SUPERFUND

PROPOSED PLAN

Collins & Aikman Plant (former) Superfund Site Farmington, NH

U.S. EPA | HAZARDOUS WASTE PROGRAM AT EPA NEW ENGLAND

THE SUPERFUND PROGRAM protects human health and the environment by locating, investigating, and cleaning up abandoned hazardous waste sites and engaging communities throughout the process. Many of these sites are complex and need long-term cleanup actions. Those responsible for contamination are held liable for cleanup costs. EPA strives to return previously contaminated land and ground-water to productive use.

CLEANUP PROPOSAL SNAPSHOT

The proposed remedy for the cleanup of the Collins & Aikman Plant (former) Superfund Site (the Site) in Farmington, New Hampshire, has been developed by the United States Environmental Protection Agency (EPA, the lead agency) and the New Hampshire Department of Environmental Services (NHDES, the support agency), and generally includes the following components:

- A final soil remedial action consisting of excavation and off-site disposal of approximately 3,000 cubic yards (CY) of contaminated soil exceeding unrestricted use, risk-based standards from the former Collins & Aikman facility (the Property) area of the Site, located south of New Hampshire (NH) Route 11;
- An interim groundwater remedial action consisting of in situ (in place) chemical reduction (ISCR) treatment of groundwater within the Property to reduce the mass, mobility and toxicity of contaminants using micro-scale zero-valent iron (MZVI). The Final remedy for groundwater would include revisiting risk for all contaminants of concern (COCs), including per- and polyfluoroalkyl substances (PFAS) and evaluating additional alternatives for restoration of groundwater;
- Land use restrictions (called "institutional controls" or ICs) to prevent exposure to Site-related contaminants in groundwater until a final groundwater remedy is established at a future date after the effectiveness of the interim treatment remedy has been assessed. The interim ICs will include prohibiting the withdrawal or use of groundwater throughout the entire Site (north and

A Public Informational Meeting immediately followed by a Formal Public Hearing will be held:

Tuesday, July 16, 2024
6:00pm – 8:00pm

Old Town Hall
531 Main Street
Farmington, NH 03835

Find virtual meeting links:
www.epa.gov/superfund/collins

continued >

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south of NH Route 11) and preventing exposure to occupants of any future buildings built within the Property to vapors emanating from groundwater;

- Inspections to verify the integrity of physical Site controls (including fencing), identify Site conditions which need to be addressed to limit increased risk to human health and the environment, and assess compliance with interim IC restrictions;

- Monitoring of soil, groundwater and surface water to evaluate the achievement of remediation goals; and

- Periodic reviews, at a minimum of every five years, to assess the protectiveness of the remedy.

The proposed remedy will also include further evaluation of the potential for the natural attenuation (*e.g.*, biodegradation; diffusion; dispersion; dilution; sorption; volatilization; and chemical or biological stabilization, transformation, or destruction of contaminants) of groundwater contamination to return groundwater to its beneficial use as drinking water. Also, the proposed remedy will assess the extent and potential for migration of contaminants in bedrock groundwater. The evaluation of the potential for natural attenuation will allow for the determination of how long it will take for groundwater to be returned to drinking water quality and assessment of Monitored Natural Attenuation (MNA)[1] as a potential component of the final groundwater remedy.

The proposed remedy is estimated to cost $2,700,000 for the soil component of the remedy and $22,000,000 for the interim groundwater component of the remedy. It is estimated the soil component of the remedy will take approximately 2-3 years to design and implement. Soil cleanup levels, allowing for unrestricted use, are anticipated to be achieved upon completion of the excavation and off-site disposal activities in those areas where excavation is proposed. The interim *in situ* groundwater treatment component of the remedy will take approximately 3-4 years to design and implement. Groundwater ICs will remain in place until a final groundwater remedy is chosen in a subsequent remedy decision document, in which it will also be determined if the ICs will need to remain in place until final groundwater cleanup levels are met. For cost estimation purposes, EPA guidance calls for basing the cost estimate on a 30-year period, although EPA anticipates selecting a final remedy before that time. The performance of the interim groundwater remedy will be assessed at a minimum every five years to evaluate the protectiveness of the remedy until all remediation goals are achieved. A more detailed description of this proposal is outlined below and in the Feasibility Study (FS) Report dated March 19, 2024, available in the Administrative Record (next pgs).

YOUR OPINION COUNTS: OPPORTUNITIES TO COMMENT ON EPA'S PROPOSED CLEANUP PLAN

EPA will be accepting public comments on this proposed cleanup plan from July 1, 2024 - July 30, 2024. EPA is seeking input on all of the alternatives and the rationale for the preferred alternative. Additionally, new information or public input that EPA gains during the public comment period could result in the selection of a final remedial action that differs from the preferred alternative. You do not have to be a technical expert to comment. If you have a concern, suggestion, or preference regarding this Proposed Plan, EPA wants to hear from you before making a final decision on how to protect your community. Comments can be sent by mail or email. People also can offer oral or written comments at the formal public hearing (see Page 29 for details). If

[1] EPA defines Monitored Natural Attenuation (MNA) as "the reliance on natural attenuation processes (within the context of a carefully controlled and monitored site cleanup approach) to achieve site-specific remediation objectives within a time frame that is reasonable compared to that offered by other more active methods."

you have specific participation needs for the public meetings and hearing, questions about the meeting/hearing site and its accessibility, or questions on how to comment, please contact Elizabeth McCarthy.

Formal Public Hearing
In accordance with Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the law that established the Superfund program, this document summarizes EPA's cleanup proposal. Copies of EPA's Proposed Plan may be viewed on the Site web page at www.epa.gov/superfund/collins or obtained by contacting Elizabeth McCarthy at (617) 918-1136 or mccarthy.elizabeth@epa.gov

For detailed information on the cleanup options evaluated for use at the Site, see the Collins and Aikman Plant (Former) Superfund Site FS Report and other documents contained in the Site's Administrative Record available for review on-line at www.epa.gov/superfund/collins. Access to the internet is available at Goodwin Library, 422 Main Street, Farmington, and at the EPA New England Records Center, 5 Post Office Sq., First Floor, Boston, Massachusetts.

A CLOSER LOOK AT EPA'S PROPOSED CLEANUP APPROACH

The Remedial Investigation (RI) Report dated March 19, 2024, available in the Administrative Record (see below), summarizes the nature and extent of contamination at the Site and was used to prepare the FS which identified all of the cleanup options (also called "alternatives") that EPA considered in selecting the proposed cleanup. The FS evaluated the efficacy of different combinations of alternatives to restrict access to, contain, remove, and/or treat contamination to protect human health and the environment by preventing unacceptable risk of exposure from Site-related contaminants in soil and groundwater.

Although the groundwater alternatives that were evaluated in the FS would contribute to the restoration of contaminated groundwater, such alternatives would only constitute an interim remedy while additional information is collected and evaluated to fully assess options and time needed to achieve complete aquifer restoration by additional remedial measures.

Based upon the alternatives evaluated in the FS, EPA is proposing the following cleanup approach for the Collins & Aikman Plant (former) Superfund Site:

On-Property Soil

EPA's preferred alternative for On-Property soil is **Alternative S3 (ALT-S3), Soil Excavation and Off-Site Disposal**, as described in the FS, which includes the following source control components:

- Pre-design investigation to further define the horizontal and vertical extents of Site-related soil contamination;
- Excavation of approximately 3,000 CY of contaminated soil with concentrations in excess of proposed remediation goals (Figure 1);
- Site management including erosion controls measures, dust control and air monitoring, and excavation shoring as necessary during excavation activities;

- Off-site disposal of excavated soil/debris at appropriately permitted facilities depending on the nature and levels of contamination in the soil/debris;
- Dewatering of any excavated saturated soils and removal of any water accumulating in excavations, which will require management, treatment (as needed) and appropriate discharge of water under applicable discharge/disposal standards (depending on the selected discharge/disposal location);
- Grading in a manner that improves drainage and addresses current erosion and contaminant migration;
- Restoration of excavation areas with documented clean, imported backfill to grade, and re-vegetation with native vegetation to control erosion, or repaving to replace the existing cover condition;
- Fencing of areas of the Property to restrict access during remedial activities and for general Site security; and
- Site inspections.
- Contamination due to the release of pure petroleum products within the Site, as investigated during the RI and described in the RI report, is being managed under separate State authority and oversight, unless such contaminants are co-located with CERCLA hazardous substances that separately pose risk and require cleanup.

Groundwater

EPA's preferred alternative for groundwater is **Alternative GW3 (ALT-GW3), *In Situ* Treatment and Institutional Controls** as described in the FS. The preferred groundwater alternative includes the following components:

- Pre-design investigation to assist in the assessment and selection of appropriate treatment technologies based on Site-specific conditions;
- Bench-scale treatability study to identify the appropriate reagents to address contaminants in groundwater, including the effectiveness of the proposed technology considering Site-specific conditions and contaminants, including PFAS. Treatability and pilot testing would provide information to design the full-scale interim remedy, including injection volumes, radius of influence, field-scale solubility/longevity of the reagents, the Site-specific method(s) for injection, and to assess the effect of treatment reagents on contaminant breakdown products;
- *In situ* chemical treatment of contaminated groundwater exceeding proposed remediation goals within the Property via reagent injection in overburden groundwater (Figure 2);
- Post-treatment monitoring of groundwater to assess the effectiveness of the treatment approach and determine if further *in situ* treatment (overburden and/or bedrock groundwater) is warranted;
- Monitoring for and evaluation of the potential for natural attenuation of groundwater contamination to return groundwater to its beneficial use as drinking water, and the extent and potential for migration of contaminants in bedrock groundwater;
- Implementation of interim ICs to prevent exposure to groundwater vapors into any future building constructed on the Property and to prevent withdrawal or use of groundwater throughout the Site until a final groundwater remedy is established (Figure 3);
- Fencing of areas of the Property to restrict access during remedial activities and for general Site security; and
- Periodic reviews, at a minimum of every 5 years, to assess the protectiveness of the remedy until cleanup levels are achieved.

Estimated Cost

The estimated total present value of this proposed cleanup approach, including construction, operation and maintenance, and long-term monitoring is $24,700,000. Each component of the proposed cleanup approach is outlined below and is discussed in the FS in greater detail.

Potential Community Impacts

Impacts to the community are expected to be limited, but design and implementation of the remedy will require communication and coordination with various stakeholders (*e.g.*, Town of Farmington officials and residents, more immediate surrounding community residents, businesses and landowners, utility companies). EPA integrates community input and considers Environmental Justice (EJ) when conducting Superfund investigations and selecting remedial alternatives. EJ screening tools provide information about a community relative to demographics, environmental risk and health, and other EJ factors. An evaluation (EJScreen) of this information for the area surrounding the Site indicates that there is an above average impact from some environmental indexes compared to the rest of New Hampshire. EPA has considered measures to limit additional environmental impacts from its implementation of the preferred remedial alternative, as described below. EJScreen results also indicated a per capita income lower than the State and national average as well as a higher-than-average unemployment rate. EPA's proposed remedial alternative will advance cleanup of the Site, enhancing potential for future reuse and economic benefit to the community.

Short-term impacts to the community and Site workers include potential inhalation of airborne contaminants during the excavation of soil and associated management activities. The minor risks to workers and the community would be temporary and mitigated through the implementation of dust control measures (*e.g.*, water sprays, truck and stockpile covers) and erosion control during activities associated with soil handling and management. Access to the work area(s) will be restricted to Site workers and authorized personnel only. The potential for localized releases of vapors during excavation are not anticipated to impact the community and will be mitigated for workers during remedial actions through proper health and safety precautions (*e.g.*, personal protective equipment, proper health & safety procedures).

Excavation and off-site disposal of contaminated soil, and construction and implementation of the groundwater treatment remedial action and monitoring well network, will also require the trucking of supplies and materials to/from the Site. Contaminated soil that is transported off-site for disposal, and clean soil that is transported onto the Site for backfilling/restoration would create additional truck traffic (approximately 120 truck trips, based on a 25 cubic yard truck). Vehicles accessing the Site are anticipated to use the existing entrance and EPA would work with Town officials to determine the best routes to and from the Site to minimize any traffic concerns. The cleanup work will be performed during typical business hours to minimize impacts from noise in nearby residential areas.

Interim ICs to establish building mitigation requirements within the Property area to prevent the inhalation of contaminated vapors and groundwater use restrictions across the entire Site (Figure 3) will be put in place and maintained until a final groundwater remedy is established.

Overall, the preferred cleanup approach is expected to take 2-3 years for soil excavation, disposal and restoration, and 3-4 years for implementation of *in situ* groundwater treatment and interim ICs.

EPA IS ASKING FOR PUBLIC COMMENTS ON THE FOLLOWING PROPOSED DETERMINATIONS

Wetland Impacts

Section 404 of the Clean Water Act (CWA) requires a determination, when circumstances necessitate, that there is no practicable alternative to taking federal actions in waters of the United States, including federal jurisdictional wetlands, and that EPA's selected alternative is the "Least Environmentally Damaging Practicable Alternative" (LEDPA). Should there be no alternative that can avoid taking an action, the federal actions should minimize the destruction, loss, or degradation of these resources and preserve and enhance their natural and beneficial values. EPA has determined that implementation of the proposed remedy may have limited potential impact on wetland areas from the excavation of contaminated soils and the installation and maintenance of monitoring wells or access ways to monitoring wells that may need to be placed within federal jurisdictional wetlands. EPA will minimize potential harm and avoid adverse impacts to protected wetlands by using best management practices and by restoring or mitigating these areas consistent with federal protection laws. Any wetlands affected by remedial work will be restored with clean, imported materials and native vegetation consistent with pre-remediation conditions and such restoration will be monitored until the vegetation becomes re-established. Other mitigation measures will be used to protect wildlife and aquatic life during remediation and restoration, as necessary. The proposed remedy will also comply with state wetland protection requirements for work within state jurisdictional wetlands (which may include areas within and beyond those under federal jurisdiction), including state-mandated buffer zones.

