SEVENTH FIVE-YEAR REVIEW REPORT FOR
OTTATI & GOSS/KINGSTON STEEL DRUM SUPERFUND SITE
ROCKINGHAM COUNTY, NEW HAMPSHIRE

Prepared by

U.S. Environmental Protection Agency
Region 1
Boston, Massachusetts

BRYAN OLSON

Digitally signed by BRYAN OLSON
Date: 2024.09.10 08:57:19 -04'00'

Bryan Olson, Division Director
Superfund and Emergency Management Division

Date

SEMS Doc ID 100031438

Table of Contents

LIST OF ABBREVIATIONS & ACRONYMS

ABN	Acid/Base/Neutral Compound
AGQS	Ambient Groundwater Quality Standards
ARAR	Applicable or Relevant and Appropriate Requirement
AUR	Activity and Use Restriction
CASRN	Chemical Abstracts Service Registry Number
CBD	Conway Barrel and Drum Company
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
COC	Contaminant of Concern
DCE	Dichloroethylene
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
ESV	Ecological Screening Value
FS	Feasibility Study
FYR	Five-Year Review
GLCC/KSD	Great Lakes Container Corporation and Kingston Steel Drum
GMZ	Groundwater Management Zone
HFPO-DA	Hexafluoropropylene Oxide Dimer Acid (Gen-X)
HI	Hazard Index
HQ	Hazard Quotient
HQ-115/TFSI	Lithium bis[(trifluoromethyl)sulfonyl]azanide (HQ-115)
ICs	Institutional Controls
ILCR	Incremental Lifetime Cancer Risk
IMC	International Minerals and Chemicals Corporation
IRIS	Integrated Risk Information System
ISCO	In Situ Chemical Oxidation
LTTD	Low Temperature Thermal Desorption
MCL	Maximum Contaminant Level
µg/dL	Micrograms per Deciliter
µg/L	Micrograms per Liter
mg/kg	Milligrams per Kilogram
mg/kg/day	Milligrams per Kilogram per Day
mg/L	Milligrams per Liter
mg/m^3	milligram per cubic meter
NAAQS	National Ambient Air Quality Standards
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NHDES	New Hampshire Department of Environmental Services
NPL	National Priorities List
ng/L	Nanograms per Liter
O&G	Ottati and Goss, Inc.
O&M	Operation and Maintenance
OHHRRAF	OLEM's Human Health Regional Risk Assessment Forum
OLEM	Office of Land and Emergency Management
ORD	Office of Research and Development
OU	Operable Unit
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethylene
PFAS	Per- and Polyfluoroalkyl Substances

PFBA	Perfluorobutanoic Acid
PFBS	Perfluorobutane Sulfonic Acid
PFDoDA	Perfluorododecanoic Acid
PFHxA	Perfluorohexanoic Acid
PFHxS	Perfluorohexane Sulfonate
PFNA	Perfluorononanoic Acid
PFOA	Perfluorooctanoic Acid
PFODA	Perfluorooctadecanoic Acid
PFOS	Perfluorooctane Sulfonate
PFPrA	Perfluoropropanoic Acid
PFTetA	Perfluorotetradecanoic Acid
PFUDA	Perfluoroundecanoic Acid
PPRTV	Provisional Peer Reviewed Toxicity Value
PRP	Potentially Responsible Party
ppb	Parts per Billion
ppm	Parts per Million
ppt	Parts per Trillion
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RfC	Reference Concentration
RfD	Reference Dose
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
RSL	Regional Screening Level
TBC	To Be Considered
TCE	Trichloroethylene
TFSI	Trifluoro-N-(trifluoromethanesulfonyl)methanesulfonamide
UU/UE	Unlimited Use and Unrestricted Exposure
VISL	Vapor Intrusion Screening Level
VOC	Volatile Organic Compound

I. INTRODUCTION

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

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National 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 seventh FYR for the Ottati & Goss/Kingston Steel Drum Superfund Site (the Site). The triggering action for this statutory review is the completion date of the previous FYR. The FYR has been prepared because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of four operable units (OUs). OU-1 consists of soil treatment at the Ottati and Goss, Inc. (O&G) property. OU-2 was a groundwater treatment design conducted by the settling parties under the 1988 Consent Decree (CD). OU-2 is thus complete, and no response action is anticipated. After the 1993 CD was entered, OU-3 and OU-4 were designated to complete the remediation. OU-3 addressed groundwater contamination. OU-4 addressed building demolition and soil and sediment contamination.

EPA remedial project manager (RPM) Ian Clarke led the FYR. Participants from EPA included human health risk assessor Paulina Do, ecological risk assessor TaChalla Gibeau, attorney David Peterson and community involvement coordinator (CIC) Aaron Shaheen. Other participants included Michael Summerlin from the New Hampshire Department of Environmental Services (NHDES) and Johnny Zimmerman-Ward and Kirby Webster from EPA support contractor Skeo. The review began on 10/16/2023.

Appendix A includes a list of documents reviewed for this FYR. Appendix B provides a chronology of Site events.

SITE BACKGROUND

The Site is located in the lower Merrimack River Valley/Coastal Plain part of southeastern New Hampshire. The Site is situated eight miles north of Haverhill, Massachusetts, and about three miles south of the Center of Kingston, New Hampshire (Figure 1).

The Site is comprised of three areas (Figure 2):

- A 5.88-acre parcel owned by the state of New Hampshire and referred to as the Great Lakes Container Corporation and Kingston Steel Drum (GLCC/KSD) area.
- A 29-acre parcel owned by BBS Realty Trust, Concord Realty Trust and John Peter Sebetes. One acre of this parcel was leased to O&G; this area is referred to as the O&G part of the Site.
- A 23-acre marsh (Country Pond Marsh) located east of the GLCC/KSD section between Route 125 and Country Pond. IMCERA Group Inc. purchased this parcel in 1984.

From the late 1950s to 1967, the Conway Barrel and Drum Company (CBD) owned the Site and performed steel drum reconditioning operations in the GLCC/KSD part of the Site. Reconditioning operations included rinsing drums and disposing of caustic rinse water in a dry well near South Brook. These operations polluted South Brook and Country Pond, so CBD established two leaching pits (lagoons) in areas removed from South Brook. Kingston Steel Drum (KSD), the operator of the facility, continued the same operations as CBD.

In 1973, International Minerals and Chemicals Corporation (IMC) purchased the drum and reconditioning plant and operated it until 1976. GLCC then purchased the property in 1976. Beginning in 1978, O&G operations consisted of "processed hazardous materials brought to the Site in drums." Heavy sludges from the wash tank and drainings and residues from incinerator operations at GLCC were transported to the O&G part of the Site for processing. O&G operations stopped in 1979. GLCC continued drum reconditioning on its part of the Site until July 1980. The Site is currently vacant and in a rural setting.

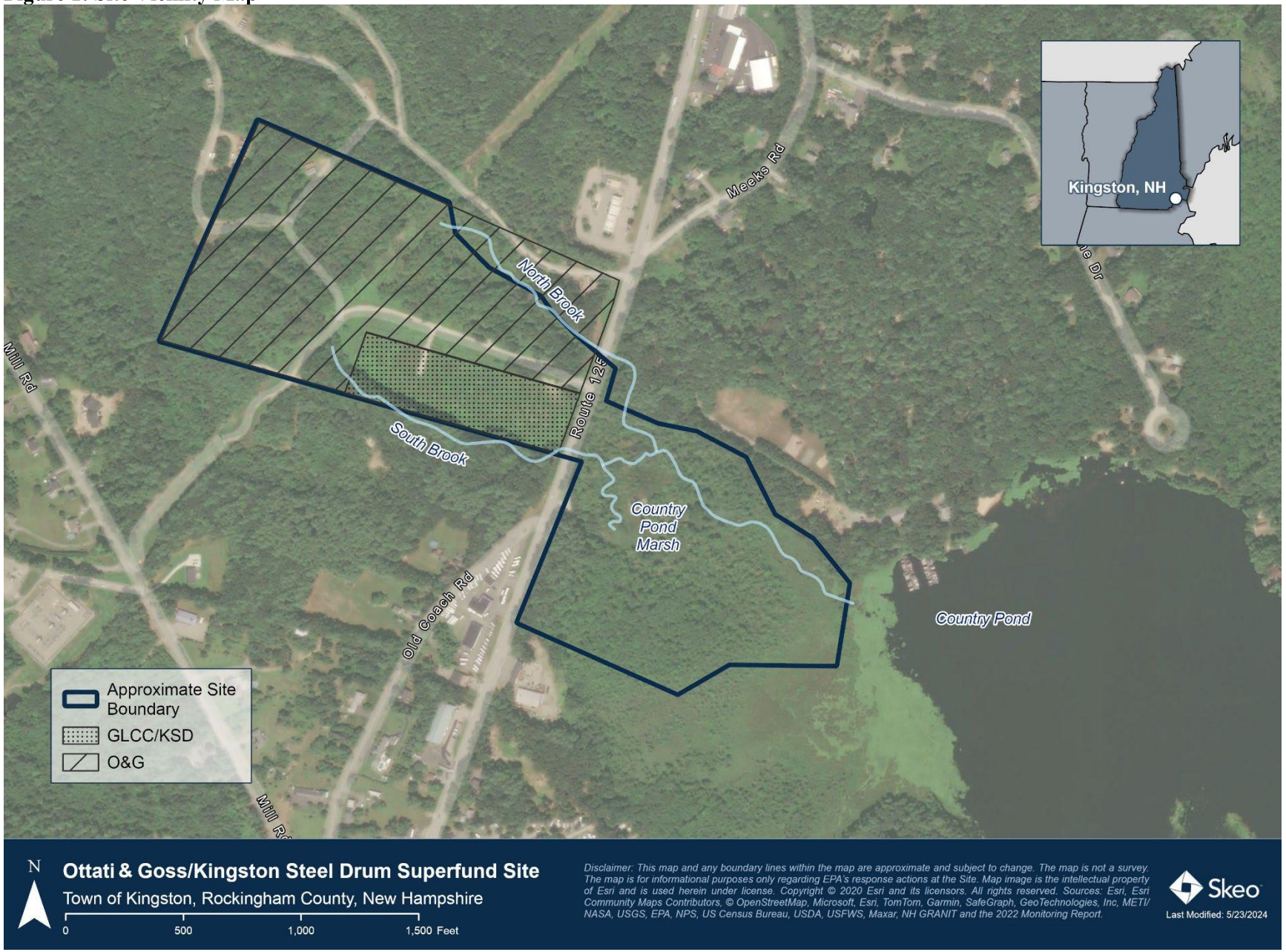
There are private residences, commercial businesses and a campground near the Site that use groundwater as their potable drinking water source. Monitoring of drinking water wells is discussed in the data review section of this FYR.

Site groundwater is in unconsolidated, stratified drift deposits (sand and gravel), which form the overburden aquifer for most of the Site. Groundwater is also present in bedrock underlying the Site. Groundwater generally flows in a southeasterly direction towards Country Pond. Two brooks are located on the northern and southern sides of the Site, respectively. North Brook flows east near the northern boundary of the Site, through a culvert under Route 125 and into Country Pond Marsh. South Brook flows east near the southern boundary of the Site, through a culvert under Route 125 and into the Country Pond Marsh. The two brooks combine in the Country Pond Marsh area before discharging into Country Pond. Country Pond is used recreationally for swimming, fishing and boating. A fish consumption advisory is in place for Country Pond due to the potential presence of PCB (polychlorinated biphenyls) contamination.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Ottati & Goss/Kingston Steel Drum		
EPA ID: NHD990717647		
Region: 1	**State:** NH	**City/County:** Kingston/Rockingham
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	**Has the Site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name: Ian Clarke		
Author affiliation: EPA		
Review period: 10/16/2023 - 9/11/2024		
Date of Site inspection: 12/8/2023		
Type of review: Statutory		
Review number: 7		
Triggering action date: 9/11/2019		
Due date *(five years after triggering action date)*: 9/11/2024		

Figure 1: Site Vicinity Map



II. RESPONSE ACTION SUMMARY

BASIS FOR TAKING ACTION AND RESPONSE ACTIONS

Pre-Record of Decision Actions

From the late 1950s to 1967, CBD's reconditioning operations disposed of caustic rinse water in a dry well near South Brook. The location of the dry well was not documented. Due to State concerns about the dry well being used for disposal of rinse water near South Brook and complaints of South Brook and Country Pond pollution, CBD established leaching pits (commonly referred to as the caustic lagoon), which discharged into South Brook and eventually into Country Pond. During CBD operations, the State received complaints by area residents. These complaints included reports of fish kills in Country Pond, dying vegetation along South Brook, and skin irritation of swimmers in Country Pond.

In 1973 IMC continued Site operations but made changes to reduce potential for pollution at the Site. Before purchasing the property in 1973, IMC collected water samples from the caustic lagoon and select downgradient receptors. The samples indicated degraded water quality in the caustic lagoon, the Kingston Swamp and on-site drainage into South Brook at Route 125. Site files report that the Kingston Swamp was backfilled in 1973 and the caustic lagoon was backfilled in 1974.

In July 1979, the State ordered Site owners and operators to remove drums and cease Site operations. Between December 1980 and July 1982, EPA processed and removed approximately 4,000 drums of waste from the Site. IMC performed drum excavation and removal operations between July and December 1984. IMC removed all stockpiled contaminated soil from the Site by June 1985. About 12,800 tons of contaminated soil, drums and metal debris were removed. EPA listed the Site on the National Priority List (NPL) in 1983.

Basis of Taking Action

The New Hampshire Water Supply and Pollution Control Commission (currently NHDES) conducted a remedial investigation/feasibility study (RI/FS) under a Cooperative Agreement with EPA in 1986. The RI/FS conclusions included:

- Soil throughout the Site was contaminated with volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), acid/base/neutral compounds (ABNs), metals and cyanide at high concentrations.
- Surface water in North and South Brooks and Country Pond contained dissolved VOCs.
- Sediments in North and South Brooks and the marsh contained VOCs and PCBs.
- Groundwater contaminated with VOCs, arsenic, nickel, iron and manganese was detected in several plumes. The plumes appeared to merge into one plume, which migrated under Route 125 and the Country Pond Marsh, eventually discharging into Country Pond.
- No significant airborne contaminants were identified.

A baseline risk assessment conducted as part of the RI evaluated the following human exposure pathways:

- Ingestion of groundwater in overburden, bedrock aquifers and Country Pond water.
- Ingestion of contaminated fish.
- Inhalation of contaminated vapors or particulates.
- Direct contact with contaminated soils, sediment or water on-site or off-site.

Ecological exposure evaluated ingestion of, or dermal contact with, contaminated media by ecological receptors associated with the Site.

The results of the human health risk assessment concluded that the following exposure pathways present risks:

- Direct contact with on-site soil contaminated with PCBs.
- Ingestion of contaminated groundwater on-site and in the marsh.
- Ingestion of sediments contaminated with PCBs.
- Contaminated soils pose a risk to groundwater by leaching.

The ecological risk assessment demonstrated potential risks to the invertebrate community inhabiting the wetland soils and sediments in addition to birds and other wildlife foraging in the associated wetlands due to exposure to one or more Site related COCs in the marsh area.

Response Actions

Enforcement Activities

On November 13, 1988, a CD was entered in the U.S. District Court for the District of New Hampshire. The settlement included three potentially responsible parties (PRPs): General Electric Company; Solvents Recovery Service of New England; and Lilly Industrial Coatings, Inc. to perform response actions at the O&G part of the Site.

On December 22, 1993, a second CD was entered in the U.S. District Court for the District of New Hampshire. The settlement included IMCERA Group, Inc. and more than 300 de minimis (minimally contributing) PRPs for the Great Lakes Container part of the Site.

Remedial Action Objectives

EPA selected the remedy for the Site in the 1987 Record of Decision (ROD), 1999 Explanation of Significant Differences (ESD), 2002 ESD, and 2007 Amended ROD. The 2007 Amended ROD identified the following remedial action objectives (RAOs) for OU-1 through OU-4, as applicable, which updated RAOs from the 1987 ROD:

- Prevent ingestion exposures to groundwater in exceedance of appropriate applicable or relevant and appropriate requirements (ARARs) or associated with a Hazard Index (HI) >1 and/or Incremental Lifetime Cancer Risk (ILCR) > 10^{-6} to 10^{-4} for future residential use as tap water.
- Limit migration of contaminants from the residual source areas west of Route 125 at concentrations in exceedance of appropriate ARARs or associated with an ingestion HI >1 and or ILCR >10^{-6} to 10^{-4} for future residential use as tap water.
- Protect the remediated and restored wetlands east of Route 125 (Country Pond Marsh), and the wetlands north of the State-owned property from potential damage from actions to remediate groundwater.

Remedy Components

Table 1 provides a summary of the final remedy components as determined by Site decision documents.

Table 1: Remedy Components by OU

Operable Unit		Remedial Components
OU-1	O&G property soil	• Excavation of contaminated soil with total VOC concentrations of 1 part per million (ppm) or more and on-site treatment by aeration. • Reuse of treated soil as backfill. • Grading and placement of four inches of sandy loam cover, followed by hydroseeding to restore grass. • Off-site disposal of process residuals, stumps, logs and drums uncovered during excavation. • Ambient air quality monitoring during excavation and on-site treatment, to ensure that off-site contaminant concentrations in air did not exceed the air quality standards established for the project.

Operable Unit		Remedial Components
OU-3 (as amended)	Groundwater	• Injecting an oxidizing agent directly into groundwater to destroy or reduce organic contaminants to safe levels. • Installing monitoring wells at the Site and on parts of abutting properties to evaluate progress of groundwater cleanup. • Placing restrictions on land and groundwater use at the Site and on parts of abutting properties until contaminants in groundwater have been destroyed or reduced to safe levels.
OU-4	Building demolition and soil and sediment contamination	• Excavation of PCB-contaminated soil and sediment from the upland area, South Brook, and the marsh areas and on-site treatment by thermal desorption. • Excavation of contaminated soil and sediment with total VOC concentrations of 1 ppm or more and on-site treatment by aeration. • Decontamination and removal of existing structures on the Site. • Reuse of treated soil as backfill within the upland area. • Re-grading and re-vegetation of the upland areas to minimize the migration of and prevent direct contact with any residual contamination. • Air emissions testing during on-site treatment to ensure compliance with applicable Resource Conservation and Recovery Act (RCRA) air emission standards. • Ambient air quality monitoring during excavation activities to ensure that off-site contaminant concentrations do not exceed applicable standards. • Establishment of an institutional control on the GLCC/KSD state-owned property to restrict the area to commercial use. • Post-construction activities consisting of groundwater monitoring, Site inspections, Site maintenance, and FYRs.

Soil/Sediment and Groundwater Cleanup Levels

The 1987 ROD established PCB cleanup levels for soils (20 milligrams per kilogram, mg/kg) and sediments (1 mg/kg).[1] The 1998 FYR determined that the PCB soil cleanup level would not be protective for future residential uses at the GLCC/KSD portion of the Site, but would be protective of human health for commercial use. The 1999 ESD changed the allowable future Site land use from residential to commercial and required use restrictions (institutional controls) for the GLCC/KSD area. However, due to new risk assessment approaches adopted by EPA since the 1987 ROD, this land use change did not result in a change to the 20 mg/kg PCB cleanup level for soil. The 1999 ESD also adjusted the sediment PCB cleanup goal from 1 mg/kg to 10 mg/kg for a five-acre area of the brook and wetland based on ecological risk.[2] The PCB cleanup level of 1 mg/kg applies to a section of South Brook at the entrance to the culvert. Before starting the OU-4 soil cleanup in 2001, EPA recalculated risks associated with the 20 mg/kg cleanup level during the 1999 ESD. EPA determined that a 3 mg/kg risk-based cleanup level would be protective under future residential use scenarios based on new information about the toxicity of PCBs. The residential cleanup level of 3 mg/kg total PCBs was achieved for two areas next to the former GLCC/KSD property, which no longer required land use restrictions for these properties. The 2009 FYR determined that the 3 mg/kg cleanup level was not achieved in one area at depth and that protectiveness of the 3 mg/kg residential PCB cleanup goal needed to be re-evaluated. The 2014 FYR determined that PCB concentrations at depth were within acceptable risk limits.

The 1987 ROD also established a cleanup level for total VOCs in soil of 1 mg/kg for the protection of groundwater. During on-site treatment of soil using low temperature thermal aeration, hourly confirmation samples were collected each day from staged treated soil. If the average total VOC concentration was less than 1 mg/kg and individual concentrations of the four indicator contaminants (1,2-dichloroethane, benzene,

[1] The cleanup goal for PCBs is based on residential direct contact exposure.

[2] The Ecological Risk Assessment concluded that 70% of the total PCB sediment risk could be eliminated (resulting in a hazard quotient of < 1.5 throughout the 60-acre marsh) if brook and wetland sediments exceeding 10 mg/kg in a five-acre area were remediated.

trichloroethylene and tetrachloroethylene) were less than 0.1 mg/kg, treatment of soils from that day was considered acceptable. If average concentrations exceeded the cleanup levels, then the treated soils were reprocessed. Individual cleanup goals for the four indicator contaminants were not established in a decision document but were used to evaluate remedy performance.

The 1987 ROD established groundwater cleanup goals for four indicator VOCs (1,2-dichloroethane, trichloroethylene, tetrachloroethylene and benzene) based on a 1 x 10^{-5} risk. The 2007 Amended ROD updated groundwater cleanup goals, as shown in Table 2, for the four indicator VOCs and included cleanup goals for contaminants that did not have cleanup goals established in the 1987 ROD.

Table 2: Groundwater Cleanup Levels

Contaminant of Concern (COC)	Interim Cleanup Level (µg/L)	Basis for Cleanup Level
Benzene	5	MCL
1,2-Dichloroethane	5	MCL
Cis-1,2-Dichloroethene	70	MCL
1,4-Dichlorobenzene	75	MCL
Ethylbenzene	700	MCL
Hexachlorobutadiene	0.5	AGQS
Methyl-tert-butyl ether	13	AGQS
Naphthalene	20	AGQS
Styrene	100	MCL
Tetrachloroethene (PCE)	5	MCL
Tetrahydrofuran	154	AGQS
Toluene	1,000	MCL
Trichloroethene (TCE)	5	MCL
Vinyl Chloride	2	MCL
Total Xylene	10,000	MCL
1,4-Dioxane	3	AGQS
Arsenic	10	MCL
Lead	15	AGQS
Manganese	300	EPA Health Advisory
Nickel	100	AGQS
Total PCBs	0.5	MCL
Notes: Source: Table B-1 (pdf page 39) in the 2007 Amended ROD.		

