IC) Review

ICs are required to restrict Site access and prevent groundwater usage within the affected aquifer. Multiple physical and legal restrictions are in place to ensure that the ICs implemented as part of the soil and groundwater remedies are being enforced. These include the Montgomery County Department of Public Health (MCHD) standards for the location, construction, and quality of individual water supply wells and system installation, as set forth in the MCHD Public Health Code, Chapter 17 (effective 2013) and MCHD Construction Specifications which were established in 1997 that regulates the permitting of new and existing individual water supplies, and the Delaware River Basin Commission which requires permits for withdrawal of more than 10,000 gallons of water per day, property easements for land access, deed restrictions that allow the Upper Merion Township to restrict or prohibit future construction at the Site, and fencing that surrounds the Site boundary to restrict access (Table 5).

Table 5. Summary of Planned and/or Implemented 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 (or planned)
Lagoon area soil and WSCS	Yes	Yes	5-800-0247-300-7	Restrict access to Site to prevent exposure to lagoon area soils and to maintain the integrity of the WSCS.	Deed Restriction
Groundwater	Yes	Yes	Groundwater Contaminant Plume	Prevent installation of wells in the groundwater contaminant plume.	Montgomery County and Delaware River Basin Commission Regulations, 1997.

Operations and Maintenance (O&M)

Operations and maintenance (O&M) is performed by the primary PRP, BASF Corporation and their contractor, Brown and Caldwell. O&M activities include operations of the groundwater recovery system and the GWTP, and maintenance of the WSCS.

In the summer of 2019, BASF upgraded the GWTP with new, more efficient carbon vessels, updated electronics, and controls. The influent and effluent from the plant before discharge to the Schuylkill River are sampled and analyzed for 1,2,3-TCP, xylenes, aniline, phenol, methylene chloride, and vinyl chloride as required by the Commonwealth of Pennsylvania. The contaminants present in the discharge water are compared to the NPDES permit equivalency limits. This sampling was originally conducted on a monthly basis, but in 2001 it was modified to quarterly and in 2007 to semiannually based on monitoring results demonstrating consistent and successful treatment of groundwater.

Surface water samples are collected from the Schuylkill River to monitor contaminant levels. Four locations are sampled in order to evaluate the effectiveness of the GWTP: at the water company's primary and backup water sources (river flume and river crib intakes), mid-channel downgradient of the Site, and upstream from the Site (Figure 3). Similar to the other monitoring elements, river monitoring was reduced from monthly to quarterly in 2001, and to semiannually in 2007.

Groundwater samples are collected from Site monitoring wells and the extraction wells to monitor the extent of groundwater contamination and ensure capture of groundwater contaminants. The monitoring frequency has been modified several times and currently requires an annual sampling event. Different monitoring wells are sampled on the following 3-year rotation:

- 1st year: DB-011, DB-013, DB-014, NW-026S, NW-261, CW-004-1, CW-004-2, CW-004-3, CW-004-4, WN-4S, WN-41, WN-4D, WN-61, WN-6S, WN-6D, WN-10S, WN-101, WN-10D, and WN-10XD;
- 2nd year: DB-008, DB-013, DB-014, WN-2S, WN-21, WN-5S, WN-51, WN-5D, WN-8S, WN-8D, NW-20S, NW-201, NW-20D, and MW-13; and
- 3rd year: DB-008, DB-013, DB-014, NW-0241, and NW-024D.

The monitoring well program was modified to sample wells that had not been sampled in recent years and in 2018, with EPA approval, six extraction wells were idled as part of system optimization. The six idled wells will continue to be sampled.

Regular inspections are conducted, and samples are collected to monitor performance of the WSCS. The vegetative cover as well as soil erosion and surface water controls are inspected on a weekly basis. The cover is mowed twice a year, and corrective actions are taken to address any issues, such as improper drainage, burrow holes, erosion, ponding, and adverse changes in the soil conditions. Depending on the component, inspections of the irrigation system are conducted at either a weekly or monthly interval. Shallow piezometers are continually controlled by a programmable logic controller (PLC) to monitor the saturated zone thickness. When necessary, the PLC turns on the irrigation system to maintain at least 4 inches of saturated soils on the WSCS.

Historically, flux density monitoring for each terrace of the wet soil cover was conducted semiannually

to evaluate the emission rate, if any, of 1,2,3-TCP vapors at the surface. Then, in 2011, EPA reduced the flux density monitoring to once every 5 years based on the consistent dataset showing that emissions from the WSCS were minimal and not presenting a risk to human health. In 2018, EPA, PADEP, and BASF, determined that flux monitoring would not be required based on the consistent data showing that emissions from the WSCS were minimal.

III. PROGRESS SINCE THE PREVIOUS REVIEW

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations from the last FYR and the current status of those recommendations.

The protectiveness statement from the 2019 FYR is included below:

Table 6: Protectiveness Determinations/Statements from the 2019 FYR

<i>Protectiveness Determination:</i> Short-term Protective
<i>Protectiveness Statement:</i> The Selected Remedy at the Site is currently protective of human health and the environment. The GWTP is containing and treating the contaminated groundwater. As shown by the surface water and GWTP discharge analytical results, surface water is not being contaminated. The WSCS is preventing exposure to contaminated soils and vapors in the lagoon area. ICs are in place to prevent exposure to Site-related contaminants in groundwater. All nearby residents are on a public water supply. However, in order for the remedy to be protective in the long-term, the following actions need to be taken: • The groundwater cleanup levels in the 1990 ROD should be updated to select PADEP Act 2 MSCs, EPA non-zero MCLGs, EPA MCLs, or calculated risk-based concentrations as groundwater cleanup levels for Site COCs; and • The Selected Remedy in the 1990 ROD should be modified to include a cumulative risk evaluation once all groundwater cleanup levels have been met for all Site COCs.

Table 7. Status of Recommendations from the 2019 FYR

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
OU3	The groundwater cleanup levels in the 1990 ROD are the federal MCLs, non-zero MCLGs or natural background concentrations, whichever is more stringent. Subsequent to the issuance of the ROD, the Commonwealth of Pennsylvania repealed its groundwater cleanup level of natural background and established a new cleanup level under Act 2. Therefore, the Pennsylvania background regulations are no longer considered ARARs.	Modify the Selected Remedy for the Site to reflect this change in groundwater ARARs and select PADEP Act 2 MSCs, EPA non-zero MCLGs, MCLs, or calculated risk-based concentrations as the groundwater cleanup levels for Site COCs.	Completed	EPA issued an ESD which changed the groundwater cleanup levels from natural background, as selected in the 1990 ROD, to MCLs, non-zero MCLGs, or SHS MSCs for each COC, whichever is more stringent (with the exception on 1,2,3 TCP as described in the 2019 ESD).	September 30, 2019
OU 3	Due to the presence of multiple COCs at the Site, once the groundwater cleanup levels for each Site COC have been achieved, the groundwater may nonetheless present an unacceptable cumulative risk.	Modify the Selected Remedy for the Site to include a cumulative risk evaluation once all groundwater cleanup levels have been met for all Site COCs.	Completed	EPA issued an ESD to require performance of a cumulative risk assessment once groundwater cleanup levels for individual contaminants are achieved.	September 30, 2019

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Community Involvement, and Site Interviews

A public notice was posted in The Times Herald on May 12, 2024 (Appendix D), stating that there was a FYR underway and inviting the public to submit any comments to the EPA. The results of the review and the report will be made available at the Site information repository located at Upper Merion Township Library, 175 West Valley Forge Road, King of Prussia, PA 19406-1851.

Data Review

Risks at the Site are almost entirely attributable to 1,2,3-TCP, and this compound is considered an indicator compound for the Site. Therefore, the data review is focused on the extent of 1,2,3-TCP

contamination at the Site. Not all of the COCs listed in the 1988 and 1990 RODs are currently monitored, and some of the listed COCs are reported only as tentatively identified compounds in laboratory analyses. Additionally, the groundwater cleanup levels selected in the 1990 ROD were MCLs, non-zero MCLGs, or natural background, whichever is lower for each COC. Subsequent to the issuance of the 1990 ROD, the Commonwealth of Pennsylvania established new groundwater cleanup levels under Act 2. On September 30, 2019, EPA issued an ESD which (1) changed the groundwater cleanup levels from natural background, as selected in the 1990 ROD, to MCLs, non-zero MCLGs, or SHS MSCs for each COC, whichever is more stringent (with the exception on 1,2,3 TCP as described in the 2019 ESD), and (2) required performance of a cumulative risk assessment once groundwater cleanup levels for individual contaminants are achieved.

Long-term monitoring (LTM) of the Site has been ongoing since 1998. Components of the monitoring program include collection of groundwater samples from monitoring wells, analysis of the GWTP influent and effluent and surface water monitoring below and within the WSCS.

Groundwater Monitoring

The conceptual site model (CSM) was updated in 2017. Hydraulic testing confirmed that the first-encountered groundwater occurs in the Stockton Formation bedrock and flows primarily along bedding plane and associated fractures toward the Schuylkill River. The fractures in the shallow bedrock are hydraulically connected and typically represent unconfined hydraulic conditions. The groundwater in this zone discharges to the Schuylkill River under static, non-pumping conditions, but is intercepted by the operation of the groundwater extraction system.

The groundwater data review includes groundwater data collected in 2019, 2020, 2021, 2022, and 2023. Annual samples are collected from wells on the south side of the Schuylkill River and Barbadoes Island (Figure 2). The sample locations are on a 3-year rotation. The monitoring well samples are analyzed for VOCs to determine the hydraulic control of the groundwater extraction system and the extent of contaminated groundwater.

During this monitoring period, the following VOCs have been detected at least once in monitoring or extraction wells: acetone, benzene, 2-butanone, carbon tetrachloride, chlorobenzene, chloroethane, chloroform, cis-1,3-dichloropropane, 1,1-dichloroethane, 1,2-dichloroethane, 1,2-dichloropropane, ethylbenzene, 4-methyl-2-pentanone, methylene chloride, 1,1,2,2-tetrachloroethane, PCE, toluene, trans-1,2-dichloroethene, TCE, 1,2,3-TCP, vinyl chloride, and xylenes (total).

1,2,3-TCP, the primary Site-related compound, is consistently detected in monitoring wells on both the north and south side of the Schuylkill River and on Barbadoes Island. Groundwater extraction wells are located on the south side of the River between the Site and the river. 1,2,3-TCP concentrations have generally decreased within the Site's monitoring and extraction wells with significant decreases occurring within shallow wells since 2000. This is illustrated in extraction wells EW-010 and EW-011. Concentrations of 1,2,3-TCP in EW-010 decreased from 5,700 µg/L in June 2000 to as low as 31 µg/L in March 2018. Concentrations of 1,2,3-TCP in EW-010 have increased the last two years, with concentrations of 560 µg/L and 430 µg/L in September 2022 and August 2023, respectively. 1,2,3-TCP concentrations in EW-011 have also decreased from 160,000 µg/L in June 2001 to the August 2023 concentration of 2,400 µg/L. Decreasing concentration trends have generally lagged within the deep bedrock monitoring wells relative to the shallow wells. For example, a generally increasing trend was

observed in 1,2,3-TCP concentrations in DB-013 from 1996 to 2017, with the exception of a single low concentration detection in 2011. The maximum 1,2,3-TCP concentration detected in DB-013 was 7,700 in August 2017. Following the sampling performed in August 2017, concentrations fell rapidly starting in 2018 and have been consistently less than 10 µg/L in monitoring events performed after 2020. Likewise, concentrations of 1,2,3-TCP increased in the Deep Bedrock Extraction well DB-014 from 1996 through 2009, reaching a maximum concentration of 4,700 µg/L in November 2009. Concentrations fell sharply after 2010 and 1,2,3-TCP with concentrations consistently remaining below the laboratory's Method Detection Limit after 2014. Deep extraction well DB-014 is located on the south side of the Schuylkill River and is monitored on a yearly basis.

It is noted that the Site continues to have contaminant concentrations in groundwater exceeding ecological freshwater benchmarks, for example, the 2019 ESD Cleanup Level of 100 µg/L of chlorobenzene was exceeded in three samples, specifically EW-004, EW-11 and NW-20I at concentrations of 120 µg/L, 210 µg/L, and 180 µg/L, respectively; these exceed the USEPA BTAG Freshwater Screening Benchmark of 1.3 ug/L chlorobenzene; benzene exceeded the benchmark of 5 ug/L in NW-20I at 120 ug/L, etc.. However, there is apparent success of the treatment system based on the levels of contaminants in discharged effluent.

A summary of 1,2,3-TCP concentrations in monitoring wells sampled between 2019 and 2023 is presented in Table 8 below.

