Offsite Removal Action Construction Completion Report

Former JH Baxter & Co. Facility
Eugene, Oregon
ECSI No. 55

January 20, 2025

Prepared for:
Oregon Department of Environmental Quality

Prepared by:
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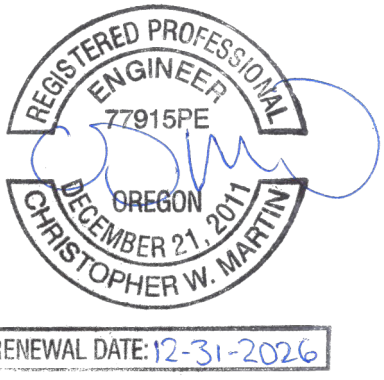

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Abbreviations and Acronyms

3 Kings	3 Kings Environmental, Inc.
ACM	asbestos-containing material
ADU	alternative dwelling unit
AP	Alva Park Decision Unit
AP-01	Alva Park Decision Unit 1, [redacted] Alva Park Drive
Baxter	JH Baxter & Co.
bgs	below ground surface
BMP	best management practice
CCR	Construction Completion Report
City	City of Eugene
CMMP	Contaminated Media Management Plan
CRZ	critical root zone
CUL	cleanup level
DEQ	Oregon Department of Environmental Quality
DU	decision unit
DU-09	Decision Unit 9, [redacted] Baxter Street
DU-10	Decision Unit 10, [redacted] Baxter Street
DU-11	Decision Unit 11, [redacted] Baxter Street
DU-15	Decision Unit 15, [redacted] Baxter Street
EC	earthwork contractor
ECSI	Environmental Cleanup Site Information
ESCP	Erosion and Sediment Control Plan
Facility	former JH Baxter & Co. facility in Eugene, Oregon
GSI	GSI Water Solutions, Inc.
GSP	global positioning system
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste and Emergency Response
HDPE	high-density polyethylene
HVAC	heating, ventilation, and air conditioning
IDW	investigation-derived waste
K&E	K&E Excavating, Inc.
LFP	Lane Forest Products
LRAPA	Lane Regional Air Protection Agency
mg/m^3	milligrams per cubic meter
MGS	Minister & Glaeser Surveying, Inc.
NWFF	NWFF Environmental
OHA	Oregon Health Authority
ORS	Oregon Revised Statute
OSHA	Occupational Safety and Health Administration
Pace	Pace Analytical National
PAH	polycyclic aromatic hydrocarbon

PCDD/F	polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofuran
PCP	pentachlorophenol
PEX	cross-linked polyethylene
pg/g	picograms per gram
PPE	personal protective equipment
PPR	Pacific Plumbing and Rooter Inc.
PVC	polyvinyl chloride
RA	Removal Action
RAWP	Removal Action Work Plan
RBC	risk-based concentration
RFB	request for bid
ROD	Record of Decision
ROW	right of way
SO	Step-Out Decision Unit
SO-06	Step-Out Decision Unit 6, [redacted] Baxter Street
SO-07	Step-Out Decision Unit 7, [redacted] Baxter Street
Spade	Spade Tree Preservation
TCDD	2,3,7,8-tetrachlorodibenzodioxin
TCP	Traffic Control Plan
TEQ	toxicity equivalence quotient
UST	underground storage tank
WHO	World Health Organization

Executive Summary

This Offsite Removal Action (RA) Construction Completion Report details and documents RA activities conducted at residential properties north of the former JH Baxter & Co. (Baxter) facility in Eugene, Oregon (the "Facility") in 2024. The offsite RA activities were completed to remove soil contaminated with polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofuran (PCDD/F) at residential properties affected by contamination from Baxter Facility operations. The objective of the offsite RA is to remove surficial and shallow soil impacted with PCDD/Fs to reduce the potential health risk of direct contact to people.

The offsite RA activities described in this report are part of an ongoing investigation and remediation of the Baxter Facility and the adjacent residential neighborhood to the north. The Baxter Site was proposed for inclusion on the federal National Priorities List (Superfund) on September 5, 2024. Additional phases of offsite residential soil RAs may be completed in the future. The RA activities described in this report were undertaken by Oregon Department of Environmental Quality (DEQ) to address residential properties with the highest PCDD/F concentrations in a timely manner. Seven properties were included in the RA with soil removal depths ranging from 6 to 24 inches below ground surface.

GSI Water Solutions, Inc. (GSI), provided construction management support during the RA to ensure project execution in accordance with the contract documents and to document and verify the construction work. Earthwork contractors were subcontracted by DEQ and GSI to implement the earthwork portion of the RA.

Following removal of impacted soil, the properties were backfilled with imported soil, gravel, or wood chips (as requested by the property owners). The properties were then restored to reestablish the original surface grade, return movable structures to their original positions, and revegetate the property with input from the property owners. Revegetation included installing surfaces such as sod, hydroseed mix, wood chips, trees, and shrubs over imported soil.

The RA was completed in two phases, with the first phase commencing in January 2024 (Phase I) and the second phase occurring from late April to early June 2024 (Phase II). Excavation was completed using a combination of heavy equipment (i.e., excavators and skid steer loader) and hand tools and/or vacuum truck in areas within the critical root zone of protected tress or in areas inaccessible to heavy equipment. A combination of heavy equipment and hand tools were used to distribute backfill evenly and to the required thickness throughout each property. A landscape firm was contracted to finalize restoration of each property following backfill.

It is GSI's opinion that Phase I and Phase II offsite RA has been implemented in accordance with project scope of work and have removed the potential for residents of those seven properties to readily come in direct contact with shallow soil impacted with PCDD/F above DEQ's risk-based concentration for residential direct contact with soil.

1 Introduction

This Offsite Removal Action (RA) Construction Completion Report (CCR) details and documents the soil removal activities from offsite properties near the former JH Baxter & Co. (Baxter) facility in Eugene, Oregon (the "Facility"). The offsite RA activities were completed to address polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofuran (PCDD/F) concentrations in surface soil at residential properties adjacent to the Baxter Facility. Previous sampling activities found PCDD/F concentrations, represented collectively as a 2,3,7,8-tetrachlorodibenzodioxin (TCDD) toxicity equivalence quotient (TEQ) values, elevated in comparison with background sample locations. With input from the Oregon Health Authority (OHA), the Oregon Department of Environmental Quality (DEQ) prioritized cleanup of properties with PCDD/F at or above 40 picograms per gram (pg/g) TCDD TEQ in surface soil, which was considered to present health risks to children younger than 6 years of age (OHA, 2023). This cleanup level (CUL) was initially used by DEQ to prioritize cleanup at seven residential properties.

1.1 Purpose

The purpose of this CCR is to detail and document the major elements of construction activities completed in support of the offsite RA. This CCR also describes and identifies project deviations from the planned RA activities.

1.2 Document Organization

This CCR is organized into the following report sections:

- **Section 1** – Introduces the project and the purpose of the CCR.
- **Section 2** – Briefly discusses the Facility setting and summarizes the regulatory history of the Facility.
- **Section 3** – Describes the properties included in the RA.
- **Section 4** – Presents the RA objectives.
- **Section 5** – Describes the pre-construction activities performed prior to initiating offsite RA work.
- **Section 6** – Describes the construction activities performed in support of Phase I of the offsite RA.
- **Section 7** – Describes the construction activities performed in support of Phase II of the offsite RA.
- **Section 8** – Describes the construction management tasks performed by GSI Water Solutions, Inc. (GSI).
- **Section 9** – Presents RA conclusions.
- **Section 10** – Includes a list of references cited for the CCR.

Appendices to this CCR include the following:

- **Appendix A** – Source Material Sampling Analytical Report and Data Validation
- **Appendix B** – Daily Field Reports
- **Appendix C** – Disposal Documentation
- **Appendix D** – Import Material Documentation
- **Appendix E** – Phase II As-Built Survey Drawings

1.3 Statement of Limitations

This RA CCR has been prepared for DEQ by GSI. Work for this project was performed in accordance with generally accepted professional practices relating to the nature of work completed at the same or similar localities. It is intended for the exclusive use of DEQ and for specific application to this project. No other warranty, express or implied, is made.

2 Background

The JH Baxter & Co. facility is a former wood treating facility located at 85 Baxter Street in Eugene, Oregon (Figure 1). A summary of the Facility's development history and previous environmental activities conducted near the Facility are provided in this section. For a detailed description of the Facility and previous Facility activities, refer to DEQ's Record of Decision (ROD) issued for the Facility (DEQ, 2019).

2.1 Development History

The Facility was developed and began wood treatment in 1943. The earliest treating processes used creosote formulations in a single retort (i.e., a pressurized vessel). In 1945, a second retort was added for treating wood products with pentachlorophenol (PCP). Between 1945 and 1970, the Facility added four more retorts, which used PCP, metals-based treating solutions, and fire retardants. Operations at the Facility ended on January 31, 2022.

2.2 Previous Environmental Activities

Identified Contaminants. From 1985 through 1989, several investigations confirmed releases of hazardous substances to soil and groundwater within the boundaries of the Facility. Hazardous substances detected at the Facility include PCP, arsenic, polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds, polychlorinated biphenyls, and PCDD/Fs. While PCDD/Fs can be from various sources, PCDD/Fs are associated with PCP as they are generated as a contaminant by-product during the manufacturing process of PCP.

Remedial Investigation. On August 3, 1989, DEQ and Baxter signed an Order on Consent, which was subsequently amended on September 16, 1994, in which Baxter agreed to complete a remedial investigation and feasibility study and to undertake interim remedial measures. Characterization of the nature and extent of contaminants at the Facility was performed in phases.

Offsite surface soil sampling was completed in 1998 at adjacent commercial properties. This offsite investigation analyzed surface soil for arsenic and PAHs. Arsenic was identified above its applicable risk-based concentration (RBC) at three of the commercial properties sampled. Baxter completed an RA in October and November 1999 where approximately 417 cubic yards of soil were removed from three commercial properties (Yale Transport, Armored Transport, and Lile of Oregon) (PES, 2010).

ROD. DEQ issued a ROD for the site in October 2019 (DEQ, 2019). The remedy described in the ROD includes capping about 16 acres of contaminated soil at the Facility, continuing groundwater pumping for hydraulic containment of contaminated groundwater, removal of contaminated ditch sediments on the south side of the Facility, and sampling of soil and sediments in offsite areas that could reasonably have been impacted by contamination from the Facility, including the residential area north of the Baxter facility.

Offsite Soil Investigations. In 2020 and 2021, Baxter conducted additional offsite soil sampling in areas near the Facility to update their understanding of offsite surface soil contamination as required in the ROD (DEQ, 2019). Based on the 2020 analytical results (GSI, 2020), additional surface soil sampling was conducted in 2021, 2022, and 2023 in background areas and at residential properties to the north of the Facility.

The offsite investigation results indicated that PCDD/Fs concentrations in soil at many of the residential yards and other non-background areas sampled exceeded DEQ's RBC of 4.7 pg/g TCDD TEQ for direct contact with residential soil (DEQ, 2023). Some of these residential yards also exceeded the OHA risk level of 40 pg/g (see Section 2.3).

2.3 Early Action Cleanup Level

In 2023, the OHA recommended a 40 pg/g TCDD TEQ value as a threshold for prioritization of cleanup of residential properties near the Facility (OHA, 2023). The value was based on the consideration of increased non-cancer human health risks for children under 6 years of age regularly exposed to residential soil. DEQ subsequently adopted the 40 pg/g value as an early action CUL for initial residential RA.

After a residential property was identified as requiring early action soil removal, the total depth of soil removal was determined by the maximum vertical depth where PCDD/F concentrations exceeded DEQ's RBC for direct contact by residential receptors of 4.7 pg/g (DEQ, 2023).

2.4 Determination of Extent of Removal Action

In January 2022, Baxter notified DEQ they would not be able to implement cleanup at the residential yards in a timely manner, and suspended wood treatment activities at the Facility. DEQ subsequently declared the Facility an Orphan Site to enable utilization of the Industrial Orphan Site Account to complete the RA at the offsite residential yards (DEQ, 2022). To define the extent of the RA, DEQ implemented an additional offsite investigation in June 2022 to delineate the extent and magnitude of elevated PCDD/F contamination in surface soil at the residential properties nearest to the Facility (GSI, 2022). The collective sampling between 2020 and 2022 resulted in identifying a total of four properties where PCDD/F concentrations exceeded the early action CUL of 40 pg/g TCDD TEQ.

In May 2022, EPA's Removal Program also assisted DEQ with the Baxter offsite property investigation. EPA's work expanded on the surface soil sampling conducted by Baxter and DEQ with a focus on bounding the spatial extent of contamination in surface soil in the neighborhood north of the Facility. In total, EPA collected surface soil samples from 52 additional properties. Analytical data provided by EPA following their investigation have informed the extent of impacts within the residential area. EPA's sampling identified three additional residential yards with PCDD/F concentrations in surface soil above 40 pg/g, necessitating the RA at these properties.

In April 2023, DEQ implemented a supplemental investigation with the purpose of delineating the depth of PCDD/F concentrations shallow soil at the seven residential yards north of the Facility with concentrations exceeding 40 pg/g in shallow soil. The results of this investigation, along with previous data, indicated that PCDD/F concentrations generally decrease with distance from the Facility and with soil depth within the residential yards. Three of the seven properties have PCDD/F concentrations exceeding the RBC at depths more than 12 inches. These data are provided in the Offsite Investigation Report (GSI, 2024b).

3 Removal Action Implementation Decision Units

During offsite soil investigations, residential properties were divided into decision units (DUs) to represent sampling areas. DUs generally consisted of individual property boundaries. DUs were also divided into sub-DUs (such as front and back yards) to facilitate the potential for multiple removal depths within each property. The seven DUs identified for the initial offsite RA are:

- DU-09 ([redacted] Baxter Street)
- DU-10 ([redacted] Baxter Street)
- DU-11 [redacted] Baxter Street)
- DU-15 ([redacted] Baxter Street)
- SO-06 ([redacted] Baxter Street)
- SO-07 ([redacted] Baxter Street)
- AP-01 ([redacted] Alva Park Drive)

A description of each DU is provided below. Additional details regarding the condition of DUs prior to the RA were provided in the Removal Action Work Plan (RAWP) and individual property Scope Memoranda (GSI, 2023a and 2023b). These properties are within the SE 1/4 of the NE 1/4 of Section 27, Township 17 South, Range 4 West, Willamette Meridian and are present on Lane County tax map 17042714. Figure 2 shows the location of these DUs. Figures 3 through 9 show individual DU conditions. Figures with an "a" suffix show pre-construction conditions and RA implementation plans. Figures with a "b" suffix show the surface restoration plan of each DU.

3.1 DU-09

The residential property at [redacted] Baxter Street was given the designation of Decision Unit 9 (DU-09). The boundaries of the DU are defined as tax lot 5602. DU-09 contains a single-story residential home and an asphaltic concrete shared driveway with the neighboring [redacted] Baxter Street residence to the west. A narrow strip of grass is located along the north side of the shared driveway leading to the residence. This DU also includes a cement concrete side yard (east side) that leads to a cement concrete slab patio and an accessory dwelling unit (ADU) in the backyard. The ADU is constructed on pier blocks and remained in place during the RA. A small aboveground wooden deck is located behind the ADU that spans to the back fence. This wooden deck was removed and disposed of during the RA and not replaced. The backyard contains a small, prefabricated shed that was removed and disposed of during the RA and replaced with a new shed. Two significant trees in the backyard were removed by a vegetation clearing firm prior to completing the RA, but stumps and roots remained and were removed to reach the excavation depth. A utility pole is also located in the northeast corner of the DU. Figure 5a presents pre-construction conditions and RA the plan for DU-09.

3.2 DU-10

The residential property at [redacted] Baxter Street was given the designation of Decision Unit 10 (DU-10). The boundaries of the DU are defined as tax lot 5501. DU-10 includes an asphaltic concrete driveway connecting Baxter Street with a carport attached to a single-story residential home. The DU includes a shed and gazebo in the backyard near the northwest corner of the property. The shed was demolished and not replaced. The gazebo was moved and returned to its original location during the RA. A lean-to cover is located along the west side of the house and was connected to the western fence of the DU. This covered area had gates on either side. Soil within the covered area was removed during the RA. The gates were temporarily removed to

access soil under the covered area and returned to their original location during site restoration. A chain-link fence divided the front and back yards on the south side of the residence. This fence was removed during the RA and not replaced. A large fir tree is located within the Baxter Street City of Eugene (City) ROW. This tree was protected during the RA. A utility pole is also located within the ROW near the northeast corner of the DU. Figure 6a presents pre-construction conditions and RA the plan for DU-10.

3.3 DU-11

The residential property at [redacted] Baxter Street has been given the designation of Decision Unit 11 (DU-11). The boundaries of the DU are defined as tax lot 2400. DU-11 contains an asphaltic concrete driveway connecting Baxter Street to a single-story residential home. DU-11 contains a fully fenced-in backyard and unfenced front yard. Four trees and a cement concrete slab patio were present within the backyard of the DU. One significant spruce tree was present in the front yard. The five trees were removed during the RA. Figure 7a presents pre-construction conditions and RA the plan for DU-11.

3.4 DU-15

The residential property at [redacted] Baxter Street was given the designation of Decision Unit 15 (DU-15). The boundaries of the DU are defined as tax lot 2500. DU-15 contains an asphaltic concrete driveway connecting Baxter Street to a single-story residential home. DU-15 contains a fully fenced backyard and unfenced front yard. A large fir tree is located in the front yard near the City ROW, this tree was protected during the RA. This DU contained trees of various sizes that were removed by a vegetation clearing firm prior to initiating the RA. A three-sided covered structure (gazebo) constructed on concrete pier footings is located in the backyard. This structure was moved by the earthwork subcontractor prior to the RA and returned to its original location as part of the site restoration activities of the RA. Figure 8a presents pre-construction conditions and the RA plan for DU-15.