STATUS OF IMPLIMENTATION

OU-1: O&G Property Soil

Pursuant to the 1988 CD, the PRPs performed response actions at the O&G part of the Site. In 1988 and 1989, these PRPs excavated and treated about 4,700 cubic yards of soil contaminated with VOCs at water table depth. The treatment was by thermal desorption (thermal aeration in the ROD). Site demobilization and OU-1 closure was completed on August 1, 1989.

OU-3: Groundwater

Implementation of the OU-3 remedy, as modified by the 2007 Amended ROD, consists of mobilization, construction of in situ chemical oxidation (ISCO) injection wells, monitoring well installation, and chemical oxidant injection. Oxidant injections began in July 2008. ISCO injections were completed within three groundwater residual source areas of the Site: Areas A and B on the part of the Site owned by the state of New Hampshire, and Area C on the North Plume area, which is located on privately-owned land north of Areas A and B (see supplemental figures in appendix D for locations of the Areas).

The selected chemical oxidant (base-activated sodium persulfate) was delivered into the subsurface (below the groundwater table) using a combination of permanent wells and temporary direct push injection points. Initial injections were completed in September 2008. EPA prepared a Preliminary Closeout Report for the Site in September 2008. Before ISCO remedial action, sitewide groundwater and surface water monitoring was performed in June 2008 to provide baseline data to monitor the overall Site plumes, including wells outside the ISCO injection areas. Full-scale injection events were conducted in 2008, 2009, and 2010. In Fall 2009, an ISCO event was conducted at one-half the magnitude of other events; it targeted Areas A and B. The 2012 ISCO Remedial Action Summary Report provides a summary of the three full-scale ISCO injection events between 2008 and 2010; evaluates results from groundwater performance monitoring and sitewide monitoring; and provides an overview of the groundwater plumes and conceptual site model following ISCO remediation. Long-term groundwater monitoring continues.

OU-4: Building demolition and remaining soil (GLCC/KSD) and sediment contamination

Phase 1 of the OU-4 remedial action (building demolition) was completed in February 1994. It included: asbestos abatement, building debris removal and disposal, sampling and analysis, utilities removal, removal of above-ground and underground storage tanks, contaminated soil and sediment disposal, and installation of a high density polyethylene cover over the southeast part of the former building.

Phase 2 of the OU-4 remedial action included soil and sediment excavation, low temperature thermal desorption (LTTD) treatment, and restoration activities which included backfilling. Between August 2001 and June 2002, 72,347 tons of PCB- and VOC-contaminated soil were excavated from the GLCC/ KSD area of the Site and treated in an on-site LTTD plant. Before treatment, debris (including drums, concrete, metal, wood, timbers and tires) was removed from the soil and disposed of off-site.

Between October 2001 and February 2002, 9,143 tons of sediment from the Country Pond Marsh were excavated, transported and disposed of as non-hazardous waste at a Resource Conservation and Recovery Act (RCRA) Subtitle D disposal facility. In addition, 492 tons of sediment were transported and disposed of as PCB hazardous waste (Toxic Substances Control Act) at a RCRA Subtitle C landfill facility. During remediation of OU-4, some soil above the 1 mg/kg total VOC cleanup goal on the GLCC/KSD portion of the Site next to State Route 125 could not be safely excavated due to concern over undermining the steep Route 125 embankment in this area.

Site restoration activities included backfilling, grading, seeding, vegetative plantings, and fence installation. Remediated areas of Country Pond Marsh were reconstructed and South Brook, which had been diverted during remediation, was restored between May 2002 and September 2002. In June 2002, 13 groundwater monitoring wells were installed at 10 locations at the Site. Other restoration activities included removing utilities, construction of permanent access roads, installation of a new chain-link fence with gates, reseeding, and removal of the South Brook diversion swale and recharge galleries.

INSTITUTIONAL CONTROLS (ICs)

The 2007 Amended ROD requires restrictions on land and groundwater use at the Site and on parts of abutting properties until contaminants in groundwater have been destroyed or reduced to levels protective of human health and the environment. In 2006, the state of New Hampshire recorded a notice to the chain of title for the GLCC/KSD property (R13, Lot 14) to document the land activity and use restrictions (AURs) required to maintain protectiveness of the soil remedy and establish institutional controls. The AURs allow for commercial or industrial uses provided soils are not disturbed at a depth greater than six feet. Use of the property as a residence, school, nursery, recreational area or any other use at which a child's presence is likely or intended is not permitted. Installation of groundwater wells or any removal or exposure to groundwater (except for remediation purposes) is not permitted unless such activity is first evaluated and approved by the EPA and NHDES.

In March 2012, the town of Kingston passed a Town Ordinance which implemented a Groundwater Management Zone (GMZ) at the Site. The Ordinance prohibits the use of groundwater for adjacent lots affected by the groundwater plume originating from the Site. Table 3 and Figure 2 show institutional controls at the Site.

NHDES also has a fish advisory in place for consumption in Country Pond for potential exposure to PCBs and mercury.[3]

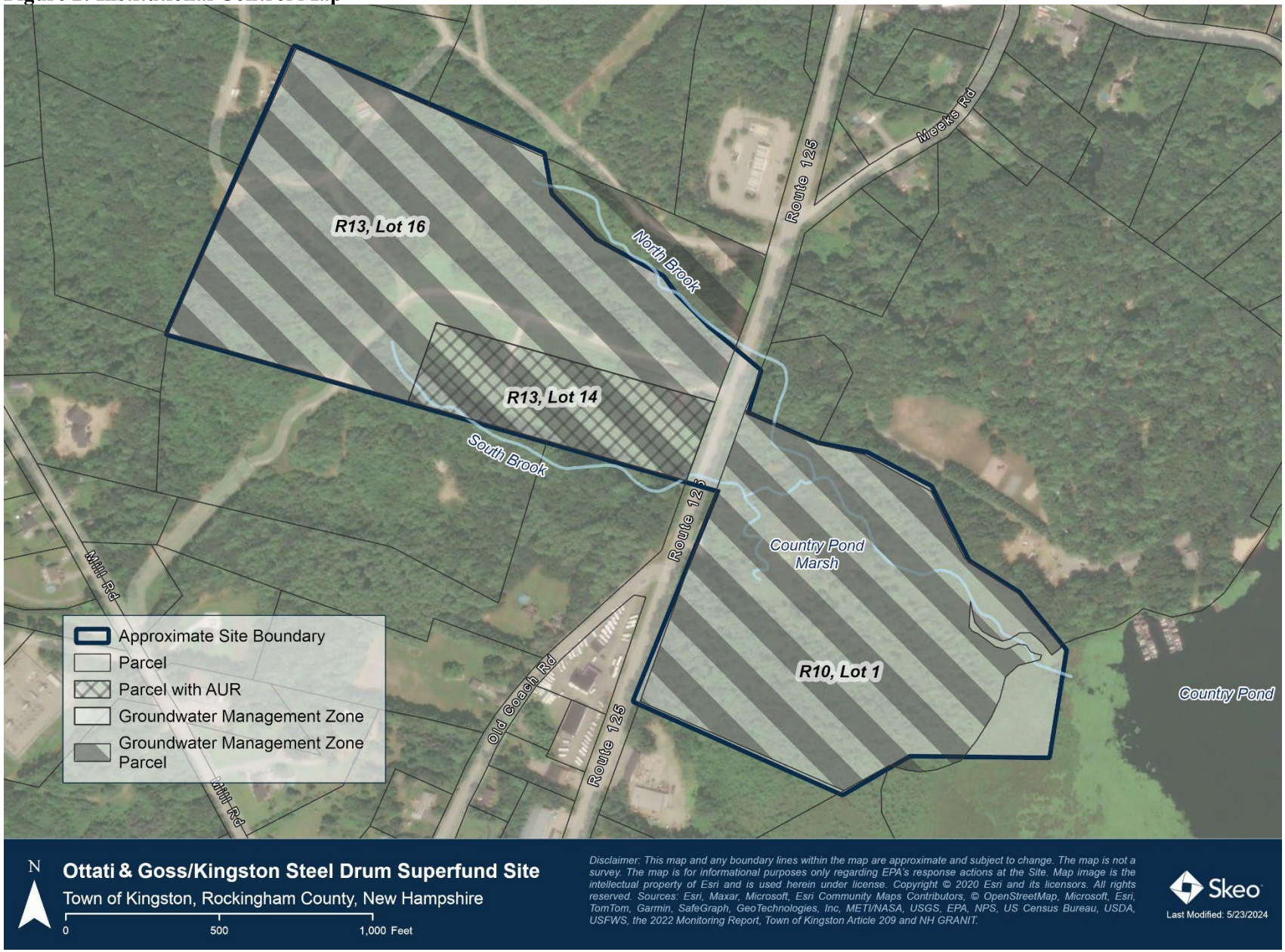
Table 3: Summary of Planned and/or Implemented Institutional Controls (ICs)

Media, Engineered Controls, and Areas That Do Not Support UU/UE Based on Current Conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date
Groundwater and land use restrictions	Yes	Yes	State owned, 5.88 acre GLCC/KSD area of the Site, R13, Lot 14	Land use limited to commercial/industrial. Use of groundwater prohibited.	AUR[a] October 26, 2006
Groundwater	Yes	Yes	R10, Lot 1; R13, Lot 14 and R13, Lot 16 (part)	Prohibits groundwater use and intrusive activities in wetlands.	Town Article 209[b]; Groundwater Management Zone Ordinance[c] March 13, 2012 (Amended March 14, 2023)

Notes:
a. AUR: https://semspub.epa.gov/work/01/269685.pdf
b. Town Article 209: www.kingstonnh.org/sites/g/files/vyhlif9761/f/uploads/ordinance_book_titlei_section200_article209_groundwatermgmtzone_03_14_2023_0.pdf; https://www.kingstonnh.org/sites/g/files/vyhlif9761/f/uploads/article_209_attachment_a_-_groundwater_management_zone_0.pdf
c. GMZ: https://www4.des.state.nh.us/DocViewer/?ContentId=5098331 (pdf page 91)

[3] Information about the fish advisory can be found at:https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/ard-ehp-25.pdf

Figure 2: Institutional Control Map



SYSTEMS OPERATION AND MAINTENANCE

There are no treatment systems on-site that require ongoing operation and maintenance (O&M). The state of New Hampshire owns the GLCC/KSD part of the Site and is responsible for ongoing O&M. The state of New Hampshire maintains the property (primarily mowing the grass and maintaining access restrictions). Groundwater monitoring wells remain on-site and are inspected for integrity during routine monitoring rounds. All ISCO injection wells and 33 Site groundwater monitoring wells that are no longer sampled have been decommissioned.

III. PROGRESS SINCE THE PREVIOUS REVIEW

Table 4 includes the protectiveness determinations and statements from the 2019 FYR. Table 5 includes the recommendations from the previous FYR and the current status of those recommendations.

Table 4: Protectiveness Determinations/Statements from the 2019 FYR Report

OU #	Protectiveness Determination	Protectiveness Statement
1	Protective	The remedy at OU1 is protective of human health and the environment because the remediation of soil has been completed to cleanup levels that are protective of human health and the environment.
3	Short-term Protective	The remedy at OU3 currently protects human health and the environment because the ISCO remedy successfully destroyed the majority of source mass, and the required ICs are in place to prevent the use of groundwater. However, in order for the OU3 remedy to be protective in the long-term, groundwater cleanup goals must be achieved throughout the aquifer and the extent of PFAS contamination associated with the Site needs to be further evaluated.
4	Protective	The remedy at OU4 is protective of human health and the environment because soil and sediments have been excavated to cleanup levels that are considered protective for the anticipated future use of the property.
Sitewide	Short-term Protective	The remedy at the Site is currently protective of human health and the environment. However, in order for the remedy to be protective in the long-term, groundwater cleanup goals must be achieved throughout the aquifer and the extent of PFAS contamination associated with the Site needs to be further evaluated.

Table 5: Status of Recommendations from the 2019 FYR Report

OU #	Issue	Recommendation	Current Status	Current Implementation Status Description	Completion Date (if applicable)
3	PFAS have been identified in select Site groundwater monitoring wells above site-specific Screening Levels and the State's current AGQS. PFAS have also been identified in surface water samples below site-specific health-based screening level for swimming/wading,	Evaluate the PFAS data collected and determine if any additional PFAS investigations are needed.	Ongoing	NHDES completed a 2019 PFAS Monitoring Report including PFAS sampling of groundwater, private well supplies and surface water. In 2022, NHDES completed 11 soil borings with the collection of 28 soil samples. To better define the nature and extent of PFAS in the bedrock aquifer and soil at the Site a Remedial Investigation (RI) is currently being conducted, which is expected to be completed in 2025.	Not applicable

	and in several private drinking water wells below EPA's Health Advisory.				

IV. FIVE-YEAR REVIEW PROCESS

COMMUNITY NOTIFICATION, COMMUNITY INVOLVMENT AND SITE INTERVIEWS

EPA issued an online news release in February 2024 to announce that the FYR was underway. A copy of the news release is included in Appendix C. The results of the review and the completed FYR Report will be made available at EPA's site profile page at www.epa.gov/superfund/og.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy that has been implemented to date. The results of these interviews are summarized below. Appendix E includes the completed interview forms.

Michael Summerlin, NHDES project manager, noted that the cleanup has been successful and the remedy is performing appropriately. He also noted that during this FYR period, the state conducted periodic groundwater monitoring and an ongoing PFAS investigation. Mr. Summerlin also noted several changes in standards or development of new standards for the following: the New Hampshire Ambient Groundwater Quality Standards (AGQS) for manganese (reduced from 840 micrograms per liter (µg/L) to 300 µg/L in January 2021), arsenic (reduced from 10 µg/L to 5 µg/L in July 2021), and certain PFAS (reduced from 70 nanograms per liter (ng/L) to 12 ng/L and 15 ng/L in July 2020 for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), respectively, and established in July 2020 for perfluorohexane sulfonate (PFHxS) and perfluorononanoic acid (PFNA) of 18 ng/L and 11 ng/L, respectively). Mr. Summerlin also said that the groundwater overlay district [GMZ] boundary may need to be expanded to include a southerly-abutting lot, which the owner is considering selling. He also reported that a neighboring property owner inquired about whether their property requires any site-related restrictions.

Susan Ayer, administrative assistant to the Select Board in Kingston, indicated awareness of the environmental issues at the Site. She indicated that the Select Board feels well informed but would also appreciate inclusion of the Conservation Commission in communications. The Conservation Commission is interested in sowing wildflower seed and possibly placing bird boxes on the Site. She was not aware of any trespassing, emergency response, or land use changes at the Site.

A private resident who owns a neighboring property reported awareness of the environmental issues and cleanup activities at the Site. He indicated being satisfied with the Site's cleanup and management. He did not feel there were significant impacts on the surrounding community and was unaware of any unusual or unexpected activities. He felt EPA had kept him well-informed. He noted that he owns a private well as his main water supply.

DATA REVIEW

The most recent data available for review during this FYR period includes:

- 2022 Groundwater Data Sampling of 12 wells for VOCs. GMZ monitoring wells were most recently sampled in 2021.
- 2022 Groundwater PFAS Sampling.
- 2022 Private Drinking Water Supply Wells for 1,4-dioxane and PFAS.
- 2019 Surface Water Sampling.
- 2022 PFAS Soil Sampling at 11 borings.

Supplemental sampling as part of an RI for the presence of PFAS is ongoing, however this data was not available for inclusion in this FYR report.

A general summary of data collected during this FYR period includes:

- The main VOCs in Site groundwater include PCE, TCE, cis 1,2-DCE, and vinyl chloride localized in Area A and Area B of the GLCC/KSD area.
- No VOCs were detected at GMZ boundary wells during the most recent sampling event in 2021.
- 1,4-Dioxane is present at concentrations greater than the interim cleanup levels for groundwater in Country Pond Marsh monitoring wells.
- Arsenic and manganese continue to exceed interim groundwater cleanup levels in five overburden wells and one bedrock well in the GMZ.
- PFAS are detected in groundwater, surface water and soil samples. Ongoing investigation is being conducted to identify the source and distribution of PFAS.
- Private drinking water wells have detected PFOA and PFOS. The highest detected concentration of PFOA was in the water quality sample collected from overburden water supply well DW-5 (4.33 ng/L), which is above the April 2024 MCL for PFOA (4 ng/L).

Groundwater Flow Properties

The predominant groundwater flow direction in the overburden is inferred to be east-southeast toward Country Pond Marsh, eventually discharging to the marsh and Country Pond, east of Route 125. Groundwater in the northern part of Area C mainly discharges to North Brook (Figure D-1, Appendix D). Based on groundwater elevation data from bedrock monitoring wells, groundwater flow in fractured bedrock appears to converge in the general area of the former GLCC/KSD source area of the Site (Figure D-2, Appendix D). Groundwater flow in shallow fractures in the general area appears to converge from the north, west and south toward the Site with flow continuing in a general easterly direction toward Country Pond. Bedrock monitoring wells are widely spaced, so groundwater elevation contours should be considered general.

Groundwater COCs

In Spring 2022, 12 groundwater monitoring wells were sampled for VOCs. VOCs that continue to exceed cleanup goals include PCE, TCE, cis-1,2-DCE and vinyl chloride. Other contaminants of concern (COCs) that exceeded cleanup goals during this FYR period include benzene (T-30SB maximum concentration of 11 µg/L in 2021, compared to the cleanup goal of 5 µg/L), 1,4-dichlorobenzene (T-21 with a maximum concentration of 160 µg/L in 2021 compared to the cleanup goal of 75 µg/L) and naphthalene (T-14D with a maximum concentration of 31 µg/L in 2021 compared to the cleanup goal of 20 µg/L).

Total VOC concentrations greater than 1,000 µg/L were observed in Area A at deep overburden well T-14D (1,489 µg/L) and in Area B at overburden well T-21 (3,156 µg/L). Figures D-3 through D-5 in Appendix D depict observed concentrations for PCE, TCE, cis-DCE and vinyl chloride during the 2022 sampling event. Figure D-6 and D-7 depict concentration trend graphs of VOCs in T-14D and T-21. Based on observed trends, concentrations in T-14D generally appear to be variable between 2008 and 2022 with an overall potentially decreasing trend since 2012. Concentrations in T-21 have been potentially increasing for vinyl chloride and cis-1,2-DCE since 2008, with a potential decreasing trend for TCE. Current trends do not indicate when VOC concentrations will meet applicable cleanup goals in groundwater monitoring points T-14D and T-21. However, the 2007 Amended ROD estimated based on natural attenuation modeling that groundwater monitoring would be needed for about 30 years.

In 2021, VOCs were not detected above COC cleanup goals in the GMZ boundary monitoring wells. Consistent with the recommendations in the 2021 report, no GMZ boundary monitoring wells were sampled for VOCs during the Spring 2022 sampling round.

Figure D-8 in Appendix D provides an illustration of the distribution of 1,4-dioxane in groundwater in 2022. Concentrations of 1,4-dioxane in 2022 exceed the interim cleanup levels for groundwater (3 µg/L) in Country Pond Marsh wells T-29 (6.7 µg/L), T-30 (5.39 µg/L) and T-30SB (108 µg/L), within the GMZ. Figure D-9 in Appendix D shows concentration trend graphs for these wells. Between 2008 and 2022, a potential decreasing concentration trend was observed at T-29 and a generally consistent concentration trend was observed at T-30. In well T30SB, 1,4-dioxane concentrations generally decreased until 2015 when an increasing trend was observed.

Lead and nickel concentrations did not exceed ROD interim cleanup levels in groundwater samples collected in 2022. Arsenic was detected at concentrations exceeding the ROD interim cleanup level (10 µg/L) in groundwater samples collected from five overburden wells and one bedrock well, including Area B wells T-20S and T-22, and Country Pond Marsh wells T-29, T-30, T-30SB and T-32. The highest concentration of arsenic was detected at Country Pond Marsh overburden well T-32 (0.08966 mg/L). Manganese concentrations exceeded the ROD interim cleanup level for groundwater (300 µg/L) in five overburden wells and one bedrock well during the 2022 sampling event. The highest concentration of manganese was detected at Country Pond Marsh bedrock well T-30SB (8.396 mg/L). Consistent with the reducing condition of groundwater measured in samples collected from monitoring wells on most of the Site, manganese and arsenic in the groundwater are likely naturally occurring elements mobilized to a greater extent in areas where degradation of the VOC contaminant plumes have affected the groundwater chemistry. Figure D-10 in Appendix D depicts arsenic and manganese distributions. Figures D-11 and D-12 depict observed arsenic and manganese concentrations exceeding the ROD interim cleanup levels in groundwater.

PFAS in Groundwater

PFAS was first sampled and detected in groundwater and drinking water at the Site and in the Site area in 2018. Twenty PFAS compounds were detected in on-site groundwater monitoring wells during 2022. PFAS impacts at the Site were evaluated based on currently regulated PFAS, which includes PFOA, PFOS, PFNA, PFHxS, and HFPO-DA. Figures D-13 and D-14 depict the observed distribution of PFOA and PFOS in overburden and bedrock groundwater during the 2022 sampling event. PFOA was detected at a maximum concentration of 414 ng/L at overburden well T-32 and 1,760 ng/L in bedrock well T-30SB. PFOS was detected at a maximum concentration of 3,170 ng/L at overburden well T-21 and 1,900 ng/L at bedrock well T-30SB. PFNA was detected in Country Pond Marsh wells T-30SB (28.1), T-30 (11.9 ng/L) and T-32 (11.6 ng/L). PFHxS was detected in deep overburden well T-19D at (15.4 ng/L), overburden well T-21 (23.2 ng/L), shallow bedrock well T-30SB (55.3 ng/L), and deep bedrock well T-30DB (39.2 ng/L).

During the 2022 sampling event, PFOA and PFOS were detected in samples collected from overburden groundwater wells T-9 (PFOS only), T-10 and T-13 located outside of the south-central GMZ compliance boundary at concentrations above state and federal standards. Additional investigative activities are currently being conducted to better define the nature and extent of PFAS in bedrock groundwater at the Site and evaluate the adequacy of the GMZ boundary relative to PFAS in bedrock groundwater. HFPO-DA was not included in the analysis.

Private Drinking Water Wells

Private drinking water wells were sampled for 1,4-dioxane and/or PFAS during the 2022 sampling event. Samples were also collected during the spring 2024 sampling event but were not available for inclusion in this FYR report.

Five drinking water supply locations were sampled for 1,4-dioxane during the 2022 sampling event. The compound was not detected above laboratory detection limits.

Eight drinking water supply locations were sampled for PFAS during the 2022 sampling event. The highest PFOA concentration was detected in the overburden water supply well sample from DW-5 (4.33 ng/L). See Figures D-15 and D-16 in Appendix D for PFAS observed distribution in sampled water supply wells. Two of the four other PFAS with MCLs, PFHxS and PFBS, were below detection in the drinking water wells with detection limits of

<1.85 ng/L. HFPO-DA and PFNA were not included in the analysis but are included in the analysis of samples collected during the spring 2024 sampling event.