Table 8. 1,2,3-TCP (µg/L) Concentration in Wells Sampled from 2019-2023

Well ID	2019	2020	2021	2022	2023
Deep Bedrock Wells (DB)					
DB-008	NS	1.3	1.1	NS	<.3
DB-011	1400000	NS	NS	1100000	NS
DB-013	2500	.26 J	.47 J	7.1	4.8 J
DB-014	<.2	<.2	<.3	<.3	<.3
Monitoring Wells (MW)					
MW-13	NS	16	NS	NS	6.3 J
Cored Wells (CW)					
CW-004-1	480	NS	NS	380	NS
CW-004-2	3700	NS	NS	3800	NS
CW-0004-3	560	NS	NS	690	NS
CW-004-4	<.2 J	NS	NS	5.7	NS
Nested Wells (NW)/ Well Nests (WN)					
NW-20S	10	3.4 J	NS	NS	<.3
NW-20I	NS	35	NS	NS	<.3
NW-20D	25	<.2	NS	NS	<.3
NW-024I	NS	NS	.73 J	NS	NS
NW-024D	NS	NS	<.3	NS	NS
NW-026S	270	NS	660	NS	NS
NW-026I	1200	NS	950	NS	NS
WN-2S	NS	10	NS	NS	10
WN-2I	NS	.58 J	NS	NS	<.3

WN-4S	110	NS	22	NS	NS
WN-4I	17	NS	<.3	NS	NS
WN-4D	140000	NS	36	NS	NS
WN-5I	NS	23	NS	NS	NS
WN-5S	NS	50	NS	NS	<.3
WN-5D	NS	.78 J	NS	NS	<.3
WN-6S	1500	NS	NS	<.3	NS
WN-6I	6000	NS	NS	<.3	NS
WN-6D	830	NS	NS	21	NS
WN-8S	NS	15	NS	NS	2.7 J
WN-8D	NS	89	NS	NS	1.7 J
WN-10S	10	NS	NS	.92 J	NS
WN-10I	4100	NS	NS	.4 J	NS
WN-10D	250	NS	NS	.54 J	NS
WN-10XD	1600	NS	NS	2.5 J	NS
Shallow Extraction Wells (EW)					
EW-001	8	5.5	<.3	4.2 J	4.3 J
EW-002	470	440	150	190	270
EW-003	25	85	21	13	9.5
EW-004	660	72	50	21	9.8 J
EW-005	28	23	23	71	46
EW-006	<.3	<.3	<.3	<.3	NS
EW-007	2	1.5 J	1.1 J	5.4	2 J
EW-008	85	81	75	51	NS
EW-009	400	140	160	360	340
EW-010	140	48	50	560	NS
EW-011	2800	1300	1600	3400	2400
EW-0012	11	11	8.4	15	63
EW-0013	13	12	15	0.99 J	0.99 J

J = Estimated value, result above MDL but below the limit of quantitation

NS = Not Sampled

Treatment Plant Monitoring

Groundwater collected from the extraction wells is treated in the GWTP using two 10,000-pound GAC units. During this monitoring period, on average 45,805,800 gallons of water were treated annually, and a total of 1849 pounds of VOCs were removed. To ensure that the GWTP is functioning properly, six chemicals are monitored: 1,2,3-TCP, xylenes, aniline, phenol, methylene chloride, and vinyl chloride. The primary COC at the Site, 1,2,3-TCP, has consistently been treated below the discharge limit. Effluent has ranged between non detect and 1.5 ug/l. Based on data collected from the influent and effluent, the GWTP is removing more than 99 percent of contaminants before its discharge to the Schuylkill River. Additionally, the plant has met all discharge limits required under their current National Pollutant Discharge Elimination System (NPDES) permit issued by Pennsylvania Department of Environmental protection (PADEP).

Surface Water Monitoring

Surface water samples are collected from the Schuylkill River on a semiannual basis from four different locations (Figure 3): upstream of the Site, downstream of the Site in river channel, from the river crib, and flume intakes (both downstream of the Site). The latter two points represent the primary and backup sources for the Pennsylvania American Water Company treatment facility. During this monitoring period, no contaminants were detected in surface water at concentrations greater than the Water Quality Criteria for Human Health or the GWTP established effluent limits from the 1990 ROD. See Appendix H for surface water monitoring data.

Sump Monitoring

Some of the irrigation water for the WSCS migrates into the shallow aquifer and is collected in a seep and trench system. The intercepted water drains into two sump pits at the east and west end of the trench. In 2017, EPA approved the discharge of this water directly to surface water due to the low level of contamination in the water.

In 2023, samples were collected quarterly from the East and West Sumps of the seep and trench system. These samples have shown consistently very low levels of site contaminants. PCE, 1,2,3-TCP, and xylenes have been detected in the sump samples; however, the levels are well below the discharge limits established by the NPDES permit equivalency limits.

BASF proposed a pilot test to EPA on May 24, 2022 to cease pumping of the water from the East and West Sumps to evaluate how pumping affects the presence of seeps in the subject area. On August 11, 2023, BASF completed a 180-day pilot. The pilot test was conducted from February 9, 2023 to August 11, 2023 and included:

- Cessation of pumping from the East and West Sumps;
- Weekly field inspections;
- Post-storm field inspections following rain events greater than 1-inch;
- Quarterly sampling of the water in the East and West Sumps for volatile organic compounds (VOCs), including 1,2,3-trichloropropane (1,2,3-TCP).

BASF completed twenty-five weekly field inspections between February 10, 2023, and August 11, 2023. The weekly inspections included a field inspection, photo documentation of the subject area, measurement of the depth to water in the East and West Sumps and the completion of a weekly inspection form. Three post-storm inspections were completed on May 1, June 16, and June 26, 2023 when rainfall amounts were greater than approximately 1-inch.

Three quarterly sampling events were conducted during the pilot test in February, April and July 2023. Analytical results indicated that all parameters continued to be below (MCLs), EPA Region III Biological Technical Assistance Group (BTAG) Freshwater Screening Benchmarks, and Surface Water Discharge Limits established in the 1990 Record of Decision (ROD).

During the pilot test, three (COCs) were detected at low concentrations. 1,2,3-TCP was detected at concentrations ranging from 1.2 to 3.4 µg/L (qualified as estimated) in the East Sump, and 0.53 µg/L to 1.2 µg/L (qualified as estimated) in the West Sump. Tetrachloroethene was detected in the East Sump at concentrations ranging from non-detect to 1.1 µg/L, and in the West Sump at concentrations

ranging from non-detect to 0.5 µg/L (qualified as estimated). Trichloroethene was detected in the East Sump on one occasion at a concentration of 0.31 µg/L (qualified as estimated).

Concentrations of COCs in the East and West Sumps remained stable and similar to the relatively low concentrations observed prior to the pilot test.

The pilot test demonstrated that idling of pumping from the East and West Sumps had no impact on the flow dynamics of the subject area. Pre-pilot test conditions were the same as those observed during the test. Hillside seeps were not observed and the amount of standing water in the drainage ditch along the tracks was not impacted due to non-pumping conditions. Water sampling results from the East and West Sumps demonstrated no increase of COCs during idled conditions. COCs remained low and continued to be below MCLs, EPA Region III BTAG Freshwater Screening Benchmarks and surface water discharge limits established in the ROD. Based on the results of the pilot test, BASF recommended decommissioning of the East and West Sumps and related infrastructure. Currently, the request is under EPA review and pending approval.

Site Inspection

The Site inspection took place on May 6, 2024. Participants included, Bob Stank, EPA's current RPM, Leanne Wiskemann, EPA Hydrogeologist, Emma Scott, EPA Geologist, Tim Cherry, PADEP Solid Waste Supervisor, Duncan Semmens, PADEP Regional Project Officer, Nick Santiago, Environmental Trainee, Kyle Schmeck, Montgomery County Department of Public Health Director Water Quality Management, Steve Havlick, BASF Site Manager, Scott Nelson, Brown Caldwell, Peter Randazzo, Brown Caldwell, Thomas Parel, Brown Caldwell Project Manager, and Ian Bush, Safe and Sound Operator. The purpose of the inspection was to assess the protectiveness of the Selected Remedy. Appendix E provides the Site inspection checklist. Appendix F provides photographs from the site inspection.

During the inspection, the site team visited the lagoon wet cap area, monitoring wells, extraction wells, and the groundwater treatment building. The wet cap area is grass covered and generally undisturbed. The wet cap system consisting of piezoelectric sensors, a programmable logic controller and a potable water sprinkler distribution is in good operating condition. Monitoring and extraction wells are numbered, secured, and generally in good condition. The groundwater treatment building is secured and fenced. The groundwater treatment equipment and process control equipment is in good condition. The effluent (treated groundwater) is discharged through a surface pipe into the Schuylkill River.

V. TECHNICAL ASSESSMENT

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

Yes. The review of the decision documents, monitoring reports, and applicable or relevant and ARARs indicate that the remedies selected for soil and groundwater are functioning as intended.

As shown by the data review, and as prescribed in the Selected Remedy, the groundwater extraction wells coupled with the GWTP are effectively containing and treating contaminated groundwater in both the shallow and deep aquifers and have greatly minimized any discharge of contaminated

groundwater to the Schuylkill River. However, contaminant concentrations in the deep aquifer have remained elevated and fairly static during this five-year review cycle. Releases of VOC gases from the lagoon area have been mitigated by the installation of the WSCS.

Two sumps are part of the Seep System. Recent sampling data indicates that all COCs are below the surface water effluent limits established in the 1988 ROD and have been for several years. In consultation with PADEP, EPA approved of bypassing the Site groundwater treatment system and allowing for direct discharge of the collected raw water from the two seep sumps directly to surface water. Sampling of the two seep sumps shall continue on a quarterly basis unless an alternate sampling schedule is approved by EPA.

Currently, the groundwater treatment system consists of two 10,000-pound Calgon Model 8 GAC units that were replaced in 2019. O&M of both the WSCS and GWTP have been successful with minimal issues.

Multiple physical and legal restrictions are in place to ensure that the ICs implemented as part of the soil and groundwater remedies are being enforced. These include a Montgomery County ordinance established in 1997 that regulates the permitting of new and existing individual water supplies, Delaware River Basin Commission required permits for withdrawal of more than 10,000 gallons of water per day, property easements for land access, deed restrictions that allow the Upper Merion Township to restrict or prohibit future construction at the Site and fencing that surrounds the Site boundary to restrict access. There have been no violations of these restrictions.

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?

No. Although the RAOs are still valid, some of the exposure assumptions, toxicity data and cleanup levels have changed since the time of remedy selection. However, these changes do not impact the protectiveness of the remedy. The GWTP and WSCS are effectively controlling the Site contamination and ICs are in place to prevent exposure to contaminated groundwater. Since the time of the ROD, Site conditions and surrounding land use have not changed significantly. No new receptors or contaminant sources have been identified.

A list of ARARs from the 1988, 1990, and 1996 RODs is included in Appendix G. No new standards or to-be-considered (TBC) requirements affecting the current protectiveness of the remedy have been implemented. However, some of the toxicity values and drinking water standards have been revised. These changes in standards do not affect the current protectiveness of the Site.

As mentioned above, toxicity values for some Site contaminants have been revised since finalization of the decision documents. For example, 1,2,3-TCP was not regulated by the EPA until 2013. Currently the Regional Screening Level (RSL) for 1,2,3-TCP in tap water is 7.5×10^{-4} µg/L. Changes in these toxicity values do not affect the short-term protectiveness of the remedies, as the groundwater contamination is being contained and no one is or will be consuming groundwater. Furthermore, no ROD requirements or regulatory standards for surface or drinking water have been exceeded in the GWTP effluent. Due to the presence of numerous volatile organic compounds, sampling and analysis for 1,4-dioxane in groundwater is recommended. The presence of 1,4-dioxane may impact the performance of

the groundwater treatment system, as GAC is not very effective in removing 1,4-dioxane from water. Sampling for perfluoroalkyl substances (PFAS) is also recommended due to the acceptance and disposal of chemical wastes from a variety of sources that have been demonstrated as using PFAS compounds.

There have been significant changes in EPA's risk assessment guidance since the original risk assessment was performed for the 1988 ROD, in which groundwater cleanup levels were established. EPA's current risk assessment methodology, the Risk Assessment Guidance for Superfund (RAGS) (EPA, 1989), was not introduced until 1989, and it has been updated several times. These changes do not affect the short-term protectiveness of the groundwater remedy, as there are no known current exposures to Site contaminants above chemical-specific cleanup levels, and ICs prevent future exposure to human receptors. Changes in risk assessment methodology and guidance do not affect the WSCS, as it has been demonstrated to be working effectively at mitigating the release of vapors to the atmosphere.

The groundwater cleanup levels selected in the 1990 ROD were MCLs, non-zero MCLGs, or natural background, whichever is lower for each COC. Subsequent to the issuance of the 1990 ROD, the Commonwealth of Pennsylvania repealed its groundwater cleanup level of natural background and established new cleanup levels under Act 2. Additionally, some of the COCs established in the 1990 ROD are no longer detected at the Site. The list of COCs and associated cleanup levels have been revised to more accurately reflect current Site conditions and current groundwater ARARs in the 2019 ESD.

Due to the presence of multiple COCs at the Site, once the groundwater cleanup level for each Site COC has been achieved, the groundwater may nonetheless present an unacceptable cumulative risk. Therefore, the 2019 ESD revised the Selected Remedy to include a requirement for a cumulative risk evaluation of the groundwater after groundwater cleanup levels have been met. The cumulative risk evaluation will take into account risks posed by all Site related COCs in accordance with the NCP at 40 C.F.R. § 300.430 (e)(2)(i).

The Sept 1988 and the 1990 ROD effluent limits for each compound are elevated. Discharge limits for a number of COCs have changed since the time of the Selected Remedy. The numbers should be evaluated for compliance with 25 Pa. Code Chapters 91-96.