3.5 SO-06

The residential property at [redacted] Baxter Street was given the designation of Step-Out Decision Unit 6 (SO-06). The boundaries of the DU are defined as tax lot 5404. SO-06 contains a single-story residential home and a cement concrete driveway. SO-06 contains a fully fenced front yard. This residence has a narrow side yard, but no separate backyard. Four trees and a shrub hedge were removed by a vegetation clearing firm prior to initiating the RA. A 40-foot-long shipping container and plastic prefabricated garden shed are present in the front yard along Baxter Street. These were relocated on the property during soil removal and returned during site restoration. A utility pole was also present in the northeast corner of the property. The property owner is planning to remodel the yard separate from RA activities. This remodel includes adding cement concrete pads and relocating portions of the chain-link fence. At the request of the owner, the restoration activities did not backfill to the former grade at the location of the future concrete pad, to allow for the thickness of new concrete to be installed by the owner. Figure 4a presents pre-construction conditions and the RA plan for SO-06.

3.6 SO-07

The residential property at [redacted] Baxter Street was given the designation of Step-Out Decision Unit 7 (SO-07). The boundaries of the decision unit are defined as tax lot 5404. SO-07 contains an asphaltic concrete driveway connecting Baxter Street to a single-story residential home. SO-07 contains a fully fenced-in backyard and unfenced front yard. The DU has a covered north side yard used for storage, and a south side yard, which mostly consists of permanent outbuilding structures. Shrubs, a tree, and various auxiliary features and structures are present within the backyard of the DU. Shrubs and a tree were removed during

the RA, but other yard features and structures were saved and replaced during the RA. Figure 9a presents pre-construction conditions and the RA plan for SO-07.

3.7 AP-01

The residential property at [redacted] Alva Park Drive was given the designation of Alva Park Decision Unit 1 (AP-01). The boundaries of the DU are defined as tax lot 2500. AP-01 contained a cement concrete driveway connecting Alva Park Drive to a single-story residential home. The concrete driveway was removed during the RA and not replaced, at the request of the owner. AP-01 contains a fully fenced-in backyard and unfenced front yard. A large cedar tree is located within the City ROW, which required protection during the RA. This DU contained four trees in the backyard, three of which were removed by a vegetation clearing firm prior to initiating RA activities. Figure 3a presents pre-construction conditions and the RA plan for AP-01.

4 Removal Action Objectives

The objectives of the offsite RA were to remove surficial and shallow soil impacted with PCDD/Fs to reduce the potential health risk of direct contact to people. The extent of the RA was determined from multiple offsite investigations of properties near the Facility (GSI, 2024b). The soil removal depth at each of the seven properties is presented in Figure 2. Specific objectives of the RA included the following:

- Remove soil exceeding 4.7 pg/g TCDD TEQ from properties where RA was prioritized based on exceedance of the early action CUL (40 pg/g). Total required depth of removal varied from 6 to 24 inches below ground surface (bgs). Required depths of excavation at specific properties were:
  - DU-09 ([redacted] Baxter Street): 18 inches bgs
  - DU-10 ([redacted] Baxter Street): 18 inches bgs (front yard sub-DU), 12 inches bgs (back yard sub-DU)
  - DU-11 ([redacted] Baxter Street): 24 inches bgs (front/side yard sub-DU), 12 inches bgs (back yard sub-DU)
  - DU-15 [redacted] Baxter Street): 12 inches bgs
  - SO-06 ([redacted] Baxter Street): 6 inches bgs
  - SO-07 ([redacted] Baxter Street): 12 inches bgs (front/side yard sub-DU), 6 inches bgs (back yard sub-DU)
  - AP-01 ([redacted] Alva Park Drive): 6 inches bgs
- Remove 6 inches of soil within the City ROW adjacent to the properties identified above between the paved street edges and the property boundaries.
- Dispose of removed soil at a permitted Subtitle D landfill.
- Import clean soil, gravel, and/or wood chips (as requested by property owner) to replace removed soil. As used in this report, “clean” is defined as soil having less than 4.7 pg/g TCDD TEQ or a material that is quarried aggregate, sod, or a wood product.
- Remove or replace trees, shrubs, and other vegetation (e.g., sod) within areas of soil replacement as recommended by an arborist (GSI, 2024b) and/or in agreement between the property owner and DEQ.

5 Pre-Construction Activities

The following sections present a summary of the major pre-construction activities performed prior to implementation of the RA. Preparatory activities included the development of site-specific work plans, property owner/tenant coordination, arborist consultation, import material source sampling, tree removal, contractor procurement and selection, pre-construction meetings and submittals, and permitting.

5.1 Preliminary Activities for Project Implementation

Preparatory activities performed by GSI and DEQ prior to implementing the RA included:

- **Property Walk-Throughs.** In June 2023, GSI and DEQ met with each property owner to explain the RA process and walk their property to identify the unique features of each property to be taken into consideration during the RA. The preferences for removal of vegetation and structures, as well as preferred finished surfaces, were noted during these walkthroughs. The final RA implementation decisions reached by GSI and DEQ were communicated to and agreed to by each property owner. This information was used to develop the draft RA Scope Memoranda prepared for each property. The draft RA Scope Memoranda were shared with property owners for concurrence and revisions if needed prior to finalization.
- **Site-Specific Health and Safety Plan (HASP).** GSI prepared a site-specific HASP that was included in the RAWP (GSI, 2023a). GSI prepared the HASP in general accordance with the Occupational Safety and Health Act and Oregon Administrative Rules. Personnel from GSI retained a copy of the HASP onsite for their use during RA field activities.
- **Property Access.** DEQ obtained agreements from all residential property owners to perform RA activities on their properties.

5.2 Arborist Consultation

Established trees and their associated critical root structures were located on portions of nearly all properties where RA activities were planned. This included root structures from trees located on neighboring properties and from trees within the City ROW. The City has a municipal code designed to protect existing ROW trees and critical root structures during development activities. Depending on how RA activities are classified by the City and whether trees within the ROW are affected, the level of protection and planning may differ. GSI subcontracted with an International Society of Arboriculture-certified arborist, Spade Tree Preservation, LLC (Spade), of Brownsville, Oregon, to identify trees that may require protective measures and best management practices to minimize impacts to established vegetation that will remain during the RA.

Spade prepared a Tree Preservation Plan which outlined procedures for the earthwork contractor (EC) to take during the RA to protect existing trees while removing as much soil as possible from removal areas. The arborist also outlined backfill requirements and completed an International Society of Arboriculture Basic Tree Risk Assessment Form for each tree potentially affected by RA activities. Based on the risk assessment, the arborist determined which trees and other vegetation were at a high risk of tree death or instability due to RA activities and should be removed. Of the 55 trees assessed, 18 were recommended for removal based on the health of the tree or the perceived survival of the tree following RA activities (i.e., these trees would not survive the RA). In practice all but 5 trees were removed. This was to provide better access to impacted soil across DUs. Many trees were replaced with new ones during the restoration process.

In addition to the pre-construction consultation, Spade was contracted by GSI to provide excavation oversight and guidance during RA activities performed within the critical root zones (CRZs) of trees located at or adjacent to the offsite properties.

5.3 Preparatory Activities with Property Owners/Tenants

GSI and DEQ consulted with property owners and required owners/tenants to prepare for RA activities as described below.

Plants/Vegetation. As discussed in Section 5.2, an arborist visited the RA properties and determined which trees or other vegetation were unlikely to survive excavation to the specified depths and which trees would constitute a safety hazard during an RA. These recommendations were discussed with the property owners and a plan for removal, transplant, or protection was prepared for each property. Additional details regarding the trees/shrubs to be removed from each property, and the trees/shrubs to be protected were presented in the individual property Scope Memoranda (GSI, 2023b).

Yard Features. DU yard features included sheds, vehicles, trailers, greenhouses, shipping container, toys, and chicken coop. The following protocols were required for yard features:

- If a structure was not constructed on a permanent foundation (i.e., concrete or asphalt pad), then access under these features would be required to remove and replace soil beneath to the appropriate depth. This included sheds, gazebos, greenhouses, and coops. The EC would be responsible for providing laborers and/or a moving firm to move these structures out of the excavation area. Temporary structures moved by the contractor would be reconstructed or replaced depending on their structural stability following temporary removal. Reconstruction or replacement of structures was pre-approved by DEQ and property residents prior to implementing the RA.
- Vehicles, boats, and trailers would need to be moved to provide access to the DUs. If the property owner was unable to complete these tasks, the EC would temporarily relocate these items to a secure location identified by the property owner or DEQ. If necessary, DEQ would reimburse owners for vehicle storage costs.
- Some yards had items stored throughout the yard that could be moved, but required storing in an offsite storage space during the RA. This included toys, lumber piles, gardening supplies, etc. The EC was required to provide offsite storage access or movable storage units to store these items. Residents were provided with the opportunity to move items into these units ahead of time if they wished, or have the EC provide movers to load the items into storage.

Garden Borders. Yard features like garden borders (metal/rock/wood) would need to be removed by the EC to perform the RA. Reconstructing these borders was not included in the scope of the RA. If the property owner wanted to save these materials, the EC would pile the materials in a paved portion of the property for the homeowner to replace following RA implementation.

Irrigation/Other Subsurface Infrastructure. Property owners were consulted to determine whether the property has an irrigation system or other subsurface landscape infrastructure that may not have been previously identified by a private utility locator. Only one irrigation system was encountered, removed, and replaced during the RA.

Temporary Offsite Housing. For safety purposes and for RA implementation efficiency, temporary housing was offered to residents of DUs during the soil removal and replacement phases of the RA. Residents who elected to relocate during portions of the RA were reimbursed the current General Services Administration rate for hotel and meals per diem per resident of each DU. The length of resident relocation was dependent on the EC schedule during the RA at each DU. Residents were also made aware that access to vehicles and utilities may be restricted during a portion of the RA and that if owners needed temporary access to their homes during relocation, they would need to coordinate with GSI and/or DEQ and the EC to ensure this was done safely.

5.4 Import Source Material Sampling

Prior to implementing the RA, GSI collected characterization samples from three potential commercially available source material suppliers located near the Facility that could regularly provide the estimated volume of import source material required to implement the RA. The material vendors included Lane Forest Products (LFP), Rexius, and Delta Sand & Gravel located in Eugene, Oregon. For each supplier, composite samples of topsoil and non-structural fill soil were collected and analyzed for PCDD/F to ensure imported material placed during the RA did not contain TCDD TEQ at concentrations greater than DEQ's direct contact RBC of 4.7 pg/g for residential receptors.

Separate from the material vendors mentioned above. DEQ entered into an agreement with Lane County to use up to approximately 400 cubic yards of the stockpiled clean topsoil generated during a wetland mitigation project near the Short Mountain Landfill. Ultimately, this topsoil stockpile was not used during the RA and remains near the landfill.

Samples of the topsoil and non-structural fill materials were submitted under chain of custody to Pace Analytical National (Pace), of Mt. Juliet, Tennessee, for PCDD/F analysis by EPA Method 1613B. Individual PCDD/F congener data were reported by the analytical laboratory for 17 congeners. Total TCDD TEQ was calculated using World Health Organization's (WHO's) 2005 summation rules (WHO, 2005). Table 1 presents the TCDD TEQ chemical analytical results for the source material sampling.

Table 1. Import Source Material Sampling Results: Total TCDD TEQ

Sample ID	Source	Material Type and Source Description	TCDD TEQ (pg/g)
TS-001-0622	Lane County	Topsoil	**0.212 J+**
LFP_SM_01	Lane Forest Products	Fill – "Loam"	**0.263 J+**
LFP_SM_02		Topsoil	**6.85 J+**
REX_SM_01	Rexius	Fill – "Loam"	**0.178 J+**
REX_SM_02		Topsoil – "Primary Soil"	**0.195 J+**
DSG_SM_02	Delta Sand and Gravel	Fill	**6.29 J+**
DSG_SM_03		Topsoil – "Screened Loam"	**0.351 J**
Oregon Health Authority Early Action Screening Level			40
DEQ Risk-Based Concentration for Direct Contact by Residential Receptors			4.7

Notes

PCDD/F by EPA Method 1613B. PCDD/F concentrations used to calculate TCDD TEQ

Highlighted cells indicate concentration above DEQ risk-based screening level of 4.7 pg/g.

DEQ = Oregon Department of Environmental Quality

J = The reported result is an estimated value.

J+ = The reported result is an estimated value, but the result may be biased high.

pg/g = picograms per gram

TCDD TEQ = 2,3,7,8-tetrachlorodibenzo-p-dioxin toxic equivalency factor

Based on the TCDD TEQ exceedances of DEQ's RBC for direct contact by residential receptors (4.7 pg/g) in two of the potential source materials (LFP – Topsoil, Delta Sand and Gravel – Fill), these source materials were eliminated as options for use during the RA. The remaining source materials were presented to solicited EC bidders as viable options for fill material (in deeper excavations) and import topsoil. It was necessary to provide potential bidders with local options for import material sources to accurately compile bids. Bidders were able to recommend a different soil source; however, additional sampling would have been required to confirm the viability of other sources. Appendix A includes the analytical laboratory report for the source material samples, including data validation.

5.5 Tree and Vegetation Removal

Based on recommendations provided in the arborist report (Appendix C of the Offsite Investigation Report [GSI, 2024b]) and from discussions with the property owners, GSI subcontracted Sperry Tree Care Co. of Eugene, Oregon, to provide tree and vegetation removal services at the RA properties ahead of soil removal activities. This included the removal of all trees identified in the arborist report (except for saving five trees) and the removal of numerous smaller trees, shrubs and blackberry brambles, and cleanup of general leaf litter throughout the properties. Tree removal activities were completed between October 4 and 10, 2023. GSI field staff were onsite during the tree removal activities to provide oversight and help guide the contractor to ensure properties were sufficiently prepared for the forthcoming RA work. Tree removal was completed by removing the larger trees to the existing ground surface and did not include the removal of stumps and/or root structures. Stump grinding and removal was left for the EC to complete prior to or concurrent with earthwork during the RA. Appendix B contains field notes from the tree and vegetation removal activities.

5.6 Initial Contractor Solicitation

GSI prepared bid packages, including RA plans and objectives, to competitively solicit bids from construction contractors. In general, the scope of work included the following:

- Prepare each DU for soil removal activities.
- Remove PCDD/F impacted soil from the ground surface to between 6 and 24 inches bgs from the DUs, as identified in the RAWP and individual property Scope Memoranda (GSI, 2023a and 2023b).
- Transport and dispose of impacted soil, demolition debris, and vegetative debris (e.g., roots and stumps) at a licensed Subtitle D landfill.
- Import clean fill material and topsoil to replace excavated soil.
- Restore the DU to pre-construction conditions as described in the individual property Scope Memoranda.

GSI and DEQ issued a request for bid (RFB) document for RA scope of work at the seven residential properties on October 16, 2023. Solicited construction contractors included firms with experience working on contaminated sites and who possessed the required 40-hour Hazardous Waste and Emergency Response (HAZWOPER) certification. Contractors who expressed interest in the project attended a site visit on October 26, 2023, where the scope was discussed, and the seven residential properties were toured. Despite initial interest in the project, no bids were received. Contractors noted that the project schedule would not fit into their existing workload and that the schedule had the majority of work scheduled for the wet season, which could be problematic when handling large quantities of soil and for erosion control measures.

5.7 Restructuring the Offsite Removal Action Implementation

Due to a lack of bids received in response to the October 2023 RFB, DEQ elected to split the implementation of the offsite RA into two phases where the first phase would prioritize two (AP-01 and SO-07) of the seven properties with the highest PCDD/F soil concentrations. RA activities performed at these two properties are referred to as "Phase I" of the offsite RA. DEQ used their Emergency Response contract for time critical RA services (Incident Order Contract No. TCR-23-06) to direct award Phase I of the offsite RA (see Section 5.8). Section 6 describes Phase I implementation activities.

On January 10, 2024, GSI issued another RFB for the remaining five residential properties (DU-09, DU-10, DU-11, DU-15, and SO-06). A voluntary pre-bid site walk for potential bidders was held on January 30, 2024, where the remaining five properties were discussed and toured. RA activities performed at the remaining five residential properties are referred to as "Phase II" of the offsite RA. Section 7 describes Phase II implementation activities.

5.8 Contractor Selection

For the Phase I RA scope, DEQ directly awarded NWFF Environmental (NWFF) of Albany, Oregon, an offsite RA contract through DEQ's Emergency Response Contract. NWFF and their subcontractors were responsible for the implementation of Phase I construction activities in accordance with the contract documents.

For Phase II of the RA work, GSI awarded 3 Kings Environmental, Inc. (3 Kings), of Battle Ground, Washington, a construction contract following a competitive solicitation process and concurrence by DEQ. GSI executed a contract with 3 Kings on April 12, 2024. 3 Kings and their subcontractors were responsible for the implementation of Phase II RA construction activities as specified in the contract documents. 3 Kings also provided project management and field oversight of their subcontractors and vendors.

As DEQ's prime contractor, GSI provided construction field oversight, documentation, and management support for both phases of the RA.