Surface Water

During 2019, NHDES initiated a surface water screening program to assess the presence and distribution of PFAS concentrations in surface water. Surface water samples were collected from 10 surface water monitoring locations at North Brook, South Brook, Mill Brook and Country Pond. NHDES's contractor collected samples from multiple depths at the Mill Brook and Country Pond locations.

Of the 36 PFAS compounds analyzed, nine were detected in surface water samples. The maximum PFAS concentration detected was 180 ng/L PFOS in North Brook on the western side of Country Pond Marsh (SG-NB6). The highest detection of PFOA (48 ng/L) was at SG-NB4, which is on North Brook at the inlet of the culvert under Route 125 that connects the western part of the Site with Country Pond Marsh.

Detected PFAS concentrations in surface water are generally consistent with a groundwater source of PFAS on the Site that discharges to North Brook in Area C and Country Pond Marsh. Higher concentrations of PFAS were detected at the outlet of North Brook to Country Pond compared to the relatively low concentrations detected at public swimming beaches north and south of the North Brook outlet. Based on these findings, PFAS concentrations discharged to Country Pond from the Site appear to attenuate to very low levels before reaching the public beaches, likely through dilution mechanisms. The comparison of the maximum PFAS detections to PFAS with established freshwater ecological screening values (ESVs) is evaluated further in the Technical Assessment Question B.

2022 PFAS Soil Sampling

In October 2022, NHDES's contractor advanced 11 soil borings into the following areas:

- Area A, Area B, and the Former Building Area (six borings).
- The Former Drum Storage Area (three borings).
- Area C (marshlands near North Brook) (two borings).

The report concluded that soils with PFAS concentrations above EPA screening levels are present in the vadose zone and extending to the capillary fringe in each of the targeted sampling zones. Activities currently being conducted at the Site include additional soil borings and samples to vertically and horizontally delineate the extent of PFAS contamination. The PFAS with established ESVs are further reviewed in the Technical Assessment Question B.

SITE INSPECTION

The Site inspection was conducted on 12/8/2023. In attendance were Ian Clarke (EPA RPM), Michael Summerlin (NHDES project manager) and Johnny Zimmerman-Ward and Kirby Webster (EPA contractor Skeo). The purpose of the inspection was to assess the protectiveness of the remedy. Appendix F includes photographs from the Site inspection. Appendix G includes the completed Site inspection checklist.

Site inspection participants met at the entrance to the Site (125 NH-125 in Kingston) and discussed the history and locations of former operations. Participants also discussed ongoing PFAS characterization in soil and groundwater. A drill rig was on-site and several new bedrock groundwater wells were observed. Participants walked inside the fenceline of the historical Area A and Area B locations and the area where ISCO occurred. The Site was recently mowed and the fence was in good condition. No vandalism or trespassing was evident. Participants drove through the northern access gate, across the southern portion of Area C and back to the powerline right-of-way and observed newly installed monitoring wells. Participants discussed that some all-terrain vehicle use is observed in the powerline area; the ground surface was not rutted and uses appeared minimal

(no observed tracks or frequently used paths). Site inspection participants then viewed Country Pond Marsh, a location of surface water and pore water sampling. This area is still fenced. Participants traveled through Country Shore Camping Area to view Country Pond. No protectiveness issues were identified during the Site inspection.

V. TECHNICAL ASSESSMENT

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

Question A Summary:
Yes. The remedy, as implemented to date, is functioning as intended by the decision documents.

The OU-1 source control remedy (O&G soil cleanup) removed and treated soil to the ROD cleanup level of 1 mg/kg total VOCs (and 0.1 mg/kg or more for cis1,2-DCE, benzene, TCE or PCE). For the VOCs identified at the O&G area, these cleanup goals are protective of groundwater and are below the New Hampshire S-1 residential soil standards. PCBs detected in O&G area soil before remediation were lower than the 1 mg/kg residential cleanup goal; lead was lower than 200 mg/kg. Investigations to determine the nature and extent of PFAS contamination in Site soil and groundwater are ongoing.

The OU-2 (PRP-led groundwater remediation) was not completed; it was replaced by OU-3 (EPA-led groundwater remediation). The OU-2 groundwater remedy, as modified by the 2007 Amended OU-3 ROD, included ISCO, environmental monitoring and institutional controls.

The OU-3 ISCO remedy has generally been effective at reducing contaminant mass. COC concentrations in groundwater have decreased significantly since initiation of the ISCO remedy; they continue to decrease with a few exceptions. The 2007 Amended ROD estimated based on natural attenuation modeling that groundwater monitoring would be needed for about 30 years, at which point groundwater cleanup standards would be achieved. At some isolated locations, COC concentrations might remain above cleanup levels for longer. Until cleanup levels are achieved throughout the aquifer, monitoring, reporting and institutional controls to prevent groundwater use are required. All institutional controls required by the Amended OU-3 ROD are in place. PFAS was detected in a residential well outside the GMZ. There is also some concern that if a residential well were installed south of the Site, it could affect groundwater VOC contamination by drawing water in the direction of the well. EPA and NHDES will discuss whether additional institutional controls are appropriate pending completion of current RI activities.

The OU-4 source control remedy treated most soil and sediments above cleanup levels in the GLCC/KSD part of the Site, the South Brook area, a small part of the BBS Realty part of the Site, and the Country Pond Marsh part of the Site. The ROD did not establish soil cleanup levels for contaminants other than PCBs and total VOCs, with the underlying assumption that treatment to the target level for total VOCs would also result in nonhazardous levels of other contaminants. During remediation of the OU-4 part of the Site, some soil above the 1 mg/kg total VOC cleanup goal on the GLCC/KSD part of the Site next to State Route 125 could not be safely excavated due to concern over undermining the steep Route 125 embankment in this area. Route 125 is elevated about 8 to 10 feet above the GLCC/KSD part of the Site. Exposure of VOC-contaminated soil during road work in this area is unlikely because VOC contamination is 8 to 10 feet below the road surface. However, EPA and the NHDES will investigate the feasibility of establishing an institutional control from the State Department of Transportation to require notifying EPA and NHDES of any intrusive road work in this area.

There is no ongoing maintenance of the remedy at the Site except for maintaining fencing, access controls, mowing and maintaining groundwater monitoring wells. Institutional controls are in place and functioning as intended, and ICs are verified during the FYR process.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the

remedy selection still valid?

Question B Summary:
No. There have been changes in toxicity values, exposure assumptions, exposure pathways and methods of evaluating risk, potential standards, and TBCs since the 1987 ROD was issued as discussed below.

The changes described below may impact the protectiveness of the remedy because of PFAS concentrations observed in a water supply well that is currently in use at a residence adjacent to the Site.

Changes in Standards and To Be Considered (TBC) Values

New standards (federal or state statutes and/or regulations), as well as new TBC guidances, should be considered during the FYR process as part of the protectiveness determination. Under the NCP, if a new federal or state statute and/or regulation is promulgated or a new TBC guidance is issued after the ROD is signed, and, as part of the FYR process it is determined that the standard needs to be attained or new guidance procedures followed to ensure that the remedy is protective of human health and the environment, then the FYR should recommend that a future decision document be issued that adds the new standard as an ARAR or guidance as a TBC to the remedy.

EPA guidance states:

> "Subsequent to the initiation of the remedial action new standards based on new scientific information or awareness may be developed and these standards may differ from the cleanup standards on which the remedy was based. These new…[standards] should be considered as part of the review conducted at least every five years under CERCLA §121(c) for sites where hazardous substances remain on-site. The review requires EPA to assure that human health and the environment are being protected by the remedial action. Therefore, the remedy should be examined in light of any new standards that would be applicable or relevant and appropriate to the circumstances at the Site or pertinent new [standards], in order to ensure that the remedy is still protective. In certain situations, new standards or the information on which they are based may indicate that the Site presents a significant threat to health or environment. If such information comes to light at times other than at the five-year reviews, the necessity of acting to modify the remedy should be considered at such times." (See CERCLA Compliance with Other Laws Manual: Interim Final (Part 1) EPA/540/G-89/006 August 1988, pp. 1-56.)

Appendix H evaluates the soil and groundwater cleanup goals. Cleanup goals remain valid for current uses. The current State AGQS for arsenic is more stringent than at the time of the signing of the ROD. The arsenic interim cleanup level for groundwater was based on federal standards. Arsenic remains above interim cleanup levels for groundwater within the Site. Consistent with the reducing condition of groundwater measured in samples collected from monitoring wells on most of the Site, arsenic in the groundwater is likely naturally occurring mobilized to a greater extent in areas where degradation of the VOC contaminant plumes have affected the groundwater chemistry.

PFAS Activities at Ottati & Goss/Kingston Steel Drum

The purpose of this section is to present current information related to PFAS activities at the Site and to evaluate whether there are any potential impacts to remedy protectiveness from PFAS. On April 10, 2024, EPA issued MCLs for six PFAS contaminants, including PFOA, PFOS, PFNA, hexafluoropropylene oxide dimer acid (HFPO-DA, or Gen-X), PFHxS, and perfluorobutanesulfonic acid (PFBS). The table below includes the maximum detections at the Site in 2022 in monitoring wells and in residential wells.

Compound	Final MCL	Maximum in 2022 (ppt)	Maximum in Residential Wells 2022 (ppt)
PFOA	4 ppt	1760 (T30SB)	4.33 (DW-5)
PFOS	4 ppt	3170 (T-21 DUP)	3.52 (DW-8B)

PFHxS	10 ppt	55.3 (T-30SB)	Not detected (DL =1.88)
PFNA	10 ppt	28.1 (T-30SB)	Not sampled
HFPO-DA (Gen-X)	10 ppt	Not detected (<47.5)	Not sampled
Mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS	Hazard Index 1 (unitless)[a]	See above wells for maxima. PFBS 11.7 (T30SB) HI = 8	See above wells for maximum PFBS 8.14 HI = 0.2

Notes:

a. HI calculated based on EPA guidance as follows entering the maxima for each of the four PFAS and divided by the MCL or health-based level (e.g., for PFBS):

Hazard Index (unitless) = $\frac{HFPO\text{-}DA\ ppt}{10\ ppt} + \frac{PFBS\ ppt}{2000\ ppt} + \frac{PFNA\ ppt}{10\ ppt} + \frac{PFHxS\ ppt}{10\ ppt}$

The maximum PFAS concentrations observed in on-site monitoring wells during the 2022 sampling event exceed the MCLs for PFOA, PFOS, PFHxS and PFNA. In addition, the MCL for the mixture of PFHxS, PFNA, HFPO-DA, and PFBS was evaluated based on EPA guidance for evaluating compliance with the MCL and shows the Site groundwater exceeds the MCL HI target of 1.

The maximum PFAS concentrations observed in nearby water supply wells during 2022 sampling event slightly exceeds the PFOA MCL with a concentration of 4.33 parts per trillion (ppt). The mixture of PFHxS, PFNA, HFPO-DA, and PFBS was evaluated for compliance with the MCL of 1 and the data shows the MCL HI is less than 1, however, PFNA and Gen-X was not analyzed in these wells. The presence of PFOA and PFOS equal to or close to the MCL in several residential wells supports the need to evaluate drinking water alternatives or treatment at these locations should the presence be connected to the site.

The following subsections discuss the relevant PFAS toxicity values and state standards that are currently available, followed by a discussion of Site activities related to PFAS and protectiveness conclusions.

PFAS Toxicity Values

This section presents the toxicity values that EPA currently has available for PFAS compounds.

2024 Cancer and Non-cancer Toxicity Values for PFOA and PFOS

On April 10, 2024, EPA issued new MCLs for PFOA and PFOS (4 ppt individually) which utilize updated toxicity values for cancer and non-cancer effects developed by EPA Office of Water. The new oral cancer slope factors are $2.93x10^{4}$ $[mg/kg/day]^{-1}$ for PFOA and $3.95x10^{1}$ $[mg/kg/day]^{-1}$ for PFOS. For non-cancer, the new oral reference dose values are 3×10^{-8} (mg/kg/day) for PFOA and 1×10^{-7} (mg/kg/d) for PFOS. It is noted that toxicity values for PFHxS, PFNA, HFPO-DA (Gen-X), and PFBS are not changed with the new MCLs.

2023 Non-cancer Toxicity Values for PFODA, PfTetA, PFDoDA, PFUDA, PFHxA, PFPrA, HQ-115

In November 2023, EPA adopted new non-cancer oral reference dose (RfD) values for multiple PFAS compounds based on toxicity values developed by the State of Wisconsin Department of Health Services which include Perfluorooctadecanoic acid (PFODA) $4x10^{-2}$4E-02 mg/kg-day, Perfluorotetradecanoic acid (PFTetA) $1x10^{-3}$mg/kg-day, Perfluorododecanoic acid (PFDoDA) $5x10^{-5}$ mg/kg-day, and Perfluoroundecanoic acid (PFUDA) $3x10^{-4}$ mg/kg-day.

Additionally, new oral RfD values were released for two PFAS compounds based on toxicity values published by the EPA Office of Research and Development (ORD) which include Perfluoropropanoic acid (PFPrA) $5x10^{-4}$ mg/kg-day and Lithium bis[(trifluoromethyl)sulfonyl]azanide (HQ-115) $3x10^{-4}$ mg/kg-day, also known as 1,1,1-Trifluoro-N-(trifluoromethanesulfonyl)methanesulfonamide (TFSI).

These values were determined to be based on similar methods and procedures as those used for other Tier 3 toxicity values. It is noted that currently there are no analytical methods available for PFODA and the two ORD compounds PFPrA and HQ-115/TFSI.

In April 2023, EPA released a new non-cancer oral reference dose (RfD) of $5x10^{-4}$ mg/kg-day for Perfluorohexanoic acid (PFHxA) based on an Integrated Risk Information System (IRIS) value.

PFODA, PFTetA, PFDoDA were not detected at the Site. PFUDA was detected at a concentration of 43.8 ng/L T19D) in 2018 and at a concentration of 2.47 ng/L (T-47) in 2021. PFUDA was not detected in residential wells. PFHxA was detected at the Site with a maximum concentration of 266 ng/L (T-30SB) in 2018 and in residential wells in during this FYR period with a maximum concentration of 5.45 ng/L in DW-4 in 2021.

Residential water supply wells continue to be monitored for Site-related constituents and additional action related to PFAS detections will be evaluated at the completion of current investigations.

2022 Non-cancer Toxicity Value for PFBA

In December 2022, EPA released a new non-cancer oral RfD of $1x10^{-3}$1.0E-03 mg/kg-day for Perfluorobutanoic acid (PFBA) based on a new IRIS value.

PFBA was detected at a concentration of 49.3 (T-21) in 2021 in Site monitoring wells and in residential wells at a concentration of 3.77 ng/L (DW-2) in 2021. The remedy remains protective because there is not a completed exposure pathway to contaminated groundwater on-site. Residential wells continue to be monitored for site-related constituents.

PFAS State Standards

At this time EPA has made no determination of whether these state standards will need to be added as an ARAR for this Site. However, for informational purposes a comparison of PFAS data against state standards is included.

In July 2020, New Hampshire promulgated State MCLs for the following four specific PFAS into the State's Safe Drinking Water Act:

- PFOA (12 ng/L)
- PFOS (15 ng/L)
- PFHxS (18 ng/L)
- PFNA (11 ng/L)

NH RSA 485:16-e. Current state law requires AGQS be the same value as any MCL established by NHDES and also that they be at least as stringent as health advisories set by EPA.

Summary of PFAS Activities

PFAS constituents have been detected in Site groundwater above the federal MCLs and state standards. Ongoing investigations for PFAS are being conducted throughout 2024. In the meantime, the remedy remains protective because there is not a completed exposure pathway to contaminated groundwater at the Site. Residential water supply wells continue to be monitored for site-related constituents and additional action related to PFAS detections will be evaluated at the completion of current investigations.

1,4-Dioxane at Ottati & Goss/Kingston Steel Drum

There is no current federal MCL for 1,4-dioxane. Using 2013 updated IRIS toxicity information and the standard Superfund risk assessment approach, EPA's carcinogenic risk range of 10^{-6} to 10^{-4} for 1,4-dioxane equates to a concentration range of 0.46 µg/L to 46 µg/L (or parts per billion, ppb).

As discussed in the data review section of this report, 1,4-dioxane is present at concentrations greater than the interim cleanup level for groundwater of 3 µg/L in Country Pond Marsh monitoring wells at a maximum concentration of 108 µg/L at T-30SB. 1,4-Dioxane was not detected above the laboratory reporting limits in the residential wells collected during 2022. There are no complete exposure pathways to groundwater within the GMZ.

State Standards for 1,4-Dioxane

In September 2018, NHDES modified its AGQS for 1,4-dioxane from 3.0 µg/L (ppb) to 0.32 µg/L (ppb).

The current Site groundwater cleanup level of 3.0 µg/L (ppb) for 1,4-dioxane equates to a carcinogenic risk of 6.5 x 10^{-6}, which is still well within EPA's acceptable 10^{-6} to 10^{-4} risk range. Thus, the existing cleanup goal remains protective, and the remedy does not need to be modified to the new AGQS of 0.32 µg/L (ppb) for 1,4-dioxane at this time.

Changes in Toxicity and Other Contaminant Characteristics

2022 cis-1,2-Dichloroethylene Non-Cancer Toxicity Value

In October 2022, EPA released a non-cancer reference concentration (RfC) of 4.00E-02 milligrams per cubic meter (mg/m^3) for cis-1,2-DCE, based on a provisional peer reviewed toxicity value (PPRTV) screening value. Previously, no RfC was available for cis-1,2-DCE.

Cis-1,2-DCE is a COC at the Site. It was detected at concentrations above the interim cleanup level for groundwater in Area A of the Site with a maximum concentration of 240 µg/L in 2021 at T-14D. This does not affect the protectiveness of the remedy. Institutional controls are in place restricting the use of groundwater on-site.

2021 Updated Recommendations on the Use of Chronic or Subchronic Non-Cancer Values

In 2021, a memorandum was released from the Office of Land and Emergency Management (OLEM) regarding the use of subchronic toxicity values rather than the chronic non-cancer value for 19 chemicals. This recommendation is based on OLEM's Human Health Regional Risk Assessment Forum's (OHHRRAF) Toxicity Workgroup evaluation of the toxicity of 32 chemicals. The OHHRRAF Toxicity Workgroup identified 21 oral and 11 inhalation non-cancer toxicity values where a subchronic toxicity value was lower than its corresponding chronic toxicity value. After review of relevant information, the OHHRRAF recommended use of the subchronic toxicity value rather than the chronic value for 19 of the 32 chemicals, as follows below.

Subchronic inhalation RfC selected for the following chemicals (Chemical Abstracts Service Registry Number[CASRN]):

- *Acrylic acid (79-10-7)*
- *2-Ethoxyethanol (110-80-5)*
- *Ethyl-chloride (75-00-3)*
- *2-Methoxyethanol (109-86-4)*

Subchronic oral RfD selected for the following chemicals (CASRN):

- *Allyl alcohol (107-18-6)*
- *Atrazine (1912-24-9)*
- *Bromodichloromethane (75-27-4)*

- *Cadmium (7440-43-9)*
- *p-Chloroaniline (106-47-8)*
- *p-Cresol (106-44-5)*
- *Ethyl acetate (141-78-6)*
- *Ethylbenzene (100-41-4)*
- *Ethylene glycol (107-21-1)*
- *Heptachlor (76-44-8)*
- *Hexachlorobenzene (118-74-1)*
- *Hexachlorocyclohexane, gamma (58-89-9)*
- *1,2,4,5-Tetrachlorobenzene (95-94-3)*

OHHRRAF recommended the chronic inhalation non-cancer value for the following chemicals: ammonia, chlordane, 1,1-dichloroethylene, methyl tert-butyl ether, nitromethane and vinyl acetate.

OHHRRAF recommended the chronic oral non-cancer value for the following chemicals: acrylamide, acrylic acid, 1,1-biphenyl, cyclohexanone, endosulfan, ethylene glycol monobutyl ether and pentachlorophenol.

Methyl tert-butyl ether is a COC at the Site and was detected at a concentration of 10 µg/L in GMZ well T-6D in 2021. This is below the Site interim cleanup level for groundwater; therefore it does not affect the protectiveness of the remedy.

2020 Trans-1,2-Dichloroethylene Non-cancer Toxicity Value

In November 2020, EPA finalized a new RfC for trans-1,2-dichloroethylene (trans-1,2-DCE) based on a new PPRTV. There previously was no RfC for trans-1,2-DCE.

Trans-1,2-DCE was detected in Area B at a concentration of 13 µg/L at T-21 in 2022. Institutional controls are in place restricting the use of groundwater in Area B.

Lead in Soil Cleanups

On January 17, 2024, EPA OLEM released the "Updated Residential Soil Lead Guidance for CERCLA sites and RCRA Corrective Action Facilities" ("OLEM Memo") which updates the residential soil lead regional screening level (RSL) for the CERCLA and RCRA programs. The OLEM Memo recommends that EPA regions use a residential soil lead RSL of 200 parts per million (ppm). However, the OLEM Memo also provides that it may be appropriate to use a screening level of 100 ppm if additional sources of lead (e.g., lead water service lines, lead-based paint, non-attainment areas where the air lead concentrations exceed National Ambient Air Quality Standards [NAAQS]) are identified that warrant lowering the RSL. The new OLEM guidance was issued due to mounting scientific evidence of cognitive function decrements and other adverse health effects at blood lead levels below 10 µg/dL[4]. Additionally, children can be exposed to multiple sources of lead other than contaminated soil/dust at Superfund sites.

Residential properties are defined as any area with high or unrestricted accessibility to sensitive populations (e.g., young children) and includes, but is not limited to, properties containing single- and multi-family dwellings, apartment complexes, vacant lots in residential areas, schools, day-care centers, community centers, playgrounds, parks, greenways, and other recreational areas. As noted in the OLEM Memo, the RSL is not a default cleanup level and should not be used as such. The RSL is a tool used to identify properties that may warrant additional evaluation.

[4] USEPA, 2013. Integrated Science Assessment for Lead EPA/600/R-10/075F. https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=255721

The OLEM Memo recommends that a review of soil lead cleanups be conducted as part of the FYR process for residential sites. Therefore, an updated assessment for lead was performed to determine the appropriate RSL for the Site. An RSL of 200 ppm is selected for this Site. The Lead Screening Level Checklist is included in Appendix I.

An RSL of 200 ppm for soil is consistent with a risk goal to limit exposure to soil lead levels such that a typical (or hypothetical) child or group of similarly exposed individuals would have an estimated risk of no more than 5% probability of exceeding a blood lead level of 5 µg/dL. An RSL of 200 ppm was determined to be appropriate for the Site because additional sources of lead are not expected because the Site is not developed.