The remedy is controlling the migration of contaminants from the Site. Although the levels of contamination in many wells is still very high, progress has been made in reducing the Site contamination in groundwater as evidenced by the declining concentrations of TCP in the monitoring and extraction wells. The WSCS is effectively preventing direct contact or ingestion of contaminants and controlling the vapors emanating from the former lagoons.

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

No issues and recommendations were identified for two OUs.

OU(s) without Issues/Recommendations Identified in the Five-Year Review:				
OU1, OU5				

Two issues and recommendations were identified for three OUs.

Issues and Recommendations Identified in the Five-Year Review:				
OUs: 2, 3, 4	Issue Category: Monitoring			
	Issue: The presence of 1,4-dioxane is unknown			
	Recommendation: Sample groundwater and analyze for 1,4-dioxane using an approved EPA test method to evaluate if it is present at the site.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	PRP	EPA	7/31/25

OUs: 2, 3, 4	Issue Category: Monitoring			
	Issue: The presence of PFAS is unknown			
	Recommendation: Sample soil and groundwater and analyze for PFAS using EPA Approved test method to evaluate if it is present at the site.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	PRP	EPA	7/31/25

OTHER FINDINGS

In the 1988 ROD effluent limits for each compound were evaluated based on NPDES limitations. Discharge limitations for a number of COCs have changed since the time of the Selected Remedy. The PRP shall submit a new Industrial NPDES permit application in order to re-evaluate parameters for surface water discharge at the Site.

The groundwater extraction and treatment system should be evaluated to determine if current optimizations are adequate to achieve groundwater cleanup levels throughout the contamination plume in a reasonable time frame.

VII. PROTECTIVENESS STATEMENT

Although OUs are identified at the Site, they cannot be evaluated individually for protectiveness due to significant overlap in the remedy components between OUs. Therefore, only a Site-wide protectiveness statement will be made for this FYR.

Sitewide Protectiveness Statement
<i>Protectiveness Determination:</i> Short-term Protective
<i>Protectiveness Statement:</i> The remedy currently protects human health and the environment because the GWTP is containing and treating the contaminated groundwater. As shown by the surface water and GWTP discharge analytical results, surface water is not being contaminated. The WSCS is preventing exposure to contaminated soils and vapors in the lagoon area. ICs are in place to prevent exposure to Site-related contaminants in groundwater. All nearby residents are on a public water supply. However, in order for the remedy to be protective in the long-term, the following actions need to be taken: • 1,4-dioxane and PFAS need to be sampled for in groundwater to evaluate if they are present at the Site.

VIII. NEXT REVIEW

The next FYR Report is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

CH2M Hill Inc. 2017. Summary Report for the Hydraulic Testing and Groundwater Sampling at the Tyson's Dump Superfund Site. May.

Environmental Protection Agency (EPA) 1984. Record of Decision (ROD) for The Tyson's Dump Superfund Site. December 21.

EPA, 1988. ROD Amendment for Tyson's Dump Superfund Site. March 31.

EPA, 1988. ROD for Tyson's Dump Superfund Site. September 30.

EPA, 1989. Risk Assessment Guidance for Superfund. December.

EPA, 1990. ROD for Tyson's Dump Superfund Site. September 28.

EPA, 1996. ROD Amendment for Tyson's Dump Superfund Site. July 20.

EPA, 2014. Fourth Five Year Review for Tyson's Dump Superfund Site. September 26.

EPA, 2012. Explanation of Significant Difference for Tyson's Dump Superfund Site. August 16.

EPA, 2019. Explanation of Significant Differences, Operable Unit 3, Tyson's Dump Superfund Site. September 30.

Environmental Standards 2019. 2019 Annual Monitoring Report Site-wide Monitoring Program BASF Corporation Upper Merion Township, Montgomery County, PA. April 2020.

Environmental Standards 2020. 2020 Annual Monitoring Report Site-wide Monitoring Program BASF Corporation Upper Merion Township, Montgomery County, PA. February 2021.

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Brown and Caldwell 2022. 2022 Annual Monitoring Report Site-wide Monitoring Program BASF Corporation Upper Merion Township, Montgomery County, PA. March 2023.

Brown and Caldwell 2023. 2023 Annual Monitoring Report Site-wide Monitoring Program BASF Corporation Upper Merion Township, Montgomery County, PA. March 2024.

NUS Corporation, 1983. Remedial Action Master Plan and Remedial Investigation/Feasibility Study Work Plan for Tyson's Dump Site. July.

APPENDIX B – SITE CHRONOLOGY

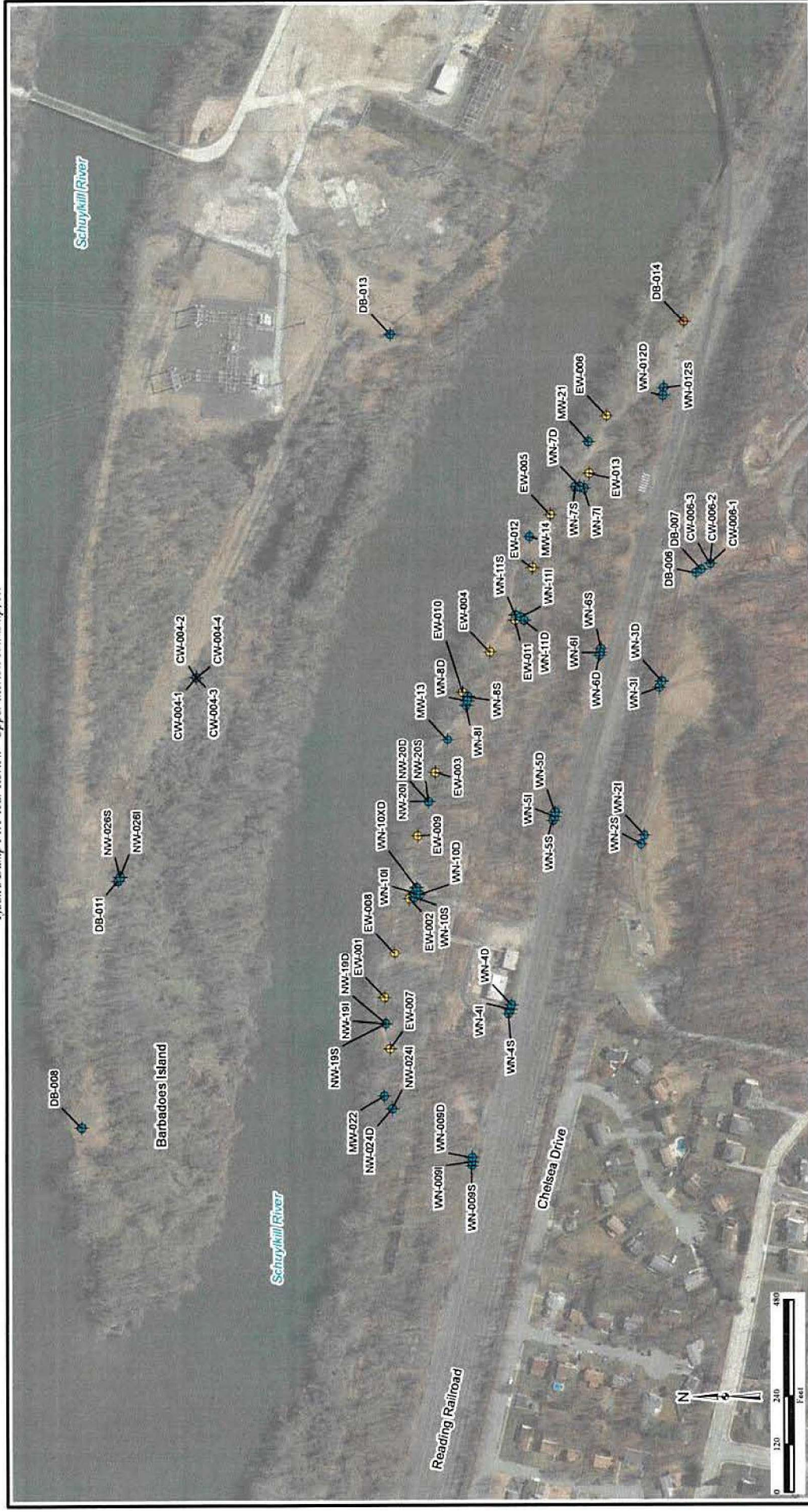
Event	Date
Property is used for disposal of septic and chemical waste.	1962-1970
The state orders the facility closed.	1973
EPA investigates a citizen's complaint about foul odors, discolored soils, and visible waste on ground surface.	1983
EPA installs leachate collection and air stripper systems.	March 1983
EPA conducts a series of investigations to characterize the nature and extent of contamination at the Site.	1983-1985
A RI/FS of the on-site area is conducted by the PRPs.	August 1984
Tyson's Dump is placed on NPL.	9/21/1984
OUI ROD signed by EPA	12/21/1984
An Administrative Order on Consent requiring the PRPs to conduct an RI/FS at the off-site area is signed by EPA, the state, and the PRPs.	5/27/1986
An Administrative Order on Consent requiring the PRPs to conduct operations and maintenance (O&M) of an air stripper system.	4/03/1987
The PRPs submit an FS Report for lagoon area soils and groundwater.	6/15/1987
The PRPs submit an RI report for the off-site area.	7/29/1987
QUI ROD amendment issued by EPA- SVE for lagoon area soils.	3/31/1988
A partial consent decree to implement a ROD amendment for SVE of lagoon soils, installation of groundwater recovery wells, and O&M of systems is signed by EPA, the state, and PRPs.	6/22/1988
The ROD for OU2, which provides for the operation of a GWTP and an associated groundwater recovery system (extraction wells) to prevent groundwater discharge to Schuylkill River, is signed by EPA.	9/30/1988
Remedial Action for SVE system is conducted by the PRPs.	1988
Construction of the GWTP and recovery system is completed.	1989
The PRPs submit an RI report addendum for groundwater in the deep aquifer.	May 1990
The PRP submit an FS report addendum for groundwater in the deep aquifer.	September 1990
The ROD for OU3, deep aquifer groundwater, is issued by EPA.	9/28/1990
The RI for off-site contamination is completed by the PRPs.	1991-1995
A ROD amendment for OU5, which requires emplacement of a wet soil cover to replace the SVE system for lagoon soils, is issued by EPA.	7/20/1996
The SVE system is dismantled.	1996-1997
The wet soil cover over the lagoons is constructed.	1997
An additional deep groundwater extraction well is installed, and the treatment system becomes fully operational.	October-December 1997
The Preliminary Close-Out Report is submitted.	12/22/1997
The first FYR is conducted by EPA.	9/30/1999

The second FYR is conducted by EPA.	9/27/2004
The third FYR is conducted by EPA.	9/28/2009
An ESD for OU3 regarding the change of the deep extraction well location from Barbadoes Island to south of the Schuylkill River is issued by EPA.	8/16/2012
The fourth FYR is conducted by EPA.	9/26/2014
Installed new design LGAC unit in the GWTP.	6/19/2019
The fifth FYR is conducted by EPA.	8/12/2019
An ESD for OU3 to: (1) modify the cleanup levels for groundwater selected in the ROD; and (2) require performance of a cumulative risk assessment once groundwater cleanup levels for individual contaminants are achieved.	9/30/2019
Seep pilot study found no COC's above cleanup targets.	8/11/2023
The sixth FYR is conducted by EPA	8/12/2024