Federal regulations at 44 C.F.R. Part 9, implementing wetland protection requirements under Executive Order 11990, require EPA to specifically solicit public comment on its proposal to impact federal jurisdictional wetlands. Through this Proposed Plan EPA is asking the public to provide the Agency its comments on the Agency's plan for protecting wetland resources.

Floodplain Impacts

Before EPA can select a cleanup alternative, federal regulations at 44 C.F.R. Part 9, implementing requirements under Executive Order 11988 (Floodplain Management), requires EPA to make a determination that there is no practicable alternative to temporary activities that affect or result in the occupancy and modification of the 100- and 500-year floodplain. EPA has determined that the majority of the Site and areas of groundwater impacted by contaminants were not within the current Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for the Town of Farmington 100- or 500-year floodplains. Parts of the Site north of NH Route 11 in the vicinity of Pokamoonshine Brook are located within the FEMA 100- and 500-year floodplain, but EPA has determined that the proposed remedy will not have any impact on floodplain areas.

SITE DESCRIPTION AND HISTORY

Site Description

Located in Farmington, New Hampshire, the Site is comprised of the former Collins & Aikman facility and real property, located on two parcels south of NH Route 11: (i) a 96-acre parcel located on Davidson Drive, identified by the Town of Farmington Tax Assessor's office as Map R31, Lot 34; and (ii) a 10-acre parcel located at 56 Davidson Drive, identified by the Town of Farmington Tax Assessor's office as Map R36, Lot 2. Collectively, these parcels are referred to as the former Collins and Aikman Automotive Interiors, Inc. property (the Property). The Site also extends into and includes an approximate 152-acre area north of NH Route 11 affected by Site-related contamination, including a groundwater plume, (hereinafter referred to as the Northern Downgradient Area). The affected Northern Downgradient Area is roughly bounded by NH Route 11, Pokamoonshine Brook to the north/northwest, and the boundaries of several properties containing the plume to the east. A Site Plan showing the Property and the entire Site is included as Figure 4. As discussed below, EPA has also designated an IC Area for the Site, shown on Figure 3.

Currently, most of the 106-acre Property consists of undeveloped wooded areas and contains the concrete foundation/floor of the former 267,000 square foot (ft^2) (6.1 acres) manufacturing building, which was demolished in 2010, and the surrounding paved parking areas and driveways for the building. The former actively used area of the Property reportedly occupied approximately 33 acres, and included the manufacturing building, a 60,000-ft^2 warehouse, and paved areas which covered most of the remaining active portion of the Property. In 2013, a 10-acre parcel which included the warehouse was subdivided from the original, larger 106-acre former-Collins & Aikman property and sold to Metal Farm, LLC (Metal Farm), a commercial metal recycler. In 2022, this 10-acre warehouse parcel was sold again to Seventy6 Holton LLC, which has used the warehouse building as a storage facility.

The Site is located on the southwestern flank of the Cocheco River valley. Surface topography generally slopes to the northeast across the Site, toward the center of the valley. The Cocheco River valley in the Site area contains a major stratified drift aquifer, comprised principally of sand and gravel. The Town of Farmington's inactive municipal water supply well GP-2, located on the western shoulder of NH Route 153 in the Area North of NH Route 11, is screened in this overburden aquifer. In general, groundwater flow is to the north-northeast, toward Pokamoonshine Brook and the center of the Cocheco River valley. Groundwater flow appears to be in a more easterly direction across a significant portion of the Area North of NH Route 11, especially the eastern areas closer to the Cocheco River.

Along the northern boundary of the Site, Pokamoonshine Brook flows generally to the east toward the Cocheco River. The Cocheco River then flows approximately 8.5 miles generally south-southeast to Rochester. Downstream of Rochester, the Cocheco River joins with the Salmon Falls River in Dover to form the Piscataqua River, which then enters Portsmouth Harbor and discharges into the Atlantic Ocean.

Site History

In 1965, Davidson Rubber Company, Inc. (DRC) purchased the Property and manufacturing operations began in 1966 following construction of a 115,000 ft^2 manufacturing building. Expansions to the building were completed in 1967, 1973, and 1977, increasing the building to a final size of approximately 267,000- ft^2. In 1977, a separate, approximately 60,000-ft^2 warehouse building was constructed near the northwest corner of the property.

In 1964, McCord Corporation (McCord) purchased DRC, which it continued to operate. In 1978, Ex-Cell-O Corporation (Ex-Cell-O) purchased and merged McCord into one of its subsidiaries and continued to operate McCord and Davidson. In 1986, Textron, Inc. (Textron) purchased Ex-Cell-O. The DRC name was kept until 1987, when under the ownership of Textron, the name was changed to Davidson Textron, Inc. In 1995, Davidson Textron, Inc. was renamed Textron Automotive Interiors, Inc., but remained under the same ownership (Textron, Inc.). In 2001, Collins and Aikman Products Company purchased Textron Automotive Interiors, Inc., which was renamed Collins and Aikman Automotive Interiors, Inc. In 2005, Collins and Aikman Corporation filed for bankruptcy for itself and its companies, including Collins and Aikman Automotive Interiors, Inc. which ceased operations in 2006. In 2007, as a part of the bankruptcy proceedings, ownership of the original 106-acre Collins and Aikman property was transferred to the New Hampshire Custodial Trust (the Trust). In 2013, the Trust subdivided the property and sold the 10-acre property to Metal Farm, LLC.

Reportedly, operations conducted at the facility included the manufacturing of instrumentation panel pads bumpers, fascias, and other parts for automobiles and trucks. Manufacturing processes conducted at the facility included polyurethane foam molding, construction of polyvinyl chloride (PVC) shells, and the assembly of the finished panels. Painting operations were also conducted at the facility. The manufacturing processes involved the use of solvents, some of which were released to groundwater, soil, and surface water at the facility. Solvents used at the facility reportedly included: acetone, isopropyl alcohol (IPA), methylene chloride, methyl isobutyl ketone (MIBK), methyl ethyl ketone (MEK), tetrachloroethene (PCE), toluene, trichloroethene (TCE), and xylene.

The Site has been the subject of numerous investigations and remedial activities since 1983 when low concentrations of chlorinated volatile organic compounds (CVOCs) were detected in the Town of Farmington municipal drinking water supply well GP-2. The GP-2 supply well is located approximately 3,500 feet northeast and downgradient of the former manufacturing facility, within the sand and gravel aquifer underlying the Cocheco River. In December 2013, the Site was added to the National Priorities List (NPL) (78 FR 75475). In August 2022, the United States filed a complaint in the U.S. District Court, District of New Hampshire against McCord Corporation for past costs incurred and future costs to be incurred by the United States in connection with the Site. In September, the case was consolidated with a similar case brought by the State of New Hampshire Department of Environmental Services, which is a co-plaintiff in the matter. Litigation is ongoing.

CURRENT AND FUTURE LAND USE

The Property portion of the Site, located south of NH Route 11, is currently unoccupied and zoned for industrial/commercial use. Zoning and anticipated land use of the Property is not anticipated to change. The off-Property portion (the Northern Downgradient Area) of the Site, located north of NH Route 11, consists of approximately 152-acres zoned for commercial, industrial, business and residential uses, and currently including primarily mixed-use commercial property and undeveloped land. Several unnamed ponds/surface water features surrounded by forest/grassy areas are present between NH Route 11 and Pokamoonshine Brook to the north/northwest. In the Northern Downgradient Area, there is also a commercial compost facility to the west and the Town of Farmington Gravel Pit located east of the compost facility. Four parcels fall within the Northern Downgradient Area: Map-Lot R36-001 (compost facility), Map-Lot R36-001-1 (Town of Farmington), Map-Lot R32-022 (Town of Farmington Gravel Pit), and Map-Lot R32-022-3 (Town of Farmington), which are impacted by Site contaminants in groundwater. In addition, an IC Area for the Site has been designated based on the parcels that make up the Site plus certain additional parcels contiguous to the Site on which groundwater withdrawal/use could potentially detrimentally affect the hydro-geological dynamics of the plume, pull contamination off-site, and/or cause risk to human health and the environment. The proposed Site IC Area is shown on Figure 3.

Under New Hampshire state law, all groundwater is classified under one of four categories (GAA, GA1, GA2 and GB) ranging from a delineated wellhead protection area (GAA) to groundwater not assigned to a higher class (GB). New Hampshire does not have a classification specifically for impaired waters. While there are currently no private wells impacted by Site-related contaminants, a final remedial action for groundwater will need to achieve federal and state drinking water standards that constitute the beneficial use standard for groundwater beneath the Site, and any risk-based cleanup levels. For this proposed interim groundwater remedial action, treatment of the source of the groundwater contamination will reduce contaminant mass and the risk of contaminant migration until a final groundwater remedy is selected at a future date.

WHY CLEANUP IS NEEDED

EPA has determined that there are current and future potential threats to human health at the Site due to hazardous substances released from historical manufacturing and industrial activities. Contaminants of concern (COCs) at the Site are primarily located in groundwater. Contaminants released into soil have migrated into subsurface soil and into bedrock, contaminating groundwater in the overburden and in bedrock beneath the Site. No current or future ecological risk to the environment has been identified. Some extent of contaminated groundwater is understood to discharge to the Pokamoonshine Brook and other water bodies north of NH Route 11, but no current risk from human exposure to surface water or risk to aquatic life has been identified at this time.

Site Contaminants

The primary COCs at the Site include the following:

Metals: Metals are minerals that naturally occur in the Earth's crust and vary based on local geology. Human activities and land disturbance can redistribute or concentrate metals in areas where they may not have been present or mobilize metals (e.g., dissolving them into groundwater). While some metals are essential as nutrients, all metals can be toxic at some level. Manganese in soil at the Site, and manganese and arsenic in groundwater were determined to be at levels that pose an unacceptable human health risk.

Volatile Organic Compounds (VOCs): VOCs include a variety of chemicals which are used as ingredients in many products and materials such as glue, paint, and solvents. Volatile organic compounds, or VOCs, are organic chemical compounds that easily evaporate. VOCs found in groundwater at the Site that pose a human health risk include trichloroethene (TCE), tetrachloroethene (PCE), vinyl chloride (VC) and cis-1,2-dichloroethene (cis-1,2-DCE).

Per- and Polyfluoroalkyl Substances (PFAS): Per- and polyfluoroalkyl substances (PFAS) are a group of human-made chemicals found in a wide range of consumer products such as non-stick products (e.g., Teflon cookware), pizza boxes, stain- and water-repellent fabrics, polishes, waxes, paints, and cleaning products. Another major source of PFAS in the environment is fire-fighting foams. PFAS compounds are very persistent in the environment – meaning they do not break down and can accumulate over time. PFAS compounds detected in groundwater that pose a human health risk include perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS).

How is Risk to People Expressed?

Every person has a baseline (non-Site related) risk for cancer and non-cancer health effects to occur. For example, the American Cancer Society estimates that one in two men, and one in three women, will develop cancer over a lifetime (Cancer Facts and Figures for 2020, American Cancer Society). While people also have baseline risk from non-cancer health effects, these adverse effects are organ-specific and cannot be expressed in terms of probability.

In evaluating chemical exposure risk to humans, estimates for risk from carcinogens and non-carcinogens (chemicals that may cause adverse effects other than cancer) are expressed differently. EPA also considers the cumulative carcinogenic and non-carcinogenic effects when multiple chemical exposures with similar target endpoints are present.

For carcinogens, risk estimates are expressed in terms of probability. For example, exposure to a particular site-related carcinogenic chemical may present a 1 in 1,000,000 increased chance of causing cancer over an estimated lifetime of 70 years. This can also be expressed as one-in-a-million or 1×10^{-6} excess lifetime cancer risk. The EPA acceptable risk range for carcinogens is 1×10^{-6} (1 in 1,000,000) to 1×10^{-4} (1 in 10,000) over a 70-year lifetime. In general, site-related risk within this range would require consideration of taking remedial action and site-related risk higher than this range would require remedial action.

For non-carcinogens, exposures are first estimated and then compared to a reference dose (RfD). RfDs are developed by EPA scientists to estimate the amount of a chemical a person (including the most sensitive person) could be exposed to over a lifetime without an appreciable risk of developing adverse health effects. The exposure dose is divided by the RfD to calculate the ratio known as a hazard quotient (HQ) to determine whether non-cancer adverse health effects would likely occur or not. The hazard index (HI) is the sum of the HQs from multiple contaminants. An HI greater than 1 suggests that adverse effects may be possible and would require consideration of taking remedial action.

Exposure Pathways & Potential Risk

In order for there to be a risk to human health from contamination, there must be potential for exposure to occur. If there is no exposure, there is no potential risk. Exposure occurs when people or other living organisms eat, drink, breathe or have direct contact with a substance or waste material. Based on existing or reasonably anticipated future land use at a Site, EPA develops different exposure scenarios to determine potential risk, appropriate cleanup levels for contaminants, and potential cleanup approaches, all of which are documented in the FS.

Human health and ecological risk assessments have been prepared for the Site. Detailed risk summaries can be found in the FS, Baseline Human Health Risk Assessment (HHRA; November 2023), and Baseline Ecological Risk Assessment (BERA; February 2023). These conservative assessments use a number of possible exposure scenarios to determine if and where there are current or potential future unacceptable risks to humans and/or the environment.

Human Health Risks

People have the potential for exposure to Site contaminants through the following exposure pathways: direct contact with soils, drinking and direct contact with groundwater, and inhalation of vapors emanating from groundwater. Further discussion of the exposure pathways is presented below.

Site Exposure Assumptions

The exposure assessment characterizes the physical setting of the Site and identifies populations that may be exposed to Site contaminants. For exposure to occur, several factors must be present: a source of contamination, a mechanism through which a receptor can come into contact with the contaminants in that medium, and a potential or actual receptor present at the point of contact.