It is noted that the updates in the OLEM Memo pertain to residential sites only. For commercial and industrial sites, a screening level of 1,000 ppm is calculated for soil using the adult lead methodology with a target blood lead level of 5 µg/dL and default parameters. This approach is consistent with a risk goal of limiting exposure to soil/dust such that there is no more than 5% probability of fetal blood lead exceeding 5 µg/dL for the exposed population.

The 1986 RI shows that pre-cleanup levels of lead at the Site averaged 190 mg/kg (Table 10, pdf page 156).

A cleanup level for lead in soil was not identified in the 1987 ROD or in subsequent decision documents for the GLCC part of the Site because the remedy involved removal of soils to 10 feet below ground surface or to groundwater and replacement with clean soil. Therefore potential human exposure is unlikely, especially since institutional controls are in place on the GLCC part of the Site to restrict future use to commercial only.

However, a small part of the South Brook excavation area was on residential property. Post-excavation confirmatory soil sampling in this area included lead analysis. The 2003 FYR reports that based on a review of the post-excavation lead sampling results, the average lead concentration in this area is approximately 108 ppm. This is below the 200 ppm site-specific RSL. Therefore, the presence of residual lead in soil does not affect the protectiveness of the remedy.

Changes in Risk Assessment Methods

There have been no notable changes in risk methodologies since the previous FYR.

Changes in Exposure Pathways

No changes in exposure pathways have been identified since the previous FYR.

Ecological Risk Considerations

2021 Development of the ESVs for PFAS

The ESVs have been developed to support screening-level ecological risk assessments sites where PFAS have been detected in soils, sediment and surface waters. The ESVs, developed for eight PFAS, represent PFAS concentrations in soil, sediment and surface water at or below which chronically exposed biota are not expected to be adversely affected and ecological risks or other impacts are unlikely.

The ESVs support the screening level steps (Steps 1 and 2) of EPA's Ecological Risk Assessment Guidance for Superfund and may be applied at sites undergoing investigation for the historic release or disposal of PFAS, to identify whether PFAS levels pose potential unacceptable ecological risks. Sites that have concentrations of PFAS that exceed ESVs may require further investigation in a baseline ecological risk assessment, which in turn may support risk-management decisions and actions to reduce risks. These ESVs are solely for use in conducting screening-level ecological risk assessments and are not recommended or intended for use as default cleanup values.

The ESVs were developed for the following media and receptors:

- Soils for invertebrates;
- Soils for plants;
- Soils for avian and mammalian wildlife;
- Surface water for freshwater and marine aquatic biota;
- Surface water for aquatic-dependent avian and mammalian wildlife.

ESVs can be found in: Derivation of PFAS Ecological Screening Values, M. Grippo, J. Hayse, I. Hlohowskyj, and K. Picel, Environmental Science Division, Argonne National Laboratory, September 2021.

The table below compares the maximum detected concentrations from 2019 surface water and 2022 soils samples collected to the relevant ESVs. All surface water detections were below the surface water ESVs. Based on available data, PFOS was detected at concentrations exceeding the ESV for mammals at the Site. A risk assessment will need to be completed to determine if exceedances of ESVs indicate a risk and evaluate protectiveness of the remedy. Based on the nature of PFAS as an emerging contaminant, research related to the impacts on ecological receptors is ongoing and may need to be readdressed when additional actionable information is available. Maximum detected soil concentrations of other PFAS did not exceed any of the ESVs.

Freshwater Surface Water ESV Evaluation

PFAS Compound	Freshwater ESV (ng/L)[a]			2019 Maximum Concentration in Surface Water (Location)(ng/L)
	Aquatic	Mammal	Bird	
PFBA	64,600	8,370,000	No ESV	7.49 (CP-3-0)
PFBS	400,000	5,710,000	88,600,000	2.45 (CP-1-0)
PFDA	2,940	660	No ESV	<1.94
PFHxA	28,800	2,210,000	No ESV	3.45 (CP-1-0)
PFHxS	65,300	5,500	No ESV	<4
PFNA	16,400	2,080	No ESV	<4
PFOA	307,000	1,580,000	No ESV	48 (SG-NB4)
PFOS	22,600	117	2,570	180 (SG-NB6/dupe)

Notes:

a. ESVs obtained from Table 3-6 of Derivation of PFAS Ecological Screening Values, M. Grippo, J. Hayse, I. Hlohowskyj, and K. Picel, Environmental Science Division, Argonne National Laboratory, September 2021.

Soil ESV Evaluation

PFAS Compound	Terrestrial ESV (µg/kg)[a]				2022 Maximum Concentration in Soil[b] (Location)
	Plants	Invertebrates	Mammals	Birds	
PFBA	No ESV	No ESV	2,980	No ESV	Not detected (DL = 1.93 µg/kg)
PFBS	No ESV	100,000	817	15,800	Not detected (DL = 0.965 µg/kg)
PFDA	No ESV	No ESV	67.7	No ESV	0.639 µg/kg (70-81 inches deep in Area A & Area B)
PFHxA	No ESV	No ESV	6,200	No ESV	Not detected (DL = 1.93 µg/kg)
PFHxS	No ESV	10,000	2.8	No ESV	0.307 µg/kg (70-81 inches deep in Area A &Area B)
PFNA	No ESV	10,000	24.2	No ESV	0.411 µg/kg (30-40 inches & 60-70 inches)
PFOA	79,500	22,400	3,840	No ESV	6.95 µg/kg (3 to 18 inches in Area A & Area B)
PFOS	40,200	48,100	8.7	38.6	294 µg/kg (4 to 16 inches in Area A & Area B)

Notes:

a. ESVs obtained from Table 3-6 of Derivation of PFAS Ecological Screening Values, M. Grippo, J. Hayse, I. Hlohowskyj, and K. Picel, Environmental Science Division, Argonne National Laboratory, September 2021.

b. Supplemental PFAS Site Investigation Human Health & Ecological Risk Screening. Table 2a. Prepared by NHDES.

EPA Regional Screening Levels

EPA RSLs are risk-based concentrations derived by combining exposure information assumptions with EPA toxicity data. EPA RSLs are updated twice a year. The most up-to-date tables as available at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

Methods for Evaluating Vapor Intrusion

EPA Guidance on Vapor Intrusion

The most current guidance available to evaluate risk from vapor intrusion is the EPA 2015 Vapor Intrusion Technical Guide. The guidance emphasizes the use of multiple lines of evidence to evaluate the potential for vapor intrusion. This guidance was considered when assessing the potential for vapor intrusion during the FYR process. This resource can be found at: https://www.epa.gov/sites/default/files/2015-09/documents/oswer-vapor-intrusion-technical-guide-final.pdf.

EPA VISL Calculator

The EPA online Vapor Intrusion Screening Level (VISL) calculator is a web-based tool, which can be used to obtain risk-based screening level concentrations for groundwater, sub-slab soil gas and indoor air. The VISL calculator uses the same database as the RSLs for toxicity values and physicochemical parameters and is automatically updated during the semi-annual RSL updates. Please see the User's Guide for further details on how to use the VISL calculator: https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator.

Vapor Intrusion Investigations for Ottati & Goss/Kingston Steel Drum

There are currently no buildings located on-site, therefore this FYR does not evaluate the vapor intrusion pathway. However, given that current concentrations of VOCs remaining in groundwater at the Site above MCLs, if or when future use plans include buildings, the vapor intrusion pathway should be evaluated.

Expected Progress Towards Meeting RAOs

RAOs have been met for the COCs identified in the ROD. Ingestion of groundwater in exceedance of appropriate ARARs or associated with a HI >1 and/or ILCR > 10^{-6} to 10^{-4} for future residential use as tap water have been prevented. Migration of the original COCs from the residual source area has been limited. The remediated and restored wetlands have been protected from potential damage from actions to remediate groundwater. PFAS, while not a current COC at the Site, have been identified in residential drinking water wells greater than the MCL and in high concentrations onsite in groundwater and soil. To better define the nature and extent of PFAS in the bedrock aquifer and soil at the Site, a Remedial Investigation (RI) is currently being conducted, which is expected to be completed in 2025.

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

The expected impacts of climate change in New England pose increasing risks to contaminated sites. Increases in air and water temperature, precipitation, flooding and periods of drought may result in altered fate and transport pathways and exposure assumptions, impaired aquatic habitats, dispersal of contaminants, damage to remediation related structures and ultimately, ineffective remedies. At coastal sites, saltwater impacts made more likely by sea-level rise may cause corrosion of remediation equipment and impair restoration efforts. Increased frequency of extreme weather events may cause damage or releases at sites, impairing remedial efforts where remedies have not been adequately designed to protect against these risks.

The risks posed by climate change in New England are not expected to alter the protectiveness of the remedy at the Ottati & Goss/Kingston Steel Drum Site because of designed remedy and lack of remedial equipment present at the Site.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues and Recommendations Identified in the FYR:
OU-1

Issues and Recommendations Identified in the FYR:

OU(s): 3	**Issue Category: Changed Site Conditions**			
	Issue: PFAS is present above MCLs in residential drinking water wells.			
	Recommendation: Continue to monitor and further evaluate PFAS impacts to residential drinking water wells and evaluate water treatment or an alternate water supply, if necessary to maintain protectiveness.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
Yes	Yes	EPA/State	EPA/State	6/30/2025

OU(s): 3	**Issue Category: Institutional Controls**			
	Issue: PFAS has been identified above the April 2024 MCL in a residential well outside the GMZ. There is also some concern that if a residential well were installed south of the Site, it could affect groundwater VOC contamination by drawing water toward the well.			
	Recommendation: EPA and NHDES will determine whether additional institutional controls are appropriate.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA/State	EPA/State	12/31/2025

OU(s): 3 and 4	**Issue Category: Remedy Performance**			
	Issue: A PFAS groundwater and soil investigation is ongoing. PFAS is not currently identified as a Site COC however it is present above EPA MCLs in groundwater. In addition, it is unclear whether off-site residential well impacts are site-related.			
	Recommendation: Complete the PFAS groundwater and soil investigation and determine if off-site PFAS impacts are site-related and if PFAS should be added as a COC and cleanup levels set in a future decision document.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA/State	EPA/State	6/30/2025

Other Findings

In addition, the following are recommendations that were identified during the FYR and may improve performance of the remedy and accelerate Site close out, but do not affect current or future protectiveness:

- In well T30SB, 1,4-dioxane concentrations decreased until about 2015, when an increasing trend began. Evaluate trends of 1,4-dioxane and determine if additional steps are needed.
- Groundwater VOC concentrations generally appear to be declining, but it is unclear when cleanup goals will be met. Assess when cleanup goals are expected to be met.
- Because VOCs in groundwater remain at the Site above MCLs, the vapor intrusion pathway should be evaluated if future use plans include buildings.
- Assess the need for ICs with the State of New Hampshire should work be conducted in areas of residual contamination in the embankment.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement	
Operable Unit: 1	*Protectiveness Determination:* Protective
Protectiveness Statement: The remedy at OU-1 is protective of human health and the environment. The remediation of soil has been completed to cleanup levels that are protective of human health and the environment. No changes have occurred at OU-1 during this review period that affect the protectiveness of the remedy.	

Protectiveness Statement	
Operable Unit: 3	*Protectiveness Determination:* Short-term Protective
Protectiveness Statement: The remedy at OU-3 currently protects human health and the environment because the ISCO remedy successfully destroyed the majority of source mass. Institutional controls are in place restricting the use of the land and groundwater in OU-3. However, in order for the remedy to be protective in the long-term, the following actions need to be taken: complete the PFAS groundwater and soil investigation and determine next steps.	

Protectiveness Statement	
Operable Unit: 4	*Protectiveness Determination:* Short-term Protective
Protectiveness Statement: The remedy at OU-4 currently protects human health and the environment because soil and sediments have been excavated to cleanup levels that are considered protective for the anticipated future use of the Site. Institutional controls are in place restricting the use of properties in OU-4. However, in order for the remedy to be protective in the long-term, the following actions need to be taken: complete the PFAS groundwater and soil investigation and determine next steps.	

Sitewide Protectiveness Statement
Protectiveness Determination: Short-term Protective
Protectiveness Statement: The remedy at the Site is currently protective of human health and the environment. However, in order for the remedy to be protective in the long-term, groundwater cleanup goals must be achieved throughout the aquifer and the extent of PFAS contamination associated with the Site needs to be further evaluated.

VIII. NEXT REVIEW

The next FYR for the Ottati & Goss/Kingston Steel Drum Superfund Site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

ATSDR. 2021. Toxicological Profile for Perfluoroalkyls. https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf

EPA. 1987. Record of Decision. Ottati & Goss/Great Lakes, NH. First Remedial Action – Final. January 16, 1987.

EPA. 1988. CERCLA Compliance with Other Laws Manual: Interim Final (Part 1). EPA/540/G-89/006. August 1988.

EPA. 1999. Declaration for the Explanation of Significant Differences. Ottati and Goss / Kingston Steel and Drum Superfund Site. September 28, 1999.

EPA. 2002. Declaration for the Explanation of Significant Differences. Ottati and Goss / Kingston Steel Drum Superfund Site. February 2022.

EPA. 2007. Amended Record of Decision. Ottati and Goss/Great Lakes Contained Corporation Superfund Site. Kingston, New Hampshire. September 2007.

EPA. 2008. Preliminary Close-Out Report. Ottati & Goss/Great Lakes Container Corporation Superfund Site. September 2008.

EPA. 2014. Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors Memorandum. OSWER Directive 9200.1-120.

EPA. 2018. Vapor Intrusion Screening Level (VISL) Calculator. Office of Land and Emergency Management, Office of Superfund Remediation and Technology Innovation (OSRTI), May 2018. https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

EPA. 2019. Sixth Five-Year Review Report for Ottati & Goss/Kingston Steel Drum Superfund Site. Kingston, New Hampshire. September 11, 2019.

EPA. 2021. Provisional Peer-Reviewed Toxicity Values for Perfluorobutane Sulfonic Acid (PFBS) and Related Compound Potassium Perfluorobutane Sulfonate. Office of Research and Development, Center for Public Health and Environmental Assessment. EPA/690/R-21/001F. 2021.

EPA. 2021. Recommendations on the Use of Chronic or Subchronic Noncancer Values for Superfund Human Health Risk Assessments Memorandum, May 26, 2021. Office of Land and Emergency Management, Washington, DC. 2021.

EPA. 2021. Human Health Toxicity Values for Hexafluoropropylene Oxide (HFPO) Dimer Acid and Its Ammonium Salt (CASRN 13252-13-6 and CASRN 62037-80-3) Also Known as "Gen-X Chemicals." Office of Water, Health and Ecological Criteria Division, Washington, DC, October 2021.

EPA, 2024. PFAS National Primary Drinking Water Regulation; Correction. 89 FR 49101. https://www.federalregister.gov/documents/2024/06/11/2024-12645/pfas-national-primary-drinking-water-regulation-correction

EPA. 2024. Updated Residential Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, January 17, 2024. OLEM Directive 9285.6-56. https://semspub.epa.gov/work/HQ/100003435.pdf

EPA. Integrated Risk Information System (IRIS). Available at https://www.epa.gov/iris

EPA. Provisional Peer-Reviewed Toxicity Values. Available at https://www.epa.gov/pprtv

EPA. Regional Screening Level Tables. Available at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

GZA. 2020. 2019 PFAS Monitoring Report. Ottati & Goss/Kingston Steel Drum Superfund Site. July 15, 2020.

GZA. 2021. 2021 Monitoring Report. Ottati and Goss/Kingston Steel Drum Superfund Site. June 11, 2021.

GZA. 2022. 2022 Monitoring Report. Ottati and Goss/Kingston Steel Drum Superfund Site. July 22, 2022.

GZA. 2023. Work Plan Supplemental for PFAS Site Investigation. Ottati & Goss/Kingston Steel Drum Superfund Site. October 11, 2023.

GZA. 2024. Supplemental PFAS Site Investigation. Human Health & Ecological Risk Screening. Ottati & Goss/Kingston Steel Drum Superfund Site. January 1, 2024.

M. Grippo, J. Hayse, I. Hlohowskyj, and K. Picel. 2021. Derivation of PFAS Ecological Screening Values, Environmental Science Division, Argonne National Laboratory, September 2021.

APPENDIX B – SITE CHRONOLOGY

Table B-1: Site Chronology

Event	Date
Drum reconditioning operations occurred on the GLCC/KSD part of the Site	1959 - 1980
Two lagoons established for the disposal of caustic liquid waste from the drum reconditioning operations were backfilled on GLCC/KSD part of the Site	1973 and 1974
A hazardous materials processing and storage facility was operated on the O&G part of the Site	March 1978 - July 1979
EPA conducted emergency removal actions on the O&G part of the Site, including the removal of approximately 4,000 drums	December 1980 - July 1982
EPA listed the Site on EPA National Priorities List	September 8, 1983
PRP removal actions on the GLCC/KSD part of the Site, including the removal of drums and contaminated soil	June 1984 - June 1985
NHDES completed RI/FS under a cooperative agreement	August 1986
EPA issued ROD for entire Site	January 16, 1987
Several PRPs entered into a Consent Decree with EPA addressing the cleanup of soil on the O&G part of the Site (OU-1) and groundwater design and remediation (OU-2)	November 1988
PRP lead cleanup of 4,700 cubic yards of contaminated soil at OU-1 was completed	1988 - 1989
EPA, NHDES, and the remaining PRPs entered into a settlement that resulted in a Consent Decree that funded continued EPA and NHDES work at the Site. All claims the United States had for injunctive relief (response activities) and costs (past and future) against the potentially responsible parties were resolved, with few exceptions. OU-2 (PRP lead groundwater remediation) was terminated and replaced by OU-3 (Superfund lead groundwater remediation).	Consent Decree entered December 22, 1993 (modified by the Court on July 19, 1994)
EPA completed the first FYR for the Site	December 1993
Under OU-4, Phase 1, the large building that housed drum reconditioning operations on the GLCC/KSD part of the Site was demolished. Hazardous materials and toxic substances were removed from the facility for disposal. Several underground storage tanks were also removed from this area.	September 1993 - February 1994
A preliminary design of the groundwater pump and treat system for OU-3 was completed. Construction of the treatment system was put on hold to evaluate the potential for natural attenuation of the groundwater contamination.	September 1996
EPA completed the second FYR for the Site	December 1998
EPA issued an ESD that addressed a change in the treatment technology to be used to remediate OU-4 Phase 2 contaminated soil and sediment. The ESD also restricted future use of the former GLCC/KSD property to commercial uses and addressed an increase in the amount of soil to be excavated and treated. Cleanup levels for total PCBs were defined for various areas of the Site, based on an updated ecological risk assessment and the change in future land use of the former GLCC/KSD property to commercial use without day care. PCB residential cleanup standards were established for properties adjacent to the GLCC/KSD part of the Site.	September 28, 1999
OU-4 Phase 2 Remedial Design was completed	September 6, 2000
State of New Hampshire acquires the former GLCC/KSD property	Fall 2000
Remediation of contaminated soil and sediment at OU-4 and Site restoration activities	February 2001 - October 2002

Event	Date
EPA prepared a letter indicating that the remedial approach for the OU-4 east/wetland soil had changed	September 19, 2001
EPA issued an ESD addressing a modification in the handling of OU-4 residual materials	February 7, 2002
Final Site inspection for OU-4 Phase 2 construction completion	October 1, 2002
Final Remedial Action Report for OU-4 Phase 2 is issued	March 28, 2003
EPA completed third FYR for the Site	December 2003
EPA completes groundwater pump test, pilot scale groundwater treatability study and treatability study report	November 2004 - February 2005
EPA conducted additional field investigations and evaluated alternatives to groundwater extraction and treatment	October 2006 - June 2007
State of New Hampshire records AUR on the GLCC/KSD part of the Site	October 2006
EPA amends the 1987 ROD to replace groundwater pump and treat with in situ chemical oxidation	September 2007
EPA completes the ISCO design	March 2008
EPA performs the first of three planned ISCO injection events	July 2008 - September 2008
EPA issues a Preliminary Close Out Report documenting the completion of all required construction activities at the Site	September 2008
Groundwater monitoring to evaluate effectiveness of first injection event and collect data to design second injection event	January and April 2009
EPA completed the fourth FYR for the Site	February 2009
Report documenting results of first injection event and design for second injection event is completed	June 2009
EPA completes the second of three planned ISCO injection events	Mid-October 2009
Groundwater monitoring to evaluate effectiveness of second injection event and collect data to design third and final injection event. Soil samples are also collected.	February and April 2010
Report documenting results of second injection event and design for third and final injection event is completed	August 2010
One year operational and functional period ends	September 2010
EPA completes the third and final ISCO injection event	October 2010
A series of GMZ wells are installed to establish the geographic boundaries for institutional controls (Town ordinance) to restrict groundwater use in the vicinity of the plume	May 2011
Groundwater monitoring to evaluate effectiveness of third injection event is performed, and the new GMZ wells are sampled for the first time	May - June 2011
ISCO Remedial Action Summary Report is completed to document all three injection events and evaluate monitoring results from 2008 through 2011	February 2012
Town of Kingston adopts an institutional control consisting of an ordinance creating a GMZ for lots affected by the groundwater plume	March 13, 2012
Groundwater monitoring to evaluate injection effectiveness and attenuation of injection by-products is performed	June and August 2012
EPA issues the Remedial Action Report that documents completion of the in situ chemical oxidation Remedial Action for OU3	October 2012
Site Monitoring Report that summarizes all groundwater monitoring results from 2012 and 2013 is prepared, with results incorporated into this five year review	September 2013
EPA completed the fifth FYR for the Site	May 2014
Site achieved Sitewide Ready for Anticipated Use	December 8, 2015
EPA completed the sixth FYR for the Site	September 2019

An official website of the United States government h

MENU

News Releases: Region 01 <https://epa.gov/newsreleases/search/press_office/region-01-226161> CONTACT US <https://epa.gov/newsreleases/forms/contact-us> h

EPA to Review Cleanups at Five New Hampshire Superfund Sites this Year h

February 1, 2024

Contact Information
James Anderson (anderson.james.r@epa.gov)
(617) 918-1401

BOSTON (Feb. 1, 2024) – The U.S. Environmental Protection Agency (EPA) will conduct comprehensive reviews of completed cleanup work at five National Priorities List (NPL) Superfund sites in New Hampshire this year.

Each individual site will undergo a legally required Five-Year Review to ensure that previous remediation efforts at the sites continue to protect public health and the environment. Once the Five-Year Review is complete, its findings will be posted to EPA's website in a final report.

"Every step of the process at a Superfund site is critical and reflects a commitment we make with local communities to be as thorough as possible. Cleaning up hazardous waste sites takes extensive time and effort, and these Five-Year Reviews allow EPA to ensure our cleanup efforts continue to protect public health and the environment, while keeping everyone informed and accountable, especially in those communities that have been overburdened by industrial pollution." **said EPA New England Regional Administrator David W. Cash.** "EPA continues to evaluate these cleanups, with the overarching mission to protect public health and the environment and ensuring that New Hampshire communities will continue to be protected."