APPENDIX C – FIGURES

Figure 2. Well Locations

Tyson's Dump Five Year Review—Upper Merion Township, PA



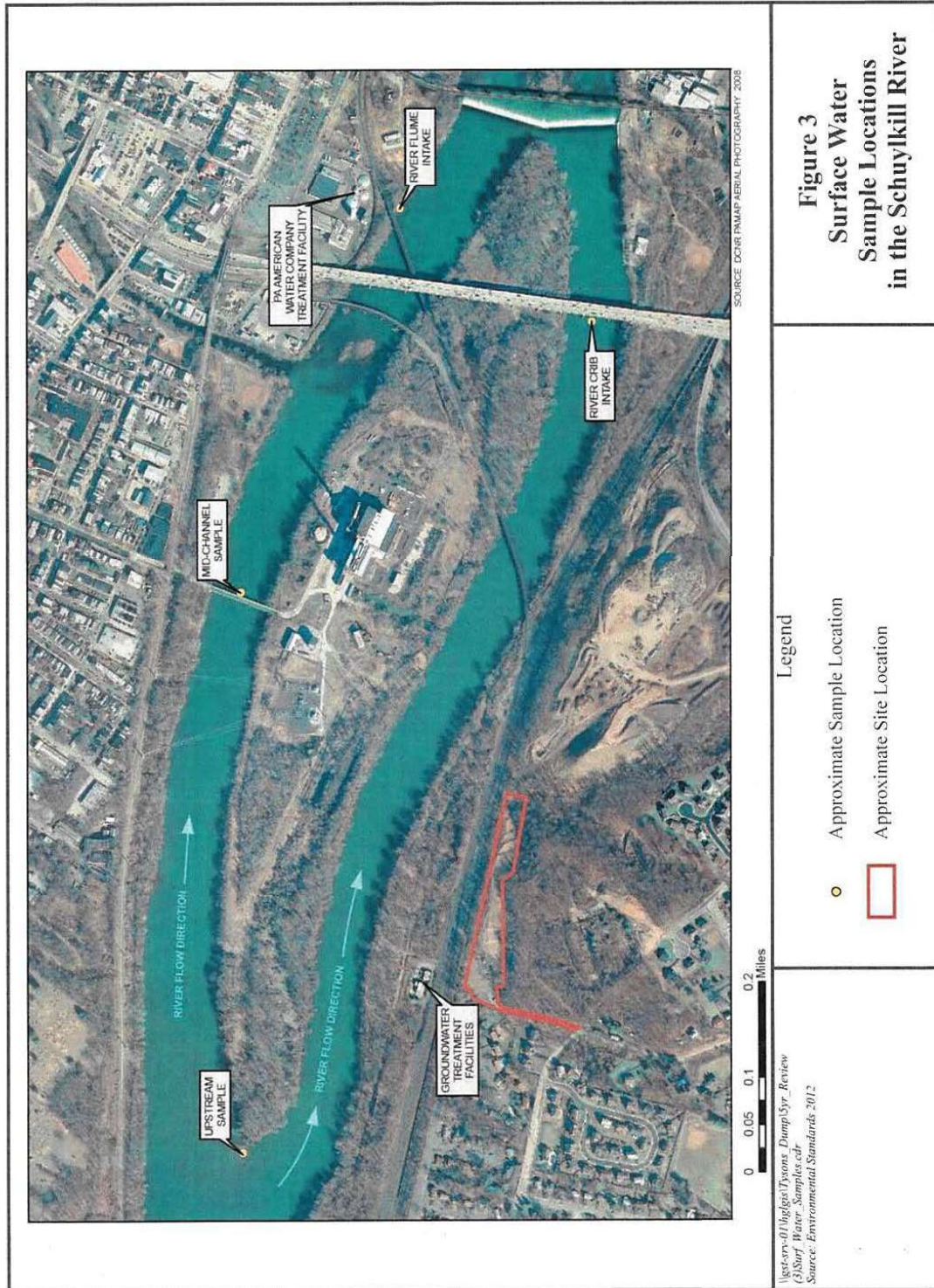
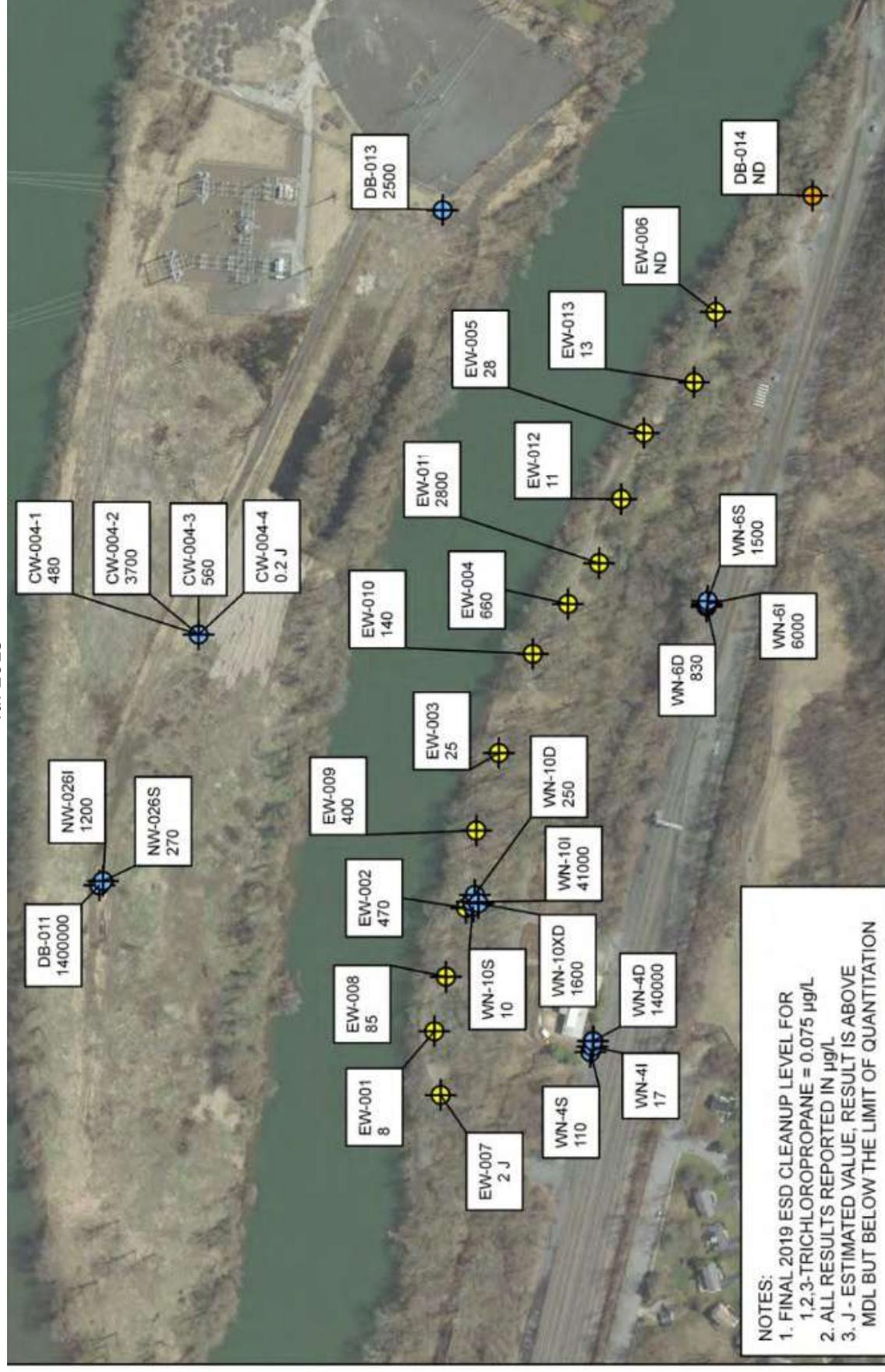
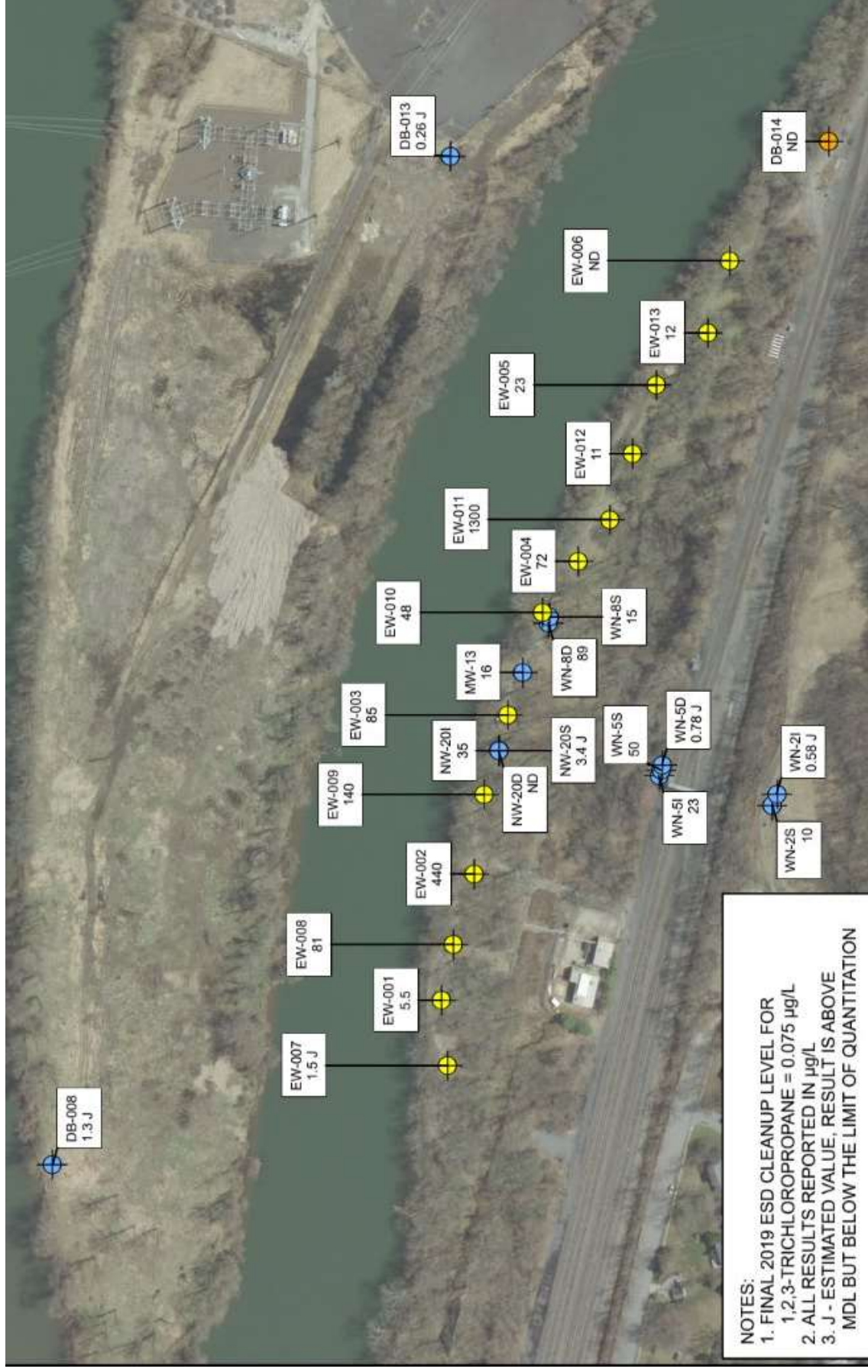