Health risks were evaluated for possible current and future uses of the Site, including residential, recreational, commercial/industrial, and construction worker use. The Property located south of NH Route 11, is zoned for industrial/commercial use, while the Northern Downgradient Area located north of NH Route 11 is zoned for a mix of commercial, industrial, business and residential uses. The Northern Downgradient Area is also located within a state-designated wellhead and groundwater protection area.

The potential for future residential use means the potential for residential dwellings, with the assumption that young children and adults spend the majority of their time each day in the residential dwelling at their property. Residential land uses are assumed to involve exposure to soil and use of groundwater as both a drinking water and non-drinking water source (e.g., for showering or watering plants). Recreational use refers to leisure and sporting activities such as walking, boating, swimming, or wading/fishing by children and adults. The specific receptors and scenarios that were evaluated for risk included recreator exposure to soil and sediment, commercial and construction worker exposure to soil and groundwater (including vapors), and resident exposure to soil and groundwater.

On January 17, 2024, EPA's Office of Land and Emergency Management (OLEM) released the "Updated Residential Soil Lead Guidance for CERCLA sites and RCRA Corrective Action Facilities" (OLEM Memo). The new guidance was released based on updated scientific information which indicates that adverse health effects are associated with blood lead levels at less than 10 µg/dL. The OLEM Memo recommends using a residential screening level of 200 mg/kg unless additional sources of lead are indicated, in which case a screening level of 100 mg/kg may be recommended. In accordance with the OLEM memo, a screening level of 200 mg/kg was determined to be appropriate for the Site as available data does not indicate additional sources of lead. Soil investigations found that lead concentrations in soil were below the screening level of 200 mg/kg for soils on the Property and the Northern Downgradient Area. Therefore, lead was determined not to be a COC for the Site.

Based on the results of the Baseline HHRA and associated refinements, EPA found that the following pathways pose unacceptable human health risks because the calculated risks exceed EPA's acceptable cancer risk range of 10^{-6} to 10^{-4} and/or non-cancer HI of 1:

- Future construction workers exposed to aggregate soil (0 to 10 feet below ground surface) via direct contact at the Property area south of NH Route 11 due to manganese.

- Future construction worker exposed to contact with groundwater within the Property and Northern Downgradient Area due to PCE and TCE.
- Future residents, both at the Property and Northern Downgradient Area, exposed to ingestion of tap water due primarily to arsenic, manganese, select VOCs (cis-1,2-DCE, PCE, TCE and VC) and PFAS compounds (PFOA and PFOS).
- Current and future building occupants exposed to indoor air vapors that originate from groundwater within the Property containing Site COCs.

The detailed evaluation of the potential human health risks is presented in the Baseline HHRA dated November 2023 and subsequent refinements in the Post-RI Supplemental Investigation Updates to BHHRA memorandum dated February 26, 2023 (Appendix J of the Remedial Investigation Report). These were used to develop the cleanup alternatives presented in the FS.

Threats to the Environment

A Screening Level Ecological Risk Assessment (SLERA) was initially performed using available soil, sediment, and surface water analytical data. The SLERA process included: identification and selection of key habitats; identification of ecological receptors and measures of effect; development of screening-level benchmarks; development of exposure estimates and risk calculations; and documentation of risk conclusions. Potential ecological risk was evaluated through the calculation of a HQ for each contaminant; contaminants with an HQ of one or greater were labeled as contaminants of potential ecological concern (COPECs). The SLERA identified several COPECs in the terrestrial habitats evaluated as potentially affected by Site contamination, which prompted further investigation.

Supplemental data was collected, and further evaluation was conducted in support of refinement of the SLERA. The BERA used the supplemental data to refine previous findings, clarify assumptions, justify the selection of chemicals of ecological concern (COECs) and develop ecological risk screening levels in support of the FS. Overall, it was determined that there were no unacceptable risks to ecological receptors due to Site-related contaminants.

Principal Threat Waste

The National Oil and Hazardous Substances Contingency Plan (NCP), which governs EPA cleanups, at 40 C.F.R. § 300.430(a)(1)(iii), states that EPA expects to use "treatment to address the principal threats posed by a site, wherever practicable" and "engineering controls, such as containment, for waste that poses a relatively low long-term threat" to achieve protection of human health and the environment. This expectation is further explained in an EPA fact sheet (OSWER #9380.3-06FS), which states that principal threat wastes are source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. Low-level threat wastes are source materials that generally can be reliably contained and that would present only a low risk in the event of exposure.

The concept of principal threat and low-level threat waste is applied on a site-specific basis when characterizing source material. Source material is defined as material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, air, or act as a source of direct exposure.

EPA has not established a threshold level of toxicity/risk to identify a principal threat waste; however, where toxicity and mobility of source materials combine to pose a potential risk of 10^{-3} or greater, treatment alternatives are generally to be evaluated. EPA has determined, based on the results of the RI and associated risk assessments, that the contaminant source material at the Site, consisting of COCs in the soil and groundwater, constitute low-level threat wastes.

Basis for Taking Action

It is EPA's current judgment that the preferred alternative identified in this Proposed Plan is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances and pollutants or contaminants from the Site which may present an imminent and substantial endangerment to public health or welfare.

CLEANUP ALTERNATIVES CONSIDERED

Once possible exposure pathways and potential risk have been identified at a site, cleanup alternatives are developed to reduce and/or mitigate the identified risks and achieve site-specific Remedial Action Objectives (RAOs), also known as cleanup objectives. The RAOs for the Collins & Aikman Plant (former) Superfund Site are as follows:

Soil RAOs:

- Prevent exposure to manganese in soil by a current or future receptor (construction worker) that would result in a total excess lifetime cancer risk greater than the target risk range of 1×10^{-4} to 1×10^{-6} and/or a non-cancer HI > 1.

Groundwater RAOs:

- Prevent exposure to COCs in groundwater through dermal contact and ingestion by a current or future receptor (consumption or construction worker contact) that would exceed ARARs or result in a total excess lifetime cancer risk greater than the target risk range of 1×10^{-4} to 1×10^{-6} and/or a non-cancer HI > 1.
- Reduce contaminant mass and limit migration of groundwater that contain Site COCs at concentrations that exceed ARARs or result in a total excess lifetime cancer risk greater than the target risk range of 1×10^{-4} to 1×10^{-6} and/or a non-cancer HI > 1.
- Prevent inhalation by current or future building occupants from indoor air vapors that originate from groundwater containing Site COCs at concentrations that result in a total excess lifetime cancer risk greater than the target risk range of 1×10^{-4} and 1×10^{-6} and/or a non-cancer HI > 1.

Table 1 presents the proposed Site contaminant remediation goals and the basis for selection found to pose an unacceptable risk to human health or the environment for each exposure scenario described above.

Once cleanup objectives have been determined, response actions to meet these objectives are then identified, and those actions are grouped into potential alternatives that may be effective at minimizing or eliminating any unacceptable risk. The remedial alternatives developed for the Site in the FS are listed below and EPA's preferred alternative is indicated. EPA and NHDES have had substantive discussions regarding the Site and the cleanup. EPA has received input indicating that NHDES supports EPA's proposed cleanup plan.

Soil Alternatives:

Alternative ALT-S1 - No Action

Alternative ALT-S1, the No Action soil alternative, is developed and evaluated for baseline comparison as required by the NCP. This alternative is proposed as a means of identifying problems posed by the Site if no soil remedial actions are implemented. "No Action," as used in this FS, means no additional actions to maintain or improve current conditions at the Site or to limit direct-contact human exposure to Site contaminants in soil.

Alternative ALT-S2 – Institutional Controls

Alternative ALT-S2 includes the establishment of permanent soil ICs (*e.g.*, deed restriction, deed notice,) to achieve the soil RAO. The soil RAO would be achieved through the implementation of permanent ICs to prevent exposure to soil COCs by construction workers without an EPA/NHDES-approved Soil Management Plan (SMP) to prevent disturbance of contaminated soils without adequate protections. Land use restrictions under the ICs would be supported by the use of fencing as an engineering control to physically restrict access to contaminated soils left in place.

Alternative ALT-S3 – Soil Excavation/Off-Site Disposal (EPA's Preferred Soil Alternative)

The soil RAO would be achieved through excavation and off-site disposal of contaminated soils exceeding risk-based soil cleanup levels to protect human receptors (construction workers). Areas proposed for excavation and off-site disposal are areas of manganese-impacted soil in the Former Blockhouse Area (Figure 1).

Impacted soil at the Site exceeding risk standards is present in limited areas. Pre-design investigations (PDIs) will be required to delineate the areal and vertical extent of soil contamination. Soils with arsenic levels above background will also be removed because the impacted soil is co-located with the manganese-impacted soil.

Groundwater Alternatives

Each of the interim alternatives for groundwater described below, except for Alternative ALT-GW1, No Action, would include the common elements of a groundwater attenuation study, deep-bedrock investigation, interim ICs and fencing.

As a part of the PDI, and/or concurrent with the implementation of the interim remedial action, it is anticipated that a groundwater model would be developed and that an attenuation study will be initiated at the Site to document the current status and stability of the existing groundwater plume in overburden and in bedrock, and to identify and quantify the effectiveness of existing natural attenuation mechanisms (biodegradation; diffusion; dispersion; dilution; sorption; volatilization; and chemical or biological stabilization, transformation, or destruction of contaminants) active at the Site. Although the RI did collect limited data on attenuation mechanisms at the Site, existing data is insufficient to demonstrate the potential effectiveness of natural attenuation mechanisms, along with the selected interim groundwater remedy, in reducing groundwater contaminant levels over time and for calculating a time to reach final groundwater restoration.

In addition, the vertical extent of CVOCs is not fully defined in bedrock in the source areas within the Property and Northern Downgradient Area. Therefore, in conjunction with the groundwater model development, a deep-bedrock PDI would be performed to better define the extent of the groundwater plume.

Interim groundwater ICs would be established and enforced as a common element of all of the groundwater alternatives, except ALT-GW1 – No Action. The interim groundwater ICs would establish building vapor prevention/mitigation requirements within the Property and groundwater withdrawal and use restrictions across the entire Site. The interim ICs would remain in place until a final groundwater remedy is chosen in a subsequent final remedy decision document, in which it is decided whether the ICs will need to remain in place until final groundwater cleanup levels are met.

Under all alternatives except ALT-GW1, fencing would be used in areas of the Property as an engineering control to restrict access where remedial infrastructure for the groundwater alternatives needs to be protected and for general Site security.

Alternative ALT-GW1 - No Action
Alternative ALT-GW1, the No Action groundwater alternative, is developed and evaluated for baseline comparison as required by the NCP. This alternative is proposed as a means of identifying problems posed by the Site if no groundwater remedial actions are implemented. "No Action," as used in this FS, means no additional actions to maintain or improve current conditions at the Site, limit migration of groundwater contaminants, or to limit direct contact of humans to Site contaminants in groundwater.

Alternative ALT-GW2 – Institutional Controls/Monitoring
Alternative ALT-GW2 relies on interim ICs and monitoring as interim measures to protect human health from Site groundwater contaminants and to prevent groundwater contamination from being drawn off-site through off-site well use. This alternative does not include active treatment of groundwater contamination source zones (GCSZs) but relies on ICs to limit potential exposure to Site groundwater and vapor, and to prevent groundwater contamination from being drawn off-site. The alternative would not address the RAO calling for reduction of contaminant mass and management of contaminant migration. This alternative would only constitute an interim groundwater remedy while additional information is collected and evaluated to fully assess the time needed to achieve complete aquifer restoration under MNA or via additional remedial measures, as determined necessary, per a final selected groundwater remedy in a future decision document.

Alternative ALT-GW3 – Shallow Source Treatment (EPA's Preferred Groundwater Alternative)
Alternative ALT-GW3 focuses on *in situ* treatment of the GCSZs in deep overburden soil and shallow bedrock within the Property to achieve groundwater RAOs. This alternative would be an interim groundwater remedy while additional information is collected and evaluated to fully assess: (1) the effectiveness of the treatment approach and determine if further *in situ* treatment (overburden and/or bedrock groundwater) is warranted; and (2) the time needed to achieve complete aquifer restoration under MNA or via additional remedial measures, as determined necessary, per a final selected groundwater remedy in a future decision document. Interim ICs would limit potential exposure to vapors and groundwater and prevent groundwater from being drawn off-site through off-site commercial or residential well use, until a final groundwater remedy is established. The Final remedy for groundwater would include revisiting risk for all COCs (including PFAS) and evaluating additional alternatives for restoration of groundwater.

Three GCSZs exist at the upgradient extents of each of the three comingled groundwater plumes within the Property (Figure 2). In these GCSZs, CVOC concentrations in groundwater can exceed 1% of solubility, potentially indicating that dense non-aqueous phase liquid (DNAPL) may exist in these areas. Based on the low residual CVOC concentrations observed in overburden soils at the Site, it is suspected that significant contaminant mass resides in the lowest extents of overburden soils and/or within the upper-most, weathered/fractured zones of bedrock in these source areas. Based on observations during the RI, the weathered/fractured zones of bedrock are generally limited to the upper approximate ten feet of bedrock. The application of *in situ* treatment in these GCSZs would have the potential to speed up the process to clean up groundwater at the Site, reduce contaminant mass and limit contaminant migration.

Based on a review of available data on *in situ* treatment technologies and discussions with *in situ* treatment vendors, *in situ* chemical reduction (ISCR) was chosen as a representative technology to evaluate for this alternative. ISCR is a treatment method that relies on the injection of a reducing agent into the GCSZs which will promote the breakdown of CVOCs in the subsurface through the reductive dechlorination pathway. The end products of this pathway are successively less chlorinated hydrocarbons, and eventually the CVOCs and micro-scale zero-valent iron (MZVI) are reduced to chloride ions, ferrous iron, and ethane and ethene as the final carbon-containing compounds. Other *in situ* technologies that could potentially be evaluated during PDIs include *in situ* chemical oxidation (*i.e., in situ* bioelectrochemical degradation [BEC]).