In 2024 EPA will conduct Five-Year Reviews at the below listed sites. The included web links provide detailed information on site status as well as past assessment and cleanup activity.

Five-Year Reviews of Superfund sites in New Hampshire to be completed in 2024:

Sylvester, Nashua

Ottati & Goss/Kingston Steel Drum, Kingston

Tinkham Garage, Londonderry

Pease Air Force Base, Portsmouth & Newington

Five-Year Reviews of Superfund sites in New Hampshire to begin in 2024, to be completed in Fiscal Year 2025:
New Hampshire Plating Co., Merrimack

More information:

The Superfund program, a federal program established by Congress in 1980, investigates and cleans up the most complex, uncontrolled, or abandoned hazardous waste sites in the country and EPA endeavors to facilitate activities to return them to productive use. In total, there are 123 Superfund sites across New England.

Superfund and other cleanup sites in New England (pdf) <https://www.epa.gov/system/files/documents/2024-02/uris-ssp-chart-508.pdf> (91.4 KB)

EPA's Superfund program <https://epa.gov/superfund>

Contact Us <https://epa.gov/newsreleases/forms/contact-us> to ask a question, provide feedback, or report a problem.

LAST UPDATED ON FEBRUARY 1, 2024

Discover. h

Accessibility Statement h <https://epa.gov/accessibility/epa- h accessibility-statement> h

Budget & Performance h <https://epa.gov/planandbudget>

Contracting h <https://epa.gov/contracts> h

Connect. h

Data <https://epa.gov/data> h

Inspector General <https://www.epaoig.gov/> h

Jobs <https://epa.gov/careers> h

Newsroomh <https://epa.gov/newsroom> h

Ask.

Contact EPA <https://epa.gov/home/forms/contact-epa>

EPA Disclaimers <https://epa.gov/web-policies-and-procedures/epa-disclaimers>

Hotlines <https://epa.gov/aboutepa/epa-hotlines>

EPA www Web Snapshot h
<https://epa.gov/utilities/wwwepagov- h snapshots>

Grants <https://epa.gov/grants> h

No FEAR Act Data h
<https://epa.gov/ocr/whistleblower- h protections-epa-and-how-they-relate-non-disclosure-agreements-signed-epa> h

Plain Writing
<https://epa.gov/web-policies-and-procedures/plain-writing>

Privacy <https://epa.gov/privacy>

Privacy and Security Notice
<https://epa.gov/privacy/privacy-and-security-notice> h

Regulations.gov
<https://www.regulations.gov/> h

Subscribe
<https://epa.gov/newsroom/email- h subscriptions-epa-news-releases> h

USA.gov <https://www.usa.gov/>

White House
<https://www.whitehouse.gov/>

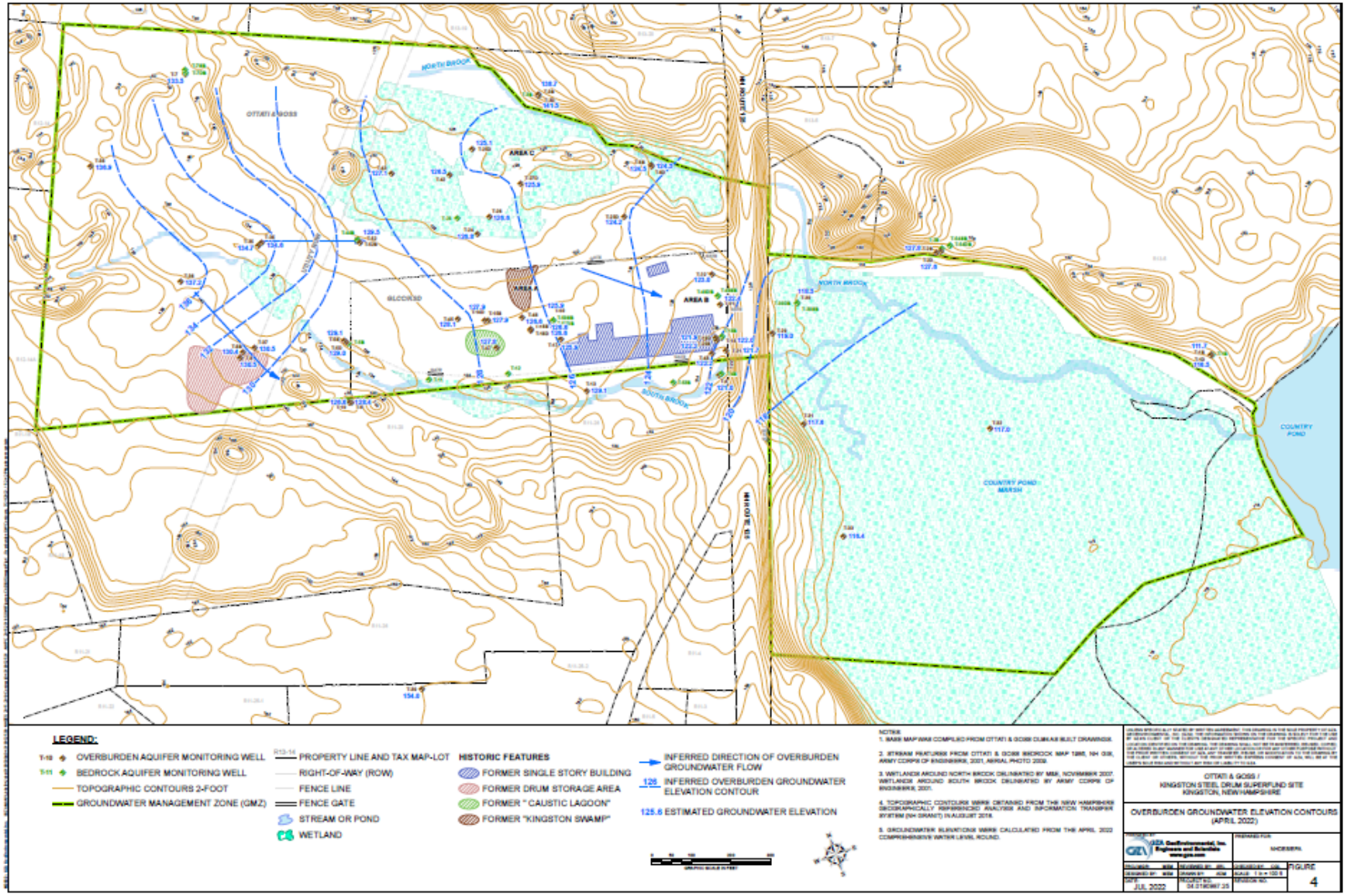
FOIA Requests
<https://epa.gov/foia>

Frequent Questions
<https://epa.gov/home/frequent-questions-specific-epa-programstopics>

Follow.

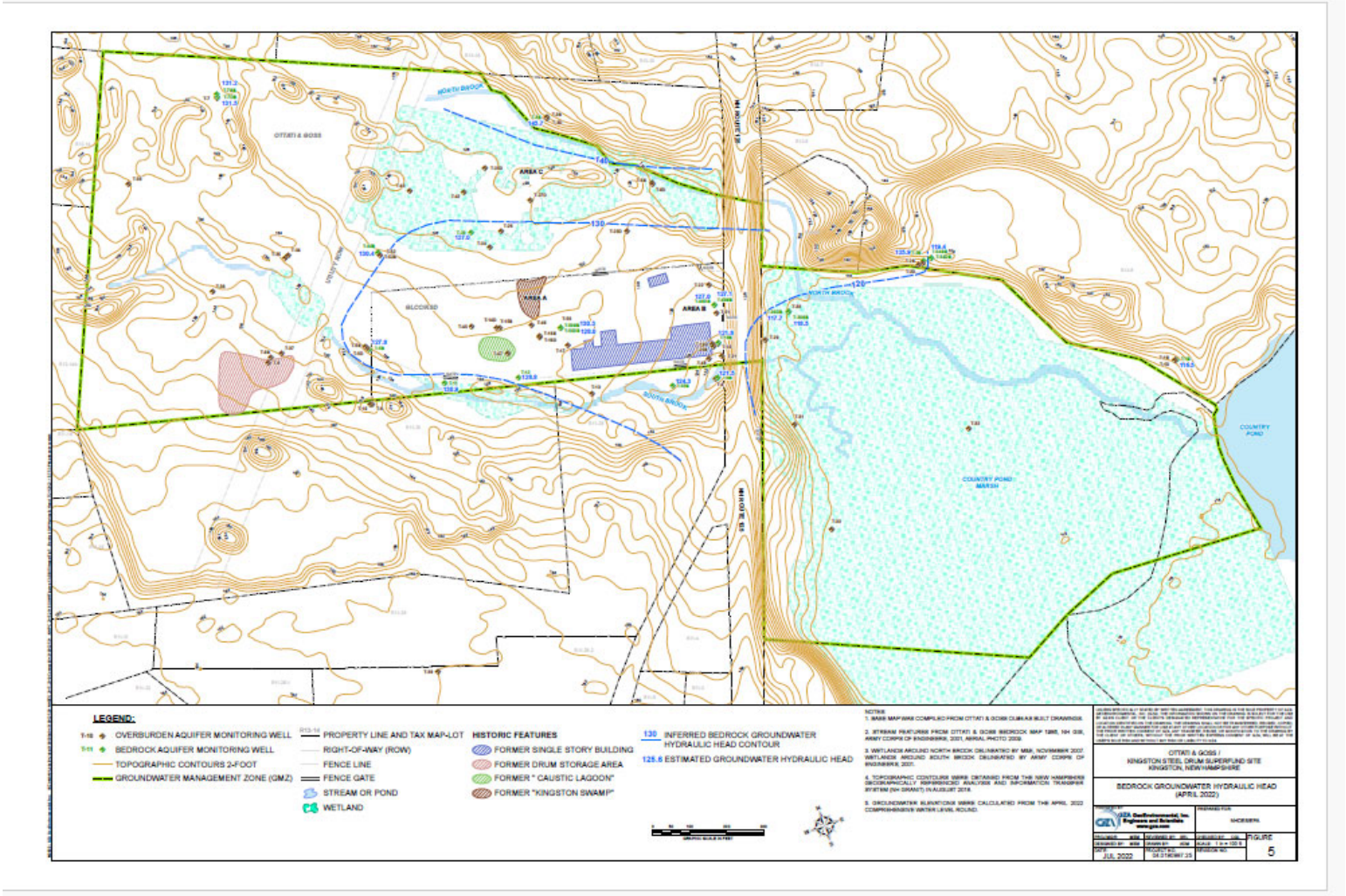
APPENDIX D – SUPPLEMENTAL FIGURES

Figure D-1: Overburden Groundwater Contour



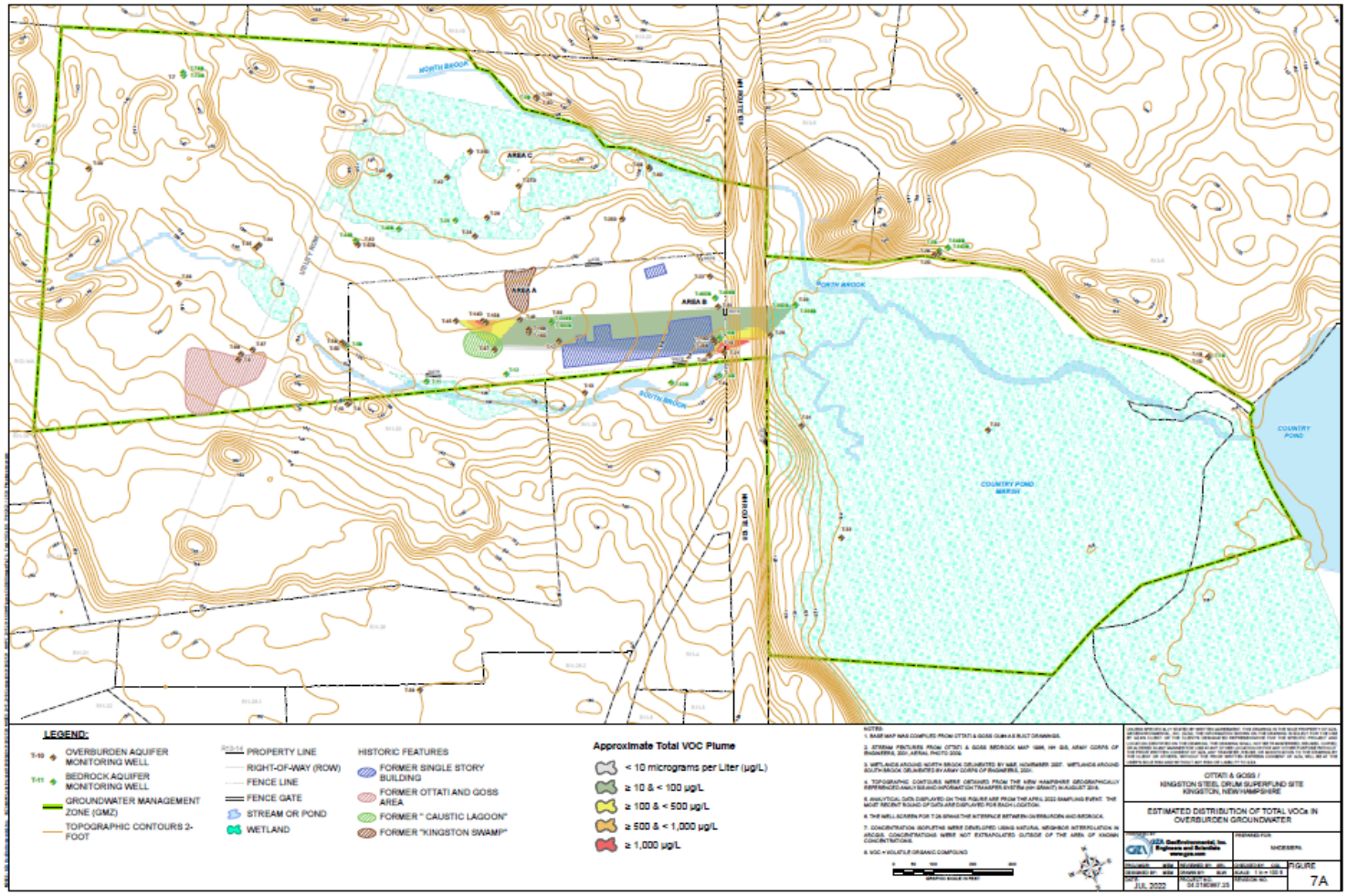
Source: Figure 4 of the 2022 Annual Report

Figure D-2: Bedrock Groundwater Contour



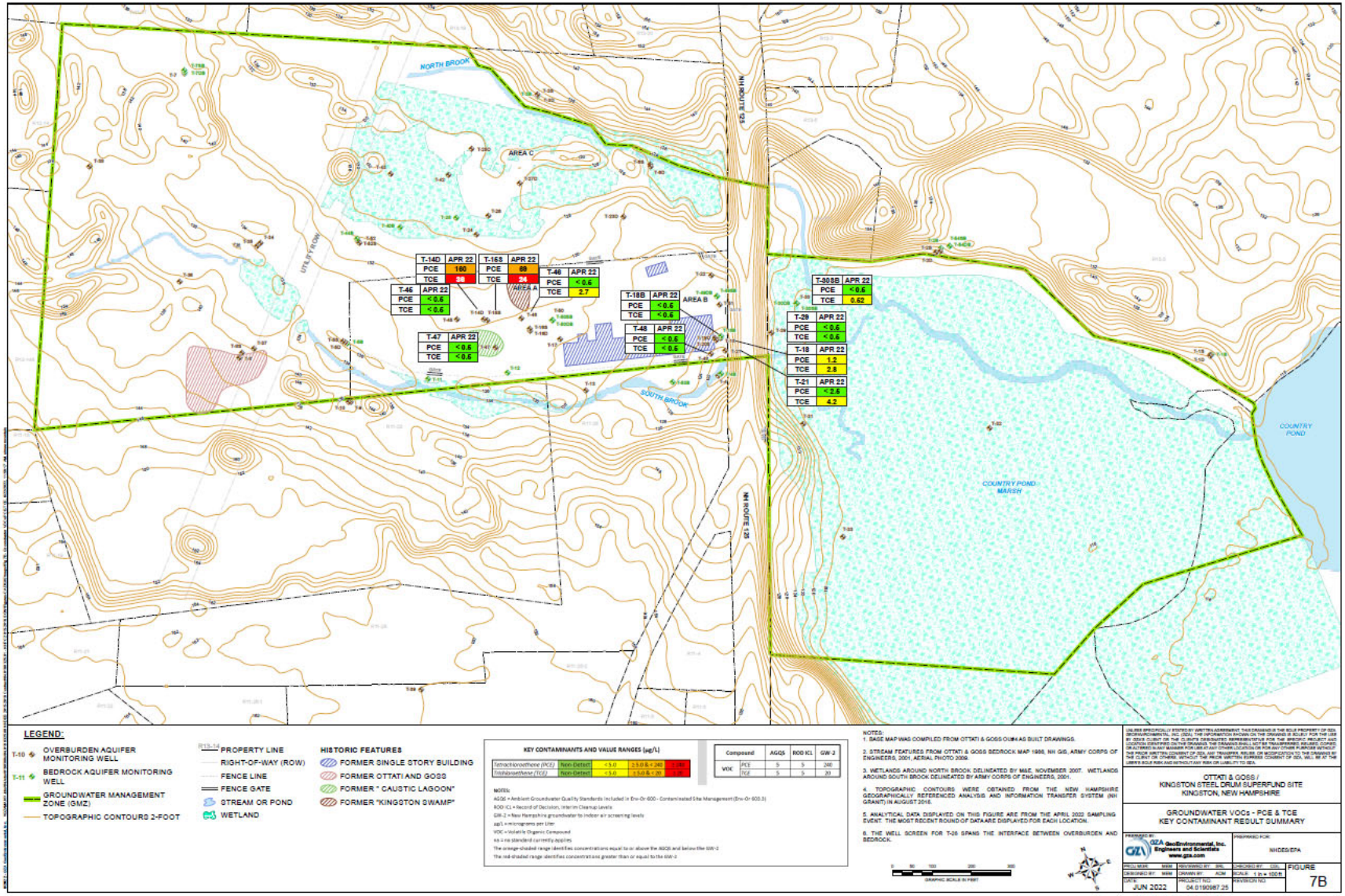
Source: Figure 5 of the 2022 Annual Report

Figure D-3: Estimated Distribution of Total VOCs in Overburden Aquifer



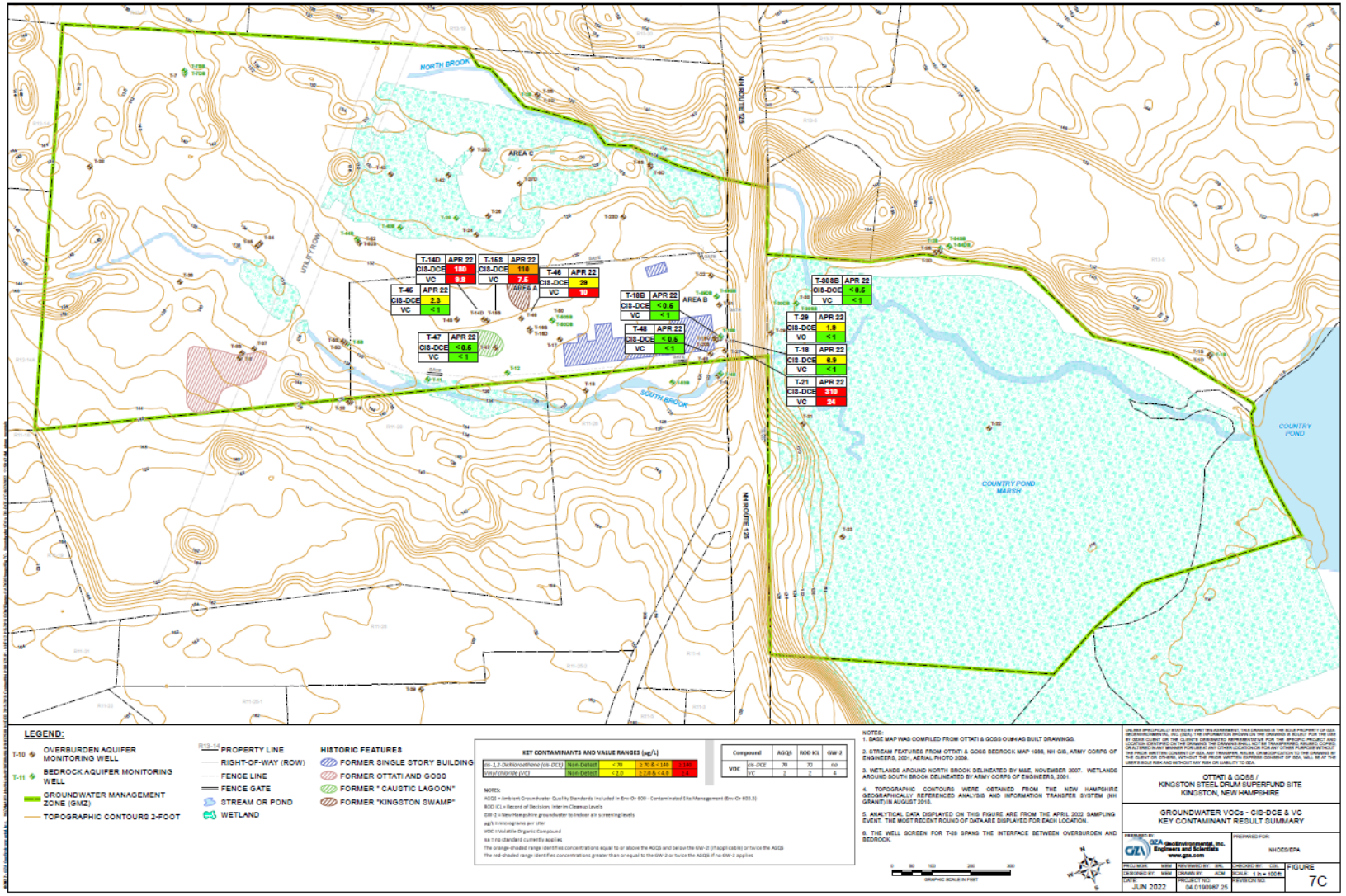
Source: Figure 7A of the 2022 Annual Report