Figure 4: 1,2,3-Trichloropropane Concentrations 2019-2023

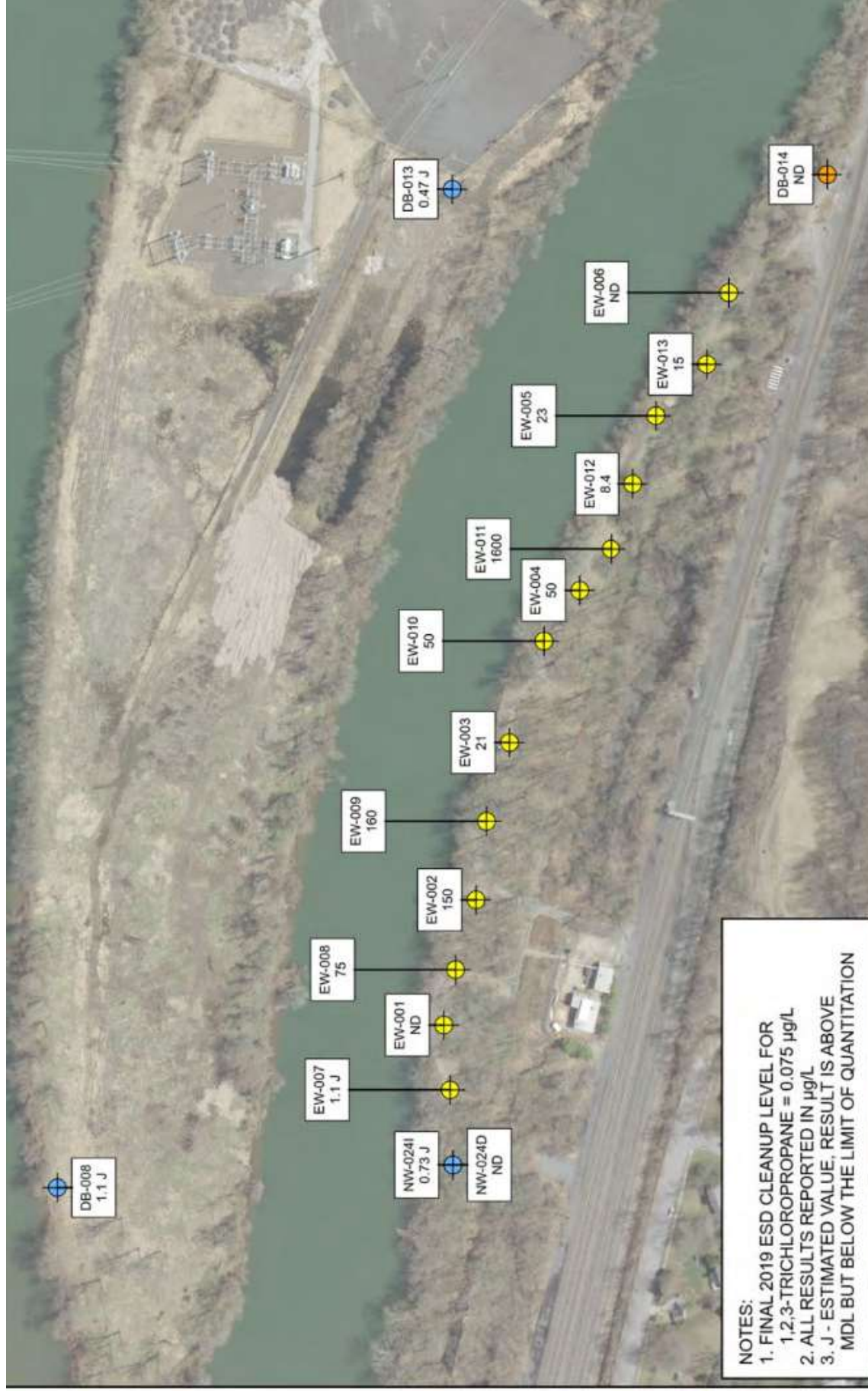
4a: 2019



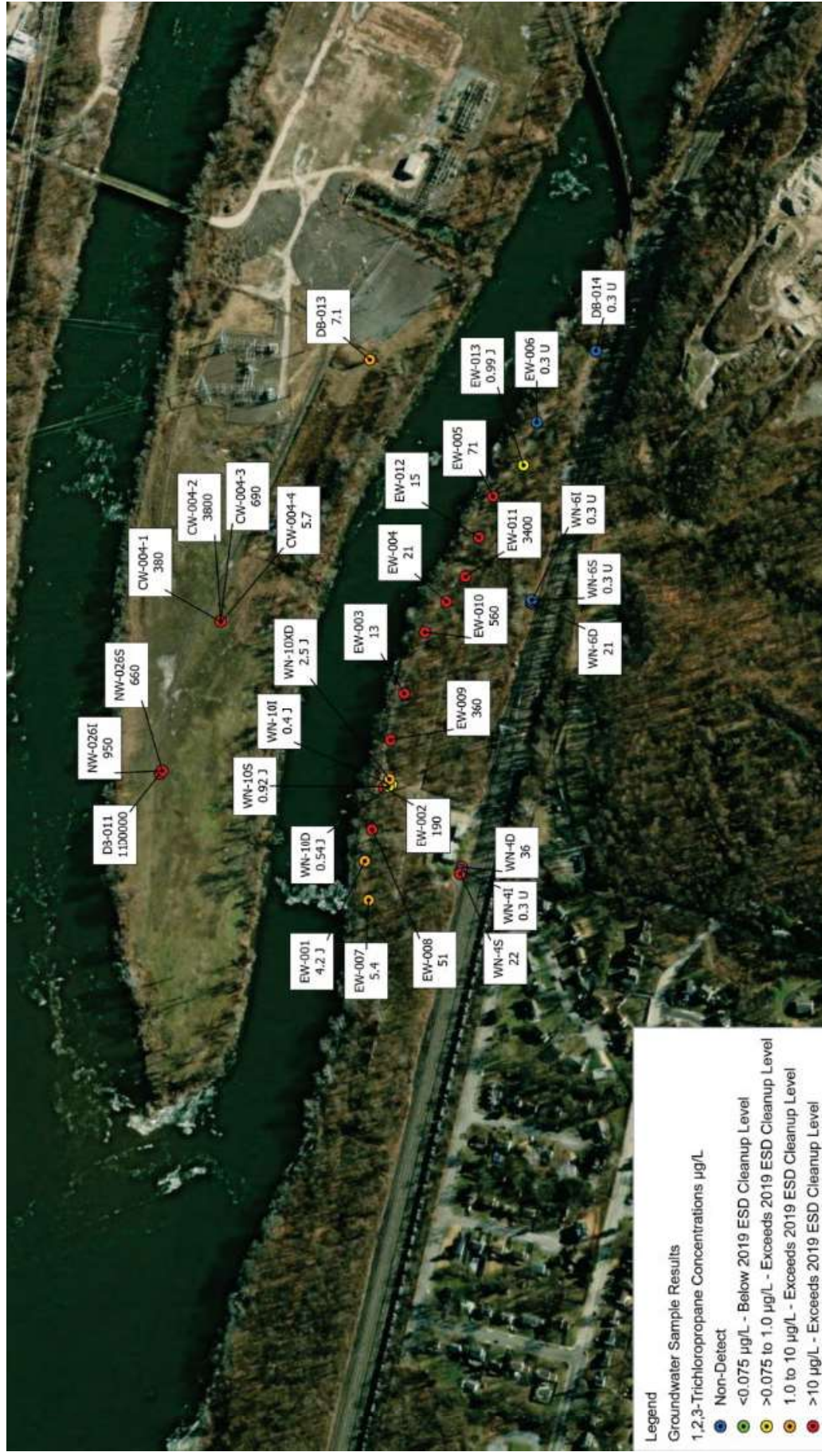
4b: 2020



4c: 2021



4d: 2022

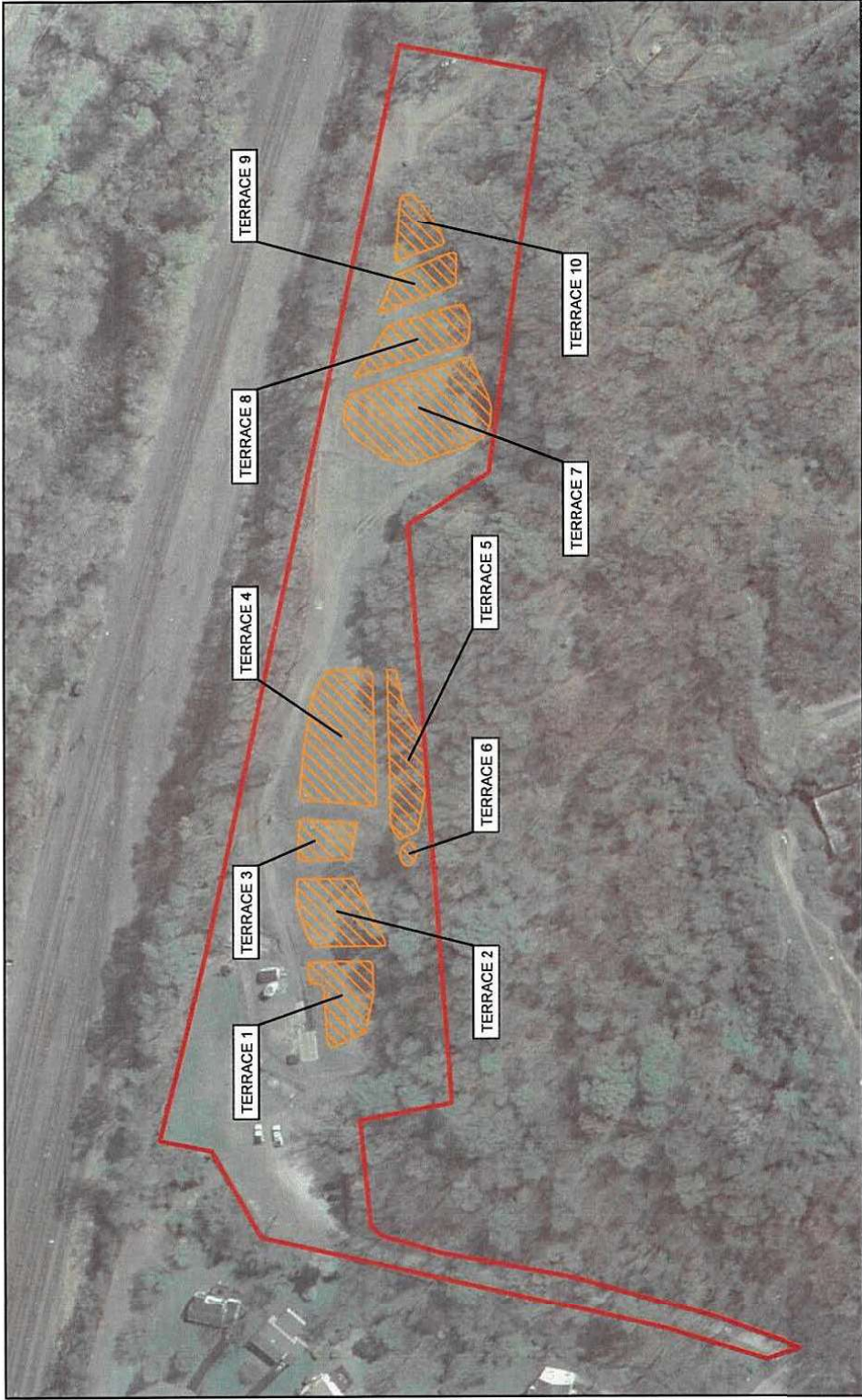


Legend
Groundwater Sample Results
1,2,3-Trichloropropane Concentrations µg/L

- Non-Detect
- <0.075 µg/L - Below 2019 ESD Cleanup Level
- >0.075 to 1.0 µg/L - Exceeds 2019 ESD Cleanup Level
- 1.0 to 10 µg/L - Exceeds 2019 ESD Cleanup Level
- >10 µg/L - Exceeds 2019 ESD Cleanup Level

Monitoring Well Data:

Well ID	Result (µg/L)
DB-008	0.30 U
DB-013	4.8 J
DB-014	0.30 U
EW-001	4.3 J
EW-002	2.0 J
EW-003	9.5
EW-004	9.8 J
EW-005	46
EW-009	340
EW-010	430
EW-011	2400
EW-012	63
EW-013	0.99 J
EW-014	0.30 U
EW-015	0.30 U
EW-016	0.30 U
EW-017	0.30 U
EW-018	0.30 U
EW-019	0.30 U
EW-020	0.30 U
EW-021	0.30 U
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EW-146	0.30 U
EW-147	0.30 U
EW-148	0.30 U
EW-149	0.30 U



Legend

- SITE BOUNDARY
- WET SOIL COVER TERRACE



FIGURE 7: WET SOIL COVER TERRACE LOCATIONS	
CREATION DATE MAY 22, 2019	PROJECT NO. 20190508A
	DRAWN BY JRW
	CHECKED BY JPK
APPROVED BY GLK	
REVISION 0	
TYSON'S SUPERFUND SITE UPPER MERION TOWNSHIP, PENNSYLVANIA	

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W:\BASFT\Tyson's Site Management\20115812\FIGURES\GIS\2013 GWFlux_Sample LocaMap.mxd

APPENDIX D – PUBLIC NOTICE

PHOTO: MICHAEL GOODMAN

PHOTO: MICHAEL GOODMAN

Israel orders new evacuations in Gaza's last refuge of Rafah

By **Yaelle Kuper**
New York City
The Associated Press

Rafah, Gaza Strip — Israel's military has ordered a new wave of evacuations in Rafah, the last enclave of Gaza's last refuge, as it prepares to expand its military operations there. The heavily populated enclave, a buffer zone between Gaza and Egypt, has been a refuge for thousands of Palestinians who fled the violence in Gaza during the 2008-2009 conflict. Israel's military has ordered the evacuation of Rafah as it prepares to expand its military operations there. The heavily populated enclave, a buffer zone between Gaza and Egypt, has been a refuge for thousands of Palestinians who fled the violence in Gaza during the 2008-2009 conflict.



PALESTINIAN REFUGEES WAIT FOR AID IN THE ENCLAVE OF RAFAH, GAZA STRIP, JULY 11.

Israel has ordered the evacuation of Rafah, the last enclave of Gaza's last refuge, as it prepares to expand its military operations there. The heavily populated enclave, a buffer zone between Gaza and Egypt, has been a refuge for thousands of Palestinians who fled the violence in Gaza during the 2008-2009 conflict. Israel's military has ordered the evacuation of Rafah as it prepares to expand its military operations there. The heavily populated enclave, a buffer zone between Gaza and Egypt, has been a refuge for thousands of Palestinians who fled the violence in Gaza during the 2008-2009 conflict.

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PHOTO: MICHAEL GOODMAN

NYC's Rikers Island jail gets a kid-friendly visitation room ahead of Mother's Day

By **Yaelle Kuper**
New York City
The Associated Press

NEW YORK — The city of New York is opening a new visitation room at Rikers Island jail, designed to be kid-friendly, ahead of Mother's Day. The room will allow mothers to visit their children in jail, a first for the city. The room will be located in the Rikers Island jail, which is the largest jail in the United States. The room will be designed to be kid-friendly, with a play area and other amenities for children. The room will be opened on Mother's Day, May 14.



NEW YORK'S RIKERS ISLAND JAIL GETS A NEW VISITATION ROOM, DESIGNED TO BE KID-FRIENDLY, AHEAD OF MOTHER'S DAY.

The city of New York is opening a new visitation room at Rikers Island jail, designed to be kid-friendly, ahead of Mother's Day. The room will allow mothers to visit their children in jail, a first for the city. The room will be located in the Rikers Island jail, which is the largest jail in the United States. The room will be designed to be kid-friendly, with a play area and other amenities for children. The room will be opened on Mother's Day, May 14.

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EPA PUBLIC NOTICE

EPA REVIEWS CLEANUP

TYSON'S CLUMP SUBSIDIZED SITE

Under the Environmental Protection Agency (EPA) is reviewing the site of the Tyson's Clump Subsidized Site, located in Upper Merion Township, Pennsylvania. EPA is reviewing the site to determine if it is a Superfund site. EPA is reviewing the site to determine if it is a Superfund site. EPA is reviewing the site to determine if it is a Superfund site.

Under the Environmental Protection Agency (EPA) is reviewing the site of the Tyson's Clump Subsidized Site, located in Upper Merion Township, Pennsylvania. EPA is reviewing the site to determine if it is a Superfund site. EPA is reviewing the site to determine if it is a Superfund site. EPA is reviewing the site to determine if it is a Superfund site.