Alternative ALT-GW4 – Shallow Source and Groundwater Treatment

Alternative ALT-GW4 focuses on ISCR treatment of GCSZs in deep overburden soil and shallow bedrock as in ALT GW3; however, ALT-GW4 also includes groundwater extraction and *ex situ* treatment to achieve groundwater RAOs. This alternative would be an interim groundwater remedy while additional information is collected and evaluated to fully assess: (1) the effectiveness of the treatment approach and determine if further *in situ* treatment (overburden and/or bedrock groundwater) is warranted; and (2) the time needed to achieve complete aquifer restoration under MNA or via additional remedial measures, as determined necessary, per a final selected groundwater remedy in a future decision document. As in ALT-GW3, interim ICs would limit potential exposure to vapors and groundwater and prevent groundwater from being drawn off-site through off-site well use, until a final groundwater remedy is established.

The addition of a groundwater extraction and treatment system (GWTS) would be focused on enhancing the removal of CVOC contamination in overburden groundwater, reducing future potential impacts to nearby surface water (*e.g*., the Western Pond north of Route 11 and Pokamoonshine Brook) from overburden groundwater flowing off the Site to the north, and accelerating the timeframe that Site groundwater quality will be restored. The GWTS would be designed to cut off continued plume migration of contaminated overburden groundwater off the Property and provide hydraulic containment of overburden groundwater plumes to the Property. However, the GWTS would not be designed to cutoff or provide hydraulic containment of the bedrock plume and the bedrock plume may continue to discharge into downgradient overburden areas. The GWTS would pump groundwater from a line of overburden extraction wells within the groundwater plumes and along the northern edge of the Property. Extracted groundwater would be pumped to a treatment system to remove COCs, including metals (primarily arsenic and manganese [non-COC iron also]), VOCs and PFAS. Treated groundwater would be discharged on-site into an infiltration basin. PDIs would be performed to obtain GWTS design parameters: extraction pump test, groundwater capture/well spacing, groundwater infiltration/mounding, and additional groundwater sampling at the Site to better define anticipated influent concentrations.

Alternative ALT-GW5 – Thermal Treatment

Alternative ALT-GW5 focuses on a combination of ISCR treatment in the easternmost GCSZ (*i.e*., the Area East of the Infiltration Basins) similar to the treatment included in Alternatives ALT GW3 and ALT-GW4, and *in situ* thermal treatment (ISTR) in the MW-1142 and MW-1144 GCSZ areas. This alternative would be implemented to address potential CVOC residuals in deeper, less fractured bedrock rather than just the DNAPL/residuals in shallow, weathered/fractured bedrock zones and deep overburden addressed by Alternatives GW3 and GW4. This alternative would be an interim groundwater remedy while additional information is collected and evaluated to fully assess: (1) the effectiveness of the treatment approach and determine if further in situ treatment (overburden and/or bedrock groundwater) is warranted; and (2) the time needed to achieve complete aquifer restoration under MNA or via additional remedial measures, as determined necessary, per a final selected groundwater remedy in a future decision document. As in ALT-GW3 and ALT-GW4, interim ICs would limit potential exposure to vapors and groundwater and prevent groundwater from being drawn off-site through off-site well use, until a final groundwater remedy is established.

In bedrock ISTR applications, the preferred method of ISTR is thermal conduction heating (TCH). TCH involves the installation of long, heating coils into borings drilled through overburden and into bedrock. Because the heating from TCH is not limited to areas with adequate flow pathways (like steam enhanced extraction) or even the presence of groundwater to transfer electrical current (like electrical resistance heating), TCH-based ISTR would be able to address both the weathered/fractured shallow bedrock zone as well as the deeper portions of bedrock at the Site where residual contamination may be associated with the less frequent fractures in the crystalline bedrock matrix beneath the weathered zones. The proposed ISTR system would also address residual CVOCs in deeper overburden as identified in the proposed PDIs.

Although data collected during the RI are strongly suggestive that substantial contaminant source mass including DNAPL and/or other high-concentration CVOC residual are present in the areas denoted as GCSZs, there is insufficient existing data to delineate the GCSZs and design a thermal remedy. Accordingly, the first step for the thermal treatment in this alternative would be a PDI in the two thermal treatment GCSZs to delineate the source zones. The PDIs would include the advancement of borings through the overburden and into bedrock down to the anticipated bottom of the thermal treatment zones, up to approximately 40 feet into bedrock in the MW-1142 area, and up to 100 feet into bedrock in the MW-1144 area. If implemented, the actual depths of drilling might be modified based on observations of subsurface conditions in the field.

THE NINE CRITERIA FOR CHOOSING A CLEANUP PLAN

EPA uses nine criteria to evaluate cleanup alternatives and select a final cleanup plan. EPA has already evaluated how well each of the cleanup alternatives developed for the Collins & Aikman Plant (former) Superfund Site meet the first seven criteria in the FS. EPA and NHDES have had substantive discussions regarding the Site and the cleanup. EPA has received input indicating that NHDES supports the proposed cleanup plan. Once comments from the State and the community are received and considered following a public comment period, EPA will select the final cleanup plan and document its selection in a Record of Decision (ROD).

1. **Overall protection of human health and the environment:** Will it protect you and the plant and animal life on and near the Site? EPA will not choose a cleanup plan that does not meet this basic criterion.
2. **Compliance with Applicable or Relevant and Appropriate Requirements (ARARs):** Does the alternative meet all federal and state environmental statutes, regulations and requirements? The cleanup plan must meet this criterion.
3. **Long-term effectiveness and permanence:** Will the effects of the cleanup plan last or could contamination cause future risk?
4. **Reduction of toxicity, mobility or volume through treatment:** Using treatment, does the alternative reduce the harmful effects of the contaminants, the spread of contaminants, and the amount of contaminated material?
5. **Short-term effectiveness:** How soon will site risks be adequately reduced? Could the cleanup cause short-term hazards to workers, residents or the environment?

6. **Implementability:** Is the alternative technically feasible? Are the right goods and services (*i.e.*, treatment equipment, space at an approved disposal facility) available?
7. **Cost:** What is the total cost of an alternative over time? EPA must select a cleanup plan that provides necessary protection for a reasonable cost.
8. **State acceptance:** Do State environmental agencies agree with EPA's proposal?
9. **Community acceptance:** What support, objections, suggestions or modifications did the public offer during the comment period?

Although not included under the nine evaluation criteria under the original NCP, the alternatives are also evaluated for sustainability, pursuant to current EPA policy.

CLEANUP ALTERNATIVES COMPARISON

The proposed alternatives were compared with each other to identify how well each alternative meets EPA's evaluation criteria. The State and community acceptance criteria will be evaluated once feedback is received during the public comment period. The alternatives were also evaluated for sustainability, per EPA policy.

The following discussion and Table 2 present a general comparison summary of the alternatives.[2] Detailed evaluations and comparisons of alternatives are included in the FS.

Comparative Analysis of Soil Alternatives

Soil alternatives ALT-S1 through ALT-S3 are compared against each other for the two threshold criteria and the five balancing criteria in this section.

Overall Protection of Human Health and the Environment

Alternative ALT-S1 (No Action) would not be protective of human health. Alternative ALT-S1 would not address exceedances of the human-health, risk-based Preliminary Remediation Goal (PRG) (see Table 1) for the soil COC, manganese, derived using chemical-specific TBC guidance. Direct contact with contaminated soil would still remain as an exposure pathway which would not be mitigated.

Alternative ALT-S2 and ALT-S3 would address exposure to manganese exceeding the human-health, risk-based PRG for soil, derived using chemical-specific TBC guidance.

Alternative ALT-S2 relies on permanent soil ICs (including compliance monitoring and enforcement) and monitoring to be protective of human health by preventing exposure to contaminated soil remaining in place.

Alternative ALT-S3 would be protective of human health through a combination of soil excavation and off-site disposal to eliminate the potential for contact with contaminated soil exceeding the PRG.

No ecological risk was identified at the Site in the RI, and therefore, the three soil alternatives are equally protective of ecological receptors.

[2] Table 2 is not a substitute for the detailed alternatives analysis included in the Feasibility Study. It is an evaluation summary intended to be helpful for the public.

Compliance with ARARs

There are no chemical-specific ARARs for the soil COC, manganese.

Because no remedial actions would occur under Alternative ALT-S1, there are no location-specific and action-specific ARARs.

Alternatives ALT-2 and ALT-S3 would comply with location-specific and action-specific ARARs that are either applicable or relevant and appropriate to the remedial actions under each alternative.

Long-Term Effectiveness and Permanence

Alternative ALT-S1 would not provide long-term protection to human health because this alternative would not achieve RAOs.

Alternative ALT-S2 would provide long-term protection to human health provided that institutional controls (*e.g.,* a deed restriction, deed notice), restricting land uses, are established, monitored for compliance, and enforced; and engineering controls (fencing) are constructed and maintained. Such land use restrictions would reduce risk by requiring: adherence to an EPA/NHDES-approved SMP for any excavation in contaminated soils; and the maintenance of protective fencing.

Alternative ALT-S3 would provide long-term protection to human health by removing all soil contamination above the PRG and disposing of it off-site. By physically removing contaminated soils under Alternative ALT-S3, any risk of exposure is reduced greater than under Alternative ALT-2 which leaves contaminated soil in-place and relies on the implementation, monitoring, and enforcement of permanent soil ICs to prevent exposure.

Reduction of Toxicity, Mobility, and/or Volume Through Treatment

Alternatives ALT-S1, ALT-S2, and ALT-S3 provide no reduction in toxicity, mobility, or volume through treatment as no treatment of waste is involved in any of the alternatives.

Short-Term Effectiveness

Alternative ALT-S1 is not effective in the short-term because no action will be taken to address Site risks. The implementation of Alternatives ALT-S2 is not anticipated to pose additional risks or impacts to the local community, Site workers, or the environment beyond those posed by current conditions. Institutional controls, such as access controls (fencing) and land use restrictions, can prevent exposure of untrained personnel from risks associated with remedial actions.

Implementation of Alternative ALT-S3 has slightly higher short-term impacts to the local community, Site workers, or the environment than ALT-S2 because it includes the excavation and management of contaminated soils and the off-site trucking of contaminated soils through the local community. However, protection of the community and workers during remedial actions is generally a matter of establishing and following proper engineering controls, training (including personal protective equipment for workers), work procedures during implementation, and coordination with local officials. For soil excavation and transport under Alternative ALT-S3, the impacts to workers and the community are manageable with the measures described above. Environmental impacts from implementation of Alternative ALT-S3 are anticipated to be minor as long as adequate engineering controls, work procedures, and access controls are maintained.

For Alternative ALT-S2, achievement of the soil RAOs is anticipated to occur after the institutional controls and access controls are in place, which is estimated to be within one year following the initiation of remedial action. For Alternative ALT-S3, achievement of the soil direct exposure RAOs is anticipated to occur when the soil excavations are complete, which it is estimated to be two to three years following initiation of soil excavation PDIs.

While Alternative ALT-S1 will require no energy or consumables, the no-action alternative is likely the least sustainable alternative as the lack of remedial actions will also have the greatest negative impact on potential future reuse of the Property and surrounding land.

Alternative ALT-S2 will only consume slightly more energy and consumables than ALT-S1 with the installation and maintenance of the security fence and the energy spent on monitoring the Site. The lack of more-intensive remedial actions (*i.e.*, soil excavation) may also restrict the opportunity to develop sustainability improvements (*e.g.*, greenspace and wildlife habitat) on the Property.

Alternative ALT-S3 will consume more energy (*i.e.*, greenhouse gas intensive construction and off-site trucking activities) and consumables, but only for the short period of time that work from soil excavation to off-site disposal and restoration activities is occuring. Removal of the soil contamination may further facilitate the development of sustainability improvements on the Property.

Implementability

Alternative ALT-S1 is readily implementable due to the lack of remedial actions involved. No monitoring of effectiveness would be required, and no administrative actions would be required.

Alternative ALT-S2 is readily implementable, relying on institutional controls and soil management practices. The Property is owned by the New Hampshire Custodial Trust, of which NHDES is the beneficiary. Under the Trust's ownership, the 96-acre parcel is fully accessible to EPA and NHDES, allowing for flexibility in the establishment of soil ICs on the Property.

Monitoring of the institutional controls is easily implementable, would be completed during quarterly Site inspections, and evaluated every five years under a Site-wide Five-Year Review. Enforcement of the soil ICs would be carried out as needed.

The remedial actions of excavation and off-site disposal, along with other supporting actions (*e.g.*, dewatering), associated with Alternative ALT-S3 are well-established technologies which are constructable, operable, and reliable. Under the Trust's ownership, the Property is fully accessible to EPA and NHDES for implementing the alternative. At the same time, the Trust's Property ownership helps enable EPA and NHDES to prevent other parties' unwarranted access until remedy implementation is complete.

Cost

The costs for Alternatives ALT-S1 through ALT-S3 are summarized on Table 2. For the FS, discounted costs, total periodic costs and total present value were evaluated using a project lifetime of 30 years. Although it is possible that remediation times could be shorter than, or extend beyond 30 years, the present value period of 30 years is reasonable considering that the cost factor (future year cost/year 0 cost) becomes increasingly small after 30 years. For example, the total cost factor for Years 1 through 30 is 12.4 (*i.e.*, $1 spent each year for the first 30 years has a present value of $12.40) but the total cost factor for Years 31 through 100 is only 1.86.