5.9 Pre-Construction Meetings

Prior to initiating onsite construction activities for each phase of the RA, a pre-construction conference call was held between key personnel from DEQ, GSI, and the ECs (NWFF, 3 Kings). The topics discussed included staff introductions and roles, communications, project goals and expectations, contract requirements including conditions and terms of payment, anticipated construction schedule and workflow, contractor submittals, permitting requirements, change order process, health and safety requirements, and questions and clarification on the contract documents and specifications.

5.10 Contractor Submittals

To facilitate an accelerated Phase I implementation schedule, GSI prepared an Erosion and Sediment Control Plan (ESCP) and a Traffic Control Plan (TCP) basemap for NWFF to review, revise as necessary, and implement during Phase I of the RA. Additionally, due to known contamination in the work area, a Contaminated Media Management Plan (CMMP) was required for RA activities. GSI prepared a CMMP detailing the nature and extent of contamination at the site and contaminated media handling requirements (GSI, 2024a).

In accordance with the Phase II contract specifications, 3 Kings and their subcontractors and/or vendors were required to prepare and deliver submittals to GSI for review and approval, prior to implementing the

work. These submittals included an ESCP, TCP, HASP, vendor list, haul road map, decontamination plan, and contractor quality control plan. GSI provided 3 Kings with the CMMP prepared for Phase I of the RA.

GSI reviewed the submittals and either approved or requested revisions to the submittals. The submittals were generally prepared within the time and scope requirements specified in the contract specifications and were submitted to GSI for review prior to plan implementation and/or material purchase or delivery.

5.11 Permitting

DEQ elected to exercise their authority under Oregon Revised Statute (ORS) 465.315(3) to waive local permit procedural requirements for this project. Permits affected included City Commercial Erosion Prevention Permit, ROW Excavation Permit, and Private Use of a Public ROW Permit. However, in accordance with ORS 465.31(3), the substantive requirements of these permits were still required to be met, including payment to the City and the preparation and submittal of the TCP and erosion control plans for each phase of the RA. DEQ worked directly with the City regarding payment of the permit fees and submission of other documentation. The City did not provide comments on submitted documentation. The ECs were not required to submit permit applications or pay City permit fees.

5.12 Prior Approvals

Import Sources. Based on the source material sampling results (see Section 5.4), DEQ approved the following sources for use during the RA: Lane County Topsoil, LFP (Loam used for clean fill soil only), Rexius (Loam used for clean fill or Primary Soil for topsoil), and Delta Sand & Gravel (Screened Loam used for topsoil only but will require amending with 25 percent of Rexius Primary Soil if used due to low organic content).

Disposal Facilities. Prior to initiating each phase of the RA, the EC selected a DEQ-approved disposal facility (permitted Subtitle D landfill) for the contaminated soil and construction-related waste to be transported to and disposed of upon removal from the site. Chemical data from investigations were provided to each EC to profile soil and facilitate disposal at the selected landfills. Short Mountain Landfill in Lane County, south of Eugene, Oregon, was selected as the disposal facility for Phase I of the RA, and Coffin Butte Landfill in Benton County north of Corvallis, Oregon, was selected as the disposal facility for Phase II of the RA.

5.13 Property Access

Property Access by Subcontractor. DEQ obtained access agreements from residential property owners to perform the RA on their properties. To facilitate soil removal, the EC removed fencing from portions of each DU to provide physical access for personnel, equipment, and vehicles performing RA work. Fence sections that required removal were replaced in like-kind and are further discussed in Sections 6.4 and 7.4.

Property access points for machinery were limited to the extent practicable to minimize track out and interference with residents. Access points were delineated using temporary construction fencing and signage, as necessary, to prevent unauthorized access to work areas.

Property Access by Owners/Tenants. Property owners/tenants were encouraged to use temporary housing offered by DEQ. However, relocation of residents during the full extent of RA activities was not required and owners/tenants were allowed to access or stay on their property during RA activities if they wished to do so. GSI, DEQ, and the EC coordinated property access with the owners/tenants and communicated site activities that affected access to and from residences and any utility disruptions that occurred due to RA work.

6 Phase I Offsite Removal Action Construction Activities

The following sections provide a description of the major components of the offsite RA construction activities completed in January 2024 under DEQ's Emergency Response Contract (i.e., Phase I). Phase I addressed two of the seven properties included in the scope of the offsite RA: [redacted] Alva Park Drive (AP-01) and [redacted] Baxter Street (SO-06) (Figures 3 and 4, respectively). Phase I construction activities were completed by NWFF and their respective subcontractors under contract with DEQ. GSI was contracted by DEQ to provide construction oversight and field documentation support during Phase I RA construction activities.

6.1 Site Preparation and Site Controls

GSI, NWFF, and NWFF's equipment operator (K&E Excavating, Inc. [K&E], of Salem, Oregon) mobilized staff and equipment to the site and began site preparations on January 22, 2024. K&E operated heavy equipment, provided dump trucks, laborers, and performed survey tasks under subcontract to NWFF. As part of the mobilization, NWFF and K&E established work limits and equipment and material staging areas, set up temporary site security measures (perimeter fences and signage), portable storage for handling of resident personal items, installed traffic control signage, and set up a portable lavatory for field staff. Sections 6.1.1 through 6.1.6 describe additional site preparation activities conducted prior to or concurrent with excavation.

6.1.1 Stump Grinding

Site preparation included stump grinding and removal of stump remnants and root structures left in place during previous tree removal work at the properties (see Section 5.5). Stumps were generally removed to, or beyond, the required excavation depths for each property. Some stump remnants were unable to be fully removed with the stump grinding equipment and required subsequent removal using power tools (i.e., reciprocating saw) and/or excavators. In accordance with the RAWP and Scope Memoranda, grubbed woody debris from stump grinding was left in place at each DU for removal and disposal with contaminated soil (GSI, 2023a and 2023b).

6.1.2 Demolition and Aboveground Removal Activities

Certain items within DUs were to be demolished or removed from the site to access soil beneath. Items that were replaced are mentioned below but described in greater detail in Section 6.4.

AP-01. At AP-01 (Figure 3a), demolition included a two-story wood-framed play structure located in the backyard. Some wood was saved at the request of the property owner while the remaining wood debris was disposed of offsite by NWFF.

A galvanized metal pipe sticking approximately 6 inches above ground and of previously unknown purpose was also removed from the backyard of AP-01. Prior to removal of the pipe, NWFF screened the pipe outlet with a photoionization detector to confirm that it did not appear to be a vent pipe associated with an undocumented underground storage tank (UST) at the property. Due to lack of evidence of a UST, the pipe section was removed by K&E by grabbing the pipe end with the excavator bucket and pulling the pipe from the ground. Although the purpose of the approximately 14-foot pipe section was unclear. No evidence of a tank or petroleum contamination was observed during the removal of the pipe.

A carport tent structure and personal belongings saved under the tent were temporarily moved from the backyard to the south end of the front yard to provide access to the backyard.

SO-06. At SO-06 (Figure 4a), a 40-foot-long shipping container and garden shed used for storage were temporarily relocated to access the soil underneath.

6.1.3 Erosion and Sediment Control Measures

GSI prepared an ESCP for NWFF to use that met the requirements of the City's Erosion Prevention and Construction Site Management Program. Standard construction BMPs were installed to prevent soil from being eroded, tracked, washed, or blown from the DUs and onto City streets, neighboring properties, or nearby waterways. This included the use of silt fencing and straw wattles at property boundaries, use of temporary construction entrances, covering any soil stockpiles overnight or during windy conditions, street sweeping at the end of each day (and as needed), and manually brushing or spraying mud and dirt from trucks or equipment prior to mobilizing between DUs or leaving the site. GSI field staff monitored and documented that the BMPs were followed by NWFF during RA activities.

NWFF installed stormwater BMPs designed to prevent soil or stormwater from leaving the site during construction. BMPs were installed in accordance with the ESCP prepared for each property. At AP-01, straw wattles were installed along Alva Park Drive adjacent to AP-01. Silt fence was installed along the eastern property boundary along Alva Park Drive except for where the construction road was installed. Silt fence was extended along the north and south property boundaries to the fence line to prevent soil from migrating to the neighboring properties. To prevent track-out from foot traffic, NWFF installed a boot wash station and provided absorbent mats for employees to walk on when accessing vehicles or facilities within Alva Park Drive. The straw wattles were removed following backfilling and final street sweeping activities. The silt fence remained installed until restoration activities were complete. The silt fence installation was realigned during the RA to prevent access to the property across the entire front yard except through to the stone-paved path installed in the front yard.

At SO-06, straw wattles were installed around the perimeter of the property at Baxter Street. A boot wash station was installed to prevent track out from foot traffic. Silt fence was temporarily installed along the southern property boundary, but this was removed because site grade did not require erosion protection in this area and the silt fence limited necessary equipment access to the property. Temporary construction fencing was installed to prevent access to the DU during excavation work and until the replacement chain-link fence was installed. Straw wattles along Baxter Street were removed after backfilling was complete.

6.1.4 Site Control Management

Only authorized personnel with the proper training and personal protective equipment (PPE) were allowed within work areas. NWFF was responsible for delineating the work area to limit access. Interested people were directed to the DEQ Project Manager for project-related inquiries. One unauthorized visitor was observed entering the AP-01 backyard work area during excavation activities. This person was quickly escorted from the property after they took pictures of work progress.

In addition to site control management, NWFF provided 24-hour security to monitor unoccupied DUs outside of working hours and report any incidents that occurred. Temporary construction security fencing was also installed along portions of DUs to prevent unwanted access to each property and to delineate portions of SO-06 to allow residents' pets to continue to use a portion of these areas during the RA.

Residents of each of the affected properties were urged to vacate the property during the RA excavation and backfill. GSI and DEQ coordinated the schedule with residents and reimbursed residents for their relocation expenses while off the property. AP-01 residents were relocated for a total of 5 days. Residents of SO-06 did not relocate during the RA, but generally remained offsite during work hours.

6.1.5 Traffic Control

Traffic control measures implemented during Phase I of the RA included construction signage placed in roadways at the entrances of Alva Park Drive and Baxter Street near Elmira Avenue and at the north edges of the DUs to notify vehicle traffic of the presence of construction activities and construction-related vehicle/equipment traffic. NWFF and K&E were responsible for establishing traffic control signage and ensuring safe passage of traffic/pedestrians around work zones when needed.

6.1.6 Utilities

Public and private utilities were located prior to commencing removal activities. NWFF was responsible for notifying and coordinating site activities with utility providers, as needed. K&E attempted to identify the exact location and depth of all buried utilities that entered the excavation areas prior to beginning earthwork. If utility lines were unable to be located, a combination of low-impact excavation methods and carefully guided equipment work was used to uncover the utility. Additionally, prior to and after earthwork at each DU, sewer utilities were scoped with video recordings to ensure that no damage had occurred due to RA activities. NWFF provided water, power, and a portable restroom required to complete the RA activities.

6.2 Removal Activities

The important aspects of earthwork and construction in support of Phase I of the RA are detailed in the following sections and shown in Figures 3a and 4a for AP-01 and SO-06, respectively.

6.2.1 Excavation

Excavation was completed at each property using a combination of heavy equipment (i.e., excavators and skid steer loader) for the majority of each property and with hand tools and/or vacuum truck in CRZs (see Section 5.2) or in areas where operated equipment could not reach. NWFF and K&E selected the appropriate means and methods for soil removal in different portions of each DU based on access considerations and the field conditions encountered. A GSI representative was onsite during excavation to observe and document the removal activities.

Excavation Limits. The extent of removal within each DU (see Section 3) is shown in Figures 3a and 4a and was predetermined based on chemical data collected during previous environmental investigations. The lateral extent of removal consisted of the entire property boundary and unpaved areas within the City ROW immediately adjacent to the affected property. To meet RA objectives, the required minimum excavation depth throughout both AP-01 and SO-06 was 6 inches bgs. This included removal of soil to 6 inches bgs within the City ROW (between the paved street edges and the property boundaries).

Pre/Extent Survey. The original surface topography and extents of RA excavation were delineated using a handheld global positioning unit (GPS) unit. Excavations at each DU extended to the edges of the property as determined by the GPS surveys performed by K&E and NWFF or the fence line where available. GPS-guided equipment operated by K&E was used to confirm the property extents and confirm that the required excavation grades had been met. Additionally, GSI confirmed the depth of excavation by periodically measuring the depth of removal using a tape measure to confirm the difference between excavated areas against adjacent undisturbed soil locations.

Driveway Removal. At the request of the AP-01 property owners, the concrete driveway was removed from AP-01 and not replaced. Driveway removal was not required to meet the RA objectives. Soil under the driveway was removed to a total of 6 inches to match the adjoining removal grade.

Sloping. Based on the required excavation depths in AP-01 and SO-06 (6 inches), sloping or benching along residential foundations or other structures was not required. As prescribed in the RAWP, the top 6 inches of soil were to be removed across the entire extent of each DU and ROW, regardless of whether the boundary was adjacent to a structure or utility (GSI, 2023a).

Construction Entrance. A temporary construction entrance was installed at AP-01 for dump truck staging and material loading during earthwork (Figure 3a). The entrance was located along the north property boundary and extended from Alva Park Drive to the backyard, passing by the north side of the residence. This entrance and staging/loading area was installed to limit potential cross-contamination during material handling and to prevent offsite migration of contaminated soils due to vehicle or equipment track out during the RA. After removal of impacted soil, the construction entrance was installed on demarcation fabric and built between approximately 6 and 12 inches thick using 1.5-inch minus angular gravel as base-course rock topped with 1.5-inch open angular gravel (no fine material) sourced from Coburg Road Quarry in Eugene, Oregon. Any soil accumulation within the top layer of the construction entrance was observed to be washed by heavy rains and free of remaining debris at the end of construction activities at AP-01. The top layer of gravel was removed from AP-01 and used as the bottom layer of gravel for the construction entrance installed in the ROW along the eastern extent of SO-06. The remaining construction entrance rock and demarcation barrier at AP-01 was disposed of with the contaminated soil.

The construction entrance at SO-06 was built with new 1.5-inch clean gravel placed on top of the gravel reused from AP-01. The construction entrance was installed along Baxter Street to allow trucks and equipment to pull off the ROW during loading activities (Figure 4a). Construction entrance rock was removed from SO-06 and disposed of with contaminated soil during RA activities.

Approximately 86 tons of 1.5-inch minus gravel used to build the construction entrances was imported from Coburg Road Quarry and subsequently disposed of with contaminated soil.

6.2.2 Excavation Narrative

The two DUs addressed during Phase I were completed consecutively with excavation beginning at AP-01 then moving to SO-06.

Excavation at AP-01 began on January 19, 2024. K&E began by scraping 6 inches of soil from the northern edge of the property to construct a construction entrance from Alva Park Drive to the backyard. Surface soil scraped to install the construction entrance was temporarily stockpiled in the front yard and loaded into dump trucks parked on Alva Park Drive. After the construction entrance was installed, excavation was completed in the backyard of AP-01 with dump trucks using the construction entrance to back into the backyard for loading. The CRZ of the protected black walnut tree in the backyard was initially excavated using a small excavator with final excavation depth being reached using hand tools. On January 23, 2024, excavation within the CRZ of the cedar tree in the front yard began using hand tools and a vacuum truck. The concrete driveway was also removed on January 23, 2024. Excavation at AP-01 was completed on January 24, 2024, except for removing the construction entrance. Construction entrance deconstruction continued through January 25, 2024.

Excavation at SO-06 began on January 25, 2024, by scraping surface soil from the Baxter Street ROW east of SO-06 and installing a construction entrance and staging/loading area. ROW surface soil was loaded into dump trucks lined up on Baxter Street. Surface soil excavation at SO-06 was postponed for less than a day while K&E excavated a trench to replace the water line that crosses the SO-06 property (see Section 6.2.4). Excavated soil from the utility trench was stockpiled onsite until it was disposed of with contaminated surface soil. After the water line installation was completed on January 26, 2024, surface soil excavation continued in the northwest corner of the DU behind the house and along the southern edge of the property. Excavation at SO-06 was completed on January 30, 2024.

As mentioned above, K&E used GPS equipment fitted to the excavator buckets to determine when excavation depths were reached. These depths were confirmed using hand measurements of excavation depths against undisturbed soil. After excavation depths were confirmed, backfill was completed (see Section 6.3).

6.2.3 Protected Tree Critical Root Zones

Earthwork activities at AP-01 included excavation within the CRZs of two established trees that required protection during the RA. This included a large cedar tree located within the City ROW adjacent to the property and a black walnut tree located within the southwest corner of the DU (Figure 3a). Excavation near the north side of SO-06 was within the CRZs of four trees located on the neighboring property that were to be protected and retained.

The City's urban forester was unable to visit the site and offer excavation guidance to NWFF for RA work performed within the CRZs. However, GSI subcontracted Spade to provide recommendations for protecting tree root structures during RA activities. Spade consulted with the City arborist and provided recommendations based on City requirements for tree protection within City property. Spade was periodically onsite during excavation within the CRZ of trees at both DUs to offer suggestions regarding approved excavation methods specific to each tree, perform inspections on the root structures during soil removal, and help guide appropriate methods for mitigation of damage caused to the root structures, if needed. In general, a combination of either hand tool excavations or a water-assisted pressurized system and Vactor excavator (i.e., low-impact methods) were used to remove soil within the CRZs of trees. To speed up soil removal and based on approval by the arborist, some careful excavation using a mini excavator was also used near the outer limits of the CRZs. Per the arborist recommendations, the equipment was used to scrape away soil until significant roots (> 1-inch-diameter) were observed, upon which a return to only using low impact methods was made.