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Bello, McGovery & DiPippo
ATTORNEYS AT LAW

TOP LAWYERS

Salvatore F. Bello, Jr., Esq.
General Law
Best Law Firm
2017-2024

Salvatore F. Bello, Jr. • Robert J. Kelley, Jr. •
Daniel T. McGovery • Gregory P. DiPippo
Salvatore F. Bello, III
* Also Admitted to Pract. Juris.

144 East DuPont Pike, Suite 300, King of Prussia, PA 19406
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emem

Help keep pollution out of storm drains

Only they can help!

Problems with storm drains and sewers can be solved by properly disposing of household waste. The way you dispose of household waste can make a big difference in the health of our environment. Use of non-hazardous household waste disposal is the best way to protect our environment.

What can you do?

- Don't throw out oil, paint, or other hazardous materials. Take them to a hazardous waste disposal site.
- Don't throw out tires, auto parts, and other auto-related items. Take them to a hazardous waste disposal site.
- Don't throw out household appliances, such as refrigerators, air conditioners, and freezers. Take them to a hazardous waste disposal site.
- Don't throw out household electronics, such as televisions, computers, and cell phones. Take them to a hazardous waste disposal site.
- Don't throw out household chemicals, such as cleaning products, pesticides, and fertilizers. Take them to a hazardous waste disposal site.
- Don't throw out household waste, such as food, paper, and plastic. Take them to a hazardous waste disposal site.

For more information, visit www.emem.org or call 1-800-EMEM-1234.

APPENDIX E – SITE INSPECTION CHECKLIST

I. SITE INFORMATION			
Site name: Tyson's Dump Superfund Site	Date of inspection: 05/06/2024		
Location and Region: Upper Merion Twnshp / R3	EPA ID: P AD980692024		
Agency, office, or company leading the five-year review: EPA R3	Weather/temperature: Overcast, Drizzle, 60 F		
Remedy Includes: (Check all that apply) ☒ Landfill cover/containment ☒ Access controls ☒ Institutional controls ☒ Groundwater pump and treatment ☐ Surface water collection and treatment ☐ Other _____ ☐ Monitored natural attenuation ☒ Groundwater containment ☐ Vertical barrier walls			
Attachments: X Inspection team roster attached ☐ Site map attached			
II. INTERVIEWS (Check all that apply)			
1. O&M site manager <u>Steve Havlick</u> <u>Senior Remediation Specialist</u> <u>05/06/2024</u> Name Title Date Interviewed X at site ☐ at office ☐ by phone Phone no. <u>973 245-5271</u> Problems, suggestions; ☐ Report attached <u>No Problems Identified.</u>			
2. O&M staff <u>Ian Bush</u> <u>Treatment Plant Operator</u> <u>05/06/2024</u> Name Title Date Interviewed X at site ☐ at office ☐ by phone Phone no. _____ Problems, suggestions; ☐ Report attached <u>No Problems Identified.</u>			
3. Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply. Agency <u>PADEP</u> Contact <u>Tim Cherry</u> <u>Solid Waste Supervisor</u> <u>05/06/2024</u> <u>484 250-5728</u> Name Title Date Phone no.			

Problems; suggestions; ☐ Report attached DEP expressed concern that the NPDES ARARs are out of date._ Recommended referencing the residential construction occurring along the southern border of the Site, PRP should work with the developer & the property owner to ensure Site security is kept in place, possible signage might be needed. DEP requested that the Annual Monitoring reports & a copy of the Deed Restriction also be provided to DEP.

Agency PADEP

Contact Duncan Semmens Solid Waste Specialist 05/06/2024 484 250-5728

Name Title Date Phone no.

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Agency Montgomery County Office of Public Health

Contact Kyle Schmeck Dir Water Quality Mgmt 05/06/2024 610 278-5117

Name Title Date Phone no.

Problems; suggestions; ☐ Report attached No Problems Identified_____

4. **Other interviews** (optional) ☐ Report attached.

1.	O&M Documents			
	X O&M manual	X Readily available	X Up to date	☐
				N/A
	X As-built drawings	X Readily available	X Up to date	☐ N/A
	X Maintenance logs	X Readily available	X Up to date	☐ N/A
	Remarks _____			

2.	Site-Specific Health and Safety Plan	X Readily available	X Up to date	☐
				N/A
	X Contingency plan/emergency response plan	X Readily available	X Up to date	☐
				N/A
	Remarks _____			

3.	O&M and OSHA Training Records	X Readily available	X Up to date	☐ N/A
	Remarks _____			

4.	Permits and Service Agreements			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	X
				N/A
	X Effluent discharge	X Readily available	X Up to date	☐ N/A
	X Waste disposal, POTW	X Readily available	X Up to date	☐
				N/A
	☐ Other permits _____	☐ Readily available	☐ Up to date	X
				N/A
	Remarks _____			

5.	Gas Generation Records	☐ Readily available	☐ Up to date	X
				N/A
	Remarks _____			

6.	Settlement Monument Records	☐ Readily available	☐ Up to date	X N/A
Remarks _____ _____ _____				
7.	Groundwater Monitoring Records	X Readily available	X Up to date	☐ N/A
Remarks Included in semi-annual and annual monitoring reports. _____ _____ _____				
8.	Leachate Extraction Records	☐ Readily available	☐ Up to date	X N/A
Remarks _____ _____ _____				
9.	Discharge Compliance Records			
	☐ Air	☐ Readily available	☐ Up to date	X N/A
	X Water (effluent)	X Readily available	X Up to date	☐ N/A
Remarks Included in annual monitoring reports. _____ _____ _____				
10.	Daily Access/Security Logs	X Readily available	X Up to date	☐ N/A
Remarks _____ _____ _____				

IV. O&M COSTS																															
1.	O&M Organization ☐ State in-house X PRP in-house ☐ Federal Facility in-house ☐ Other _____ ☐ Contractor for State ☐ Contractor for PRP ☐ Contractor for Federal Facility 																														
2.	O&M Cost Records X Readily available X Up to date X Funding mechanism/agreement in place Original O&M cost estimate _____ ☐ Breakdown attached Total annual cost by year for review period if available <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">From _____</td> <td style="width: 20%;">To _____</td> <td style="width: 40%;">_____ ☐ Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td>_____ ☐ Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td>_____ ☐ Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td>_____ ☐ Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td>_____ ☐ Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> </tr> </table>	From _____	To _____	_____ ☐ Breakdown attached	Date	Date	Total cost	From _____	To _____	_____ ☐ Breakdown attached	Date	Date	Total cost	From _____	To _____	_____ ☐ Breakdown attached	Date	Date	Total cost	From _____	To _____	_____ ☐ Breakdown attached	Date	Date	Total cost	From _____	To _____	_____ ☐ Breakdown attached	Date	Date	Total cost
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Date	Date	Total cost																													
3.	Unanticipated or Unusually High O&M Costs During Review Period Describe costs and reasons: <u>None</u> _____ 																														
V. ACCESS AND INSTITUTIONAL CONTROLS X Applicable ☐ N/A																															
A. Fencing																															

1.	Fencing damaged	☐ Location shown on site map	X Gates secured	☐ N/A
Remarks <u>Fencing in place.</u>				
B. Other Access Restrictions				
1.	Signs and other security measures	☐ Location shown on site map		☐ N/A
Remarks <u>Signs in place.</u>				

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No ☒ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☐ No ☒ N/A

Type of monitoring (e.g., self-reporting, drive by) Daily visual inspection.

Frequency

Daily

Responsible party/agency BASF and Brown

Caldwell

Contact Steve Havlick Senior Remediation Spec. 05/06/2024
973 245-5271

Name

Title

Date

Phone no.

Reporting is up-to-date ☒ Yes ☐ No ☐ N/A

Reports are verified by the lead agency ☒ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☒ Yes ☐

No ☐ N/A

Violations have been reported ☐ Yes ☐ No ☒ N/A

Other problems or suggestions: ☐ Report attached

2. **Adequacy**

☒ ICs are adequate

☐ ICs are inadequate ☐ N/A

Remarks

D. General

1.	Vandalism/trespassing	☐ Location shown on site map evident	☒ No vandalism
Remarks _____ _____ _____			
2.	Land use changes on site	☐ N/A	
Remarks___Land use has not changed._____ _____ _____			
3.	Land use changes off site	☐ N/A	
Remarks___Land use has not changed._____ _____ _____			
VI. GENERAL SITE CONDITIONS			
A. Roads ☒ Applicable ☐ N/A			
1.	Roads damaged	☐ Location shown on site map	☒ Roads adequate ☐ N/A
Remarks _____ _____ _____ _____			

B. Other Site Conditions			
Remarks _____ _____ _____ _____ _____ _____			
VII. LANDFILL COVERS ☒ Applicable ☐ N/A			
A. Landfill Surface			
1.	Settlement (Low spots)	☐ Location shown on site map ☒ Settlement not evident	
Areal extent _____ Depth _____ Remarks _____ _____			
2.	Cracks	☐ Location shown on site map ☒ Cracking not evident	
Lengths _____ Widths _____ Depths _____ Remarks _____ _____			
3.	Erosion	☐ Location shown on site map ☒ Erosion not evident	
Areal extent _____ Depth _____ Remarks _____ _____ _____			
4.	Holes	☐ Location shown on site map ☒ Holes not evident	
Areal extent _____ Depth _____ Remarks _____ _____ _____			
5.	Vegetative Cover ☐ Grass ☐ Cover properly established ☒ No signs of stress		
☐ Trees/Shrubs (indicate size and locations on a diagram) Remarks <u>Sprinkler system operating properly.</u> _____ _____ _____			

6.	Alternative Cover (armored rock, concrete, etc.) Remarks <u>Wet cap system using water sprinklers.</u> 	☐ N/A
7.	Bulges Areal extent _____ Height _____ Remarks _____ 	☐ Location shown on site map X Bulges not evident
8.	Wet Areas/Water Damage ☐ Wet areas ☐ Ponding ☐ Seeps ☐ Soft subgrade Remarks <u>Wet cap operating as intended.</u> 	X Wet areas/water damage not evident ☐ Location shown on site map Areal extent _____ ☐ Location shown on site map Areal extent _____ ☐ Location shown on site map Areal extent _____ ☐ Location shown on site map Areal extent _____
9.	Slope Instability Areal extent _____ Remarks _____ 	☐ Slides ☐ Location shown on site map X No evidence of slope instability
B. Benches ☐ Applicable X N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	Flows Bypass Bench Remarks _____ 	☐ Location shown on site map X N/A or okay

2.	Bench Breached	☐ Location shown on site map X N/A or okay
Remarks _____ _____ _____		
3.	Bench Overtopped	☐ Location shown on site map X N/A or okay
Remarks _____ _____ _____		
C. Letdown Channels X Applicable ☐ N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)		
1.	Settlement	☐ Location shown on site map X No evidence of settlement
Areal extent _____ Depth _____ Remarks _____ _____ _____		
2.	Material Degradation	☐ Location shown on site map X No evidence of degradation
Material type _____ Areal extent _____ Remarks _____ _____ _____		
3.	Erosion	☐ Location shown on site map X No evidence of erosion
Areal extent _____ Depth _____ Remarks _____ _____ _____		
4.	Undercutting	☐ Location shown on site map X No evidence of undercutting
Areal extent _____ Depth _____ Remarks _____ _____ _____		

5.	Obstructions Type _____ X No obstructions ☐ Location shown on site map Areal extent _____ Size _____ Remarks _____ _____ _____
6.	Excessive Vegetative Growth Type _____ X No evidence of excessive growth X Vegetation in channels does not obstruct flow ☐ Location shown on site map Areal extent _____ Remarks _____ _____ _____
D. Cover Penetrations X Applicable ☐ N/A	
1.	Gas Vents ☐ Active ☐ Passive ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs Maintenance X N/A Remarks _____ _____ _____
2.	Gas Monitoring Probes ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs Maintenance X N/A Remarks _____ _____ _____
3.	Monitoring Wells (within surface area of landfill) X Properly secured/locked ☐ Functioning X Routinely sampled X Good condition ☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A Remarks _____ _____

2.	Outlet Rock Inspected	☐ Functioning	☐ N/A	Remarks _____ _____ _____ _____
G. Detention/Sedimentation Ponds ☐ Applicable X N/A				
1.	Siltation	Areal extent _____ Depth _____ ☐ N/A ☐ Siltation not evident		Remarks _____ _____ _____ _____
2.	Erosion	Areal extent _____ Depth _____ ☐ Erosion not evident		Remarks _____ _____ _____ _____
3.	Outlet Works	☐ Functioning ☐ N/A		Remarks _____ _____ _____ _____
4.	Dam	☐ Functioning ☐ N/A		Remarks _____ _____ _____ _____

H. Retaining Walls ☐ Applicable X N/A			
1.	Deformations	☐ Location shown on site map ☐ Deformation not evident Horizontal displacement _____ Vertical displacement _____ Rotational displacement _____ Remarks _____ _____ _____ _____	

2.	Degradation	☐ Location shown on site map ☐ Degradation not evident	
Remarks _____			

I. Perimeter Ditches/Off-Site Discharge X Applicable ☐ N/A			
1.	Siltation	☐ Location shown on site map X Siltation not evident	
Areal extent _____ Depth _____			
Remarks _____			