Alternative ALT-S1, the No Action Alternative, is the least costly of the alternatives with a total present value of $0. Because no remedial actions are included in Alternative ALT-1, the capital, annual O&M, and periodic costs are all set to $0.

Capital costs for Alternatives ALT-S2 and ALT-S3 increase with increasingly aggressive remedial actions. Capital costs for Alternative ALT-S2 include only the establishment of permanent soil ICs and the installation of security fencing. Capital costs for ALT-S3 consist primarily of the excavation and disposal of contaminated soil.

Because Alternatives ALT-S2 and ALT-S3 consist primarily of Year zero capital costs, the annual O&M and periodic costs of these alternatives are the same. Annual O&M costs are limited to the costs of site inspections, and no periodic costs are included for these alternatives.

The total present value of Alternatives ALT-S1 through ALT-S3 increase with additional remediation effort. Alternative ALT-S1 has a total present value of $0 because no remedial actions would be taken. Alternative ALT-S2 has the next lowest total present value at approximately $900,000, about 61% of which is capital cost. Alternative ALT-S3 is the most expensive soil alternative with a total present value of approximately $2,700,000 (about 91% is capital cost).

Comparative Analysis of Groundwater Alternatives

Groundwater alternatives ALT-GW1 through ALT-GW-5 are compared against each other for the two threshold criteria and the five balancing criteria in this section.

Overall Protection of Human Health and the Environment

Alternative ALT-GW1 (No Action) would not be protective of human health. Exposure to contaminated groundwater through direct contact or as drinking water would still remain as exposure pathways, which would not be mitigated, and expansion of the groundwater plume is possible.

For exposure to contaminated groundwater through direct contact or as drinking water, Alternatives ALT-GW2 through ALT-GW5 would be protective of human health through the establishment, compliance monitoring and enforcement of interim ICs until a final groundwater remedy is established after further studies in a subsequent final remedy decision document.

No ecological risk was identified at the Site in the RI, and therefore, the five groundwater alternatives are equally protective of ecological receptors.

Compliance with ARARs
Alternative ALT-GW1 would not comply with the chemical-specific ARARs because no actions would be included to address regulatory drinking water standards for groundwater. Because no remedial actions would occur under Alternative ALT-GW1, there are no location-specific or action-specific ARARs.

As an interim groundwater remedy that is not focussed on meeting final cleanup standards there are no chemical-specific ARARs applicable to groundwater cleanup for ALT-GW2 through ALT-GW5. Chemical-specific ARARs for groundwater will be identified as part of the final groundwater remedy.

Alternatives ALT-GW2 through ALT-GW5 would comply with location-specific and action-specific ARARs that are either applicable or relevant and appropriate to the remedial actions under each alternative.

Long-Term Effectiveness and Permanence
Alternative ALT-GW1 would not provide long-term protection to human health because this alternative would not achieve RAOs.

Alternatives ALT-GW2 through ALT-GW5 are not permanent and only need to maintain effectiveness until a final groundwater remedy is established.

Alternative ALT-GW2 would provide protection to human receptors once interim ICs are in place, but the effectiveness of this alternative requires compliance monitoring and enforcement, as required. The possibility of further spread of the groundwater contamination at the Site may have a higher likelihood under this alternative since it includes no source control measures and might mean that additional parcels would require institutional controls in the future.

Like Alternative ALT-GW2, ALT-GW3 would provide protection to human receptors once interim ICs are in place, but the effectiveness of this alternative requires compliance monitoring and enforcement, as required. This alternative would decrease the contaminant mass in the GCSZs and reduce migration through *in situ* treatment to help meet the RAO of reducing contaminant mass and limiting the migration of contaminated groundwater.

Alternative ALT-GW4 would provide similar protection to human receptors once interim ICs are in place, but the effectiveness of this alternative requires compliance monitoring and enforcement, as required. In comparison to ALT-GW3, ALT-GW4 has a greater possibility to achieve the groundwater RAO of reducing contaminant mass and limiting migration of contaminated groundwater in the Northern Downgradient Area sooner because groundwater extraction may be able to isolate on-Property overburden groundwater contamination from migrating into the Northern Downgradient Area. Alternative ALT-GW4 will also directly address dissolved metals and PFAS contamination in overburden groundwater through the extraction of groundwater, whereas alternatives ALT-GW3 and ALT-GW5 rely on secondary effects from the treatment of CVOCs to reduce dissolved metals and PFAS concentrations (*i.e.*, decrease in reducing conditions caused by CVOC contamination). The groundwater extraction system is expected to have limited-to-no effect on bedrock groundwater contamination both in the Property and in the Northern Downgradient Area, and limited effect on downgradient overburden groundwater quality where bedrock groundwater migrates back into the overburden.

Similar to Alternatives ALT-GW3 and ALT-GW4, the decrease in contaminant mass in GCSZs and thus reduction of contaminated groundwater migration would be enhanced under Alternative ALT-GW5; under ALT-

GW5, however, the volume of the source zones treated would extend beyond the deepest overburden/shallow bedrock zone and into deeper bedrock, potentially further increasing the reduction of contaminant mass and limiting migration of contaminated groundwater until a final groundwater remedy is established.

Reduction of Toxicity, Mobility, and/or Volume Through Treatment

Alternatives ALT-GW1 and ALT-GW2 provide no active reduction in toxicity, mobility, or volume through treatment as no active remedial actions and no active treatment of waste are involved, so the alternatives do not meet this criterion.

Alternatives ALT-GW3 and ALT-GW4 would treat additional contaminant mass, primarily CVOCs in DNAPL (and sorbed) form, through ISCR. This DNAPL mass is assumed to reside in deep overburden soil in contact with bedrock or within the upper, more-highly-fractured, weathered bedrock zones. DNAPL CVOCs treated through ISCR would be degraded to less toxic forms through dechlorination of CVOCs to nonhalogenated compounds (*e.g.*, ethene). The source zone volumes which could reasonably be treated through ISCR are estimated to be about 8,600 CY, although PDIs would be required to refine that estimate. Treatment of CVOCs through ISCR would be considered to be permanent as the contaminants are physically destroyed through the treatment process, although potential difficulties with effective delivery of reactants may leave some sources of CVOCs in place following treatment. Treatment residuals for ISCR amendments (*i.e.*, zero valent iron) may remain following treatment, although these residuals would also provide additional treatment capacity if rebound of CVOC contamination occurred in the source areas.

The groundwater extraction and treatment system also included in ALT-GW4 would remove some contaminant mass from the subsurface, although the direct reduction of contaminant mass through overburden groundwater extraction is anticipated to be limited (*i.e.*, not sufficient by itself to eliminate source areas and the groundwater plume in a reasonable time frame). Groundwater extraction is primarily intended as a form of hydraulic containment downgradient of the source zones to reduce the mobility of contaminants to the Northern Downgradient Area in overburden groundwater. Groundwater treatment for the system is anticipated to include precipitation for metals (chemical removal of dissolved arsenic and manganese) and air stripping and granular activated carbon (GAC) for removal of organic contaminants (*i.e.*, CVOCs, PFAS). Treatment residuals from these process options would include precipitation sludge and spent GAC (both liquid-phase and vapor-phase). Precipitation sludge, after verification sampling, would likely be transported off-site for disposal as non-hazardous waste in municipal solid waste landfills (*i.e.*, Resource Conservation and Recovery Act (RCRA) Subtitle D facilities), and spent GAC would likely be sent to GAC recycling facilities for regeneration and then for reuse as GAC or landfilling. It is currently estimated that the groundwater treatment system will generate about 58,000 pounds of GAC and 300 tons of precipitated sludge per year, but final estimates of these residuals will require additional refinement of the groundwater extraction rate estimate and anticipated influent conditions for the system during remedial design/remedial action (RD/RA) activities.

Alternative ALT-GW5 would implement thermal treatment in the MW-1142 and MW-1144 source zone areas, supplemented by ISCR injections in the source zone of the Area East of the Former Infiltration Basins. ISCR treatment in the Area East of the Infiltration Basins would be implemented similarly to that area in Alternatives ALT-GW3 and ALT-GW4. Thermal treatment in the MW-1142 and MW-1144 source zones would treat the same materials described above for Alternatives ALT-GW3 and ALT-GW4, but thermal treatment would be expanded to zones of saturated bedrock where elevated groundwater concentrations have been detected (approximately to zones where total CVOC concentrations above 1,000 micrograms per liter (μg/L) are present). The total volume of source zones in the MW-1142 and MW-1144 areas to receive thermal treatment is approximately 210,000 CY. The volume of treatment for the Area East of the Infiltration Basins would be approximately 890 CY. The primary treatment mechanism for CVOCs during thermal treatment would be thermal oxidation *ex situ* following extraction, in addition to liquid-phase GAC for treatment of extracted liquids and condensed steam from the thermal treatment. Thermal oxidation would destroy CVOCs and other organics with greater than 99% efficiency. GAC would treat the extracted and condensed liquids from the condensed steam before discharging treated water back to a temporary infiltration basin at the Site.

Short-Term Effectiveness

The implementation of Alternatives ALT-GW1 and ALT-GW2 are not anticipated to pose additional risks or impacts to the local community, Site workers, or the environment beyond those posed by current conditions.

Protection of the community and workers during remedial actions is generally a matter of establishing and following proper engineering controls, training (including personal protective equipment for workers), and work procedures during implementation; and access controls/restrictions to prevent exposure of untrained personnel from impacts associated with remedial actions. For the ISCR remedial actions in Alternatives ALT-GW3 through ALT-GW5, exposure to stored reagents and implementation equipment are manageable using engineering controls, proper work procedures, and proper training. Alternatives ALT-GW4 and ALT-GW5 will both result in air emissions from aboveground treatment equipment (ALT-GW4 – groundwater treatment; ALT-GW5 – thermal treatment) which will require monitoring and emissions control equipment to protect the community. Alternative ALT-GW5 will have several additional potential hazards, such as high-voltage electrical equipment and storage/usage of liquified propane gas (LPG) for thermal treatment. Protection of the community and workers will require engineering controls and warning signs to prevent unauthorized and untrained persons from encountering these potential hazards. Temporary LPG storage is required for the thermal system's air emissions treatment. Adequate isolation of the storage equipment, designed per relevant regulations for above-ground LPG storage, would be required to protect the community and workers.

Environmental impacts for Alternatives ALT-GW2 through ALT-GW5 are anticipated to be minor as long as adequate engineering controls, work procedures, and access controls are maintained. Alternatives ALT-GW4 and ALT-GW5 would include air emissions to ambient air and treated water discharge to infiltration basins on Site, and monitoring will be required to confirm that effluent controls designed into each system are functioning adequately to meet effluent requirements.

The short-term effectiveness criterion also includes an evaluation of the time until achievement of RAOs. ALT-GW1 would not achieve RAOs since no action will be taken. Alternatives ALT-GW2 through ALT-GW5 would meet the interim remedy groundwater RAO of preventing exposure to contaminated vapor and groundwater once interim ICs are established. Alternative ALT-GW2 would not achieve the RAO of decreasing contaminant mass and limiting migration. As the degree of treatment increases from ALT-GW3 through ALT-GW5 the effectiveness of mass reduction and limitation of migration would also increase. Alternatives ALT-GW3 and ALT-GW4 would address the RAO through the decrease in source zone contaminant mass via ISCR treatment. It is possible that Alternative ALT-GW4, with on-Property extraction and treatment of groundwater, might address the managment of migration RAO for overburden groundwater in the Northern Downgradient Area sooner than ALT-GW3. Alternative ALT-GW5, with a larger extent of GCSZ treatment, is likely to address the interim remedy groundwater RAO of contaminant mass reduction and reduction in migration sooner than the other alternatives, but as noted, it is difficult to estimate how much sooner with the current information.

Alternative ALT-GW1 is the most energy efficient of the alternatives in that the lack of remedial actions will require no energy or consumables, but the no-action alternative is likely the least sustainable alternative as the lack of remedial actions will also have the greatest negative impact on potential future reuse of the Property and surrounding land.

Alternative ALT-GW2 will consume more energy and consumables than ALT-GW1 with the completion of the additional PDIs, installation/maintenance of wells and annual groundwater monitoring, but the long-term monitoring will enable the tracking of contamination at the Site, enhance potential future reuse, and allow for identification of future risks to nearby resources likely before they occur.

Alternatives ALT-GW3 and ALT-GW5 are somewhat similar in that they both will include short-term energy and consumable usage which will decrease significantly after the implementation of groundwater contamination source zone treatment. During that short-term period, Alternative ALT-GW5 will have significantly higher energy and consumable usage to complete the thermal remediation versus the ISCR treatment of ALT-GW3.

Alternative ALT-GW4 would likely be the least energy efficient of the groundwater alternatives because long-term operation of the groundwater treatment system would use more energy and consumables (and generate more waste for off-site disposal) than the short-term operation of the thermal treatment system under ALT-GW5. The infrastructure associated with the GWTS (*e.g.*, extraction well network, treatment building, and infiltration gallery) would also likely restrict the incorporation of sustainable reuse of the Site more than the other groundwater alternatives, until a final groundwater remedy has been established in a future remedy decision (which may or may not continue to use the infrastructure).

Implementability

Alternative ALT-GW1 is readily implementable due to the lack of remedial actions involved. No monitoring of effectiveness would be required, and no administrative actions would be required.

Alternative ALT-GW2 is readily implementable because well installation/maintenance and monitoring technologies are well established. Each of the technologies associated with Alternatives ALT-GW3 through ALT-GW5 are well established technologies which are constructable, operable, and reliable remediation technologies. Each of these alternatives should be considered implementable although the complexity of the technologies does vary. The 96-acre parcel of the Property is owned by the Trust, of which NHDES is the beneficiary, so implementing Alternatives ALT-GW2 through ALT-GW5 should present few administrative challenges. Under the Trust's ownership, the Property is fully accessible, allowing for flexibility in the placement of infrastructure associated with ALT-GW2 through ALT-GW5. For the rest of the Site located outside of the Property (the Northern Downgradient Area), there may be administrative challenges in establishing interim groundwater ICs (*e.g.,* deed restrictions, deed notices, municipal ordinances) on some parcels impacted by the groundwater contamination. The three larger parcels of the four within this Northern Downgradient Area, however, are owned by the Town of Farmington, which has expressed its support for remediation.