Due to significant amounts of near-surface roots encountered within the CRZ of the cedar tree at AP-01, some minor damage to roots (generally < 1-inch-diameter) from excavation work was observed. Per the arborist recommendations, damaged root sections were trimmed back to the undamaged sheath to stimulate new growth and prevent future rot. Additionally, an overhead branch was damaged by equipment operating in the area. After receiving approval from the City's urban forester, the cedar tree branch was removed by Spade to eliminate the potential risk to residents at the property.

Additionally, some damage to two significant roots (approximately 5-inch-diameter and 2-inch-diameter) associated with a fir and spruce tree, respectively, located on the north adjoining property to SO-06 was observed. The damage was apparently caused by striking the exposed roots during the relocation of a storage shed at the property. Per Spade's recommendations, the larger damaged root of the spruce tree was left as is, and the damaged fir tree root was cut back to the undamaged sheath with a clean hand tool prior to backfilling.

As the excavations were completed, the exposed root zones were kept moist and backfill was placed as soon as possible in accordance with the RAWP and individual property Scope Memoranda (GSI, 2023a and 2023b). Because hand tools, vacuum truck excavation, and/or mini-excavator methods were used within the CRZs, GPS-guided excavation to depths relative to the original surface topography did not occur. GSI and NWFF confirmed excavation depth within these areas by measuring the soil removal depths relative to unexcavated areas. Due to significant amounts of smaller roots (i.e., root mats) and near-surface larger diameter roots in the CRZ of the cedar tree in the City ROW, removal of 6 inches of soil was not possible in limited areas of the root zone without risking irreparable damage to the tree. In these areas, soil was carefully removed from around the roots to the maximum extent possible based on guidance provided by Spade.

While observing the excavation work within the CRZ of the black walnut tree located at AP-01. Spade determined that this tree had been previously over buried and would benefit from backfilling the CRZ with wood chips rather than the pre-approved soil by providing additional air to the tree base to prevent future rot. After receiving approval from the property owners and DEQ, the area encompassing the approximate drip line of the walnut tree was backfilled with a wood chip product. Section 6.4 further discusses surface restoration.

6.2.4 Utility Replacement

Underground utilities are typically installed greater than 6 inches below grade. However, some utilities were encountered, removed, and/or replaced during Phase I of the RA.

Natural Gas. Natural gas lines were not encountered during Phase I of the RA.

Water Lines. Excavation work at SO-06 required the removal and replacement of a water line that was damaged during excavation. The metal water line was uncovered at approximately 6 inches deep and was severely corroded. NWFF elected to remove the existing water line from the water meter to the residence and subcontracted a local plumber to install a replacement water line in accordance with local code requirements. The entire length of water supply line from the meter to the house was replaced with 0.75-inch-diameter cross-linked polyethylene (i.e., PEX) pipe. The water line was installed approximately 18 inches bgs within a 12-inch-wide trench with 0.75-inch minus gravel bedding and 0.75-inch minus gravel placed to approximately 6 inches above the water line. The remainder of trench to 6 inches bgs was backfilled with native soil. The water line included a new utility tracer wire to aid future locating.

Septic Tanks. A structure that is believed to be a historic septic tank is located in the backyard of AP-01, approximately 12 feet west of the house. This tank was covered by a concrete slab. The concrete slab was not disturbed during the RA and no investigation into the condition of the septic system was completed during the RA. During soil removal in the front yard of SO-06, a previously unidentified historical septic tank was encountered, approximately 9 feet from the eastern side of the residence. The lid was removed to find the tank had not been filled with inert material and contained liquid. NWFF subcontracted a local septic pumping contractor to remove the liquid contents from septic system prior to backfilling the septic vault with 0.75-inch minus gravel. The lid was replaced before backfilling import soil over the tank.

Sewer Lines. Portions of the sewer service lines were encountered at each DU. Where encountered, the extent of excavation only reached the top of the sewer pipe in each case. The utilities were a combination of polyvinyl chloride (PVC) and metal and were not damaged or replaced during Phase I of the RA.

Electrical Service. Electrical service was not disrupted during Phase I of the RA.

Communication Service. Communication lines were not affected during Phase I of the RA.

Stormwater. Roof drains and stormwater conveyance systems were not encountered or modified during earthwork.

Heating, Ventilation, and Air Conditioning Units. No heating, ventilation, and air conditioning (HVAC) units were disturbed during Phase I of the RA. Soil underneath the HVAC pad was not excavated during the RA.

6.2.5 Soil Stockpiling, Loading, and Transport

Contaminated soil was either directly loaded onto dump trucks or temporarily stockpiled and staged onsite prior to loading and transport to Lane County's Short Mountain Landfill located in Lane County, southeast of Eugene, Oregon. Stockpiling was avoided to the extent possible to minimize the handling of impacted material.

If temporary stockpiling of soil was required, the material was covered during periods of inactivity with a minimum 6-mil plastic sheeting that was secured to prevent wind and stormwater erosion. Temporary stockpiles were staged within portions of DUs that had not yet been excavated to depth to avoid placing the material on clean soil which would require over excavation of clean material or require the stockpile to be placed on plastic lining in addition to being covered. Due to wet conditions present throughout Phase I of the RA, stockpile wetting to prevent windblown dust was not required.

Soil was loaded in a manner that limited the generation of visible dust to the maximum extent possible. Due to generally wet atmospheric and soil conditions, dust suppression of work zones or material being loaded was not required. Soil was loaded into plastic-lined trucks and loads were covered with additional weighted plastic lining and/or tarps prior to leaving the site to reduce the risk of spreading contamination to offsite areas.

Contaminated soil was transported directly from the DUs to the landfill for disposal. NWFF provided truck drivers with bills of lading and any required soil profiling documentation prior to the truck's departure to the landfill. Visible loose soil was removed from transport trucks prior to leaving the site. Standard construction BMPs (e.g., construction entrance, sweeping) were used to prevent soil from being tracked off the DUs.

Removal, transport, and disposal of contaminated soil occurred between January 22 and 25, 2024, for AP-01 and between January 25 and 30, 2024, for SO-06. Wood debris generated during stump grinding and debris from other site preparation activities (see Section 6.1) were comingled with the loads of contaminated soil and transported to the landfill. As a precautionary measure, the base layer of 1.5-inch minus gravel was used to construct the temporary construction entrance at AP-01 and approximately the upper 3 inches of 1.5-inch minus gravel relocated and used as a construction staging area at SO-06 were also handled as contaminated material and transported to the landfill for disposal. A total of approximately 521 tons of contaminated soil, gravel, and debris were removed from the properties and disposed of at Short Mountain Landfill. Appendix C presents the tipping summary showing total soil tonnages disposed of at the Short Mountain Landfill.

6.2.6 Removal Confirmation

The depth of excavation was confirmed using survey data and by completing "field truths" during excavation. Field truths refer to physical measurements of cut depths taken during excavation. Survey data reference GPS-collected data and requires an initial baseline topographic survey and an excavation extent survey to compare elevations and property boundaries. As described below, survey data was not solely relied upon to verify the depth of excavation.

An initial baseline topographic and DU boundary survey of each property was completed by K&E prior to initiating RA to establish work limits and the pre-construction surface topography for reference during excavation. Excavation depths within each DU were confirmed by K&E using survey-grade GPS-guided earthwork equipment (i.e., GPS-guided excavator bucket with live relative excavation depth outputs) in accordance with project requirements. During excavation, K&E used the live GPS readings to verify that required excavation depths were met relative to the baseline survey elevations (6-inch minimum removal). GPS points from the equipment were also stored for surface comparison purposes by GSI upon completion of the RA. The extent of excavation survey was limited or not completed in areas where excavations were completed using other methods (i.e., CRZs, limited access areas). This resulted in SO-06 not getting an excavation depth survey in an area that encompassed the vicinity of the septic tank and behind the house. An area in the southeast portion of AP-01, primarily within the CRZ of the ROW cedar tree, also did not receive excavation depth survey confirmation.

Certain property features, including the replaced water service line and the extents of the septic tank at SO-06, were recorded by K&E using handheld GPS units to document their respective locations.

6.3 Backfill and Grading

Following confirmation by K&E that the required excavation extents had been achieved, excavated areas within each DU were backfilled with clean imported fill, topsoil, or 0.75-inch minus gravel. Due to irregular surface grades present within portions of the DUs prior to the RA, limitations with the earthwork equipment's ability to match these small-scale topographic changes, and a consensus to provide finish grading that was level and unlikely to promote future erosion concerns at the properties, finished surface grades were slightly higher or lower than previous conditions in many locations. A combination of earthwork equipment and hand tools was used to distribute backfill evenly and to the required thickness throughout each DU.

Imported soil materials were supplied from pre-approved sources (see Section 5.4) and included the following: clean fill (loam) from LFP, topsoil from Rexius, and 0.75-inch minus gravel from Knife River's Tangent, Oregon, location, and Coburg Road Quarry's Eugene, Oregon, facility. GSI field staff were onsite to document imported material types (e.g., topsoil, fill, gravel), material origins, and methods of installation for each DU. Copies of the import material weigh tickets were provided by NWFF to DEQ and GSI, and are presented in Appendix D. Figures 3b and 4b show backfill details.

6.3.1 Soil

Due to a lack of available topsoil at the Rexius facility during backfilling at AP-01, NWFF and K&E imported and placed loam (clean fill) from LFP throughout areas of this DU that were specified for backfilling with topsoil from Rexius. Clean fill (AP-01) and topsoil (SO-06) was loosely compacted until the final grade was met with NWFF ensuring sufficient compaction was performed to minimize settlement while avoiding over-compaction that would limit infiltration or limit future vegetation establishment. Truckloads of clean imported soil were placed directly within the footprints of the excavation limits and spread throughout the DUs. Standard construction erosion control BMPs were maintained to prevent offsite migration of imported materials. Imported soil was not staged within any roadways or areas outside of the two Phase I DUs.

Approximately 216 cubic yards of loam from LFP were imported and placed throughout the majority of AP-01. This material was left as bare soil until hydroseed application and planting could be performed in May 2024 (concurrent with Phase II of the RA). Immediately prior to hydroseed and planting, an additional 84 cubic yards of Rexius' Turf Start topsoil was imported to AP-01 on May 6, 2024. The imported Turf Start soil was tilled into the previously imported loam to provide organic material and nutrients formulated by Rexius to promote seeded lawn establishment. The high organic content soil also brought the final soil surface grade flush to concrete slabs located in the backyard of AP-01.

The majority of SO-06 was backfilled with imported topsoil to just below the required finish grades in anticipation of finishing with sod. Approximately 80 cubic yards of topsoil from Rexius were imported and placed at this DU during Phase I of the RA.

6.3.2 Gravel

Gravel surface finishes were completed in a single 6-inch lift that was compacted to a non-yielding state using a vibratory plate. The 6-inch-thick layer of 0.75-inch minus gravel was underlain by an 8-ounce non-woven geotextile fabric in accordance with project plans and specifications. Standard landscape edging was installed by Rexius as a barrier between gravel and sod surfaces where no other barrier were present such as a fence line.

AP-01 included an approximately 10-foot by 20-foot area on the south side of the residence that was finished with gravel for a base for the carport tent. Approximately 2.63 tons of gravel from Knife River were imported and placed at AP-01 for the gravel base.

Gravel surface restoration at SO-06 included the following areas: a strip outside of the fence along the south edge of the property, the narrow area west and north of the residence, a 45-foot-long by 10-foot-wide area along the eastern property line where a shipping container was placed, and the City ROW along the east side of the property (Figure 4b). Additionally, an area approximately 750 square feet adjacent to the driveway and along the front of the residence where the property owner plans on installing a concrete pad was finished with an approximately 3-inch-thick layer of 0.75-inch minus gravel underlain by 8-ounce non-woven geotextile material. The 1.5-inch minus gravel used as the temporary construction staging area in the City ROW was scraped clean and replaced with clean imported 0.75-inch minus gravel to finish grade. Approximately 120 tons of 0.75-inch minus gravel from Coburg Road Quarry in Eugene, Oregon, was imported to SO-06.

6.3.3 Backfill Narrative

Backfilling began on January 23, 2024, in the backyard of AP-01 when loam fill material was delivered to the west end of the backyard using the construction entrance for access. Backfill was spread from the construction entrance across the backyard except within the CRZ of the black walnut tree. Backfill continued moving from the backyard to the front yard. The construction entrance was removed when backfilling was complete in the backyard. Backfill was completed at AP-01 on January 26, 2024. Additional topsoil was imported to AP-01 on May 6, 2024, and spread across the yard using a blower. This soil was tilled into the fill material lightly raked to provide a level surface.

Initial backfilling at SO-06 began on January 25, 2024, with the installation of the construction entrance. Backfilling continued through January 29, 2024, by importing gravel fill to the southwest corner of SO-06. Gravel backfill continued with the installation of the gravel pad for the shipping container on January 30, 2024, and behind the residence and ROW on January 31, 2024. Topsoil backfill began on January 30, 2024, in the center of the property and continued through January 31, 2024. Backfilling was completed January 31, 2024.

A total of approximately 521 tons of soil, and 208 tons of gravel were imported to the two DUs to complete RA activities. Appendix D presents the tipping summary showing total tonnages of import material.

6.4 Surface Restoration Activities

Three pre-approved restoration surface materials were included in Phase I of the RA: sod, bare soil with a hydroseeded micro-clover seed mix, and 0.75-inch minus gravel. Additionally, a finished surface change from soil to wood chips was made for an area near the black walnut tree at AP-01 based on an arborist recommendation for tree health. Following initial backfill activities in January 2024, surface restorations were postponed until May 2024 due to restoration subcontractor availability. In the interim, DUs were finished with bare soil. Prior to installing final surface restoration materials, the bare soil surface at each DU was regraded and roughed to promote surface material growth. Additional topsoil was imported to AP-01 by Rexius to fill low spots that had developed and to promote seed growth.

Restoration activities also included restoring or replacing structures that had been removed for the RA to provide access to the DU. Relevant aspects of site restoration performed during Phase I of the RA are described in the following sections. Property-specific restoration details for each surface type are discussed below. Figures 3b and 4b show surface restoration details.

6.4.1 Sod

Approximately 4,320 square feet of sod were installed as the finish surface on imported soil at SO-06. The sod was sourced and installed by Rexius. Installation of sod was performed May 2 through 6, 2024, concurrent with Phase II RA work.

6.4.2 Micro-Clover

Approximately 7,985 square feet of micro-clover hydroseed were installed on soil as the finish surface at AP-01. Micro-clover seed application was completed by Rexius at AP-01 on May 13 through 15, 2024, concurrent with Phase II of the RA work. The seed mix (PT 799 Microclover®) was selected by Rexius based on their local experience to ensure a high probability of survival after application. The seed mix was added to a hydroseeding bonded fiber matrix, fertilizer, and a tackifier at ratios selected by Rexius.

6.4.3 Wood Chips

Based on consultation with the arborist, backfilling with soil within the CRZ of the black walnut tree located at AP-01 was not performed to promote the long-term health of this tree. According to the arborist, this tree had been previously over-buried and would benefit from having less soil around the tree base and CRZ so that increased airflow would help reduce the risk of future rot at the tree base. The arborist recommended that a wood chip material be placed within an approximately 15-foot radius of the tree base to match the surrounding grade instead of topsoil specified in the RA plans. Approximately 5 cubic yards of a Douglas fir Wood Chips product from LFP were imported and placed around the tree in accordance with the arborist recommendations. Wood chips were placed using earthwork equipment and hand tools to approximately the final grades as the surrounding soil backfill. The area immediately around the tree base (approximately 6 inches from base) was left mostly as bare soil at the excavated grade at the suggestion of the arborist to support long-term tree health.

6.4.4 Plants

At AP-01, four Ebb Tide (Floribunda) rose bushes and one resident-supplied rose bush were installed in the front yard in areas where similar plants were previously located. In the backyard, two Jefferson hazel trees and two Lapins cherry trees were planted to replace vegetation removed during the RA. The plants installed during Phase I were sourced and installed by Rexius. The specific varieties of rose bushes, and fruit trees were determined in coordination with the property owner. At SO-06, no additional plants (beyond sod) were requested or installed.

6.4.5 Fencing

After completion of earthwork at AP-01, NWFF subcontracted a local fence contractor to reinstall the north and south side yard gates at AP-01 on February 2, 2024. DEQ was notified by the property owners that several issues with the gates were observed following the reinstallation that rendered the gates unusable. During Phase II of the RA (see Section 7), the Phase II EC was subcontracted by NWFF to replace the incorrectly installed gate sections and repair a section of damaged fence along the northern property boundary. The fence rebuilds occurred May 8 and 9, 2024.

At SO-06, the chain-link fence along the south and west ends of the property was completely removed to provide site access and to access soil for removal. NWFF subcontracted with a fence contractor to reinstall the chain-link fence following RA activities. The fence was installed on February 5, 2024, to pre-RA conditions without any further modifications required.

6.4.6 Special Conditions

Certain aspects of restoration required special attention to complete. These are discussed below:

- **AP-01.** A paver stone path was installed over the finished surface as shown in Figure 3b. Paver stones were 16-inch-diameter round and placed approximately 12 inches apart. The stone path was installed after backfilling was complete. After a heavy rain event, the area under the stone path was re-excavated to install a gravel subbase that would prevent stones from subsiding. Paver stones were placed over the gravel subbase and the gravel was covered with soil to blend into the surrounding grade. Paver stones were also placed alongside the eastern edge of the gravel area on the south side of the house.
- **AP-01.** A carport tent structure and personal belongings saved under the tent were temporarily moved from the backyard to the front yard to provide access to the backyard. The tent and belongings were returned to their original location along the south side of the house following RA activities.
- **SO-06.** At SO-06, a 40-foot-long shipping container and garden shed used for storage were moved to access the soil underneath. Both were moved from their original position to a different location on the property. The storage units were moved back to their original positions after backfill was complete. The shipping container was moved to and from the adjacent street right-of-way using a chain connected to the large excavator. One end of the shipping container was lifted at a time and the unit was walked to the temporary location. To move the shipping container back, the entire shipping container was lifted by the excavator using chain straps and the unit was placed onto the gravel pad constructed for the container. The shed is constructed on skids and was moved by dragging or pushing using heavy equipment.