2. Vegetative Growth ☐ Location shown on site map ☐ N/A			
X Vegetation does not impede flow			
Areal extent _____ Type _____			
Remarks _____			

3.	Erosion	☐ Location shown on site map X Erosion not evident	
Areal extent _____ Depth _____			
Remarks _____			

4.	Discharge Structure	X Functioning ☐ N/A	
Remarks <u>Observed pipe discharge to river.</u>			

VIII. VERTICAL BARRIER WALLS ☐ Applicable X N/A			
1.	Settlement	☐ Location shown on site map ☐ Settlement not evident	
Areal extent _____ Depth _____			
Remarks _____			

2.	Performance Monitoring Type of monitoring _____ ☐ Performance not monitored Frequency _____ ☐ Evidence of breaching Head differential _____ Remarks _____ _____ _____ _____
IX. GROUNDWATER/SURFACE WATER REMEDIES X Applicable ☐ N/A	
A. Groundwater Extraction Wells, Pumps, and Pipelines X Applicable ☐ N/A	
1.	Pumps, Wellhead Plumbing, and Electrical X Good condition X All required wells properly operating ☐ Needs Maintenance ☐ N/A Remarks _____ _____ _____ _____ _____
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances X Good condition ☐ Needs Maintenance Remarks _____ _____ _____ _____
3.	Spare Parts and Equipment X Readily available X Good condition ☐ Requires upgrade ☐ Needs to be provided Remarks _____ _____ _____ _____
B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable X N/A	
1.	Collection Structures, Pumps, and Electrical ☐ Good condition ☐ Needs Maintenance Remarks _____ _____ _____ _____

2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances ☐ Good condition ☐ Needs Maintenance Remarks _____ _____ _____ _____
3.	Spare Parts and Equipment ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided Remarks _____ _____ _____ _____
C. Treatment System X Applicable ☐ N/A	
1.	Treatment Train (Check components that apply) ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation ☐ Air stripping X Carbon adsorbers X Filters _____ ☐ Additive (e.g., chelation agent, flocculent) _____ ☐ Others _____ X Good condition ☐ Needs Maintenance X Sampling ports properly marked and functional X Sampling/maintenance log displayed and up to date X Equipment properly identified X Quantity of groundwater treated annually <u>Approximately 50,000,000 gallons</u> ☐ Quantity of surface water treated annually _____ Remarks _____ _____ _____ _____

2.	Electrical Enclosures and Panels (properly rated and functional) ☐ N/A X Good condition ☐ Needs Maintenance Remarks _____ _____ _____ _____
3.	Tanks, Vaults, Storage Vessels ☐ N/A X Good condition ☐ Proper secondary containment ☐ Needs Maintenance Remarks _____ _____ _____ _____
4.	Discharge Structure and Appurtenances ☐ N/A X Good condition ☐ Needs Maintenance Remarks _____ _____ _____ _____
5.	Treatment Building(s) ☐ N/A X Good condition (esp. roof and doorways) ☐ Needs repair X Chemicals and equipment properly stored Remarks _____ _____ _____ _____
6.	Monitoring Wells (pump and treatment remedy) X Properly secured/locked X Functioning X Routinely Sampled X Good condition X All required wells located ☐ Needs Maintenance ☐ N/A Remarks _____ _____ _____ _____
D. Monitoring Data	
1.	Monitoring Data X Is routinely submitted on time X Is of acceptable quality
2.	Monitoring data suggests: X Groundwater plume is effectively contained X Contaminant concentrations are declining

D. Monitored Natural Attenuation	
1.	Monitoring Wells (natural attenuation remedy) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ All required wells located ☐ Needs Maintenance X N/A Remarks _____ _____ _____ _____
X. OTHER REMEDIES	
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.	
XI. OVERALL OBSERVATIONS	
A. Implementation of the Remedy	
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). <u>The remedy is functioning as designed and is effective in containing contaminated groundwater and reducing contaminant mass. IC's are in place which control exposure pathways.</u> _____ _____ _____ _____ _____ _____ _____ _____	
B. Adequacy of O&M	

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>The site is well run and maintained. The current systems are sufficient to ensure the long-term protectiveness of the remedy.</u>
C. Early Indicators of Potential Remedy Problems
Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. <u>There are no observations indicating unexpected change in cost, scope, or protectiveness.</u>
D. Opportunities for Optimization
Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

APPENDIX F – SITE INSPECTION PHOTOS



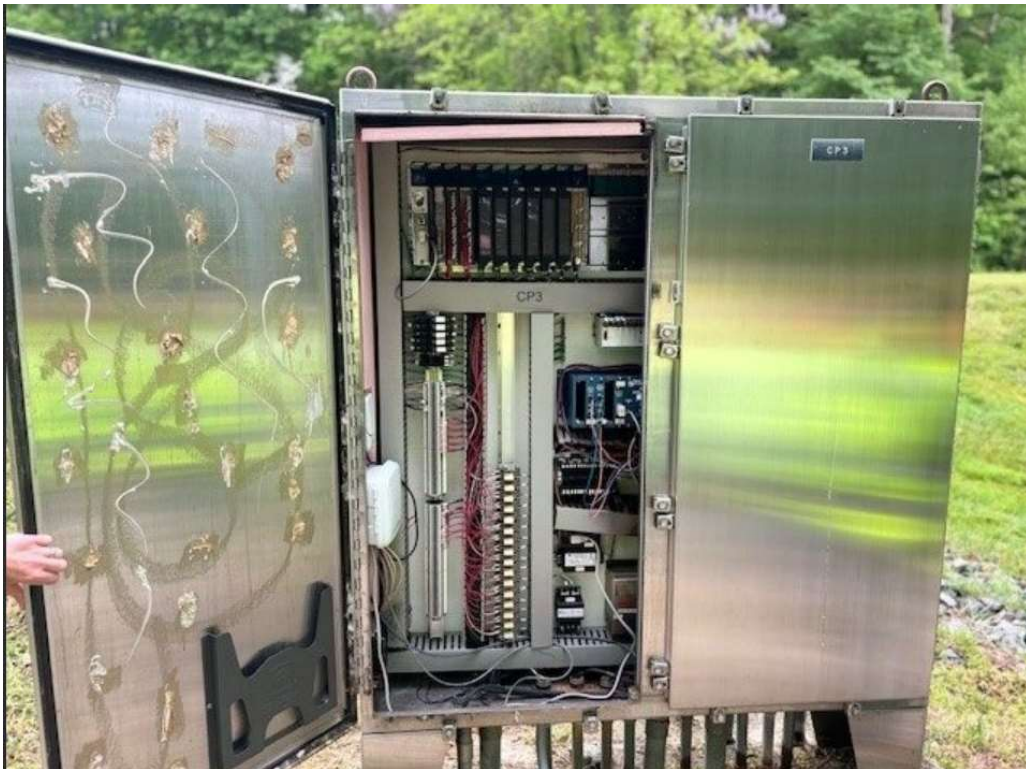
Site fence and entrance



Terraced wet cap over lagoon area



Piezoelectric wet cap sensor



PLC for wet cap sprinkler system



Ground water treatment plant



GWTP entrance



GWTP Exterior



Calgon Model 8, 10,000-pound LGAC units



Effluent flow meter and totalizer



Monitoring well



Seep water collection tank



Recovery well water transfer pipes



Effluent discharge to the Schuylkill River



Storm water control

APPENDIX G – ARAR REVIEW

1988 ROD Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered for the Tyson's Dump Site

Citation	Requirement	Comments
ARARs		
Safe Drinking Water Act Maximum Contaminant Levels (MCLs)	Comply with MCLs	The contaminated groundwater in the shallow and deep site aquifer does not currently meet MCLs.
Clean Water Act	- Wetlands Impact - Ambient Water Quality Criteria (AWQC)	Wetlands portion was met when remedial action was constructed. AWQC are currently being met by the remedy.
Executive Order 11988 – Protection of Floodplains 40 CFR 6, Appendix A	Action to avoid adverse effects, minimizes potential harm, restore and preserve natural and beneficial value	ARAR met when remedial action was constructed.
State Ambient Air Quality Guidelines for Air Toxic Substances (ATGS)	Satisfy guidelines	ATGS standards available at the time of remedy selection were documented in the ROD and are being met.
PADER Discharge Limits for Treated Groundwater	Meet limits established by PADER	Discharge standards available at the time of remedy selection were documented in the ROD and are being met.

1990 ROD Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered for the Tyson's Dump Site

Citation	Requirement	Comments
ARARs		
25 PA Code § 264.90 through 264.100	"Background" quality for ground water remediation	Extraction of groundwater will continue until background, the MCLs or non-zero MCLGs are achieved. Background levels have not been established to date.
25 PA Code §123.1, 123.2, 123.31 and 123.41	Pennsylvania air quality standards for establishing air emission limitations for fugitive, odor, and visible emissions	Requirements are still applicable and being met.
25 PA Code §121.7 and 127.11	Pennsylvania Air Quality Standards Prohibition of Air Pollution Establishes air emission control	Requirements are still applicable and being met.
25 PA Code § 92.1 through 92.79	National Pollutant Discharge Elimination System (NPDES) for treated groundwater discharge	This requirement is still applicable. The GWTP is consistently meeting NPDES requirements

Citation	Requirement	Comments
25 PA Code §93.1 through 93.9	Establish water quality standards	Discharge standards available at the time of remedy selection were documented in the ROD and are being met.
25 PA Code §269.22 and 269.33	Prohibits siting of treatment facilities in the 100-year floodplain and in wetland areas, respectively	ARAR met when remedial action was constructed.
25 PA Code §Section 105.1 through 105.423	Regulates water obstruction, encroachments, and wetlands	ARAR met when remedial action was constructed.
Pennsylvania Scenic Rivers Act and 25 PA Code § 269.50	Requirements for constructing a facility within a protected river corridor	ARAR met when remedial action was constructed.
25 PA Code §260 through 265 and §270	Regulates hazardous waste generation, transportation, storage and treatment	Requirement is still applicable.
25 PA Code § 75.21 through 75.38	Regulates residual waste generation, transportation, storage and treatment	Requirement is still applicable. Waste generated from the GWTP system is handled pursuant to regulation.
29 CFR Parts 1910 and 1926	Occupational Health and Safety Act	Requirements are applicable to all response activities

1996 ROD Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered for the Tyson's Dump Site

Citation	Requirement	Comments
ARARs		
40 CFR §264.14	Security requirements will be followed through completion of the construction of the cap	ARAR met when remedial action was constructed.
40 CFR §264.97 and §264.98	Groundwater Monitoring Requirements	Requirements are still applicable.
40 CFR §264.111-112, 264.114, 264.117-118	Hazardous Waste Landfill regulations concerning closure and post-closure activities	Requirements are still applicable.
40 CFR §264.302 and .310	Cap construction and operation cap design requirements	ARAR met when remedial action was constructed.
40 CFR §258.60	Long-term monitoring requirements	Requirements are still applicable.