Figure D-4: Groundwater VOCs – PCE & TCE



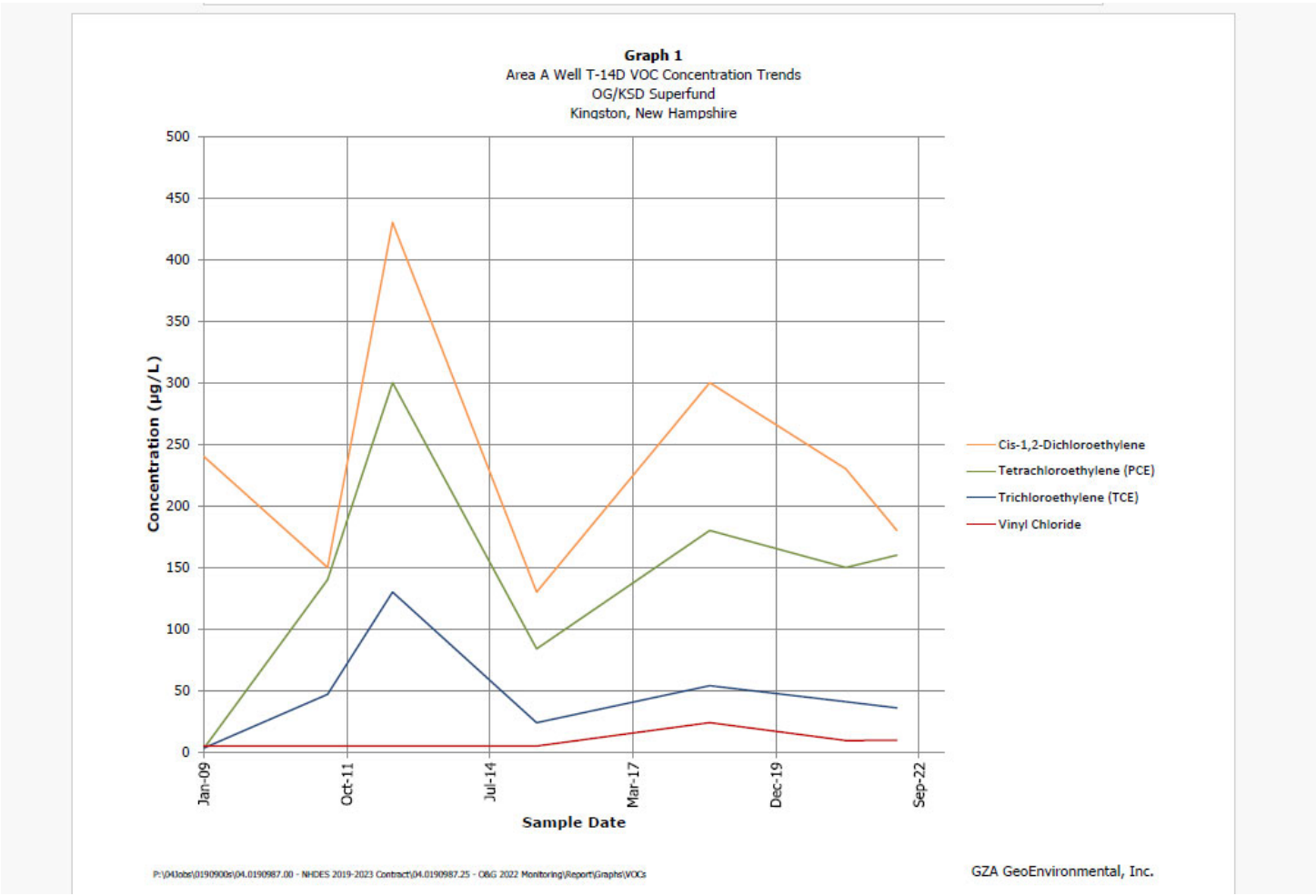
Source: Figure 7B of the 2022 Annual Report

Figure D-5: Groundwater VOCs – Cis-DCE & Vinyl Chloride



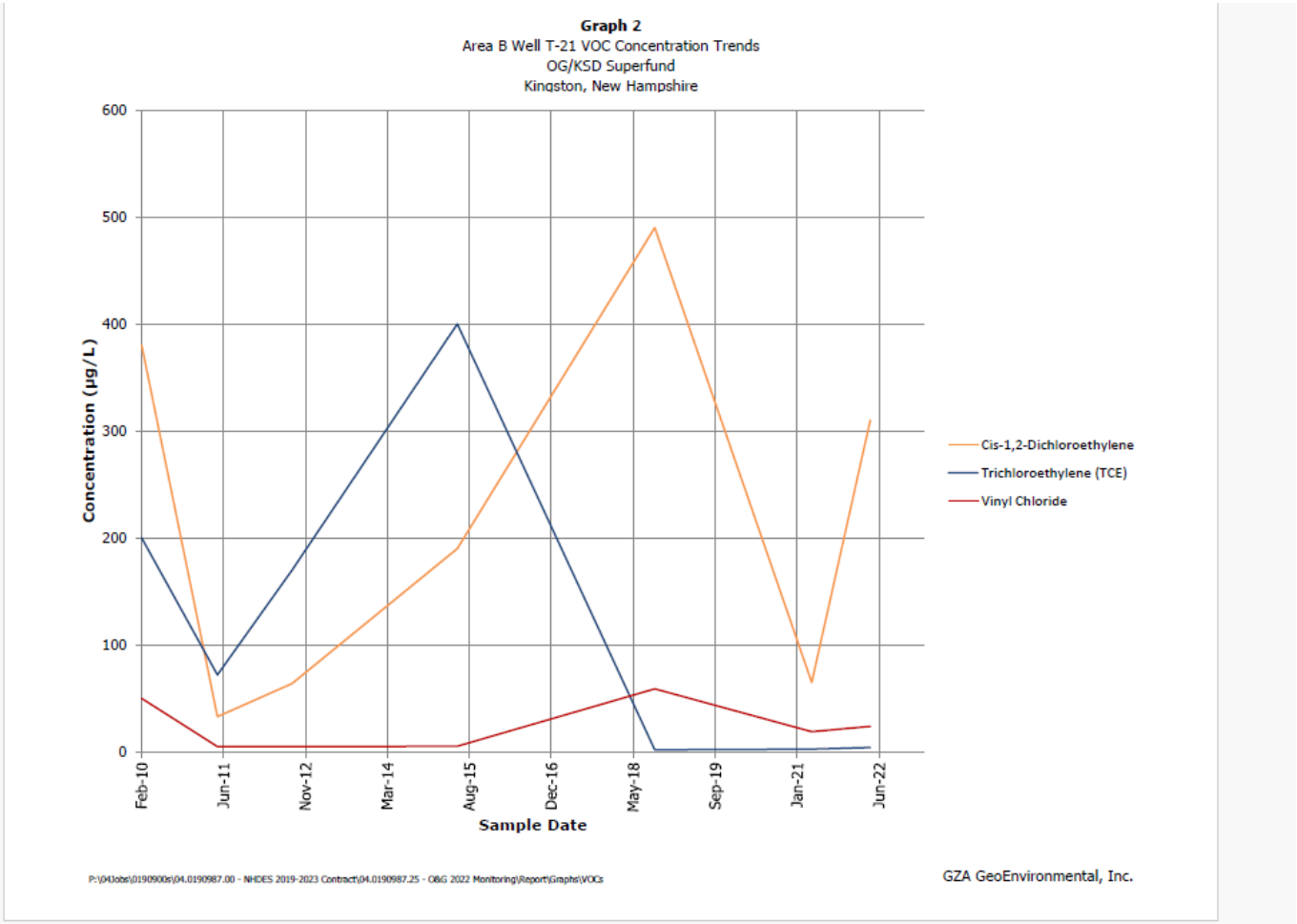
Source: Figure 7C of the 2022 Annual Report

Figure D-6: Area A Well T-14D VOC Concentration Trends



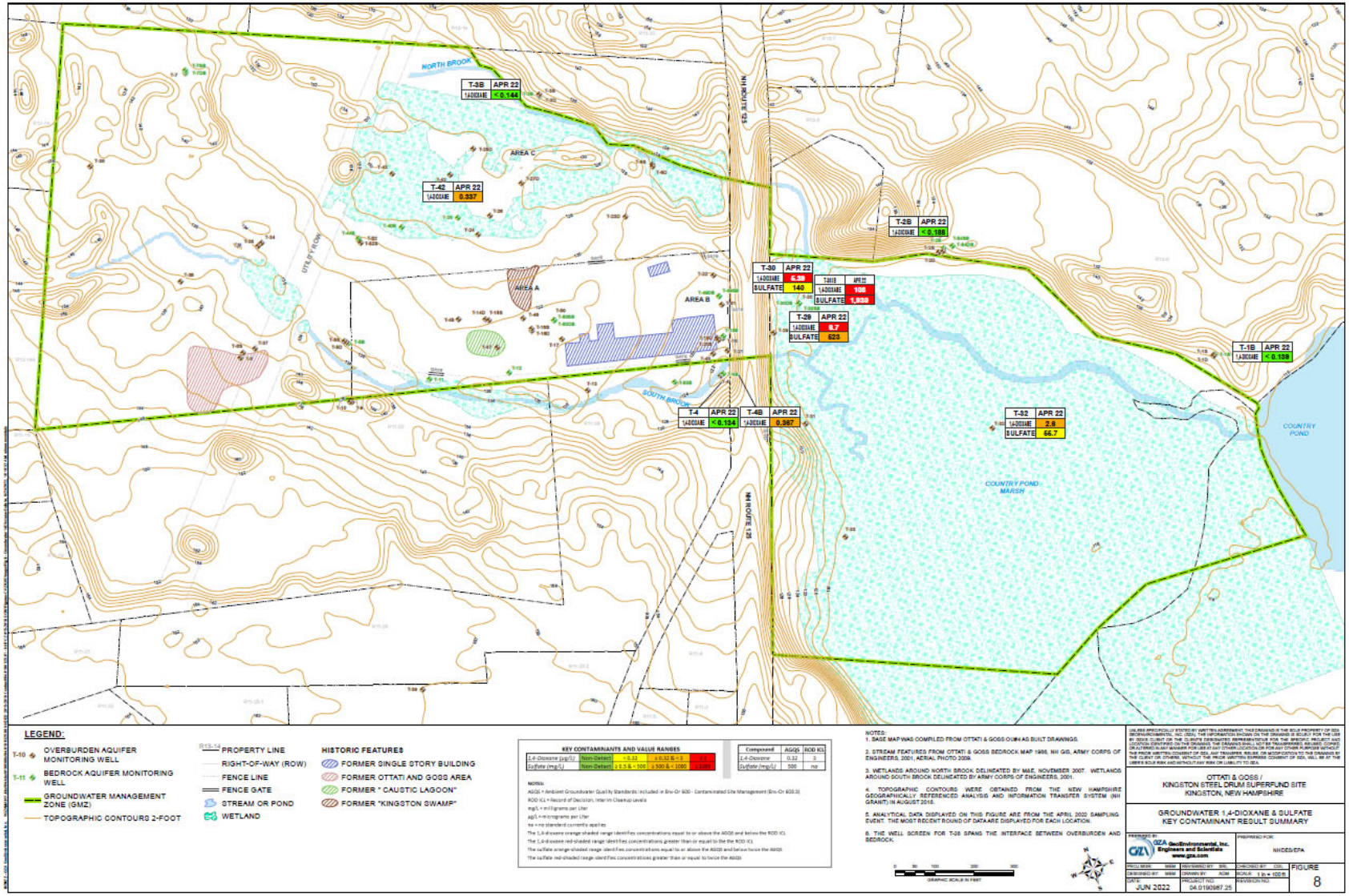
Source: Graph 1 of the 2022 Annual Report

Figure D-7: Area B Well T-21 VOC Concentration Trends



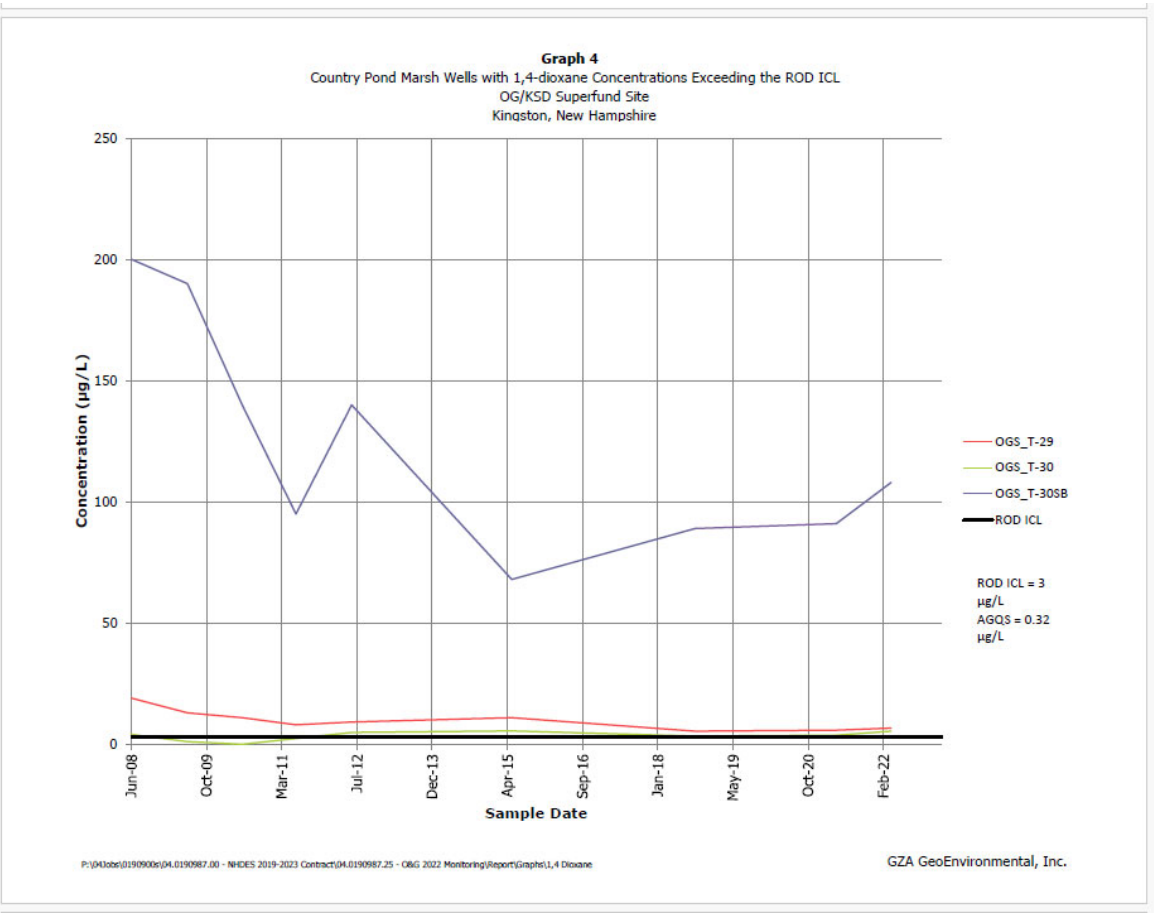
Source: Graph 2 of the 2022 Annual Report

Figure D-8: Groundwater 1,4-Dioxane



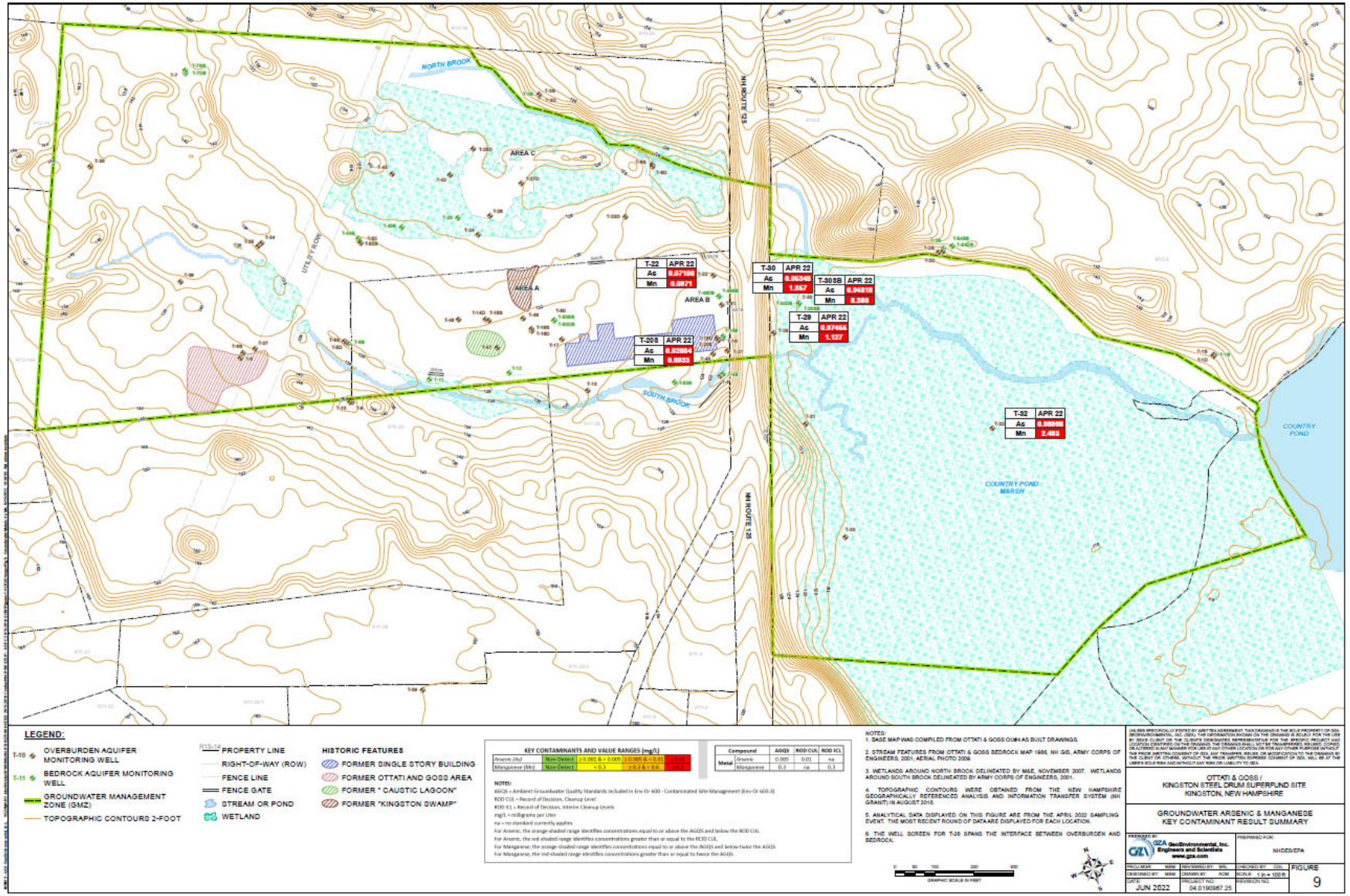
Source: Figure 8 of the 2022 Annual Report

Figure D-9: Country Pond Marsh Wells with 1,4-Dioxane Exceeding the ROD ICL



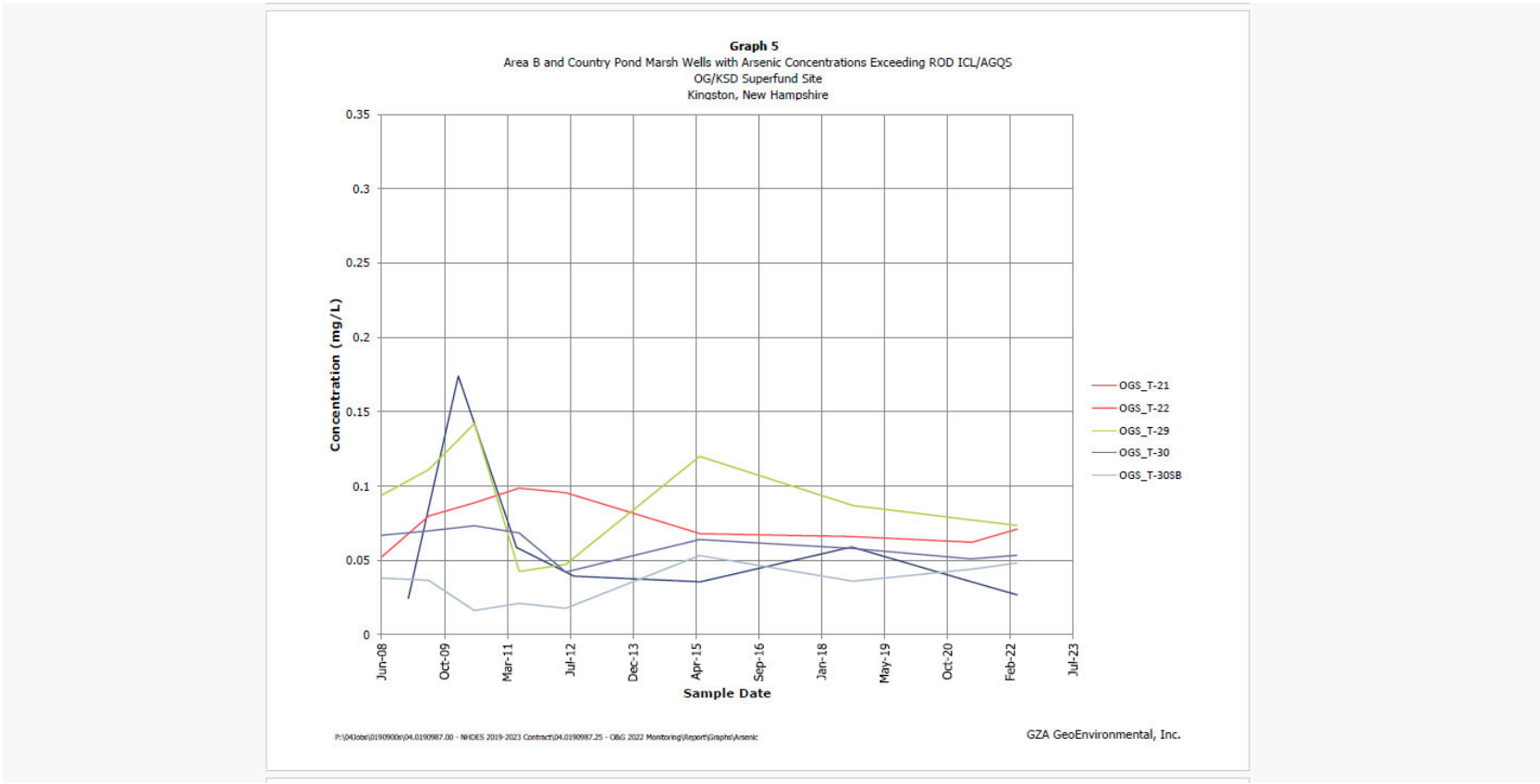
Source: Graph 4 of the 2022 Annual Report