6.5 Contractor Demobilization

Contractor demobilization occurred on January 31, 2024, following backfill and before surface restorations had been completed. NWFF provided surface restoration oversight following demobilization, but did not remobilize equipment for surface restorations. Prior to demobilization, the contractor installed long-term erosion control BMPs (i.e., removed after hydroseed application). Demobilization included removal of all NWFF's and K&E's equipment, temporary facilities, trailer, portable sanitation station, temporary construction fencing and other site security measures, and all construction-related wastes from the properties. A final street sweeping event was completed to remove any remnant soil and gravel within the ROW.

6.6 Final Surveys

After backfill placement at each DU (prior to sod installation at SO-06 and hydroseeding at AP-01), K&E completed a final topographic survey of the two properties using a handheld GPS device to compare against the depth of excavations to confirm that sufficient backfill had been placed to restore previous site grades.

A post-RA video survey of the sewer utility lines was completed to confirm lines were not damaged during the RA. No damage was observed and videos have been provided to DEQ.

6.7 Decontamination and Investigation-Derived Waste Management

Decontamination procedures were implemented during earthwork to prevent unintended contact with contaminated soil removed during RA activities. Decontamination procedures and handling of investigation-derived waste (IDW) are described in the following sections.

6.7.1 Decontamination

To prevent contamination of areas outside of the DUs, equipment was brushed off or power washed after excavating contaminated soil, prior to remobilizing equipment from one DU to the next, and prior to equipment demobilization from the site. Brushed off soil was collected and added to temporary stockpiles or directly loaded to dump trucks for disposal along with contaminated material. Decontamination water from power washing was contained within the excavation footprints to the extent possible and allowed to infiltrate prior to backfilling. If soil track out was observed along ROWs, NWFF either swept or washed dirt back into the footprint of the DU or cleaned the road surface by power washing with a vacuum truck. Sediment and wash water generated during vac-truck cleaning were contained and disposed of at the landfill along with contaminated soil. NWFF performed manual street sweeping at the end of each workday and as necessary throughout earthwork to minimize offsite soil track out as much as possible.

6.7.2 Investigation-Derived Waste Management

IDW consisted of excavated contaminated soil, decontamination water, spent erosion control BMPs (e.g., straw wattles), and PPE. Excavated contaminated soil was placed into lined and covered trucks for transport and disposal at a permitted Subtitle D landfill (see Section 6.2.5). Decontamination water that was not contained within the excavation footprints was collected and added to contaminated soil prior to disposal. Spent erosion control BMPs, PPE, and miscellaneous construction-related waste (e.g., temporary fencing) generated during RA implementation were disposed of as standard municipal solid waste.

6.8 Project Deviations

Construction activities were modified in response to unexpected field conditions, requests for additional work by the residents, and adjustments to the RA scope of work requested by DEQ. The project deviations from contract documents are presented in the respective construction element sections above and are summarized as follows:

- **Damaged Cedar Branch at AP-01 (Section 6.2.3).** During earthwork in the front yard of AP-01, an overhead branch was damaged by equipment operating in the vicinity of the cedar tree. After receiving approval from the City's urban forester, the cedar tree branch was removed by Spade to eliminate the potential risk to residents at the property.
- **Water Line Replaced at SO-06 (Section 6.2.4).** Excavation work at SO-06 required the removal and replacement of a water line that was damaged during excavation. The existing water line was removed from the water meter to the residence and a local plumbing contractor was subcontracted to install a replacement water line in accordance with local code requirements.
- **Septic System Encountered at SO-06 (Section 6.2.4).** During soil removal in the front yard of SO-06, a historical septic system was encountered. NWFF subcontracted a local septic contractor to remove the liquid contents from the septic system prior to backfilling the septic vault with 0.75-inch minus gravel.
- **Clean Fill Placed at AP-01 (Section 6.3.1).** Due to a lack of available topsoil from the Rexius facility during backfilling at AP-01, imported loam (clean fill) from LFP was placed throughout the DU in areas specified for backfilling with topsoil. The material was left bare until May 2024 when Rexius imported high organic content "Turf Start" soil to amend the clean fill soil and then performed hydroseed application and planting.
- **Fence/Gate Repairs at AP-01 (Section 6.4).** After completion of earthwork at AP-01, NWFF subcontracted a local fence contractor to reinstall the north and south side yard gates at AP-01. DEQ was notified by the property owners that several issues with the gates were observed following the reinstallation that rendered the gates unusable. During Phase II of the RA (Section 7), the Phase II EC

was subcontracted by NWFF to replace the incorrectly installed gate sections as well as repair a section of damaged fence along the northern property boundary.

- **Wood Chips Installed at AP-01 (Section 6.4).** Approximately 5 cubic yards of a Douglas fir Wood Chips product from LFP were imported and placed around the walnut tree located at AP-01 in accordance with the arborist recommendations.

7 Phase II Offsite Removal Action Construction Activities

The following sections provide a description of the major components of offsite RA construction activities completed between April 23 and June 30, 2024 (i.e., Phase II). Phase II of the offsite RA focused on the remaining five properties included in the scope of the offsite RA. These five properties are located at [redacted] Baxter Street (DU-09), [redacted] Baxter Street (DU-10), [redacted] Baxter Street (DU-11), [redacted] Baxter Street (DU-15), and [redacted] Baxter Street (SO-07), as shown in Figures 4 through 9. The Phase II construction activities were completed by 3 Kings (and their subcontractors) under subcontract with GSI. GSI was present during the Phase II RA activities to provide construction oversight and document the activities.

7.1 Site Preparation and Controls

GSI and the Phase II EC (3 Kings) visited the site on April 23 and 24, 2024, to begin site preparations and complete several pre-construction RA requirements. GSI and 3 Kings mobilized to the site to initiate earthwork for Phase II of the RA on April 29, 2024. As part of the mobilization, 3 Kings established work limits and equipment and material staging areas, set up temporary site security measures and portable storage for handling of resident personal items, set up erosion and sediment control measures, installed traffic control signage, and set up a portable lavatory for field staff. Additional site preparation activities conducted prior to or concurrent with excavation are described below.

7.1.1 Stump Grinding

On April 23, 2024, stump grinding of stump remnants left in place during pre-construction tree removal work (see Section 6.1.1) was completed. 3 Kings subcontracted Advanced Tree Service and Landscaping of Eugene, Oregon, to perform stump removal activities throughout the four DUs ahead of soil removal activities. Stumps were removed to the maximum extent possible with a large walk-behind stump cutter and were generally removed to the required excavation depths for the associated DU. The 3 Kings crew assisted the stump grinding contractor by clearing grubbed material and soil from around the stumps to provide access to the stump grinder. Due to equipment limitations such as limited access or adjacent structures, complete removal of all stump/root structures by stump grinder was not possible. Several of the larger diameter stumps were located along property fence lines which limited equipment access and would have required fence deconstruction to facilitate full stump removal. Due to these limitations, 3 Kings elected to leave portions of these stumps in place for later removal via power tools (e.g., chainsaw, reciprocating saw) and/or heavy equipment (e.g., excavators) concurrent with RA earthwork. In accordance with the RAWP and individual property Scope Memoranda, grubbed woody debris from stump grinding was left in place at each DU for removal and disposal along with contaminated soil (GSI, 2023a and 2023b).

7.1.2 Demolition and Aboveground Removal Activities

Certain items within DUs were demolished or removed from the site to access soil beneath them. Items that were replaced are mentioned below but described in greater detail in Section 7.4.

DU-09. At DU-09 (Figure 5a), a metal garden shed was demolished prior to excavation activities. 3 Kings worked with the property owners to move items stored within the shed into the garage of the residence. A new garden shed was installed during restoration activities. A small deck behind the ADU in the backyard was demolished prior to excavation activities. This deck was not replaced.

DU-10. At DU-10 (Figure 6a), a wooden frame garden shed was demolished prior to excavation activities and was not replaced. A gazebo in the backyard was temporarily stored off the property during the RA and returned to its original location. Garden stones and pavers were removed from the front yard and stacked on the driveway for future use by the residents.

DU-15. At DU-15 (Figure 8a), a gazebo constructed on concrete pier footings and a wooden doghouse in the backyard were temporarily moved to other locations during excavation activities and later returned to their original location.

SO-07. Firewood, a canoe, and other miscellaneous items were removed from a covered storage area north of the house (Figure 9a). Within the greenhouse, aquiculture totes and their contents were removed. These items were temporarily stored in the front driveway during the RA and returned to their original location following completion.

7.1.3 Erosion and Sediment Control Measures

3 Kings prepared a Stormwater Pollution Prevention Plan for use during the RA that met the requirements of the City's Erosion Prevention and Construction Site Management Program. Standard construction BMPs were installed to prevent soil from being eroded, tracked, washed, or blown from the DUs and onto City streets, neighboring properties, or nearby waterways. Soil stockpiles left overnight or during windy conditions were covered with plastic to prevent erosion. GSI field staff monitored and documented that BMPs were installed by 3 Kings during RA activities.

Straw wattles and silt fences were used along the paved ROW to prevent sediment from encroaching on City streets. To mitigate excessive sedimentation observed on the City streets and the private driveway during loading, plastic sheeting was placed on the street where dump trucks were being loaded at DU-09 and DU-10. The private driveway and Baxter Street were swept using a street sweeper at the end of each day. Stormwater drains located on Baxter Street were initially covered with felt material and later had dedicated stormwater curb inlet filters installed and surrounded by wood chip bags to capture sediment before stormwater entered the drains.

A temporary construction entrance was built from the road south of DU-11 through the backyard of DU-11 and into the backyard of DU-15 (Figures 7a and 8a). This construction entrance was built using high-density plastic track out control mats installed upside down for the first 10 feet.

7.1.4 Site Control Management

Only authorized personnel with the proper training and PPE were allowed within work areas. 3 Kings was responsible for delineating the work areas to limit access. Interested people were directed to the DEQ Project Manager for project-related inquiries. Temporary construction fencing was installed to limit access to backyards or work areas after hours and to allow residents' pets to continue to safely use a portion of these areas during the RA.

In addition to site control management, 3 Kings contracted with Oregon Metro Public Safety & Security Services, LLC, of Eugene, Oregon, to provide 24-hour security to monitor DUs outside of working hours and report any incidents that occurred. Temporary construction security fencing was also installed along portions of DUs to prevent unwanted access to property yards.

Residents of each of the affected properties were urged to vacate the property for the portion of the RA that was most likely to affect utilities and affect direct access to the property. This was generally during RA activities within the front yards or when access to the property was restricted due to the long private driveway (DU-09). GSI and DEQ coordinated the schedule with residents and reimbursed residents for their relocation expenses while off the property. Relocation consisted of 5 days for each DU.

7.1.5 Traffic Control

Traffic control measures implemented during Phase II of the RA included construction signage placed in roadways at the entrances of Alva Park Drive and Baxter Street near Elmira Avenue and at the north edges of the DUs to notify vehicle traffic of the presence of construction activities and construction-related vehicle/equipment traffic. Signage notifying pedestrians and bicyclists of construction activities were placed where the pedestrian/bike path opens to Baxter Street and Alva Park Drive. 3 Kings was responsible for establishing traffic control signage and ensuring safe passage of traffic/pedestrians around work zones when needed. This included having flaggers staged at either end of a dump truck while it was being loaded along Baxter Street.

7.1.6 Utilities

Public and private utilities were located prior to commencing removal activities. It was the responsibility of 3 Kings to notify and coordinate site activities with utility providers, as needed. 3 Kings attempted to identify the exact location and depth of buried utilities that entered the excavation areas prior to beginning earthwork. If utility lines were unable to be located, a combination of low-impact excavation methods and carefully guided equipment work was used to uncover the utility.

Prior to and after earthwork at each DU, sewer utilities were scoped with video recordings to ensure that no damage had occurred due to RA activities. 3 Kings subcontracted Pacific Plumbing and Rooter, Inc. (PPR), of Eugene, Oregon, to scope and mark the depths of sanitary sewer lines at each property prior to initiating earthwork. Pre-RA video recordings of the sewer line condition were recorded for each DU from the property line to the residence, and PPR marked the approximate sewer pipe locations/depths at 6-to-10-foot intervals for the contractor to reference during the RA.

3 Kings provided water, power, and a portable restroom required to complete the RA activities.

7.2 Removal Activities

The important aspects of earthwork and construction in support of Phase II of the RA are detailed in the following sections, as shown in Figure 5a (DU-09), 6a (DU-10), 7a (DU-11), 8a (DU-15), and 9a (SO-07).

7.2.1 Excavation

Excavation was completed at each DU using a combination of heavy equipment (i.e., excavators), hand tools, and low-impact excavation methods (air knife). A vacuum truck was also used within the greenhouse of SO-07. 3 Kings selected the appropriate means and methods for soil removal in different portions of each DU based on access considerations and the field conditions encountered. A GSI representative was onsite during excavation to observe and document the removal activities.

Excavation Limits. The extent of removal within each DU was predetermined based on chemical data collected during previous environmental investigations (see Section 5). The depth of the RA is shown in Figure 2 and the individual construction details for each property (Figures 5a through 9a). The lateral extent and depth of soil removal were delineated by Minister & Glaeser Surveying, Inc. (MGS), of Vancouver, Washington. Excavations at each DU extended to the edges of the property, as determined by the surveyor.

Pre/Extent Survey. 3 Kings subcontracted with MGS to perform third-party surveys during Phase II of the RA. MGS was onsite on April 24, 2024, to perform a pre-construction topographic survey documenting the existing conditions at the five DUs.

Excavation Sloping. Six-inch deep excavations did not require side sloping. For excavations deeper than 6 inches, required slopes adjacent to excavation boundaries were predetermined, as described in the RAWP. 3 Kings observed the extent of excavation and followed the sloping requirements in the RAWP (GSI, 2023a). If there were questions regarding the proper slope or structural stability of the excavation, 3 Kings would notify GSI to confirm the appropriate steps forward to meet the RA objectives.

The sloping requirements followed during the RA include:

- For excavations adjacent to non-load bearing permanent structures (i.e., concrete pads, fence posts, driveways), the excavation was completed vertically to the extent of the RA unless otherwise determined unsafe by 3 Kings, GSI, or DEQ. This included concrete pads that held HVAC units.
- Excavations adjacent to buried foundations were excavated to a minimum of 6 inches bgs at the foundation. Soil removal along the foundation was continued to the bottom of the foundation footing, or the bottom extent of the RA, whichever was shallower. Once at the foundation base, and, if necessary, the excavation was stepped out 1 foot before sloping or benching the excavation at a 1 foot horizontal to 1 foot vertical (1:1) to the total depth of excavation.

Special Conditions. A permanent ADU is located in the backyard of DU-09 that is constructed on pier blocks installed on the surface. The structure could not be moved or deconstructed. In this case, because of safety concerns, soil removal was not completed up to 6 inches around the pier blocks or under the structure. A 1:1 slope was cut beginning at the surface starting a minimum of 6 inches from the outer pier blocks to 18 inches bgs.

Construction Entrance. A temporary construction entrance was installed at the southern end of DU-11 to provide access to the backyards of DU-11, DU-15, and SO-07. The entrance consisted of multiple plates of prefabricated high-density plastic rumble strips (approximately 8 feet long by 10 feet wide); however, the plates were installed upside down to provide stability and prevent contact with soil instead of prevent track out. Lumber was used to build short ramps as curb protection.

7.2.2 Excavation Narrative

The five DUs addressed during Phase II were separated into three discrete areas composed of consecutive DUs, or portions of DUs, on either side of Baxter Street. This grouping was made to efficiently finish removal activities in areas that had the potential to affect residents and utilities the most. The groups were DU-09 and DU-10 on the west side of Baxter Street, which were addressed first. The front yards of DU-11, DU-15, and SO-07 on the east side of Baxter Street were addressed second. The backyards of DU-11, DU-15, and SO-07 were addressed third (utilities were generally not affected by backyard excavations). Some overlap of excavation and backfill between the areas were completed for efficiency of earthwork.

Excavation began on April 29, 2024, at DU-09. 3 Kings began by excavating soil from the backyard using a combination of small excavator and hand tools to access the limited amount of soil in the northeast corner of the property. Soil was brought to the front of the property and directly loaded into dump trucks or temporarily stockpiled in the front yard of DU-09 while waiting for dump trucks to arrive. 3 Kings began excavation of the DU-09 front yard and DU-10 backyard on April 30, 2024. Soil from these areas was directly loaded into dump trucks or temporarily stockpiled in the west side yard of DU-10 while waiting for dump trucks to arrive. Excavation in the front yard of DU-10 began on May 6, 2024, soil from the front yard of DU-10 was direct loaded to trucks located on Baxter Street. The MGS periodically conducted site visits to confirm that required excavation depths were reached within the DUs. Once confirmed, backfill was completed as described in Section 7.3. The majority of excavation in the two DUs was completed on May 10, 2024, with minor excavations continuing beyond this date.