ISCR (Alternatives ALT-GW3 through ALT-GW5) requires PDIs to accurately identify target areas for application of reagents and accurate contaminant mass estimates to determine reagent application rates. Information on the flow pathways in the target zones is important to identify the proper injection network design to increase efficiency of the reagents. The injection plan for the Site would require EPA review/approval prior to beginning injections.

Groundwater extraction and treatment (Alternative ALT-GW4) will require PDIs such as hydraulic pump tests to evaluate the location and design of the extraction well network to provide hydraulic control of overburden groundwater on the Property. Infiltration of treated groundwater on-site will require percolation testing and groundwater modeling to design infiltration basins that will allow discharge of treated water without negatively impacting mobility of residual contamination or excessive mounding of groundwater at the Site. Treatment technologies anticipated for the groundwater treatment system are common process units, but some treatability and/or pilot testing may be required to design the treatment train. Siting of the groundwater treatment system and the air emissions from the system would require EPA review/approval of the design.

Thermal treatment (Alternative ALT-GW5) will require PDIs to determine design information for the final thermal treatment system. Most thermal treatment vendors have proprietary design knowledge and tools to facilitate the design of thermal remediation systems which requires that the same vendor who designs the system must also implement the treatment, but multiple thermal vendors do exist. The implementation of a thermal treatment system would include more electrical infrastructure than the other alternatives. The above-grade systems to treat extracted vapors and liquids from thermal treatment are also typically designed by the same thermal vendor and would require EPA review/approval. Infiltration basin design for discharge of extracted and treated liquids may be done by the thermal vendor or another engineering firm, but with adequate percolation testing and groundwater modeling support, the basins should not pose a significant challenge to design. Design of a temporary liquified propane gas storage facility should not pose a significant challenge, although siting and safety considerations might limit the design options.

The remedial actions included in Alternatives ALT-GW2 through ALT-GW5 should not significantly alter the subsurface characteristics of the Site to the extent that additional remedial actions could not be implemented at the Site.

Cost

The costs for Alternatives ALT-GW1 through ALT-GW5 are summarized on Table 2. For the FS, discounted costs, total periodic costs and total present value, were evaluated using a project lifetime of 30 years, based on EPA guidance standards, though it is anticipated that a final remedy may be established earlier than 30 years. The present value period of 30 years is reasonable considering that the cost factor (future year cost/year 0 cost) becomes increasingly small after 30 years. For example, the total cost factor for Years 1 through 30 is 12.4 (*i.e.*, $1 spent each year for the first 30 years has a present value of $12.40) but the total cost factor for Years 31 through 100 is only 1.86. For the purpose of comparison, costs are derived based on a conservative presumption of operating the interim remedy for 30 years. EPA would, however, assess the interim remedy at least every five years and anticipates issuing a final remedy before the end of the 30-year period.

Alternative ALT-GW1, the No Action Alternative, is the least costly of the alternatives with a total present value of $0. Because no remedial actions are included in Alternative ALT-GW1, the capital, annual O&M, and periodic costs are all set to $0.

Capital costs for Alternatives ALT-GW2 through ALT-GW5 increase with increasingly aggressive remedial actions. The four alternatives all will incur costs to establish the interim groundwater ICs. Capital costs for Alternative ALT-GW2 also include the additional PDIs required to finish assessing groundwater at the Site (*e.g.*, MNA study, groundwater data gap investigation) and maintaining and possibly installing monitoring wells (to replace damaged wells or monitor any expansion of the contamination plume(s)). Capital costs for ALT-GW3 consist of the same additional PDIs as ALT-GW2, and for ISCR treatment of the three groundwater contamination source zones. Alternative ALT-GW4 has the second most expensive capital costs primarily because of the construction of the GWTS. Alternative ALT GW5 has the most expensive capital costs due to the extensive year zero cost for thermal remediation.

Annual O&M costs vary across alternatives ALT-GW2 to ALT-GW5. Alternatives ALT-GW2, ALT GW3, and ALT-GW5 have similar annual O&M costs consisting primarily of IC compliance monitoring, long-term groundwater monitoring and well maintenance, although Alternatives ALT-GW3 and ALT-GW5 include some additional monitoring associated with performance monitoring for ISCR and/or thermal treatment for the first 10 years of O&M. Annual O&M costs for Alternative ALT-GW4 are significantly higher than the other alternatives because of the additional expense to operate, maintain, and monitor the GWTS (in addition to monitoring the ISCR treatment).

Total periodic costs have the least variation between the alternatives. Alternatives ALT-GW2, ALT-GW3, and ALT-GW5 have the same periodic costs, approximately $110,000, which include Five-Year Reviews and decommissioning the monitoring well network in Year 30 (although some wells may be decommissioned sooner if no longer needed). The total discounted periodic costs for Alternative ALT-GW4 also include the decommissioning costs for the GWTS in Year 30 and are slightly higher at approximately $200,000.

The total present value of Alternatives ALT-GW1 through ALT-GW5 increase with additional remediation effort. Alternative ALT-GW1 has a total present value of $0 because no remedial actions would be taken under ALT-GW1. Alternative ALT-GW2 has the next lowest total present value at approximately $15,000,000, about 43% of which is capital cost. Alternative ALT-GW3 is the next most expensive alternative with a total present value of approximately $22,000,000 (about 55% capital cost). Alternative ALT-GW4, with a total present value of approximately $56,000,000, has the highest percentage of O&M cost (62% O&M cost versus 38% capital). Alternative ALT-GW5 has the highest total present value, approximately $66,000,000, and the highest percentage of capital cost (86%).

WHY EPA RECOMMENDS THIS PROPOSED CLEANUP PLAN

Based on the results of the RI, human health and ecological risk assessments and associated refinements, and the FS for the Site, EPA recommends the following proposed cleanup plan to be implemented. EPA believes the proposed cleanup plan for the Collins & Aikman Plant (former) Superfund Site achieves the best overall balance among EPA's nine criteria (excluding State and community acceptance which will be considered following a public comment period) used to evaluate the various alternatives presented in the FS. The proposed cleanup plan meets the cleanup objectives or RAOs for the Site. EPA and NHDES have had substantive discussions regarding the Site and the cleanup. EPA has received input indicating that NHDES supports the proposed cleanup plan.

This Proposed Plan includes a summary in general terms of why EPA recommends the cleanup plan for the Site. For more detail, refer to the FS.

Alternative ALT-S3 (Excavation and Off-Site Disposal) is EPA's preferred soil alternative for the following reasons:

Is the most effective at protecting human health and the environment as the alternative prevents potential exposure by human receptors through the removal of soil with COCs in excess of cleanup levels;

- Will meet risk-based cleanup standards, and all action-specific and location-specific ARARs and risk-based cleanup levels;
- Achieves substantial risk reduction by permanently removing and disposing of contaminated soil/debris from the Property off-site;
- Limits risks to workers and the community during implementation with the maintenance of adequate engineering controls, work procedures, and access controls;
- Has no significant implementability issues;
- Is the most climate change resilient, and may further facilitate sustainability improvements in the future, as soil with COCs in excess of cleanup levels will be removed for off-site disposal; and
- Allows for the reasonably anticipated future use of the Property.

Alternative GW-3 (*In Situ* Treatment/ Institutional Controls, Baseline and Post-Treatment Monitoring and Institutional Controls) is EPA's preferred interim groundwater alternative for the following reasons:

- Achieves substantial reduction in contaminant mass in groundwater until a final groundwater remedy can be established;
- Will be protective of human health through the establishment, compliance monitoring and enforcement of interim groundwater ICs until a final groundwater remedy is established;
- Will meet all action-specific and location-specific ARARs;
- Will reduce toxicity, mobility, and volume through treatment, therefore satisfying CERCLA's statutory preference for treatment;
- Has no significant implementability issues, *in situ* treatment technologies are well established and interim ICs are easily implemented;
- Is cost effective at reducing contaminant mass and limiting contaminant migration until a final groundwater remedy can be established; and
- Is effective and sustainable with lower energy usage required for implementation than for the other active remedial alternatives (*i.e.,* ALT GW4 and GW5).

EPA believes that this proposed cleanup approach to address contaminated soil and groundwater is protective of human health and the environment, uses proven cleanup technologies (e.g., excavation and off-site disposal of soil and *in situ* treatment of groundwater) and is cost effective, while achieving the Site-specific cleanup objectives in a reasonable timeframe. This cleanup approach meets the NCP's criteria in providing both short and long-term protection of human health and the environment and satisfies the statutory requirements of CERCLA §121(b). It complies with applicable Federal and State environmental laws and regulations; reduces the toxicity, mobility, and volume of contaminated groundwater through treatment (with limited treatment included for the soil component of the cleanup); utilizes a permanent solution for soil; uses an interim solution for groundwater that will not be inconsistent with any final groundwater remedy that may be required; uses interim groundwater ICs to prevent unacceptable exposures in the future to the remaining Site-related wastes; has no significant implementability issues; and is cost effective.

WHAT IS A FORMAL COMMENT?

EPA will accept public comments during a 30-day formal public comment period. EPA considers and uses these comments to improve its cleanup approach.

EPA will hold an informational meeting on July 16, 2024, during the formal public comment period which starts on July 1, 2024. During the formal comment period, EPA will accept written comments via mail or email. Additionally, verbal comments may be made during the formal public hearing following the informational meeting on July 16, 2024, during which a stenographer will record all comments offered during the hearing. EPA will not respond to comments during the formal public hearing. EPA will prepare a written summary of significant comments, criticisms, and new relevant information submitted during the public comment period and the lead agency response to each issue.

EPA will review the transcript of all formal comments received during the hearing, and all written comments received during the formal comment period, before making a final cleanup decision. Formal comments made during the hearing or submitted in writing during the comment period will become part of the official public record and Administrative Record for EPA's final cleanup plan decision. A copy of the transcript of the hearing will be placed in the Administrative Record and be publicly accessible. EPA will prepare a Responsiveness Summary of significant comments, criticisms, and new relevant information submitted during the public comment period and EPA's responses to each issue. The Responsiveness Summary will be included in EPA's decision document, referred to as the Record of Decision, specifying EPA's final selected cleanup plan. The Record of Decision and Responsiveness Summary will be made available to the public on-line at www.epa.gov/superfund/collins. Access to the internet is available at Goodwin Library and the EPA New England Records Center at the addresses listed below. EPA will announce the final decision on the cleanup plan through the local media and via its website.

FOR MORE DETAILED INFORMATION:

The Administrative Record, which includes all documents that EPA has considered or relied upon in proposing this cleanup plan for the Collins & Aikman Plant (former) Superfund Site, is available via computer for public review and comment at the following locations:

EPA Records and Information Center, 5 Post Office Square, First Floor, Boston, MA 02109-3912
Phone: 617-918-1440

Goodwin Public Library, 422 Main Street, Farmington, NH 03835
Phone: 603-755-2944

Information is also available for review on-line at www.epa.gov/superfund/collins.

SEND US YOUR COMMENTS

Provide EPA with your written comments about the Proposed Plan for the Collins & Aikman Plant (former) Superfund Site.

Please email comments, **no later than July 30, 2024**, to hull.richard@epa.gov, or mail comments, **postmarked no later than July 30, 2024** to:

Richard Hull
EPA Region 1 New England
5 Post Office Square, Suite 100
Mail Code: 07-1
Boston, MA 02109-3912

ACRONYMS

1,2-DCE	1,2-Dichloroethene
ARAR	Applicable or Relevant and Appropriate Requirement
BERA	Baseline Ecological Risk Assessment
BHHRA	Baseline Human Health Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
ChemCycle	ChemCycle Corporation
cis-1,2-DCE	cis-1,2-Dichloroethene
COC	Contaminants of Concern
COEC	Contaminants of Ecological Concern
COPEC	Contaminants of Potential Ecological Concern
CVOC	Chlorinated Volatile Organic Compound
CWA	Clean Water Act
CY	Cubic Yards
DNAPL	Dense Non-Aqueous Phase Liquid
DRC	Davidson Rubber Company, Inc.
EPA	United States Environmental Protection Agency
Ex-Cell-O	Ex-Cell-O Corporation
FEMA	Federal Emergency Management Agency
FS	Feasibility Study
ft^2	Square Feet
GCSZ	Groundwater Contaminated Source Zone
GEI	Geotechnical Engineers, Inc.
GWTS	Groundwater Treatment System
HHRA	Human Health Risk Assessment
HQ	Hazard Quotient
HRS	Hazard Ranking System
IC	Institutional Control
IPA	Isopropyl Alcohol
ISCR	*in situ* Chemical Reduction
ISTR	*in situ* Thermal Treatment
LEDPA	Least Environmentally Damaging Practicable Alternative
LPG	Liquified Propane Gas
µg/dL	micrograms per deciliter
µg/L	micrograms per liter
µg/kg	micrograms per kilogram
mg/kg	milligram per kilogram
McCord	McCord Corporation
MEK	Methyl Ethyl Ketone
MIBK	Methyl Isobutyl Ketone
MNA	Monitored Natural Attenuation
MZVI	Micro-Scale Zero-Valent Iron
NCP	National Oil and Hazardous Substance Contingency Plan
NHDES	New Hampshire Department of Environmental Services
NPL	National Priorities List

NHWSPCC	New Hampshire Water Supply & Pollution Control Commission
O&M	Operation and Maintenance
OLEM	Office of Land and Emergency Management
PCE	Tetrachloroethene
PDI	Pre-Design Investigation
PFAS	Per- and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonic Acid
PRG	Preliminary Remediation Goal
PVC	Polyvinyl Chloride
RAO	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RfD	Reference Dose
RI	Remedial Investigation
Site	Collins & Aikman Plant (former) Superfund Site
SLERA	Screening Level Ecological Risk Assessment
SMP	Soil Management Plan
START	Superfund Technical Assessment and Response Team
TCA	Trichloroethane
TCE	Trichloroethene
trans-1,2-DCE	Trans-1,2-Dichloroethene
Trust	New Hampshire Custodial Trust
UST	Underground Storage Tank
VOC	Volatile Organic Compound

Table 1 Part 1

Recommended Preliminary Remediation Goals for Soil
Collins & Aikman Plant (Former) Superfund Site
Farmington, New Hampshire

Contaminant of Concern	Recommended Soil PRG (mg/kg)	Basis for Recommended PRG	Exceedances for Applicable Soil Interval			
			No. of Samples	No. of Detects	Maximum Detect (mg/kg)	No. of PRG Exceedances
Inorganics/Metals						
Manganese	564	Human Health Risk (Construction Worker)	118	118	19,000	3

Notes:
1. Recommended soil Preliminary Remediation Goal (PRG) concentrations are presented in units of milligrams per kilogram (mg/kg), which are equivalent to parts per million (ppm), unless otherwise noted.