APPENDIX H – Surface Water Monitoring Data

		Location ID	RIVER-CHANNL	RIVER-CHANNL	RIVER-CHANNL	RIVER-CHANNL	RIVER-CHANNL	RIVER-CHANNL	RIVER-CHANNL	RIVER-CHANNL	RIVER-CHANNL	RIVER-CHANNL
		Sample ID	RIVER-CHANNL-20230426	RIVER-CHANNL-20231012	RIVER-CHANNL-20230426	RIVER-CHANNL-20231012	RIVER-CHANNL-20230426	RIVER-CHANNL-20231012	RIVER-CHANNL-20230426	RIVER-CHANNL-20231012	RIVER-CHANNL-20230426	RIVER-CHANNL-20231012
		Sample Date	4/26/2023	10/12/2023	4/26/2023	10/12/2023	4/26/2023	10/12/2023	4/26/2023	10/12/2023	4/26/2023	10/12/2023
Method	Parameter	Surface Water Discharge Limits	Units									
ESD-2	1,1,1-TRICHLOROETHANE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	1,1,2,2-TETRACHLOROETHANE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ESD-2	1,1,2-TRICHLOROETHANE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	1,1-DICHLOROETHANE	37400	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	1,1-DICHLOROMETHYLENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	1,2,3-TRICHLOROPROPANE	600	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ESD-2	1,2,4-TRICHLOROBENZENE	560	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ESD-2	1,2,4-TRIMETHYLBENZENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	1,2-CIS-DICHLOROETHYLENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	1,2-DIBROMO-3-CHLOROPROPANE		ug/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
ESD-2	1,2-DIBROMOETHANE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	1,2-DICHLOROBENZENE		ug/L	0.1 U	0.2 U	0.1 U	0.2 U	0.1 U	0.2 U	0.1 U	0.2 U	0.1 U
ESD-2	1,2-DICHLOROETHANE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	1,2-DICHLOROPROPANE	495	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	1,2-TRANS-DICHLOROETHYLENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	1,3-CIS-DICHLOROPROPYLENE	4530	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	1,3-DICHLOROBENZENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	1,3-TRANS-DICHLOROPROPYLENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	1,4-DICHLOROBENZENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	2-HEXANONE		ug/L	0.6 U	1 U	0.6 U	1 U	0.6 U	1 U	0.6 U	1 U	0.6 U
ESD-2	ACETONE		ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
ESD-2	BENZENE	212	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	BROMOFORM		ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ESD-2	CARBON DISULFIDE		ug/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
ESD-2	CARBON TETRACHLORIDE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	CHLORO BENZENE	16100	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	CHLORO Dibromomethane		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	CHLOROBENZENE		ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ESD-2	CHLOROFORM	61.1	ug/L	0.12 J	0.12 J	0.12 J	0.26 J	0.1 U	0.1 U	0.1 U	0.1 U	0.12 J
ESD-2	DICHLORODIBROMOMETHANE		ug/L	0.1 U	0.1 U	0.1 U	0.11 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	DICHLORODIFLUOROMETHANE		ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ESD-2	ETHYLBENZENE	450	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	ISOPROPYLBENZENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	METHYL BROMIDE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	METHYL CHLORIDE		ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ESD-2	METHYL ETHYL KETONE		ug/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
ESD-2	METHYL ISOBUTYL KETONE	12000	ug/L	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
ESD-2	METHYLENE CHLORIDE	224	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ESD-2	METHYL T-BUTYL ETHER		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	NAPHTHALENE		ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ESD-2	STYRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	TETRACHLOROETHYLENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	TOUENE	4500000	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	TRICHLORODIBROMOMETHANE	898	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	TRICHLORODIFLUOROMETHANE		ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ESD-2	VINYL CHLORIDE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ESD-2	VYLENES TOTAL	500	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
SW82700	1,2,4-TRICHLOROBENZENE	560	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.55 U	0.5 U	0.5 U
SW82700	1,2-DICHLOROBENZENE		ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.55 U	0.5 U
SW82700	1,2-DIPHENYLBENZENE		ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.55 U	0.5 U	0.5 U
SW82700	1,3-DICHLOROBENZENE		ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.55 U	0.5 U	0.5 U
SW82700	1,4-DICHLOROBENZENE		ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.55 U	0.5 U	0.5 U
SW82700	2,4,6-TRICHLOROPHENOL		ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.55 U	0.5 U
SW82700	2,4,6-TRICHLOROPHENOL		ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.55 U	0.5 U	0.5 U
SW82700	2,4-DICHLOROPHENOL		ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.55 U	0.5 U	0.5 U
SW82700	2,4-DIMETHYLPHENOL		ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
SW82700	2,4-DINITROPHENOL		ug/L	14 U	14 U	14 U	14 U	14 U	14 U	14 U	14 U	14 U
SW82700	2,4-DINITROTOLUENE		ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
SW82700	2,6-DINITROTOLUENE		ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.55 U	0.5 U
SW82700	2-CHLORONAPHTHALENE		ug/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
SW82700	2-CHLOROPHENOL		ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.55 U	0.5 U
SW82700	2-METHYL-4,6-DINITROPHENOL		ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.55 U	0.5 U
SW82700	2-METHYLNAPHTHALENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
SW82700	2-NITRONAPHTHALENE		ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
SW82700	2-NITROPHENOL		ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
SW82700	3,3-DICHLOROBENZIDINE		ug/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
SW82700	3-NITRONAPHTHALENE		ug/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
SW82700	4-BROMODIPHENYL ETHER		ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.55 U	0.5 U
SW82700	4-CHLORO-3-METHYLPHENOL		ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
SW82700	4-CHLOROANILINE		ug/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
SW82700	4-CHLOROPHENYL PHENYL ETHER		ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.55 U	0.5 U
SW82700	4-NITROANILINE		ug/L	0.9 U	0.91 U	0.91 U	0.91 U	0.91 U	0.99 U	0.9 U	0.91 U	0.91 U
SW82700	4-NITROPHENOL		ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
SW82700	ACENAPHTHENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	ACENAPHTHYLENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	ANILINE	100	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
SW82700	ANTHRACENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDINE		ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
SW82700	BENZIDIANTHRACENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.16 J	0.1 U	0.16 J	0.1 U
SW82700	BENZIDOPYRENE		ug/L	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.12 U	0.11 U	0.12 U	0.11 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
SW82700	BENZIDOPYRORYLENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700	BENZIDOPYRULANTHRENE		ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.11 U	0.1 U
SW82700</												

Parameter	Surface Water	National	Location ID	RIVERCHANL	RIVERCHANL	RIVERCRIB	RIVERCRIB
	Discharge	Recommended	Sample ID	RIVER-CHANNEL-20220603	RIVER-CHANNEL-20221213	RIVER-CRIB-20220603	RIVER-CRIB-20221213
Parameter	Limits	Water Quality	Sample Date	6/3/2022	12/13/2022	6/3/2022	12/13/2022
Parameter	Limits	Criteria	Units				
1,1,1-TRICHLOROETHANE	--	20000	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2,2-TETRACHLOROETHANE	--	3	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	--	--	ug/L	--	0.2 U	--	0.2 U
1,1,2-TRICHLOROETHANE	--	8.9	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,1-DICHLOROETHANE	37400	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,1-DICHLOROETHYLENE	--	20000	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,2,3-TRICHLOROPROPANE	600	--	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-TRICHLOROBENZENE	560	0.076	ug/L	--	0.2 U	--	0.2 U
1,2,4-TRIMETHYLBENZENE	--	--	ug/L	--	0.1 U	--	0.1 U
1,2-CIS-DICHLOROETHYLENE	--	--	ug/L	--	0.1 U	--	0.1 U
1,2-DIBROMO-3-CHLOROPROPANE	--	--	ug/L	--	0.4 U	--	0.4 U
1,2-DIBROMOETHANE	--	--	ug/L	--	0.1 U	--	0.1 U
1,2-DICHLOROBENZENE	--	3000	ug/L	--	0.1 U	--	0.1 U
1,2-DICHLOROETHANE	--	650	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,2-DICHLOROPROPANE	495	31	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,2-TRANS-DICHLOROETHYLENE	--	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,3-CIS-DICHLOROPROPYLENE	4530	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,3-DICHLOROBENZENE	--	--	ug/L	--	0.1 U	--	0.1 U
1,3-TRANS-DICHLOROPROPYLENE	--	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,4-DICHLOROBENZENE	--	--	ug/L	--	0.1 U	--	0.1 U
2-HEXANONE	--	--	ug/L	0.6 U	0.6 U	0.6 U	0.6 U
ACETONE	--	--	ug/L	3.7 J	3 U	6.0 J	3 U
BENZENE	212	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
BROMOFORM	--	--	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
CARBON DISULFIDE	--	--	ug/L	0.4 U	0.4 U	0.4 U	0.4 U
CARBON TETRACHLORIDE	--	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
CHLOROBENZENE	16100	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
CHLORODIBROMOMETHANE	--	--	ug/L	0.1 U	0.1 U	0.11 J	0.1 U
CHLOROETHANE	--	--	ug/L	0.2 U	0.2 U	0.2 U	0.2 U

Parameter	Surface Water	National	Location ID	RIVERFLUME	RIVERFLUME	RIVERUPSTR	RIVERUPSTR
	Discharge	Recommended	Sample ID	RIVER-FLUME-20220603	RIVER-FLUME-20221213	RIVER-UPSTREAM-20220603	RIVER-UPSTREAM-20221213
Parameter	Limits	Water Quality	Sample Date	6/3/2022	12/13/2022	6/3/2022	12/13/2022
Parameter	Limits	Criteria	Units				
CHLOROFORM	61.1	--	ug/L	14	1.1	0.1 U	0.1 U
DICHLOROBROMOMETHANE	--	--	ug/L	0.45 J	0.1 U	0.1 U	0.1 U
DICHLORODIFLUOROMETHANE	--	--	ug/L	--	0.2 U	--	0.2 U
ETHYLBENZENE	450	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
ISOPROPYLBENZENE	--	--	ug/L	--	0.1 U	--	0.1 U
METHYL BROMIDE	--	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
METHYL CHLORIDE	--	--	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
METHYL ETHYL KETONE	--	--	ug/L	2 U	2 U	2 U	2 U
METHYL ISOBUTYL KETONE	12000	--	ug/L	0.6 U	0.6 U	0.6 U	0.6 U
METHYLENE CHLORIDE	224	--	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
METHYL-T-BUTYL ETHER	--	--	ug/L	--	0.1 U	--	0.1 U
NAPHTHALENE	--	--	ug/L	--	0.2 U	--	0.2 U
STYRENE	--	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
TETRACHLOROETHYLENE	257	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
TOLUENE	4500000	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
TRICHLOROETHYLENE	868	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
TRICHLOROFUOROMETHANE	--	--	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
VINYL CHLORIDE	--	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
XYLENES, TOTAL	500	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U

Parameter	Surface Water	National	Location ID	RIVERFLUME	RIVERFLUME	RIVERUPSTR	RIVERUPSTR
	Discharge	Recommended	Sample ID	RIVER-FLUME-20220603	RIVER-FLUME-20221213	RIVER-UPSTREAM-20220603	RIVER-UPSTREAM-20221213
	Limits	Water Quality	Sample Date	6/3/2022	12/13/2022	6/3/2022	12/13/2022
		Criteria	Units				
1,1,1-TRICHLOROETHANE	--	200000	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2,2-TETRACHLOROETHANE	--	3	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	--	--	ug/L	--	0.2 U	--	0.2 U
1,1,2-TRICHLOROETHANE	--	8.9	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,1-DICHLOROETHANE	37400	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,1-DICHLOROETHYLENE	--	20000	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,2,3-TRICHLOROPROPANE	600	--	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-TRICHLOROBENZENE	560	0.076	ug/L	--	0.2 U	--	0.2 U
1,2,4-TRIMETHYLBENZENE	--	--	ug/L	--	0.1 U	--	0.1 U
1,2-CIS-DICHLOROETHYLENE	--	--	ug/L	--	0.1 U	--	0.1 U
1,2-DIBROMO-3-CHLOROPROPANE	--	--	ug/L	--	0.4 U	--	0.4 U
1,2-DIBROMOETHANE	--	--	ug/L	--	0.1 U	--	0.1 U
1,2-DICHLOROBENZENE	--	3000	ug/L	--	0.1 U	--	0.1 U
1,2-DICHLOROETHANE	--	650	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,2-DICHLOROPROPANE	495	31	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,2-TRANS-DICHLOROETHYLENE	--	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,3-CIS-DICHLOROPROPYLENE	4530	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,3-DICHLOROBENZENE	--	--	ug/L	--	0.1 U	--	0.1 U
1,3-TRANS-DICHLOROPROPYLENE	--	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
1,4-DICHLOROBENZENE	--	--	ug/L	--	0.1 U	--	0.1 U
2-HEXANONE	--	--	ug/L	0.6 U	0.6 U	0.6 U	0.6 U
ACETONE	--	--	ug/L	3 U	3 U	3.0 J	3 U
BENZENE	212	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
BROMOFORM	--	--	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
CARBON DISULFIDE	--	--	ug/L	0.4 U	0.4 U	0.4 U	0.4 U
CARBON TETRACHLORIDE	--	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
CHLOROBENZENE	16100	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
CHLORODIBROMOMETHANE	--	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
CHLOROETHANE	--	--	ug/L	0.2 U	0.2 U	0.2 U	0.2 U

Parameter	Surface Water	National	Location ID	RIVERCHANL	RIVERCHANL	RIVERCRIB	RIVERCRIB
	Discharge	Recommended	Sample ID	RIVER-CHANNEL-20220603	RIVER-CHANNEL-20221213	RIVER-CRIB-20220603	RIVER-CRIB-20221213
	Limits	Water Quality	Sample Date	6/3/2022	12/13/2022	6/3/2022	12/13/2022
		Criteria	Units				
CHLOROFORM	61.1	--	ug/L	0.1 U	0.1 U	1.0	0.1 U
DICHLOROBROMOMETHANE	--	--	ug/L	0.1 U	0.1 U	0.35 J	0.1 U
DICHLORODIFLUOROMETHANE	--	--	ug/L	--	0.2 U	--	0.2 U
ETHYLBENZENE	450	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
ISOPROPYLBENZENE	--	--	ug/L	--	0.1 U	--	0.1 U
METHYL BROMIDE	--	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
METHYL CHLORIDE	--	--	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
METHYL ETHYL KETONE	--	--	ug/L	2 U	2 U	2 U	2 U
METHYL ISOBUTYL KETONE	12000	--	ug/L	0.6 U	0.6 U	0.6 U	0.6 U
METHYLENE CHLORIDE	224	--	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
METHYL-T-BUTYL ETHER	--	--	ug/L	--	0.1 U	--	0.1 U
NAPHTHALENE	--	--	ug/L	--	0.2 U	--	0.2 U
STYRENE	--	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
TETRACHLOROETHYLENE	257	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
TOLUENE	4500000	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
TRICHLOROETHYLENE	868	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
TRICHLOROFUOROMETHANE	--	--	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
VINYL CHLORIDE	--	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U
XYLENES,TOTAL	500	--	ug/L	0.1 U	0.1 U	0.1 U	0.1 U

Notes:

No concentrations above Surface Water Discharge Limits or USEPA National Recommended Water

Quality Criteria for Human Health

ug/L - micrograms per liter

U - Constituent not detected above the associated detection limit