On May 13, 2024, excavation began at DU-11 east of Baxter Street. Excavation began on the south side of the front yard with dump trucks either being directly loaded from Baxter Street or the street that connects Baxter Street and Alva Park Drive. Excavation from the front yards and ROW east of Baxter Street continued with the excavation crew moving north into DU-15 on May 14, 2024, and into SO-07 on May 15, 2024. The three front yards were excavated consecutively. As excavation moved north, dump trucks were loaded from Baxter Street.

On May 15, 2024, 3 Kings removed a portion of the backyard fence at DU-11 to access soil in the backyard. While 3 Kings was urged by GSI to focus on finishing the front yard excavation (where utilities were most likely to be affected) while residents were relocated. 3 Kings elected to move to the backyard to quickly fill the relatively large number of dump trucks available at that time. Excavation in the backyard of DU-11 began in the southeast and southwest corners and moved north. The center strip of soil remained to be used as an access road to the backyards north of DU-11. Excavation of DU-15's backyard began on May 16, 2024, after 3 Kings removed a segment of fence. The backyard of S0-07 was accessed on May 20, 2024, after another segment of fence was removed. 3 Kings completed excavation in the backyard of SO-07, moved south to complete excavation in the backyard of DU-15, and continued south to complete excavation in the backyard of DU-11. Excavation was completed on May 31, 2024, when the last portion of the construction road was removed.

7.2.3 Protected Tree Critical Root Zones

Earthwork activities in three of the five DUs (DU-10, DU-15, and SO-07) included excavation within the CRZs of established trees that required protection during the RA. These trees were either located in the City ROW or had CRZs that extended into the City ROW. The locations of the trees are shown in Figures 6a, 8a, and 9a.

The City's urban forester was unable to visit the site and offer excavation guidance to 3 Kings for RA work within the CRZs. However, Spade (the arborist retained for Phase I and subcontracted to GSI) continued its role as the project's arborist for Phase II. GSI coordinated with Spade to be onsite during excavation within the CRZs to offer suggestions regarding excavation methods, perform inspections on the root structures, help guide appropriate methods for mitigation of damage caused to the root structures, if needed, and provide backfill guidance.

In general, 3 Kings elected to use hand tool methods when working within the CRZs of protected trees. Hand tool soil removal included the use of shovels, picks, and brushes to carefully remove soil from around root structures. Due to a dense near-surface root mat encountered within the CRZ of the maple tree at SO-07 (Figure 9a), excavation within this CRZ was primarily completed using air knife excavation methods per the arborist's recommendations. To speed up soil removal and based on approval by the arborist, some careful excavation using a mini excavator was also used near the outer limits of the CRZs. Per the arborist recommendations, the equipment was used to scrape away soil until significant roots (greater than 1-inch-diameter) were observed, upon which a return to only using low impact methods was made.

Some damage to root structures associated with the maple at SO-07 was observed and documented by the arborist. The damage was primarily observed along the approximate eastern extents of the drip line of the tree and was apparently caused by 3 Kings excavating up to this area with earthwork equipment without considering the roots being encountered. Damaged roots were trimmed back to the undamaged root sheath in accordance with the arborist recommendations and the remainder of soil removal within the CRZ of the maple tree was completed with low impact methods as described above. Following completion of the RA, the arborist provided GSI and DEQ with an assessment of the damage observed at this tree along with recommendations for watering and care to promote full tree recovery and long-term health.

Excavation within the CRZ was either to the proposed excavation depths or to arborist-recommended removal depths to protect the structural stability and long-term health of the trees. Areas where the full extent of soil was not removed were generally where the root masses were too thick to excavate beneath without undermining the stability of a tree.

7.2.4 Utility Replacement

Because of the depth of removal, utilities were encountered at all properties. In general, RA activities worked around utilities where possible; however, some utilities were removed and replaced due to damage or to provide access to the soil underneath.

Natural Gas. Natural gas lines were encountered at DU-10 and DU-11. These utilities were not damaged or removed during the RA. The steel gas line at DU-10 was found at approximately 6 inches bgs, which is shallower than it should be buried according to NW Natural, the natural gas provider. NW Natural was called to the site to determine whether the line should be replaced by a deeper line to meet their requirements. Excavation in the front yard of DU-10 was completed to the prescribed excavation depths (18 inches in the front yard near the residence and 6 inches in the ROW), including under the utility line. The gas line was supported by blocks during excavations and prior to NW Natural arriving onsite. NW Natural did not require a new line to be installed; instead, they physically bent the pipe to lay it down at the 18-inch-deep level. As a precautionary measure, NW Natural installed pipe wrap along an approximately 3-foot section of the gas line that had been scuffed by the excavator bucket during soil removal. No further action was taken for this utility. At DU-11, the steel gas line was encountered at approximately 12 inches deep. The excavation was completed to 24 inches deep in this area with soil under the gas line being removed. The gas line was suspended during excavation. Imported soil was brought in and compacted under the utility line to prevent settlement. No other action was taken.

Water Lines. Municipal service water lines were encountered at every DU except for DU-09. Original water lines were iron and in a degraded and brittle state due to their age. At four locations (DU-10, DU-11, DU-15, and SO-07), water lines were replaced by 3 Kings with PEX lines from the service meter to the transition under each house. Water line replacements at DU-11, DU-15, and SO-7 also included the installation of tracer wires to support future locating of the water lines. Additionally, Eugene Water and Electric Board was called to SO-07 to shut off the water main and replace a leaking water meter. Eugene Water and Electric Board was also called to inspect the DU-11 water meter box when flooding from the meter box was observed, but determined the leak was coming from the residential service line and not the meter itself. The residential service meter was shut off until the service line was replaced. Except for at DU-11, in every case when water service was restored, the residents experienced clogged faucets or appliances. Initially, 3 Kings unclogged faucets by cleaning or replacing affected faucets. When this did not resolve the faucet issue, and to address clogged appliances, 3 Kings contracted with a plumber (Local Plumbing Co. of Sherwood, Oregon) to troubleshoot and fix the clogged supply lines. This included disconnecting supply from toilets and showers and replacing water lines and valves. On June 7, 2024, water service was restored to all properties.

Septic Tanks. Septic tanks were encountered at DU-10, DU-11, DU-15, and SO-07. These tanks had been previously disconnected from the homes and connected to municipal service. Each tank was not necessarily properly decommissioned as described below.

On April 30, 2024, a septic tank was encountered in the backyard of DU-10 approximately 6 feet west of the house (Figure 6a). The lid of the septic tank was removed to observe that the tank had not been backfilled with inert material and was partially filled with liquid. 3 Kings contracted with Best Septic of Eugene, Oregon, to pump the liquid from the tank on May 2, 2024. The tank was then filled with pea gravel. The lid was replaced and import soil was backfilled over the tank. Potential asbestos-containing material (ACM) was uncovered during septic tank decommissioning. Section 7.7.3 describes this material and the handling of it.

On May 15, 2024, a septic tank was encountered in the backyard of DU-11 approximately 10 feet east of the house (Figure 7a). The lid of the tank was only partially exposed under the cement concrete patio pad installed in the backyard. The lid could not be opened and was not investigated further. A junction box used as a diffusion manifold was uncovered west of the septic tank. This manifold was attached to a concrete drain field pipe. The top of the drain field pipe was uncovered at the lower extent of excavation (12 inches bgs) throughout the backyard. The junction box and drain field pipe were not removed or investigated further. A potential ACM pipe was identified connecting the septic tank to the junction box. This material was not disturbed or removed.

On May 20, 2024, a septic tank was encountered in the backyard at DU-15 (Figure 8a). The lid of the tank was removed, and it was observed that the tank was not filled with inert material. No liquid was observed in the tank. 3 Kings filled the tank with pea gravel on May 22, 2024. Import soil was backfilled over the decommissioned tank.

On May 21, 2024, a septic tank was encountered in the backyard at SO-07 in between the backside of the residence and the greenhouse (Figure 9a). The tank appeared to have been previously decommissioned due to an apparent concrete cap observed at the former lid location. The tank was left in place and not investigated any further. Import soil was backfilled over the tank.

Sewer Lines. Sewer service lines were encountered near the rear of the homes at DU-10, DU-11, DU-15, and SO-07. In general, these utilities were steeply graded and dropped below the excavation extents. No action was required in these cases.

The municipal sewer service line encountered at DU-11 was in poor condition. A portion of the cast iron line near the rear of the house was found to contain a large, 18-inch-long hole, across the top of the pipe. The hole had been covered with a sheet of plastic to prevent soil from clogging the pipe. This segment of pipe was replaced by 3 Kings by cutting out an approximately 2-foot-long segment of the degraded pipe and installing a new plastic pipe of the same diameter. The pipes were secured using flexible couplings (Fernco brand or similar). Near the City ROW, a brittle and rusted shut cleanout was found buried approximately 2 feet bgs (the extent of excavation). 3 Kings extended the 4-inch-diameter cleanout 2 feet to the ground surface using plastic pipe and installed a locking cap at the surface.

At DU-15, an approximately 8-foot section of sewer drain line connecting the laundry room to the sewer was replaced by 3 Kings. This segment of pipe runs north south approximately 3 feet from the east side of the building. The replaced pipe was high-density polyethylene (HDPE) pipe and connected to the original HDPE pipe using flexible couplings (Fernco brand or similar). A joint of concrete sewer pipe was also damaged during excavation. This segment of pipe was resecured to the original pipe using concrete adhesive and covered with additional concrete.

Electrical Service. Electrical service was not disrupted during the RA.

Communication Service. Communication lines were not affected during the RA.

Stormwater. Roof drains and stormwater conveyance were observed at all properties. At DU-09 and SO-07, roof drain downspouts and conveyance pipes were not disturbed during RA activities.

At DU-10, six downspout drains located in the backyard, front yard, and north side yard were removed and replaced to existing drywells during restoration activities. The downspout drains consisted of corrugated plastic pipe connected to metal downspouts (these were not removed or damaged during the RA). Downspout drains were buried in gravel fill or soil and conveyed roof drainage to existing drywells in the backyard and north side yard.

At DU-11, two downspout drains connected to roof downspouts were excavated and replaced along the north side of the residence to an existing drywell in the backyard. The downspout drains consisted of corrugated plastic pipe or PVC pipe connected to metal downspouts (these were not removed or damaged during the RA). Downspout drains were buried in gravel fill and covered with demarcation fabric. Downspout drains conveyed roof drainage to an existing drywell in the backyard.

At DU-15, segments of PVC downspout drains were damaged during RA activities. These pipes were repaired by 3 Kings during restoration activities using PVC pipe and slip couplings.

HVAC Units. The HVAC unit at DU-09 was removed and replaced during the RA. Excavation in the backyard began without removing the HVAC unit, but the polystyrene and cement mounting pad was damaged by excavation equipment. The HVAC unit was removed to provide better access to the backyard and to replace the mounting pad. 3 Kings contracted with Home Comfort of Eugene, Oregon, to disconnect the HVAC unit on April 30, 2024. A new support pad with gravel footing was installed prior to the HVAC unit replacement on May 3, 2024. The HVAC contractor reconnected the unit, refilled fluids, and checked functionality of heating, cooling, and emergency cooling functions. The unit was confirmed to be operational inside the residence by Home Comfort and 3 Kings. Despite these measures, the resident notified DEQ that the HVAC unit was not operating as it did prior to the RA. The HVAC contractor was called back to the site twice to confirm that the HVAC unit was operating properly. Fluids were refilled, but no other maintenance was required. The resident ultimately hired Priority One Heating & Air Conditioning of Eugene, Oregon, to inspect and conduct maintenance on the system (i.e., perform fluid, valve, and filter drier replacement) on July 17, 2024. DEQ reimbursed the resident for this maintenance cost.

Irrigation. Existing irrigation lines were encountered during soil removal activities throughout the front and backyard of SO-07. During excavation, 3 Kings operators noted the approximate locations of where these lines were encountered and how the lines connected to property's irrigation system controls to ensure they could be similarly reconstructed during restoration. 3 Kings worked closely with the property owner to determine an appropriate irrigation line layout as well as the property owner's preference for sprinkler head type/locations to ensure that full coverage of areas requiring future watering after restoration (sod and hydroseeded finish surfaces) was achieved. After installing the new irrigation lines and sprinklers (Figure 9b), 3 Kings tested the functionality of the irrigation system and made modifications as needed to ensure that the system was ready for use immediately following restoration surface installation.

7.2.5 Soil Stockpiling, Loading, and Transport

Contaminated soil was either directly loaded onto dump trucks or temporarily stockpiled and staged onsite prior to subsequent loading and transport to Coffin Butte Landfill in Benton County north of Corvallis, Oregon. Stockpiling was generally avoided to the extent possible to minimize the handling of impacted material. If temporary stockpiling of soil was required, the material was covered during periods of inactivity with a minimum 6-mil plastic sheeting that was secured to prevent wind and stormwater erosion. Temporary stockpiles of contaminated soil were staged within portions of DUs that had not yet been excavated to depth to avoid having to place the material on additional plastic lining. Due to hot and dry weather encountered during portions of Phase II RA activities, stockpile wetting was performed as needed to prevent windblown dust.

Soil was loaded in a manner that limited the generation of visible dust to the maximum extent possible. Dust suppression was performed periodically by wetting work zones, roadways, and material stockpiles to limit airborne dust particles. Soil was loaded into trucks and covered with tarps prior to leaving the site to reduce the risk of spreading contamination to offsite areas.

Contaminated soil was either transported directly from the DUs to the landfill for disposal or pre-loaded and covered at the end of a workday for transport to the landfill the following morning. 3 Kings provided truck drivers with bills of lading and any required soil profiling documentation prior to the truck's departure to the landfill. Visible loose soil was removed from transport trucks prior to leaving the site. Standard construction BMPs (e.g., construction loading areas, sweeping) were used to prevent soil from being tracked off the DUs.

Removal, transport, and disposal of contaminated soil was completed between April 29 and June 7, 2024. A total of approximately 1,796.38 tons of contaminated soil and 15.46 tons of miscellaneous refuse (e.g., degraded lumber, disposed of sheds) was removed from the five DUs and disposed of at the landfill. Appendix C contains the disposal receipts for materials transported to the landfill during Phase II of the RA.

7.2.6 Removal Confirmation

The depth of excavation was confirmed using survey data and by completing "field truths" during excavation. Field truths refer to physical measurements of cut depths taken during excavation. Survey data reference GPS-collected data and requires an initial baseline topographic survey and an excavation extent survey to compare elevations and property boundaries. As described below, survey data was not solely relied upon to determine the depth of excavation.

A baseline topographic survey was completed by MGS, a third-party licensed land surveyor subcontracted to 3 Kings, to establish work limits and the pre-construction surface topography of each DU. During excavation, MGS collected elevation readings and compared these to the baseline survey to verify that the required excavation depths were met. Survey data was stored for surface comparison purposes by GSI upon completion of the RA. Excavation depths were also field verified by GSI to confirm that the minimum removal requirements had been met.

Excavation to the full removal depth within the CRZs at DU-10, DU-15, and SO-07, was not always possible due to the density of roots and potential for irreparable damage to the tree. In these areas, excavation was conducted with direct oversight from the arborist with the goal of removing as much soil as possible without undermining or harming the protected trees. Even with CRZ restrictions, the minimum removal depth achieved was generally 6 inches bgs except at the maple tree within SO-07 where, due to a shallow and dense root structure, approximately 2 to 4 inches of soil was removed before a heavy mat of roots were encountered.

7.3 Backfill and Grading

Excavated areas within each DU were backfilled to the original grade (or slightly below to account for sod mat thickness) with clean imported fill, topsoil, or 0.75-inch minus gravel. Due to irregular surface grades present within portions of the DUs prior to the RA, limitations with the earthwork equipment's ability to match these small-scale topography changes, and a consensus to provide finish grading that was level and unlikely to promote future erosion concerns at the properties, finished surface grades were slightly higher or lower than previous conditions in many locations. A combination of earthwork equipment and hand tools was used to distribute backfill evenly and to the required thickness throughout each DU.

Imported soil materials were supplied from pre-approved sources (see Section 5.4) and included the following: clean fill (loam) from LFP, topsoil from Rexius, 0.75-inch minus gravel was supplied by Delta Sand and Gravel, and wood chips from LFP. GSI field staff were onsite to document imported material types, material origins, and methods of installation for each DU. Copies of the import material weigh tickets were provided by 3 Kings to DEQ and GSI, and are presented in Appendix D. Backfill details are shown in Figures 5b, 6b, 7b, 8b, and 9b.

7.3.1 Soil

Loam from LFP was used as fill material to bring surface grades to 12 or 6 inches below final grade. Topsoil from Rexius was used to bring soil areas to final grade. Clean fill and topsoil were loosely compacted until the final grade was met, with 3 Kings ensuring sufficient compaction was performed to minimize settlement while avoiding over-compaction that would limit infiltration or limit vegetation establishment. Truckloads of clean imported soil were placed directly within the footprints of the excavation limits and spread throughout the DUs. In general, imported soil was not staged within any roadways or areas outside the DUs; however, due to limited available space, clean import soil was staged within the ROW in front of DU-15. This stockpile was largely within the unpaved portion of the ROW, but the pile did extend to the paved ROW. Standard construction erosion control BMPs were maintained to prevent offsite migration of imported materials.

Approximately 709.32 tons of loam were imported and placed throughout DU-09, DU-10, DU-11, and DU-15. Approximately 1,072 cubic yards of topsoil from Rexius were imported and placed during the RA.