2. Listed exceedances are based on analytical data of soil samples collected during the Remedial Investigation and Post-RI soil investigations through 2022. The indicated number of samples, detections, and PRG exceedances apply only to samples in aggregate soils (0-10 feet below ground surface).

Table 1 Part 2

Recommended Preliminary Remediation Goals for Groundwater
Collins & Aikman Plant (Former) Superfund Site
Farmington, New Hampshire

Contaminant of Concern	Recommended Groundwater PRG (µg/L)	Basis for Recommended PRG	Groundwater Data Collected from 2019 through 2022 (unfiltered)				Groundwater Data Collected from 2019 through 2022 (filtered)			
			# of Samples	# of Detects	Maximum Detect (µg/L)	# of PRG Exceedances	# of Samples	# of Detects	Maximum Detect (µg/L)	# of PRG Exceedances
Inorganics/Metals										
Arsenic	5	NHDES AGQS (GW-1)	168	70	400	64	44	21	112.8	13
Manganese	300	NHDES AGQS (GW-1)	168	147	9,681	91	44	42	5,280	25
VOCs										
Dichloroethene, cis-1,2- (c-1,2-DCE)	70	SDWA MCL & NHDES AGQS (GW-1)	291	182	3,900	69				
Tetrachloroethene (PCE)	5	SDWA MCL & NHDES AGQS (GW-1)	291	47	49,000	109				
Trichloroethene (TCE)	5	SDWA MCL & NHDES AGQS (GW-1)	291	125	2,100	94				
Vinyl Chloride (VC)	2	SDWA MCL & NHDES AGQS (GW-1)	291	60	840	50				
PFAS										
Perfluorooctanoic Acid (PFOA)	0.004	SDWA MCL	60	49	0.0345	42				
Perfluorooctanesulfonic Acid (PFOS)	0.004	SDWA MCL	61	53	0.094	48				

Notes:
1. Recommended Groundwater Preliminary Remediation Goal (PRG) concentrations are presented in units of micrograms per liter (µg/L), which are equivalent to parts per billion (ppb).

2. Listed exceedances are based on analytical data of groundwater samples collected during the Remedial Investigation collected via a low-flow-sampling method and analyzed at a fixed laboratory. The indicated number of samples, detections, and PRG exceedances are summarized for samples collected from 2019 through 2022. For inorganic COCs, the exceedances are summarized for both samples that were filtered in the field and samples which were not filtered. Filtered samples for VOCs, PFAS, and other organic compounds were not collected during the RI.

Table 2
Comparative Analysis Summary of Remedial Alternatives
Collins & Aikman Plant (Former) Superfund Site
Farmington, New Hampshire

Alternatives by Medium	Overall Protection of Human Health and the Environment	Compliance with ARARs	Long-Term Effectiveness and Permanence	Reduction of Toxicity, Mobility, or Volume Through Treatment	Short-Term Effectiveness	Implementability	Cost
Soil							
Alternative ALT-S1: No Action	**N**	**N**	+	+	++	+++	$0
Alternative ALT-S2: Institutional Controls	**Y**	**Y**	++	+	++	+++	$900,000
Alternative ALT-S3: Soil Excavation/ Off-Site Disposal	**Y**	**Y**	+++	++	+++	++	$2,700,000
Groundwater							
Alternative ALT-GW1: No Action	**N**	**N**	+	+	++	+++	$0
Alternative ALT-GW2: Institutional Controls	**Y**	**Y**	+	+	++	+++	$15,000,000
Alternative ALT-GW3: Shallow Source Treatment	**Y**	**Y**	++	++	++	++	$22,000,000
Alternative ALT-GW4: Shallow Source and Groundwater Treatment	**Y**	**Y**	++	++	++	+	$56,000,000
Alternative ALT-GW5: Thermal Treatment	**Y**	**Y**	+++	+++	+	++	$66,000,000

Notes:

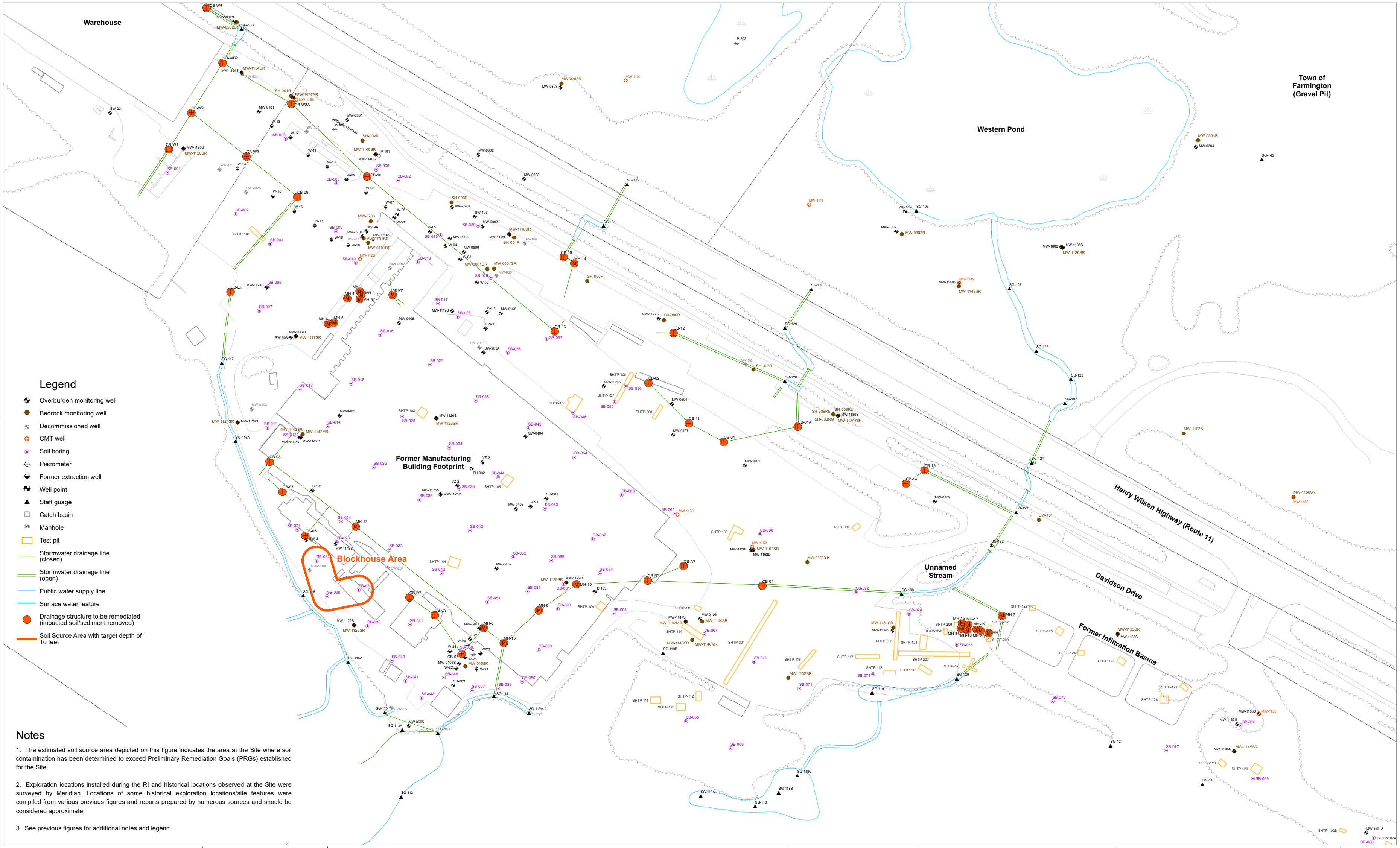
Y = Alternative passes this criterion
N = Alternative fails this criterion

+ = Least favorable
++ = Moderately favorable
+++ = Most favorable

1. Costs represent total present value of alternatives (discounted with an annual rate of 7%) and are generally rounded to two significant figures. The total present value is the complete remedial alternative cost including capital costs, annual O&M costs, and periodic costs, and is also a discounted value with a discount rate of 7%.

2. The remedial cost estimates represent a feasibility level estimate and are intended to provide an accuracy of +50% to -30%.

3. Refer to the Feasibility Study report for further discussion regarding comparison of various alternatives.



Notes

1. The estimated soil source area depicted on this figure indicates the area at the Site where soil contamination has been determined to exceed Preliminary Remediation Goals (PRGs) established for the Site.

2. Exploration locations installed during the RI and historical locations observed at the Site were surveyed by Meridian. Locations of some historical exploration locations/site features were compiled from various previous figures and reports prepared by numerous sources and should be considered approximate.

3. See previous figures for additional notes and legend.

SANBORN HEAD

Figure Narrative

This figure depicts locations of contaminated soil and/or sediment considered for remedial action as part of the Feasibility Study (FS) at the former Collins & Aikman Plant Site. The indicated locations include soil and/or sediment in which contaminants of concern (COCs) for the FS have been detected at concentrations above the Preliminary Remediation Goals (PRGs) developed for the FS.

Drawn By: E. Wright
Designed By: M. Abberton
Reviewed By: S. Nerney/C. Crocetti
Project No: 3856.13
Date: February 2024

Feasability Study

Collins & Aikman Plant (Former) Site
NH Department of Environmental Services
Farmington, New Hampshire

Areas of Contaminated Soils

1

Last Edited By: ewright

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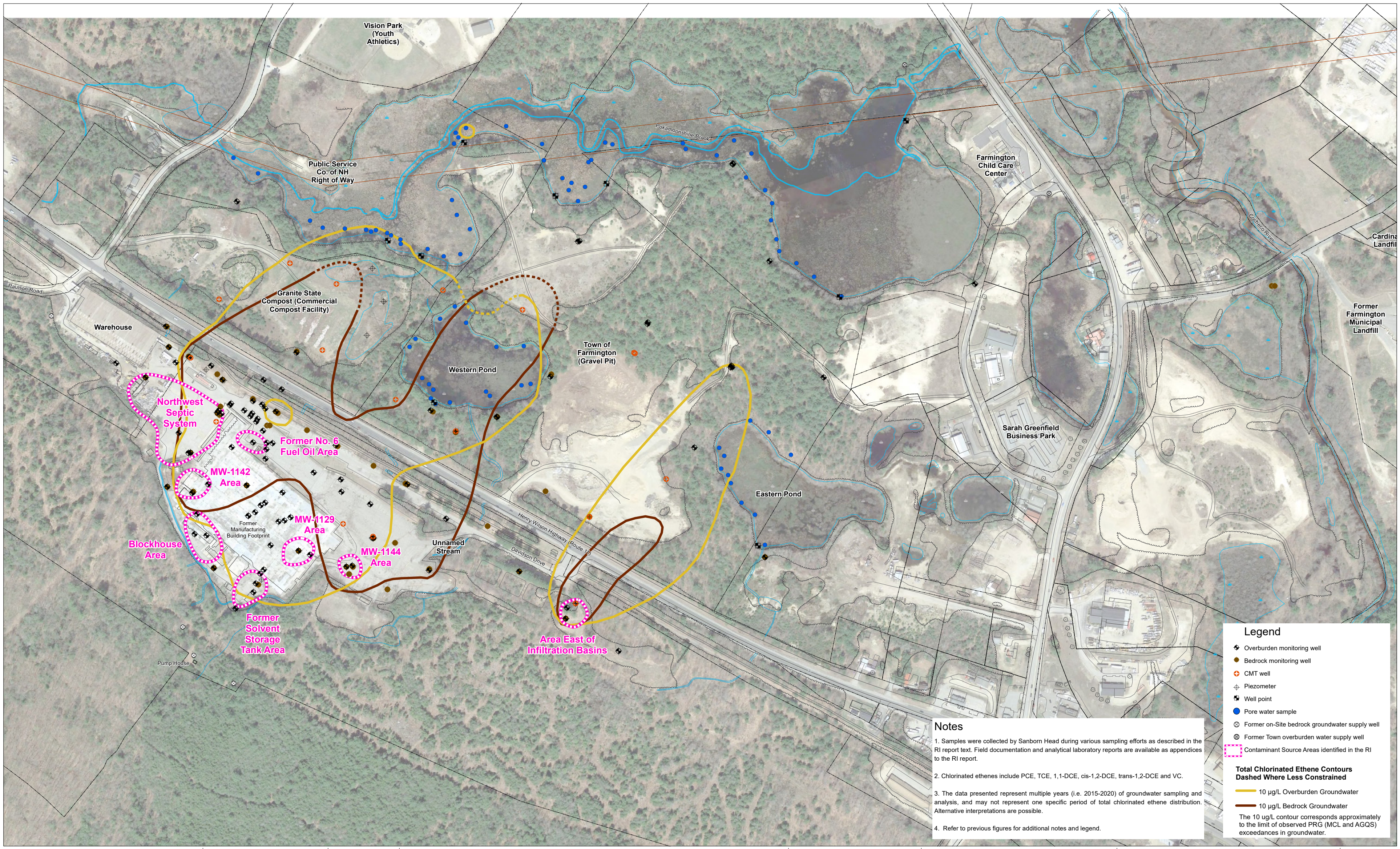

Notes

1. Samples were collected by Sanborn Head during various sampling efforts as described in the RI report text. Field documentation and analytical laboratory reports are available as appendices to the RI report.