Figure D-10: Groundwater Arsenic & Manganese



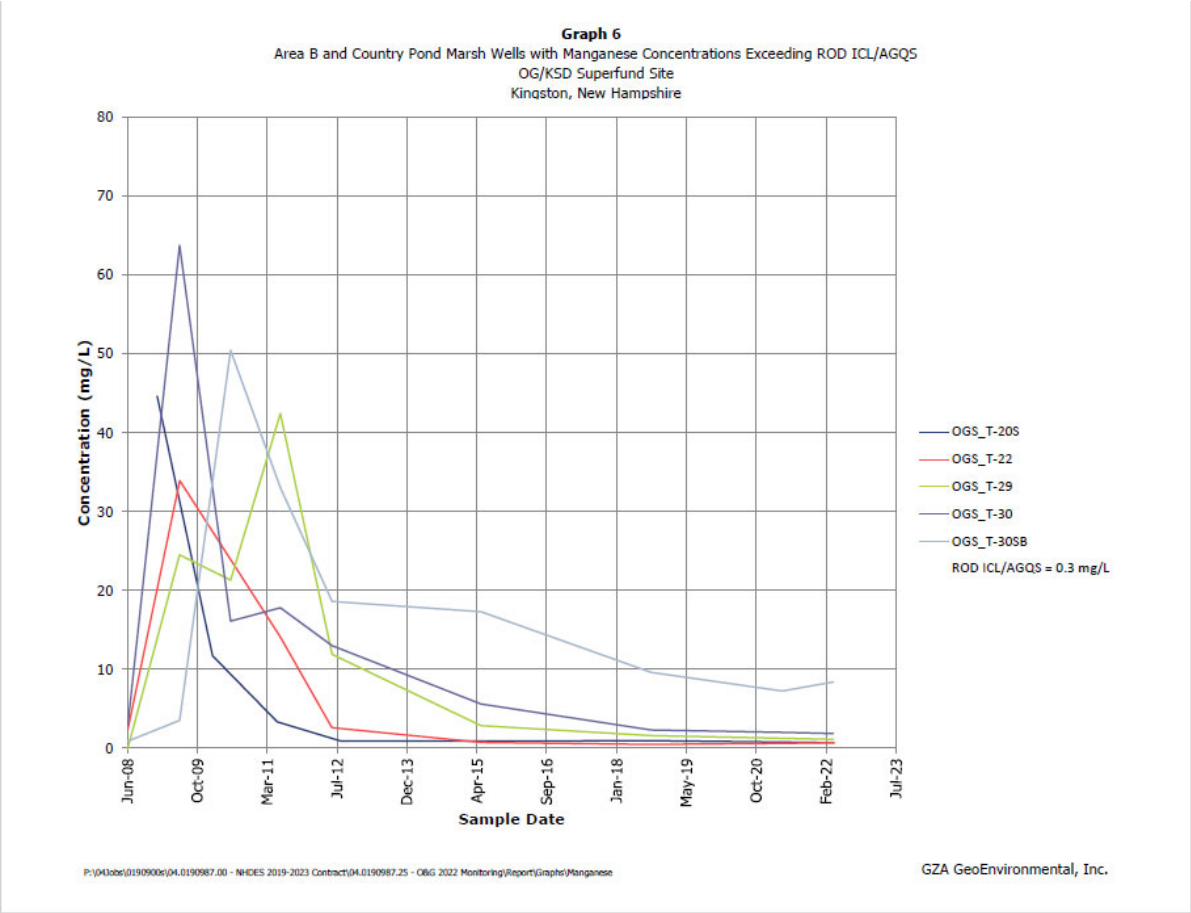
Source: Figure 9 of the 2022 Annual Report

Figure D-11: Arsenic Concentrations Exceeding the ROD ICL



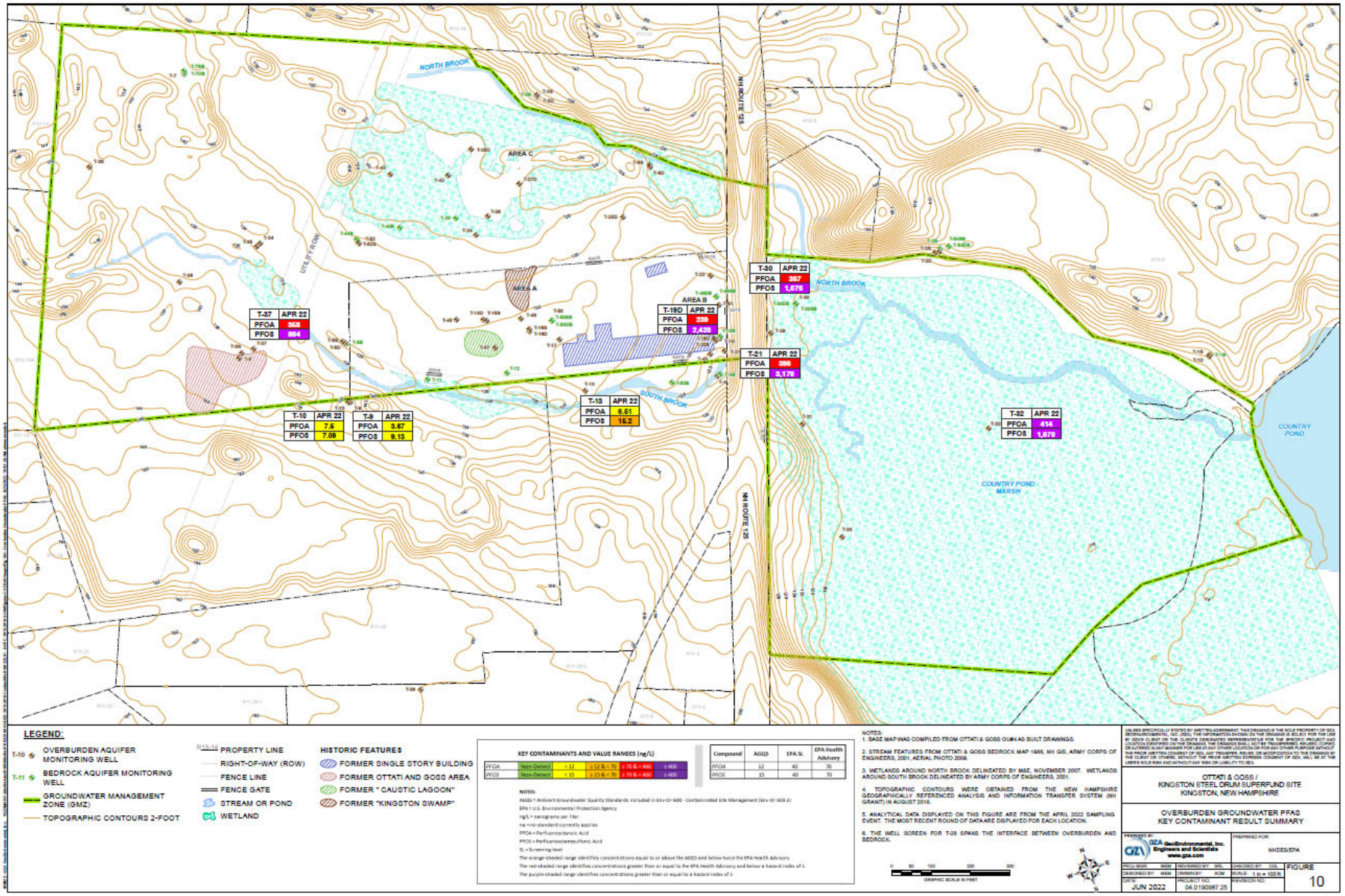
Source: Graph 5 of the 2022 Annual Report

Figure D-12: Manganese Concentrations Exceeding the ROD ICL



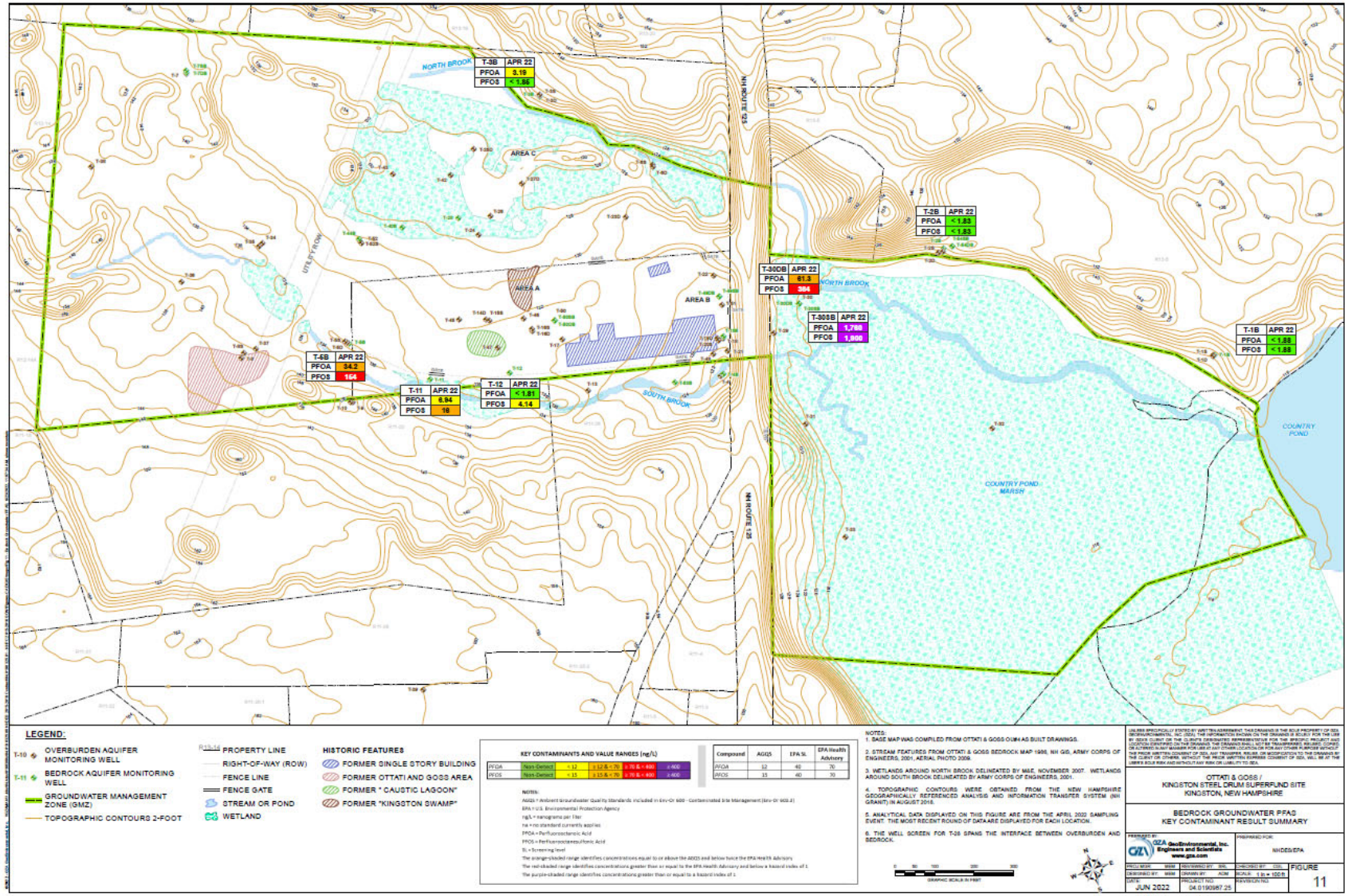
Source: Graph 6 of the 2022 Annual Report

Figure D-13: Overburden Groundwater PFAS



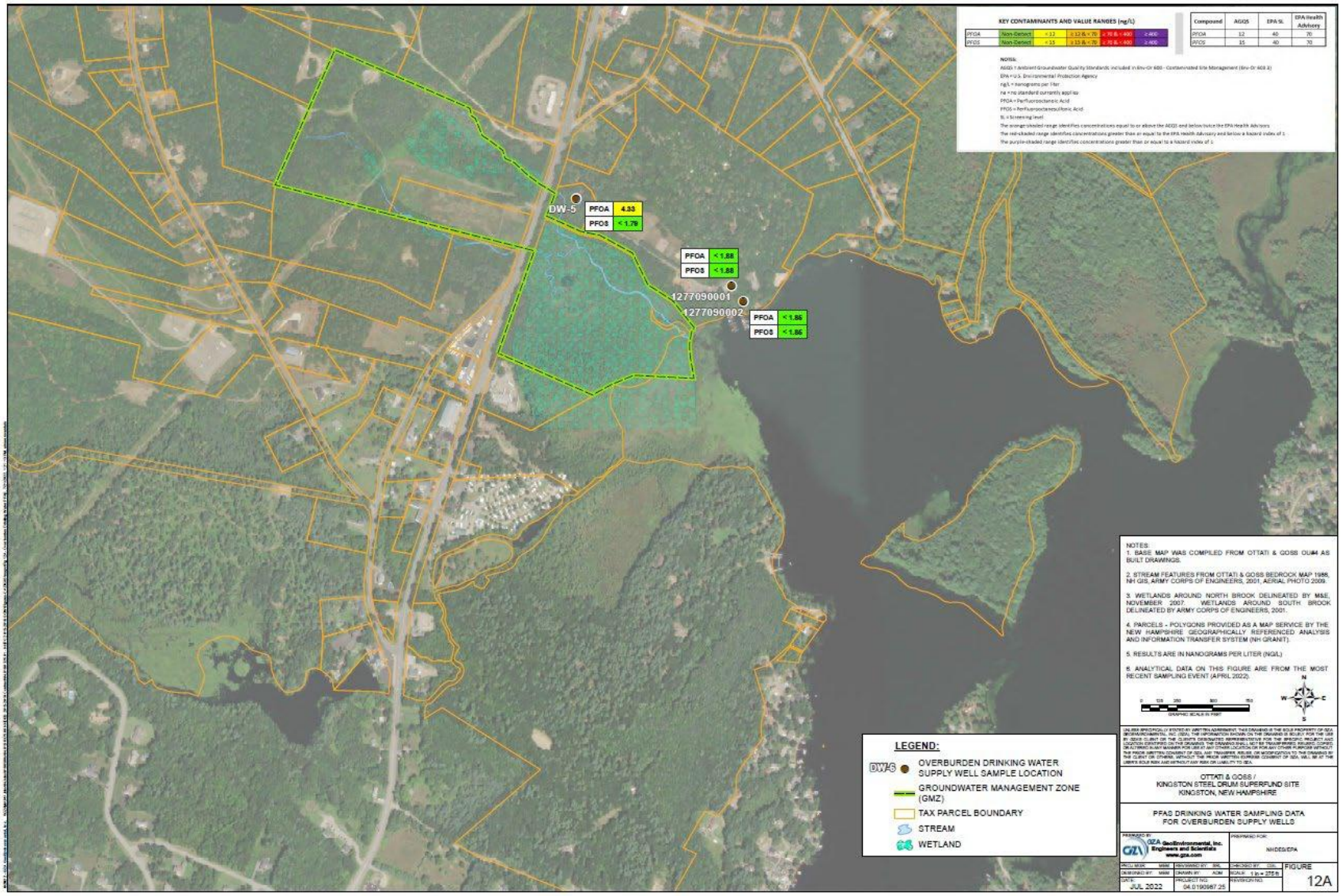
Source: Figure 10 of the 2022 Annual Report

Figure D-14: Bedrock Groundwater PFAS



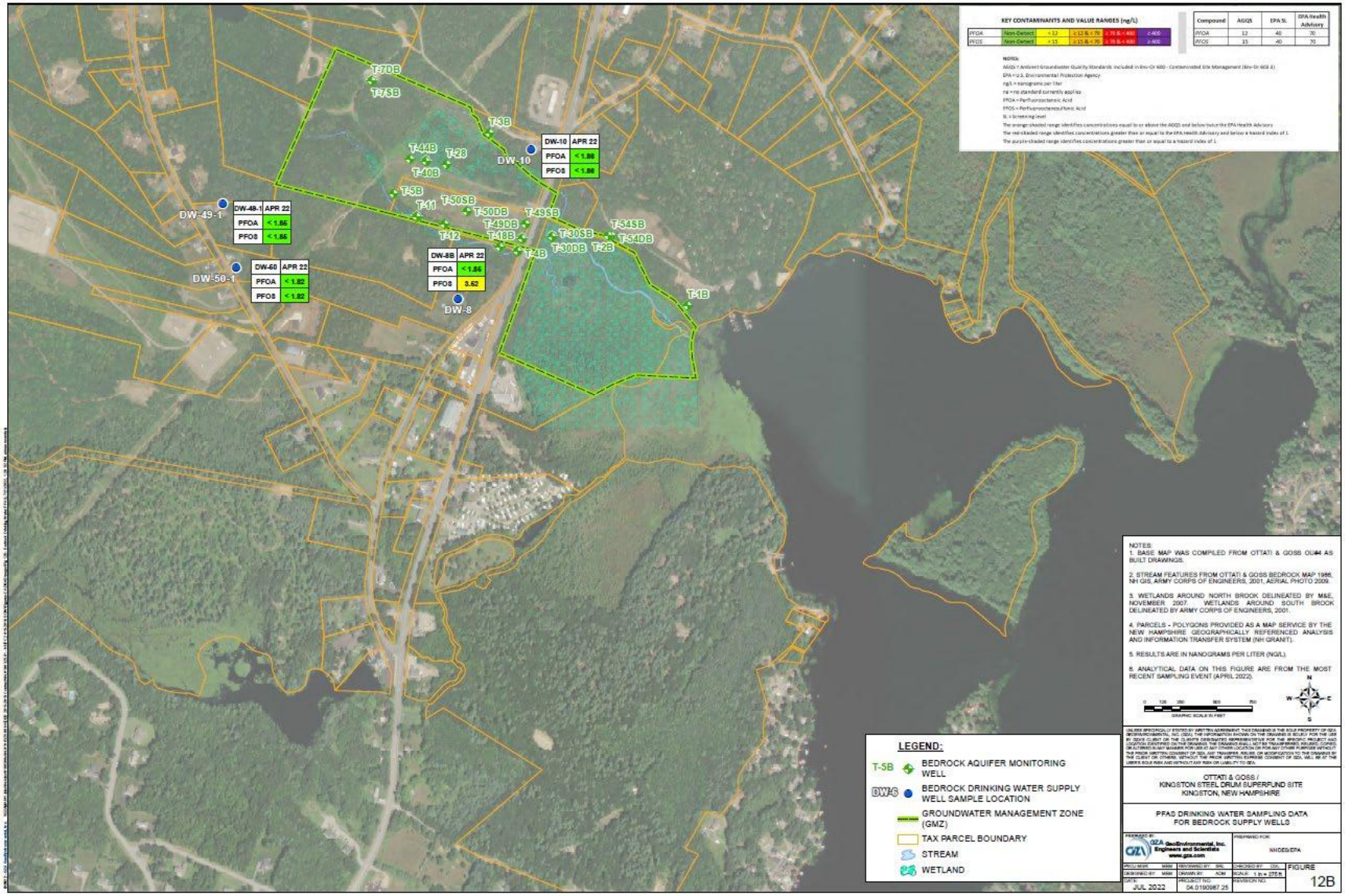
Source: Figure 11 of the 2022 Annual Report

Figure D-15: PFAS Drinking Water Sampling Data for Overburden Supply Wells



Source: Figure 12A of the 2022 Annual Report

Figure D-16: PFAS Drinking Water Sampling Data for Bedrock Supply Wells



Source: Figure 12B of the 2022 Annual Report

APPENDIX E – INTERVIEWS

SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Ottati and Goss	
EPA ID: NHD990717647	
Interviewer name: Ian Clarke	**Interviewer affiliation: RPM**
Subject name: Neighboring property owner	**Subject affiliation: Neighboring property owner**
Subject contact information: N/A	
Interview date: 4/18/2024	**Interview time: 0930**
Interview location: Phone	
Interview format (circle one): In Person **Phone** Mail Email Other:	
Interview category: Resident	

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

He was aware of the environmental issues and all cleanup activities at the site.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

He noted that being next to a Superfund Site is never ideal he is happy with how the site is managed and actions taken at the site.

3. What have been the effects of this Site on the surrounding community, if any?

He did not indicate that the site had significant impacts on the surrounding community.

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

He has not encountered any problems with unusual or unexpected activities.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

He indicated he felt he was well informed and the EPA is doing a good job at communicating site-related information.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

He owns a private well for as his main water supply.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

He had no comments, suggestions or recommendations regarding any aspects of the project.

OTTATI & GOSS/KINGSTON STEEL DRUM SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Ottati & Goss/Kingston Steel Drum	
EPA ID: NHD990717647	
Interviewer name: Aaron Shaheen	**Interviewer affiliation:** U.S. EPA Community Involvement Coordinator
Subject name: Select Board	**Subject affiliation:** Kingston, NH
Subject contact information: Susan Ayer, Administrative Assistant to Select Board	
Interview date: 3/28/24	**Interview time:**
Interview location:	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: Local Government	

1. Are you aware of the historic environmental issues at the Site and the cleanup activities that have taken place to date? **Yes.**

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future? **In general, yes.**
   From Conservation: "It would be beneficial if the EPA would inform the Kingston Conservation Commission through Chair Evelyn Nathan (evynathan@comcast.net), or via the Town contact, so that Conservation is in the loop."

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing? **None reported by the Police or Fire Departments.**

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy? **None known to the Kingston Planning Department or Select Board**

5. Are you aware of any changes in projected land use(s) at the Site? **None known to the Kingston Planning Department or Select Board**

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future? **We do feel that information is readily available and shared as needed. Emails to the Select Board Administrator are the best avenue for information.**

7. Do you have any comments, suggestions or recommendations regarding the project? **From Conservation Chair Evelyn Nathan:**
   "I have spoken with EPA representatives about sowing wildflower seed and possibly placing bird boxes on the site to utilize the property a bit. But it was not approved. I would request that it be reconsidered."

OTTATI & GOSS/KINGSTON STEEL DRUM SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: OTTATI & GOSS/KINGSTON STEEL DRUM	
EPA ID: NHD990717647	
Interviewer name: N/A (completed by subject)	**Interviewer affiliation:** N/A
Subject name: Michael Summerlin	**Subject affiliation:** NHDES Project Manager
Subject contact information: Michael.SummerlinJr@des.nh.gov	
Interview date: 12/20/2023	**Interview time:** N/A
Interview location: N/A	
Interview format (circle one): In Person Phone Mail Email Other: X	
Interview category: State Agency	

1. **What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?** Successful.

2. **What is your assessment of the current performance of the remedy in place at the Site?** Appropriate.

3. **Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?** Yes. Property owner of 26 Old Coach Rd. has inquired as to whether there are any restrictions on the property necessitated by the presence of the adjacent Superfund Site.