7.3.2 Gravel

Surface restoration at all five DUs included some gravel areas. Gravel surface finishes were completed in single 6-inch lift of 0.75-inch minus gravel that was compacted to a non-yielding state using a vibratory plate, with additional gravel added and compacted as needed to meet the finish grade. Gravel was underlain by an 8-ounce non-woven geotextile fabric or equivalent in accordance with project plans and specifications. Standard landscape edging was installed by 3 Kings as a barrier between gravel and adjacent seeded soil or sod surfaces except where existing barriers such as a fence line were present. Gravel finish was installed within each DU as described below:

- **DU-09.** An approximately 3-foot-wide strip along the north side of the private driveway to Baxter Street and the northeast corner of the backyard behind the ADU in the backyard. Approximately 497 square feet of gravel was placed at DU-09.
- **DU-10.** North of the driveway to the property line, an approximately 2-foot-wide walkway along the north side of the house, an approximately 6- by 13-foot fenced in and covered storage area on the west side of the house, and the City ROW (outside of the fir tree CRZ). Approximately 1,759 square feet of gravel was placed at DU-10.
- **DU-11.** South side of the property, south of the driveway from the ROW on the west to the backyard fence on the east. The gravel pad extended into the backyard along the south fence line; approximately 13 feet wide and for the length of the property (145 feet). Approximately 1,917 square feet of gravel was placed at DU-11.
- **DU-15.** South of the driveway to the southern property line. Gravel pad in the southwest corner of the backyard near the backyard gate. The pad measured approximately 10 feet by 30 feet. Approximately 595 square feet of gravel was placed at DU-15.
- **SO-07.** North of the house in a fenced in and covered storage area (approximately 9 feet by 28 feet). Within the eastern half of the greenhouse (20 feet by 16.5 feet). South of the driveway from the ROW to the backyard fence (8 feet by 68 feet). In the backyard in areas with restricted access such between outbuildings and behind the sauna. Approximately 1,362 square feet of gravel was placed at SO-07.

7.3.3 Backfill Narrative

Backfilling began on May 3, 2024, at DU-09 where gravel was delivered and stockpiled in the front yard and then transported to the backyard using a skid steer loader to the area behind the ADU. Similarly, loam fill material was delivered and stockpiled in the front yard of DU-09 and transported to the backyard for

placement. Backfill continued moving from the backyard to the front yard and along the private driveway for approximately a week. DU-10 backfilling began on May 9, 2024, with topsoil placement in the north portion of the property. Backfilling at DU-10 continued through approximately May 17, 2024. Backfilling at DU-11 began on May 16, 2024, by placing imported loam directly in the front yard. Fill material was spread from this location across the entire front yard of DU-11 and into the front yards of DU-15 and SO-07 as excavations were completed. Backfilling in the backyard areas on the east side of Baxter Street began on May 24, 2024, starting on the north side of SO-07 and working south. Backfill was completed on May 31, 2024.

In total, approximately 709 tons of loam, 1,072 cubic yards of topsoil, and 330 tons of gravel were imported to complete Phase II RA activities. Appendix D presents the tipping summary showing total tonnages of import material.

7.4 Surface Restoration Activities

Pre-approved restoration surface materials that were included in Phase II of the RA included: sod, bare soil, bare soil with a hydroseeded micro-clover seed mix, wood chips, and 0.75-inch minus gravel. Section 7.3 describes bare soil and gravel restorations. Surface restorations began immediately following backfill.

Restoration activities also included restoring or replacing structures that had been removed for the RA to provide access to the DU. Relevant aspects of site restoration performed during Phase II of the RA are described in the following sections. Property-specific restoration details for each surface type are discussed below. Surface restoration details are shown in Figures 5b, 6b, 7b, 8b, and 9b.

7.4.1 Sod

Sod was installed on imported soil at DU-09, DU-11, and the front yard of SO-07. Approximately 11,613 square feet of sod were installed as the finish surface at these three DUs. The sod was sourced and installed by Rexius. Sod installation was completed on June 6 and 7, 2024.

7.4.2 Micro-Clover

Micro-clover hydroseed mix was installed at DU-10 and the backyard of SO-07. Micro-clover seed application was completed by Rexius. The seed mix (PT 705 Xeriscape Lawn Alternative) was selected by Rexius based on their local experience to ensure a high probability of survival after application. The seed mix was added to a hydroseeding bonded fiber matrix, fertilizer, and a tackifier at ratios selected by Rexius. Approximately 5,692 square feet of micro-clover were installed as the finish surface at these two DUs. Micro-clover hydroseed installation was performed on June 7, 2024.

7.4.3 Wood Chips

Wood chips were requested for a majority of DU-15, an approximately 6-foot-wide strip along the northern backyard fence line at SO-07, and within the CRZ of protected trees. The arborist was consulted and recommended that a wood chip material be placed within an approximately 15-foot radius of the CRZs of protected tree bases instead of topsoil specified in the RA plans to promote the long-term health of the trees. Wood chips allow for increased airflow which helps reduce the risk of future rot at the tree base. Wood chips installed within CRZs and at SO-07 consisted of Douglas Fir ‘Wood Chips’. Wood chips installed in the backyard of DU-15 and SO-07 were “PlayAway” chips. Wood chip products were sourced from LFP. Wood chips were placed using earthwork equipment and hand tools to the final grades. In total, approximately 9,427 square feet of wood chips were installed.

7.4.4 Plants

Surface restoration at each DU included planting multiple varieties of plants or trees, either to replace similar vegetation that was removed during the RA or to install resident-requested plants that DEQ had approved. The specific varieties of plants and/or trees were determined in coordination with the property owners and are summarized for each DU below:

- **DU-09.** Two dwarf apple trees and a flowering cherry tree were planted in the backyard of the property. In the front yard, a flowering plum tree was installed to replace a similar tree previously removed during the RA.
- **DU-10.** One dwarf Japanese maple, four rose bushes (Fragrant Plum, Blue Girl, Cecile Brunner, and Purple Tiger Rose), four iris, and one lilac bush were planted within the front yard and south side yard of the DU.
- **DU-11.** A black tupelo tree was planted in the front yard of the property and an Oregon white oak was planted in the backyard to replace trees that were removed as part of the RA. Additionally, two hydrangeas and two fatsia plants were installed in the bare soil areas located on the backside of the residence.
- **DU-15.** Five rose bushes (two Sugar Moon and three Perfume Delight) and two native currant plants were planted in the front yard of the DU. In the backyard of the property, one each of the following fruit trees were planted to replace trees removed during the RA: Lapins cherry, Stella cherry, Bartlett pear, Frost peach, Brooks plum, and a Brown Turkey fig. Additionally, two common hazel trees were installed in the backyard of the DU.
- **SO-07.** A Japanese maple tree, two apple trees, and five blueberry bushes (Chandler, Duke, Bluecrop, Superior, and Legacy) were planted to replace trees/shrubs removed during the RA.

The plants installed during Phase II were sourced by Rexius. Except for SO-07, all plants were also installed by Rexius on June 6 and 7, 2024. The property owner of SO-07 requested that plants delivered to the property be left without planting so that the property owner could determine the desired planting locations and install the plants themselves.

7.4.5 Fencing

3 Kings rebuilt fences following RA activities. In most cases, the original fence material was reused with new posts installed. Fences replaced at each property are described below:

- **DU-09.** The fence and gate dividing the front and backyards on the west side of the house was removed to provide access during the RA. This section of fence and gate was rebuilt using the original material. Individual fence boards that were broken or missing in the backyard were replaced with new fence boards.
- **DU-10.** The chain-link fence along the south side of the property was removed to provide access during the RA. This fence was rebuilt using the original material except with new fence posts. The chain-link gate and segment of fence on the south side of the house was removed and not replaced at the request of the property owner (Figure 6a). Two chain-link gates that enclosed a small storage area were removed to provide access during the RA. The original gates were rehung on the original hinges following RA activities. The wooden double-wide swinging gate and man-gate on the north side of the house was also removed to provide access to the backyard during the RA. These gates were rebuilt using the original material except with new fence posts.
- **DU-11.** The double-wide swinging gate on the south side of the house and an approximately 25-foot-long section of fence along the south side of the property were removed to provide access to the backyard.

These were rebuilt using original materials. New posts were supplied to rebuild the fence. An approximately 40-foot-long section of fence along the east side of the property was in poor condition. This fence was replaced during the RA by 3 Kings, at the request of DEQ.

- **DU-15.** An approximately 20-foot-long section of fence along the south side and 55-foot section along the north sides of the property's backyard fence were removed to provide equipment access. These were rebuilt using original fence panels and new posts. A longer segment of fence was removed along the north side of the property to provide access to soil adjacent to an outbuilding on the neighboring property. Individual fence boards that were damaged or missing near where a large tree was previously growing were replaced with new fence boards.
- **SO-07.** A chain-link pen was removed to provide access to the backyard during the RA. The square pen was approximately 16 feet long on each side. The chain-link pen was rebuilt using the original chain-link with new fence posts.

3 Kings also rebuilt the fences at AP-01 that were initially completed during Phase I of the RA (see Section 6.4).

7.4.6 Special Conditions

Certain aspects of restoration required special attention to complete. These are discussed below:

- **DU-09.** 3 Kings purchased a new metal shed measuring 6 feet by 5 feet to replace the existing shed demolished and removed from DU-09. The shed was installed on a wooden platform/deck built by 3 Kings. The shed was placed in the northwest corner of the backyard in a similar location to the original shed.
- **DU-10.** In the time between topsoil placement and hydroseed application, the residents of DU-10 installed multiple garden boxes and installed plants throughout the front and side yards. The micro-clover hydroseed mix was not applied over newly installed plants or within garden boxes.
- **DU-10.** The corner of a concrete walkway slab in the front yard adjacent to the driveway was damaged by equipment during the RA. 3 Kings removed the entire slab of concrete (approximately 2 feet wide by 2 feet long) and repoured a concrete pad to the previous dimensions.
- **SO-07.** Two raised planter beds located within the greenhouse in the backyard of SO-07 contained a specific potting soil that the residents used to cultivate vegetables. This potting soil was removed to access native topsoil underneath that needed to be removed and replaced. The residents requested that the potting soil be saved to reinstall following the RA. Instead, 3 Kings elected to dispose of the potting soil along with the soil underneath and agreed to purchase new potting soil specified by the residents following the RA.
- **SO-07.** The contents of the greenhouse included totes used for aquiculture. These totes were removed and replaced following the RA. The placement of totes was directed by the property owner.
- **SO-07.** Firewood, a canoe, and other miscellaneous items were returned to the covered and gated storage area north of the residence following restoration.

7.5 Contractor Demobilization

Contractor demobilization occurred on June 7, 2024, and included the removal of all of 3 Kings' equipment, temporary facilities, trailer, portable sanitation station, erosion and sediment control BMPs, temporary construction fencing and site security, and all construction-related wastes from the properties. Because site surfaces were finished with sod or hydroseed along ROWs, long-term BMP installation was not required.

7.6 Final Surveys

After completing backfill placement at each DU (prior to sod installation at DU-09, DU-11, and SO-07), MGS conducted final elevation surveys of the properties to confirm that sufficient backfill had been placed to restore previous site grades. Appendix E provides the final as-built survey for the DUs.

A post-RA video survey of the sewer utility lines was completed by PPR to confirm lines were not damaged during the RA. No damage was observed and videos have been provided to DEQ.

7.7 Decontamination and Investigation-Derived Waste Management

Decontamination procedures were implemented during earthwork to prevent unintended contact with contaminated soil removed during RA activities. Decontamination procedures and handling of IDW are described in the following sections.

7.7.1 Decontamination

To prevent contamination of areas outside of the DUs, equipment was brushed off or power washed after excavating contaminated soil, prior to remobilizing equipment from one DU to the next, and prior to equipment demobilization from the site. Brushed off soil was collected and added to temporary stockpiles or directly loaded to dump trucks for disposal along with contaminated material. Decontamination water from power washing was contained within the excavation footprints to the extent possible and allowed to infiltrate prior to backfilling. If soil track out was observed along ROWs, 3 Kings either swept or washed dirt back into the footprint of the DU, or to various ESC BMPs installed along the boundaries of DU work zones.

In addition to the sweeping and washing activities performed by 3 Kings, 3 Kings subcontracted Mid-State Industrial Service of Eugene, Oregon, to provide commercial street sweeping services for the ROWs surrounding the DUs. Commercial street sweeping was performed daily, at a minimum, with additional washing and/or sweeping services provided as needed if significant track out was observed in roadways, and prior to contractor demobilization. Street sweeping waste was either added to contaminated soil for offsite disposal or directly disposed of as standard municipal solid waste.

7.7.2 Investigation-Derived Waste Management

The IDW consisted of excavated contaminated soil, decontamination water (if not maintained in the excavation footprint), spent erosion control BMPs, and PPE. Excavated contaminated soil was placed into lined and covered trucks for transport and disposal at a permitted Subtitle D landfill (see Section 7.2.5). Decontamination water was generally contained in excavation footprints or routed to various BMPs installed at the site. Swept material (not included with contaminated soil), PPE, and spent erosion control BMPs were disposed of along with miscellaneous construction-related waste (e.g., temporary fencing) as standard municipal solid waste.

7.7.3 Potential Asbestos-Containing Material

Old remnant pipe connected to the decommissioned septic tanks at DU-10 and DU-11 were potential ACM. The volume of pipe material in situ was limited to an approximately 6-foot-long segment of 4-inch-diameter pipe at DU-10 and 2-foot-long segment of 4-inch-diameter pipe at DU-11. An approximately 4-inch segment of pipe at DU-10 was removed from the ground and double bagged and sealed for pending analysis. The remaining potential ACM was not disturbed. Addressing ACM was not included in the original scope of the RA. 3 Kings required an ACM Supervisor to handle the ACM testing and disposal. 3 Kings and GSI were negotiating a contract change to test and dispose of the potential ACM, when GSI was notified that the

potential ACM had been accidentally disposed of in the municipal trash. Short Mountain Landfill and Lane Regional Air Protection Agency (LRAPA) were contacted by DEQ to notify them of the erroneous disposal and no further action was taken or required by LRAPA or Short Mountain.

7.8 Change Orders and Project Deviations

Construction activities were modified in response to unexpected field conditions, requests for additional work, and adjustments to the site work directed by DEQ and GSI. Most of the project deviations could be addressed by line item totals provided by 3 Kings during the procurement process. Certain activities were determined to be outside of the original RA scope and required contract change orders. Three change orders were issued during the project. The following sections provide a brief description of these change orders and project deviations.

7.8.1 Change Order 1 – Septic Tank Pumping

Septic tank decommissioning was covered in the original bid document. However, pumping liquid waste from the septic tanks was not included. When septic tank pumping was completed at DU-10, it required approval via Change Order 1 to cover 3 Kings cost to pump the tank.

7.8.2 Change Order 2 – Wood Chip Unit Rate

The volume of wood chips requested and installed during the RA changed significantly, both based on arborist recommendations and residents' request. The change in volume constituted a change in payment terms. A new unit rate cost for wood chip purchase and delivery was negotiated during the RA that constituted Change Order 2.

7.8.3 Change Order 3 – HVAC Unit Work

3 Kings elected to remove the HVAC unit at DU-09 to prevent damage and provide better access to the backyard. The removal and replacement of the HVAC unit was completed at cost to 3 Kings. Following installation, the residents notified DEQ that the HVAC unit was not operating as it did prior to the RA. The HVAC contractor was called back to the site twice to confirm that the HVAC unit was operating properly. The cost for these additional visits were captured in Change Order 3.

7.8.4 Project Deviations

Project deviations are instances where the project plans or estimated volumes changed during the course of the project, but the changes were not outside of the Contract Plans and Specifications. The project deviations from the Contract Plans and Specifications are discussed in the respective construction element sections and are summarized below:

- **Water Lines (Section 7.2.4).** Municipal service water lines were encountered at every DU except for DU-09. Existing water lines were iron and generally in a degraded and brittle state due to their age. Water lines at these properties were replaced by 3 Kings with PEX lines from the service meters to the transition to each residence. Additionally, Eugene Water and Electric Board was called to SO-07 to temporarily shut off the water main and replace a leaking water meter that was encountered. Except for at DU-11, residents experienced clogged water fixtures upon restoring water service to the residences. 3 Kings was unable to resolve all the clogging issues themselves and subcontracted a plumbing contractor to perform additional troubleshooting and repairs at DU-15 and DU-10. Water service was restored to all properties by June 7, 2024.