2. Chlorinated ethenes include PCE, TCE, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE and VC.

3. The data presented represent multiple years (i.e. 2015-2020) of groundwater sampling and analysis, and may not represent one specific period of total chlorinated ethene distribution. Alternative interpretations are possible.

4. Refer to previous figures for additional notes and legend.

SANBORN HEAD

Figure Narrative

This figure depicts the approximate extents of overburden and bedrock groundwater with total chlorinated ethene concentrations above 10 micrograms per liter. Based on the evaluation of the nature and extent of groundwater contamination at the Site in the Remedial Investigation (RI), these contours can be considered as approximately equivalent to the extent of exceedances of Preliminary Remediation Goals (PRGs) developed for the Feasibility Study. Site groundwater PRGs are based on the USEPA Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs), and NHDES Ambient Groundwater Quality Standards (AGQS) which are generally equivalent to NHDES GW-1 Standards.

Drawn By: E. Wright
Designed By: M. Abberton
Reviewed By: S. Nerney/C. Crocetti
Project No: 3856.13
Date: February 2024

Feasibility Study

Collins & Aikman Plant (Former) Site
NH Department of Environmental Services
Farmington, New Hampshire

Extent of Overburden and Bedrock Groundwater Exceeding Preliminary Remediation Goals

2

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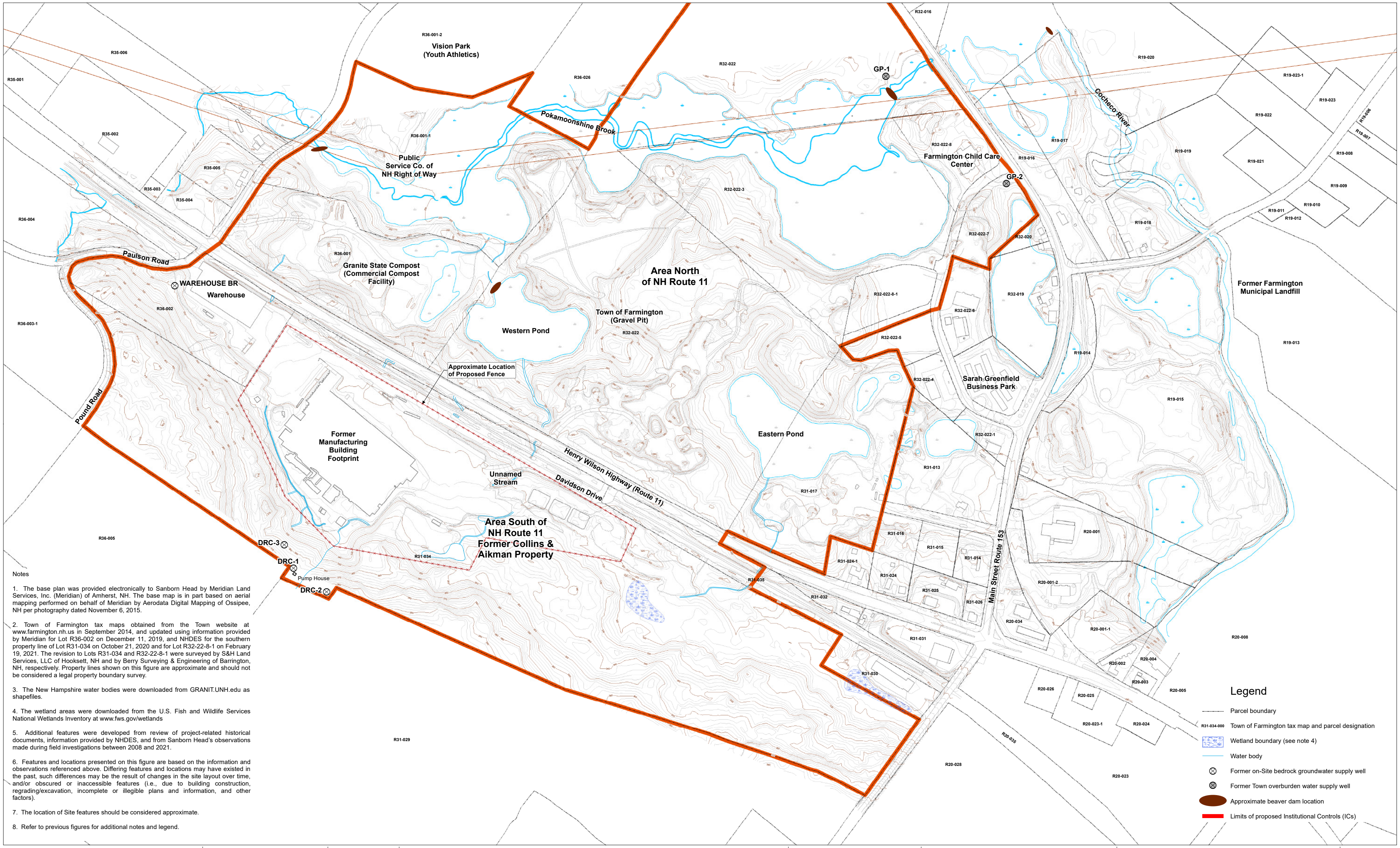

Notes

1. The base plan was provided electronically to Sanborn Head by Meridian Land Services, Inc. (Meridian) of Amherst, NH. The base map is in part based on aerial mapping performed on behalf of Meridian by Aerodata Digital Mapping of Ossipee, NH per photography dated November 6, 2015.

2. Town of Farmington tax maps obtained from the Town website at www.farmington.nh.us in September 2014, and updated using information provided by Meridian for Lot R36-002 on December 11, 2019, and NHDES for the southern property line of Lot R31-034 on October 21, 2020 and for Lot R32-22-8-1 on February 19, 2021. The revision to Lots R31-034 and R32-22-8-1 were surveyed by S&H Land Services, LLC of Hooksett, NH and by Berry Surveying & Engineering of Barrington, NH, respectively. Property lines shown on this figure are approximate and should not be considered a legal property boundary survey.

3. The New Hampshire water bodies were downloaded from GRANIT.UNH.edu as shapefiles.

4. The wetland areas were downloaded from the U.S. Fish and Wildlife Services National Wetlands Inventory at www.fws.gov/wetlands

5. Additional features were developed from review of project-related historical documents, information provided by NHDES, and from Sanborn Head's observations made during field investigations between 2008 and 2021.

6. Features and locations presented on this figure are based on the information and observations referenced above. Differing features and locations may have existed in the past, such differences may be the result of changes in the site layout over time, and/or obscured or inaccessible features (i.e., due to building construction, regrading/excavation, incomplete or illegible plans and information, and other factors).

7. The location of Site features should be considered approximate.

8. Refer to previous figures for additional notes and legend.

SANBORN HEAD

150 75 0 150 300 Feet

N W E S

Figure Narrative

The area subject to ICs includes parcels where contamination is present (Site) based on available data plus parcels within 400 feet of contamination (Env-Dw 302.10 Sanitary Protective Area). The proposed IC area includes the following properties: R31-017, R31-034, R31-035, R32-022, R32-022-3, R32-022-7, R32-022-8, R32-022-8-1, R36-001, R36-001-1, and R36-002, but may potentially be modified in the future pending the results of proposed predesign investigations (PDIs).

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Feasibility Study

Collins & Aikman Plant (Former) Site
NH Department of Environmental Services
Farmington, New Hampshire

Area Subject to Institutional Controls (ICs)

3

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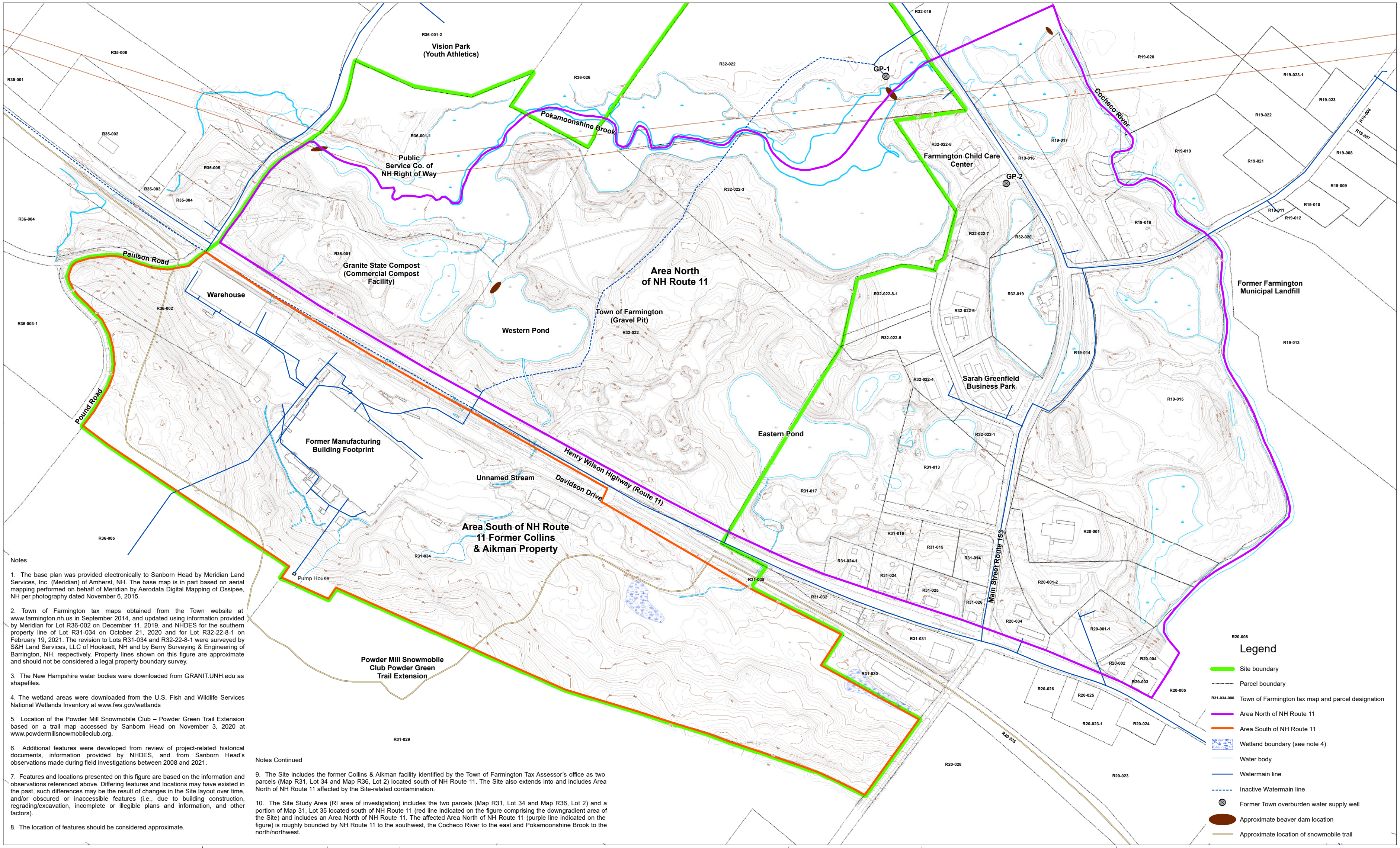

Notes

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3. The New Hampshire water bodies were downloaded from GRANIT.UNH.edu as shapefiles.

4. The wetland areas were downloaded from the U.S. Fish and Wildlife Services National Wetlands Inventory at www.fws.gov/wetlands

5. Location of the Powder Mill Snowmobile Club – Powder Green Trail Extension based on a trail map accessed by Sanborn Head on November 3, 2020 at www.powdermillsnowmobileclub.org.

6. Additional features were developed from review of project-related historical documents, information provided by NHDES, and from Sanborn Head's observations made during field investigations between 2008 and 2021.

7. Features and locations presented on this figure are based on the information and observations referenced above. Differing features and locations may have existed in the past, such differences may be the result of changes in the Site layout over time, and/or obscured or inaccessible features (i.e., due to building construction, regrading/excavation, incomplete or illegible plans and information, and other factors).

8. The location of features should be considered approximate.

Notes Continued

9. The Site includes the former Collins & Aikman facility identified by the Town of Farmington Tax Assessor's office as two parcels (Map R31, Lot 34 and Map R36, Lot 2) located south of NH Route 11. The Site also extends into and includes Area North of NH Route 11 affected by the Site-related contamination.

10. The Site Study Area (RI area of investigation) includes the two parcels (Map R31, Lot 34 and Map R36, Lot 2) and a portion of Map 31, Lot 35 located south of NH Route 11 (red line indicated on the figure comprising the downgradient area of the Site) and includes an Area North of NH Route 11. The affected Area North of NH Route 11 (purple line indicated on the figure) is roughly bounded by NH Route 11 to the southwest, the Cocheco River to the east and Pokamoonshine Brook to the north/northwest.

SANBORN HEAD

150 75 0 150 300 Feet

N W E S

Figure Narrative

This figure depicts features in the vicinity of the Site.

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Feasibility Study

Collins & Aikman Plant (Former) Site
NH Department of Environmental Services
Farmington, New Hampshire

Site Vicinity Plan

4

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