4. **Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities.** Only periodic groundwater monitoring and ongoing PFAS Remedial Investigation activities.

5. **Are you aware of any changes to state laws that might affect the protectiveness of the Site's remedy?** There have been changes to the NH Ambient Groundwater Quality Standards (AGQS) for manganese (reduction from 840 to 300 ug/L in March 2021), arsenic (reduction from 10 to 5 ug/L in July 2021), and certain PFAS (reduction from 70 to 12 ng/L and 15 ng/L in July 2020 for PFOA and PFOS, respectively; establishment of AGQS in July 2020 for PFHxS and PFNA of 18 and 11 ng/L, respectively).

6. **Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues?** There may be a need to expand the Groundwater Overlay District boundary, established by Town Ordinance, to include a southerly-abutting lot, Map R-11, Lot 20. Should a commercial/industrial use become present at the parcel and there become a significant groundwater withdrawal, contaminant plume dynamics may be adversely impacted.

7. **Are you aware of any changes in projected land use(s) at the Site?** The parcel at Map R-11, Lot 20 is under consideration for selling by the owner. The owner is also considering solar development.

8. **Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?** No.

9. **Do you consent to have your name included along with your responses to this questionnaire in the FYR report?** Yes.

APPENDIX F – SITE INSPECTION PHOTOS

Entrance gate to the northern part of the Site

Signage on the entrance to Area A and B and location of prior ISCO injections

Recently mowed Area A and B

Concrete protection around wells

New bedrock monitoring well for current investigations

Powerline right-of-way through the Site

Surface water and porewater sampling location for current investigations

Confluence of Country Pond Marsh with Country Pond

Country Pond

APPENDIX G – SITE INSPECTION CHECKLIST

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site Name: Ottati & Goss/Kingston Steel Drum	**Date of Inspection:** 12/08/2023
Location and Region: Kingston, NH, Region 1	**EPA ID: NHD990717647**
Agency, Office or Company Leading the Five-Year Review: EPA	**Weather/Temperature:** 40 degrees Fahrenheit, partly cloudy

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☐ Access controls
- ☒ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls
- ☒ Other: Soil and Sediment removal, ISCO injections, LTTD and aeration

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (check all that apply)

1. **O&M Site Manager** _____ (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems, suggestions ☐ Report attached: _____

2. **O&M Staff** _____ (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems/suggestions ☐ Report attached: _____

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). Fill in all that apply.

   Agency NHDES
   Contact Michael Summerlin (Name) | Project Manager (Title) | 12/20/2023 (Date) | 603-271-3649 (Phone)
   Problems/suggestions ☐ Report attached: _____

   Agency _____
   Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone)
   Problems/suggestions ☐ Report attached: _____

   Agency _____
   Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone)
   Problems/suggestions ☐ Report attached: _____

   Agency _____
   Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone)
   Problems/suggestions ☐ Report attached: _____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone
Problems/suggestions ☐ Report attached:_____

4. **Other Interviews** (optional) ☐ Report attached: _____

Neighboring Property Owner, Administrative Assistant to the Select Board

III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)

1. **O&M Documents**

☐ O&M manual	☐ Readily available	☐ Up to date	☒ N/A
☐ As-built drawings	☐ Readily available	☐ Up to date	☒ N/A
☐ Maintenance logs	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

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

Remarks: _____

3. **O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

4. **Permits and Service Agreements**

☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
☐ Other permits: _____	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

5. **Gas Generation Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

6. **Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

7. **Groundwater Monitoring Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

8. **Leachate Extraction Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

9. **Discharge Compliance Records**

☐ Air	☐ Readily available	☐ Up to date	☒ N/A
☐ Water (effluent)	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

10. **Daily Access/Security Logs** ☐ Readily available ☐ Up to date ☒ N/A

Remarks: _____

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☒ Contractor for state

☐ PRP in-house ☐ Contractor for PRP

☐ Federal facility in-house ☐ Contractor for Federal facility

☐ _____

2. **O&M Cost Records**

☐ Readily available ☐ Up to date

☐ Funding mechanism/agreement in place ☒ Unavailable

Original O&M cost estimate: _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached

3. **Unanticipated or Unusually High O&M Costs during Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing Damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: _____

B. Other Access Restrictions

1. **Signs and Other Security Measures** ☐ Location shown on site map ☒ N/A

Remarks: _____

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): _____

Frequency: _____

Responsible party/agency: _____

Contact _____ _____ _____ _____

Name Title Date Phone

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: EPA and the State might need to consider whether institutional controls need to be put into place for a neighboring property to the Site.

D. General

1. **Vandalism/Trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks: _____

2. **Land Use Changes On Site** ☒ N/A

Remarks: _____

3. **Land Use Changes Off Site** ☒ N/A

Remarks: _____

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: Vegetation is well managed and groundwater monitoring wells are clearly identified and protected from mowing equipment.

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps and Pipelines ☐ Applicable ☒ N/A

1. **Pumps, Wellhead Plumbing and Electrical**

☐ Good condition ☐ All required wells properly operating ☐ Needs maintenance ☐ N/A

Remarks: _____

2. **Extraction 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: _____

B. Surface Water Collection Structures, Pumps and Pipelines ☐ Applicable ☒ 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 ☐ Applicable ☒ N/A

1. **Treatment Train** (check components that apply)

☐ Metals removal ☐ Oil/water separation ☐ Bioremediation

☐ Air stripping ☐ Carbon adsorbers

☐ Filters: _____

☐ Additive (e.g., chelation agent, flocculent): _____

☐ Others: _____

☐ Good condition ☐ Needs maintenance

☐ Sampling ports properly marked and functional

☐ Sampling/maintenance log displayed and up to date

☐ Equipment properly identified

☐ Quantity of groundwater treated annually: _____

☐ Quantity of surface water treated annually: _____

Remarks: _____

2. **Electrical Enclosures and Panels** (properly rated and functional)

☐ N/A ☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Tanks, Vaults, Storage Vessels**

☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs maintenance

Remarks: _____

4. **Discharge Structure and Appurtenances**

☐ N/A ☐ Good condition ☐ Needs maintenance

Remarks: _____

5. **Treatment Building(s)**

☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair

☐ Chemicals and equipment properly stored

Remarks: _____

6. **Monitoring Wells** (pump and treatment remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: _____

D. Monitoring Data

1. **Monitoring Data**

☒ Is routinely submitted on time ☒ Is of acceptable quality

2. **Monitoring Data Suggests:**

☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs maintenance ☒ N/A

Remarks: _____

X. OTHER REMEDIES

If there are remedies applied at the site and 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 designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions).

The soil and sediment remedy was intended to remove materials that resulted in unacceptable risk. The groundwater remedy was intended to treat VOCs in groundwater. It is ongoing. Recent investigations in soil and groundwater have identified signficant quantities of PFAS in groundwater and soil. Investigations are ongoing.

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.

Very minimal O&M is appropriate for the current site conditions.

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.

Investigations into remaining PFAS will determine the future for the Site.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

No opportunities for optimization were identified.

APPENDIX H – CLEANUP GOAL REVIEW

ARARs Review

CERCLA Section 121(d)(1) requires that Superfund remedial actions attain "a degree of cleanup of hazardous substances, pollutants, and contaminants released into the environment and control of further release at a minimum which assures protection of human health and the environment." The remedial action must achieve a level of cleanup that at least attains those requirements that are legally applicable or relevant and appropriate. In performing the FYR for compliance with ARARs, only those ARARs that address the protectiveness of the remedy are reviewed.

Table H-1: Review of Groundwater Interim Cleanup Levels

COC	2007 Amended ROD Interim Cleanup Level (µg/L)[a]	Current Federal MCL (µg/L)[b]	Current State AGQS (µg/L)[c]	Change
Benzene	5	5	5	No change
1,2-DCA	5	5	5	No change
Cis-1,2-Dichloroethene (DCE)	70	70	70	No change
1,4-Dichlorobenzene	75	75	75	No change
Ethylbenzene	700	700	700	No change
Hexachlorobutadiene	0.5	--	0.5	No change
Methly-t-butyl ether	13	--	13	No change
Naphthalene	20	--	100	Less stringent
Styrene	100	100	100	No change
Tetrachloroethylene (PCE)	5	5	5	No change
Tetrahydrofuran	154	--	600	Less stringent
Toluene	1,000	1,000	1,000	No change
Trichloroethylene (TCE)	5	5	5	No change
Vinyl Chloride	2	2	2	No change
Total Xylene	10,000	10,000	10,000	No change
1,4-Dioxane	3	--	0.32	More stringent
Arsenic	10	10	5	No change/More stringent
Lead	15	15	15	No change
Manganese	300	--	300	No change
Nickel	100	--	100	No change
Total PCBs	0.5	0.5	0.5	No change

Notes:

a. Table B-1 (pdf page 39) of the 2007 Amended ROD.

b. National Primary Drinking Water Regulations located at: https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations (accessed 4/23/2024).

c. NH AGQS located at: https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/env-or-600.pdf (accessed 4/23/2024).

-- No standard

Soil/Sediment Cleanup Goal Review

The soil and sediment cleanup goals were also reviewed to determine if they remain valid based on changes in toxicity values or risk assessment methodology. The 1987 ROD established PCB cleanup levels for soils of 20 mg/kg and 1 mg/kg for sediments. The 1998 FYR determined that the ROD PCB cleanup level of 20 mg/kg for the GLCC/KSD part of the Site would not be protective under residential future site uses. However, the 20 mg/kg level was determined to be protective of human health if the GLCC/KSD property was limited to commercial use. The 1999 ESD changed the future land use from residential to commercial and the PCB cleanup goal remained at 20 mg/kg as the ESD determined this level is protective for commercial uses. The 1999 ESD also adjusted the sediment PCB cleanup goal from 1 mg/kg to 10 mg/kg for a five acre area of the brook and wetland based on ecological risk; while the PCB cleanup level of 1 mg/kg applies to the section of South Brook that is at the entrance to the culvert. Prior to initiating the OU4 soil cleanup in 2001, EPA recalculated the risks associated with the 20 mg/kg cleanup level as part of the 1999 ESD and determined that a 3 mg/kg risk-based cleanup level would be needed to be protective under future residential use scenarios based on new information about the toxicity of PCBs. The residential cleanup level for soil of 3 mg/kg total PCBs was derived for two areas adjacent to the former GLCC/KSD property, so that land use restrictions for these other properties would not be required. Table H-2 shows that the PCB cleanup goals are within EPA's risk management range for residential and commercial land uses. The cleanup goals remain valid.

The 1987 ROD also established a cleanup level for total VOCs in soil of 1 mg/kg for the protection of groundwater. During on-site treatment of soil using low temperature thermal aeration confirmation samples were collected each day from staged treated soil and if the average total VOC concentration was less than 1 mg/kg and the individual concentrations of the four indicator contaminants (1,2-dichloroethane, benzene, trichloroethylene, and perchloroethylene) were less than 0.1 mg/kg, the treatment of the soils from that day was considered acceptable. If the average concentrations exceeded the cleanup levels then the treated soils were reprocessed. The individual cleanup goals for the four indicator contaminants were not established in a decision document but were used to evaluated remedy performance. Table H-2 shows that the cleanup goals for the four indicator VOCs are below EPA's risk management range for residential land use and below EPA's noncancer threshold of 1.

Table H-2: Review of Soil/Sediment Cleanup Levels

OU	COC	Cleanup Goal (mg/kg)	Residential Soil RSL[a] (mg/kg)		Cancer Risk	Noncancer HQ
			1 x 10^{-6} Risk	*HQ = 1.0*		
OU-1 O&G Future residential	Benzene	0.1	1.2	82	8 x 10^{-8}	0.001
	Dichloroethane, 1,2-	0.1	0.46	31	2 x 10^{-7}	0.003
	PCE	0.1	24	81	4 x 10^{-9}	0.001
	TCE	0.1	0.94	4.1	1 x 10^{-7}	0.02
OU-4 Future residential	PCB	3.0	0.23	-	1 x 10^{-5}	-
OU	**COC**	**Cleanup Goal (mg/kg)**	**Commercial Soil RSL[a] (mg/kg)**		**Cancer Risk**	**Noncancer HQ**
			1 x 10^{-6} Risk	**HQ = 1.0**		
OU-4 Future commercial	PCB	20	0.94	-	2 x 10^{-5}	-

Notes:

a. RSLs accessed 4/30/2024 at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables.

b. Cancer risks were calculated using the following equation, based on the fact that RSLs are derived based on 1 x 10^{-6} risk: cancer risk = (cleanup goal ÷ cancer-based RSL) x 10^{-6}.

c. Noncancer hazard quotient (HQ) calculated using the following equation: HQ = cleanup goal ÷ noncancer-based RSL.

APPENDIX I – LEAD SCREENING LEVEL CHECKLIST

Residential Lead Screening Level Checklist

Site Information			
Site or study area name	OTTATI & GOSS/KINGSTON STEEL DRUM		
Location (City/County, State, Zip)	KINGSTON, NH	SEMS EPA ID	NHD990717647
Current remedial pipeline phase	POST CONSTRUCTION; PFAS RI	Does a site boundary exist in SEMS?	☒ Yes ☐ No
Briefly describe any removal or remedial work completed to date, including previous screening levels	A small portion of the South Brook excavation area was on residential property. Post-excavation, confirmatory soil sampling in this area included lead analysis. Based on a review of this post-excavation lead sampling results, the average lead concentration in this area is approximately 108 ppm.		
Briefly describe the geographic scope of the study area that was considered while completing the checklist	Full site boundary		

Checklist completed by:		
Name	Title and Organization	Date
Melissa Taylor	Chief, NH/RI Superfund Section	3/14/24

Table 1: Evaluate Primary Data Sources in "Residential Lead GIS Screening Tool" [**Ctrl+Click here to access GIS tool**]

Yes	No	?	Question	Data Evaluation Notes	References
☐	☒	☐	Is the study area in a NAAQS nonattainment zone for lead?	SCREENSHOT ATTACHED	EPA Green Book provides detailed information about NAAQS designations
☐	☒	☐	Does the EJScreen Lead Paint Index data demonstrate that a majority of the homes in the study area are at or above the 80th percentile?	SCREENSHOT ATTACHED	EJ Screen Environmental Indicators Census Bureau housing data tools American Community Survey data
☒	☐	☐	Are you able to you select a screening level based on these primary data sources?	☒ Yes: 200 ppm ☐ Yes: 100 ppm ☐ No: continue with checklist *If yes, skip to the last page to summarize the weight of evidence and to document approval.*	

Table 2: Evaluate Secondary Data Sources on Potential Lead Exposures

Yes	No	?	Question	Data Evaluation Notes	References
☐	☐	☐	Are you aware of any potential soil exposures due to deteriorating exterior lead-based paint?		EPA Regional Lead-Based Paint Contacts
☐	☐	☐	Are there facilities in the study area with known lead violations?		Search for facilities to assess their compliance Check with state and local contacts for facilities not subject to EPA authorities
☐	☐	☐	Are you aware of lead pipes and/or lead service lines in the study area?		Check with the state's drinking water program Check local drinking water quality annual reports
☐	☐	☐	Among the schools in the study area, are there drinking water reports or testing that indicate lead exposures?		The local public water department may have more information Check local drinking water quality annual reports EPA contacts for voluntary testing in schools
☐	☐	☐	Are you aware of any local cultural practices or community activities that may involve lead? (e.g., ceremonial uses, traditional medicines, pottery/jewelry making)		EPA resources on lead in cultural products
☐	☐	☐	Are there reports or data demonstrating elevated blood lead levels (BLL) in children in the study area? (If so, do reports indicate meaningful trends?)		Local Health Department may have more information CDC childhood lead poisoning prevention data and statistics

Table 3: Evaluate Mitigation Efforts

Yes	No	?	Question	Data Evaluation Notes	References
☐	☐	☐	Does the state, tribe, or territory have an EPA-authorized lead-based paint program?		Lead-based paint abatement programs RRP program information Identify authorized professionals EPA Regional Lead-Based Paint Contacts
☐	☐	☐	Is the study area covered by a lead ordinance or local lead laws? (e.g., real estate disclosure, dust hazard mitigation, building codes, permits or requirements for renovations)		Check with the state and local government authorities to find out about lead laws and ordinances specific to the area. Learn about federal lead laws and regulations Real estate disclosures about potential lead hazards
☐	☐	☐	Are you aware of whether older homes and/or schools have addressed lead-based paint through mitigation, encapsulation, or renovation?		Check with your regional Lead-Based Paint Coordinator, the local health department, education department, or school district(s) for this information. How to check for lead hazards in schools and childcare facilities
☐	☐	☐	Are you aware of whether lead service lines have been replaced or are scheduled to be replaced?		Check with the local public water department for more information
☐	☐	☐	Have there been other previous initiatives to directly address lead exposures in the study area? *(If yes, add notes on the outcome, including successes, challenges and gaps in effectiveness.)*		Check with your state or local health department

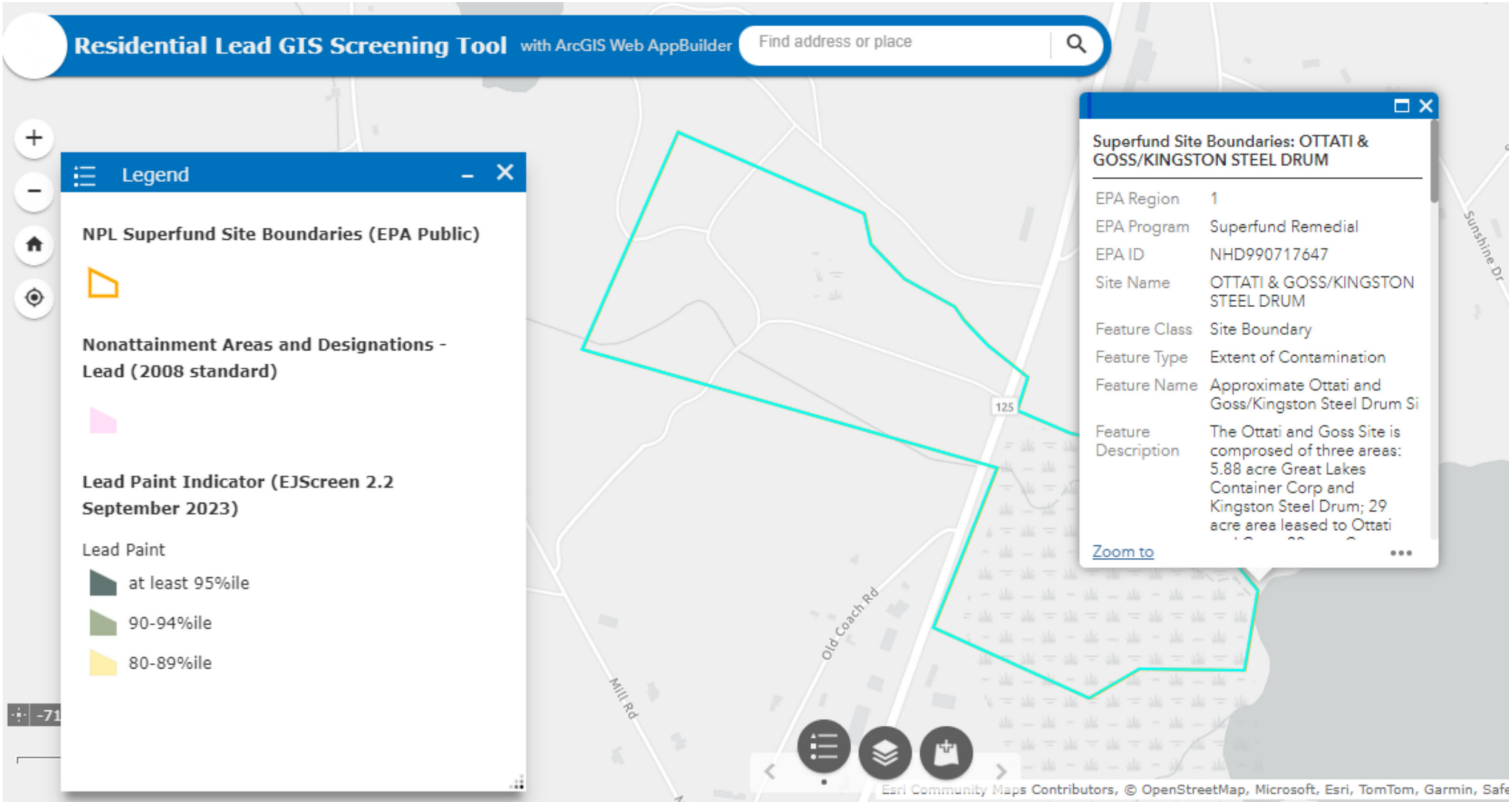
Additional Notes
Document any additional findings not addressed by the items specified in the checklist, including any input from key points of contact in other lead programs in the region or other federal, state and local agencies.
From 2019 Five Year Review: A cleanup level for lead in soil was not identified in the OU4 ROD or in subsequent decision documents for the Great Lakes Container Corporation (GLCC) portion of the Site because the remedy involved removal of soil to 10 ft bgs or to groundwater and replacement with clean soil. Therefore, potential human exposure is unlikely, especially since institutional controls are in place on the GSLCC portion of the Site to restrict future use to commercial only, and to prevent disturbance of the cover. A small portion of the South Brook excavation area was on residential property. Post-excavation, confirmatory soil sampling in this area included lead analysis. Based on a review of this post-excavation lead sampling results, the average lead concentration in this area is approximately 108 ppm. This is below the 200 ppm site-specific residential lead soil screening level.

Recommended Regional Screening Level		
Select the appropriate screening level and summarize the weight of evidence assembled above.	☒ 200 ppm	☐ 100 ppm

DANIEL WAINBERG

Digitally signed by DANIEL WAINBERG
Date: 2024.09.09 19:22:32 -04'00'

Approved By [Type Name, Title] **Date**


Residential Lead GIS Screening Tool
with ArcGIS Web AppBuilder
Find address or place
Legend
NPL Superfund Site Boundaries (EPA Public)
Nonattainment Areas and Designations - Lead (2008 standard)
Lead Paint Indicator (EJScreen 2.2 September 2023)
Lead Paint
at least 95%ile
90-94%ile
80-89%ile
Superfund Site Boundaries: OTTATI & GOSS/KINGSTON STEEL DRUM
EPA Region 1
EPA Program Superfund Remedial
EPA ID NHD990717647
Site Name OTTATI & GOSS/KINGSTON STEEL DRUM
Feature Class Site Boundary
Feature Type Extent of Contamination
Feature Name Approximate Ottati and Goss/Kingston Steel Drum Si
Feature Description The Ottati and Goss Site is comprosed of three areas: 5.88 acre Great Lakes Container Corp and Kingston Steel Drum; 29 acre area leased to Ottati
Zoom to
125
Old Coach Rd
Mill Rd
Sunshine Dr
Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, Safe