- **Septic Systems (Section 7.2.4).** Historical septic systems were encountered at DU-10, DU-11, DU-15, and SO-07. These tanks were previously disconnected from the homes, but not necessarily properly decommissioned. Following further investigation, the septic tanks at DU-10 and DU-15 were found to have not been previously filled with inert material. The tank at DU-10 was observed to be partially filled with liquid, which was removed by a local septic pumping contractor. Both the tanks at DU-10 and DU-15 were backfilled with pea gravel prior to placing import material over the decommissioned tanks. The other tanks were either observed to be partially covered by a concrete patio and inaccessible (DU-11) or appeared to have been previously decommissioned with a concrete cap observed at the former lid location (SO-07). These tanks were not investigated further and left in place prior to covering them with imported backfill.
- **Surfacing Changes (wood chips, bare soil) (Section 7.4).** Wood chips were requested for a majority of DU-15, an approximately 6-foot-wide strip along the northern backyard fence line at SO-07, and within the CRZ of protected trees. Wood chips around the CRZs of protected trees were installed per the arborist recommendations to promote long-term tree health. Wood chips installed within CRZs and at SO-07 consisted of Douglas fir Wood Chips. Wood chips installed in the backyard of DU-15 and SO-07 were PlayAway chips. Wood chip products were sourced from LFP.
- **Planting Changes (Section 7.4).** Due to numerous resident-requested changes to replacement plant varieties and limitations with the available plant stock/sizes from the selected supplier (Rexius), some of the installed plants at each DU differed from the pre-approved varieties selected prior to initiating the RA. DEQ worked closely with the property owners of each DU to ensure that suitable replacement varieties were sourced and installed during restoration activities.
- **Potential ACM Pipe (Section 7.7.3).** Remnant pipe sections consisting of potential ACM were encountered connected to historical septic tanks at DU-10 and DU-11. A small section of the disturbed pipe section of at DU-10 was removed from the ground and temporarily double bagged and set aside while GSI and the contractor determined how to properly dispose of the material. GSI was later informed that the potential ACM had mistakenly been disposed of in the municipal trash. DEQ notified Short Mountain Landfill and LRAPA of the erroneous disposal and no further action was taken.
- **HVAC System Issues (Sections 7.2.4 and 7.8.3).** An HVAC unit at DU-09 was removed and replaced during the RA to provide better access to the DU and to replace the HVAC mounting pad that was damaged by earthwork equipment during soil removal activities. A local HVAC contractor was subcontracted to disconnect and subsequently reinstall the HVAC unit upon completion of the RA. Despite being confirmed operational by the HVAC contractor, the residents informed DEQ that the HVAC system was no longer functioning as it did prior to the RA. The HVAC contractor was called back to the site twice to perform additional troubleshooting and system checks, and the residents ultimately hired a separate HVAC contractor to inspect the system. DEQ reimbursed the residents for the HVAC contractor costs.

7.9 Final Walkthrough

GSI, DEQ, and 3 Kings project representatives met at the site on June 13, 2024, to conduct a final walkthrough of the five Phase II properties. During this visit, the team confirmed restoration scope had been completed, documented final planting locations, and confirmed area and volume measurements for payment. The field work portion of Phase II RA was deemed substantially complete on June 13, 2024.

8 Oversight and Documentation

DEQ contracted GSI to provide construction management support during Phase I and Phase II of the RA to ensure project execution in accordance with the contract documents and to document and verify the construction work. Construction management involved both onsite and offsite duties, consisting of daily construction observation during both phases of the RA and offsite engineering and managerial support. Specific construction management tasks included:

- Monitoring RA construction and documenting field observations, which included keeping a daily log of field activities, taking photographs, and completing daily field reports. Appendix B presents GSI's daily field reports for Phase I and Phase II of the RA, including selected photographs of construction.
- Tracking contractor construction quality assurance and quality control to ensure compliance with project work plans and contract documents.
- Attending regular progress meetings.
- Communicating and coordinating with DEQ and contractors and serving as DEQ's representative in the field. This included communication of any deviations from contract documents, change order requests, field directives, and information requests from the contractors and DEQ.
- Reviewing and providing recommendations and approvals to DEQ on contractor submittals, contractor pay applications, requests for information, and change requests.

8.1 Field Oversight and Documentation

GSI field staff were present for both phases of the RA construction activities to provide project oversight and contractor support for the work performed. Oversight included tracking work progress, observing/documenting all work to ensure conformance with RA workplans and contract documents, ensuring compliance with site safety requirements, and monitoring/tracking material quantities during the RA.

GSI staff completed daily field reports. Details in the field reports included local weather conditions, onsite personnel, site visitors, work performed/equipment used, types and amounts of materials imported or exported from the site, potential health and safety concerns, any project deviations, and miscellaneous notes or outstanding issues. Photographic documentation of RA work was also completed. Representative photographs of RA work were included in the daily field reports. Appendix B presents copies of the daily field reports.

8.2 Phase II Air Monitoring

Due to Phase II of the RA being implemented during a timeframe of warm and dry weather, GSI staff performed periodic air monitoring during construction activities to evaluate for potential impacts to air quality caused by earthwork and assess if dust mitigation measures were required. Air monitoring was conducted using a factory-calibrated TSI DustTrak II 8534 Aerosol Monitor capable of measuring particulate mass fractions corresponding to particulate matter smaller than 1 micron in diameter (PM1), particulate matter 2.5 microns in diameter and smaller (PM2.5), Respirable, particulate matter 10 microns in diameter and smaller (PM10), and Total particulate mass concentrations.

GSI collected daily spot check readings (either single-point measurements or one minute screening tests) both from near ongoing earthwork activities and upwind from earthwork activities (background measurements). A comparison of the average values calculated for each particulate mass fraction across the project duration did not indicate a significant difference between particulate concentrations measured

near earthwork activities or background concentrations in the project vicinity. Average PM2.5 particulate concentrations for both the near earthwork and background air monitoring spot checks performed during the RA were less than LRAPA established criteria corresponding to 'Good' air quality (i.e., an Air Quality Index of 0 to 50) (LRAPA, 2024). Additionally, the average Respirable and Total particulate concentrations for all tests were well below the Occupational Safety and Health Administration (OSHA) 8-Hour Time Weighted Average Permissible Exposure Limits of 5 milligrams per cubic meter (mg/m^3) and 15 mg/m^3 for the Respirable and Total mass fractions, respectively (OSHA, 2024).

In addition to the spot check air monitoring performed with the particulate monitor, GSI staff visually assessed air conditions around the project work zones during construction for potential dust impacts due to earthwork activities. Intermittent airborne dust due to excavation activities, material loading, and/or vehicle and equipment traffic was periodically observed. If airborne dust was observed during construction work, GSI staff notified 3 Kings, who promptly implemented BMPs (e.g., roadway and excavation wetting) to limit airborne particulate impacts due to RA activities. Extended periods of significant airborne dust were not observed during the course of RA work.

9 Conclusions

The offsite RA activities described in this report are part of an ongoing investigation and remediation of the former JH Baxter facility and the adjacent residential neighborhood to the north. Phase I and Phase II of the RA were undertaken by DEQ to address residential properties with the highest TCDD TEQ concentrations in a timely manner.

The objective of the offsite RA was to remove surficial and shallow soil impacted with PCDD/Fs to reduce the potential health risk of direct contact to people. The depth of soil removal required to meet this objective was determined through multiple rounds of investigations and using screening criteria from OHA and DEQ. The predetermined depth and extent of soil removed during Phases I and II was confirmed using a combination of survey data and manual field measurements. Property restoration activities were completed to reestablish the original surface grade, return movable structures to their original positions, and revegetate each property with input from the property owners. It is GSI's opinion that the Phase I and Phase II offsite RA has been implemented in accordance with project scope of work and have removed the potential at these properties for people to readily come in contact with shallow soil impacted with PCDD/F above DEQ's RBCs for direct contact with residential soil.

This report documents the work performed by GSI at the request and direction of DEQ in accordance with Task Orders 65-23-05 and 65-23-011. The findings, opinions, and conclusions included herein are for the exclusive use of DEQ. Reliance shall not be provided to any other person or entity without DEQ's and GSI's written consent. Reliance on this document for any use or by parties other than those specifically identified, is prohibited without the expressed written consent of GSI and DEQ, and such use is at the sole risk of the user.

10 References

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LEGEND

- City Boundary
- Railroad
- Major Road
- Watercourse
- Waterbody

NOTE

1. RA completed in Offsite Project Area.

Date: October 28, 2024
Data Sources: BLM, ESRI, ODOT, USGS, Maxar Imagery (2021), City of Eugene

N

0 1,000 2,000 3,000
Feet

GSI Water Solutions, Inc.

FIGURE 1

Vicinity Map

Offsite Removal Action
Construction Completion Report

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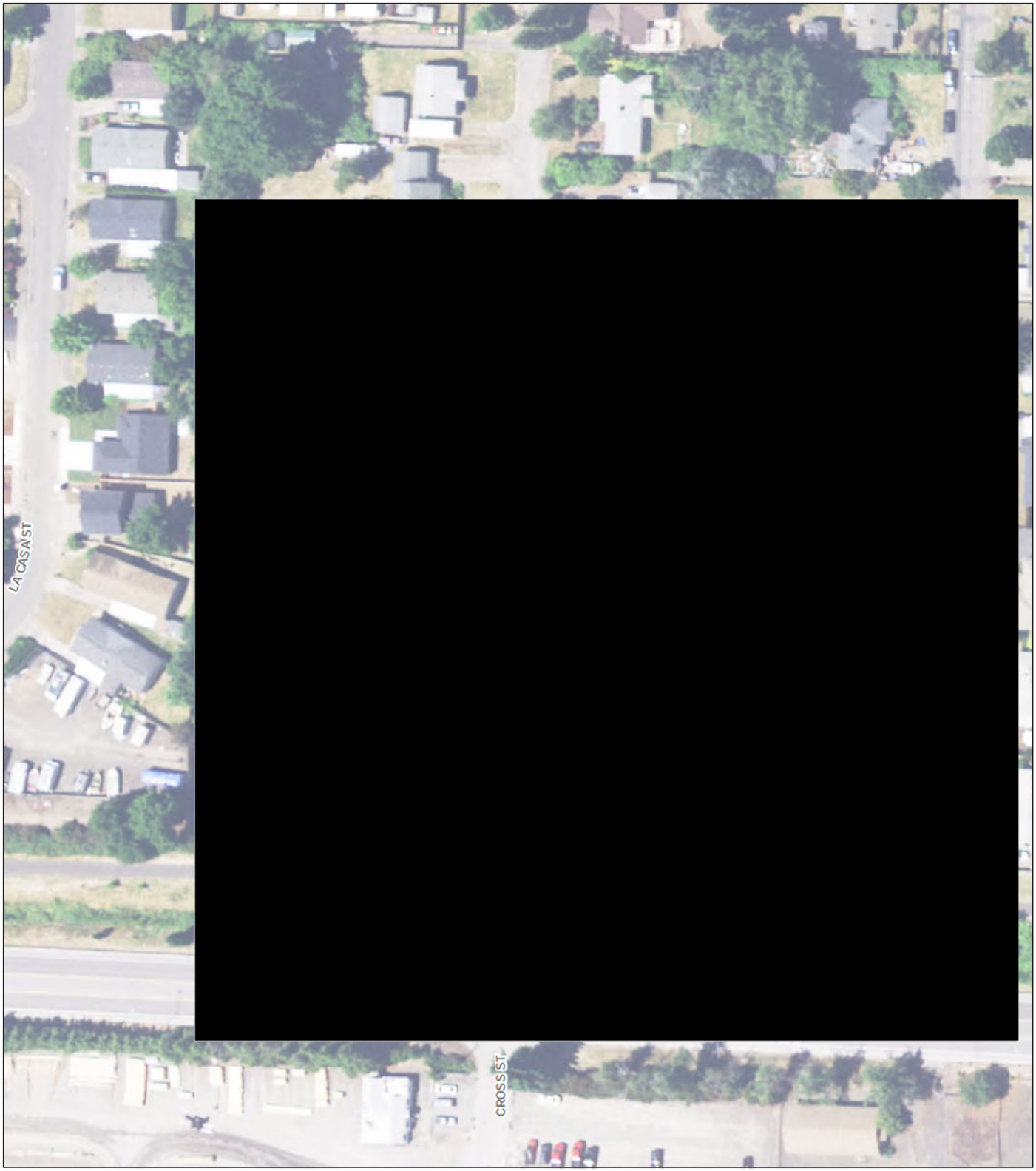

LEGEND

Decision Unit

Surface Soil Removal Depth

- 6-inch
- 12-inch
- 18-inch
- 24-inch

Date: October 15, 2024
Data Sources: BLM, ESRI, ODOT, USGS, Aerial Photo 2019, City of Eugene

FIGURE 2

Surface Soil Removal Action Depths
Offsite Removal Action
Construction Completion Report

N

0 50 100
Feet

GSI Water Solutions, Inc.

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FIGURE 3a

AP-01: [redacted] Alva Park
Pre-Construction and RA Plan

Offsite Removal Action
Construction Completion Report

SEPTIC TANK
LEFT IN PLACE

[redacted] ALVA
PARK HOUSE

WOODEN PLAY
STRUCTURE
REMOVED
PRIOR TO
EARTHWORK

EXISTING CONCRETE
DRIVEWAY AND WALKWAY
REMOVED DURING EARTHWORK

LEGEND

- Property of Interest
- Fence
- Tree Stump (>12" diameter) Removed
- Protected Tree and Root Structure
- Vertical Metal Pipe Removed During RA
- Critical Root Zone
- Temporary Construction Entrance

Surface Soil Removal Depth

- 6-inch

Utilities

- Water Meter
- Septic Tank

NOTES

1. All feature locations are approximate.
2. Where shown, utility locations are estimated based off of field observations or public utility information from the City of Eugene's GIS mapping hub. Not all utilities shown.
3. This figure should not be used for location of underground utilities or features.

N

0 6 12 18
Feet

Date: October 28, 2024
Data Sources: BLM, ESRI, ODOT, USGS, OSIP Imagery (2018)

GSI Water Solutions, Inc.

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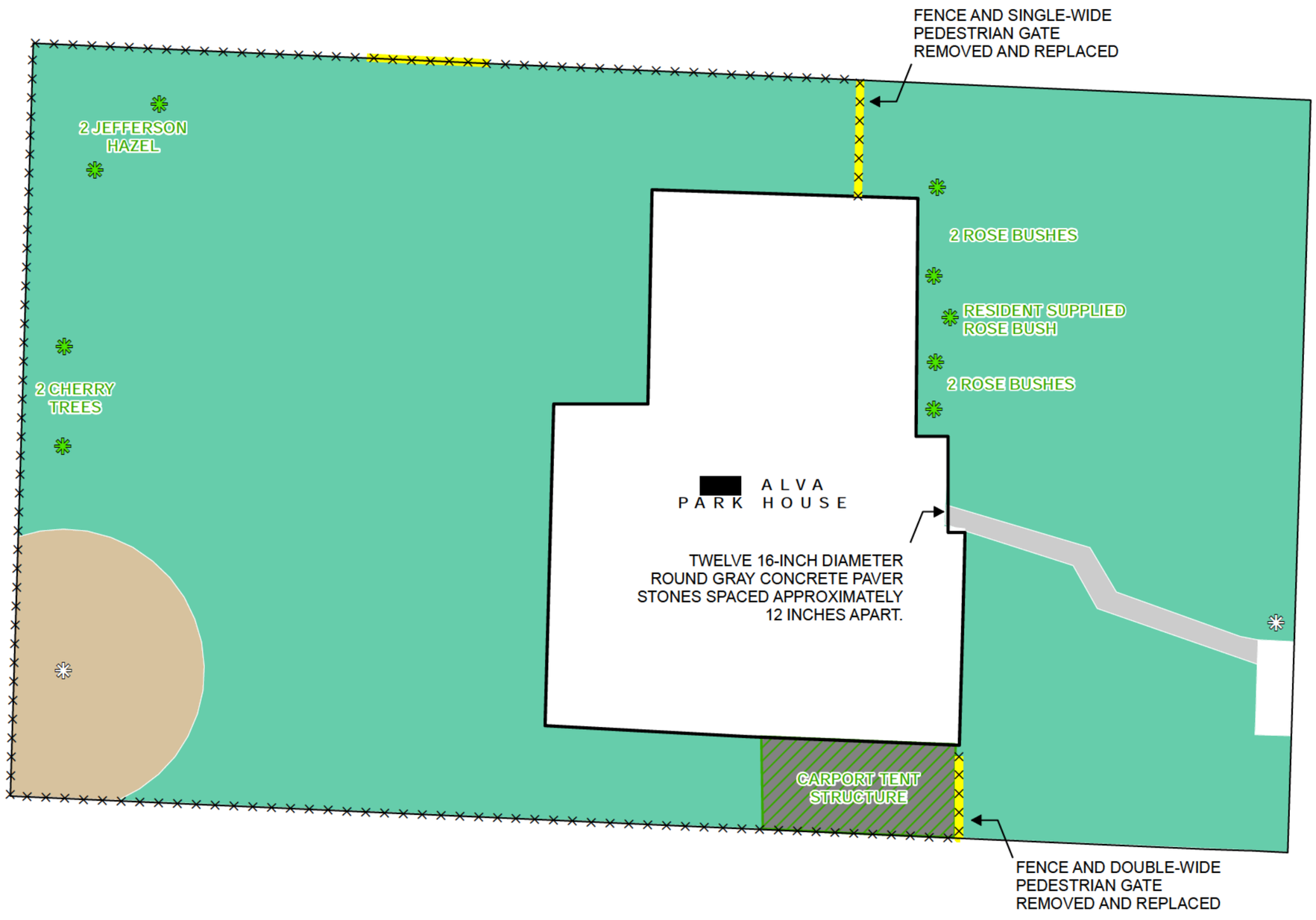
FIGURE 3b

AP-01: ■ Alva Park
Restoration Plan

Offsite Removal Action
Construction Completion Report



LEGEND

- Property of Interest
- Fence
- Tree or Shrub Planted During RA
- Protected Tree and Root Structure
- Repaired and/or Replaced Fence Section
- Added Structure

Finished Surface

- Seed
- Gravel Surface
- Concrete/Asphalt
- Wood Chips

NOTE
All feature locations are approximate.

AP-01: PLANT SCHEDULE

Quantity	Common Name	Approximate Size
2	Jefferson Hazelnut	5-gallon
2	Lapin Cherry	5-gallon
4	Ebb Tide (Floribunda) Rose	3-gallon
1	Rose Bush	NA

N

0 6 12 18
Feet

Date: January 10, 2025
Data Sources: BLM, ESRI, ODOT, USGS, OSIP Imagery (2018)

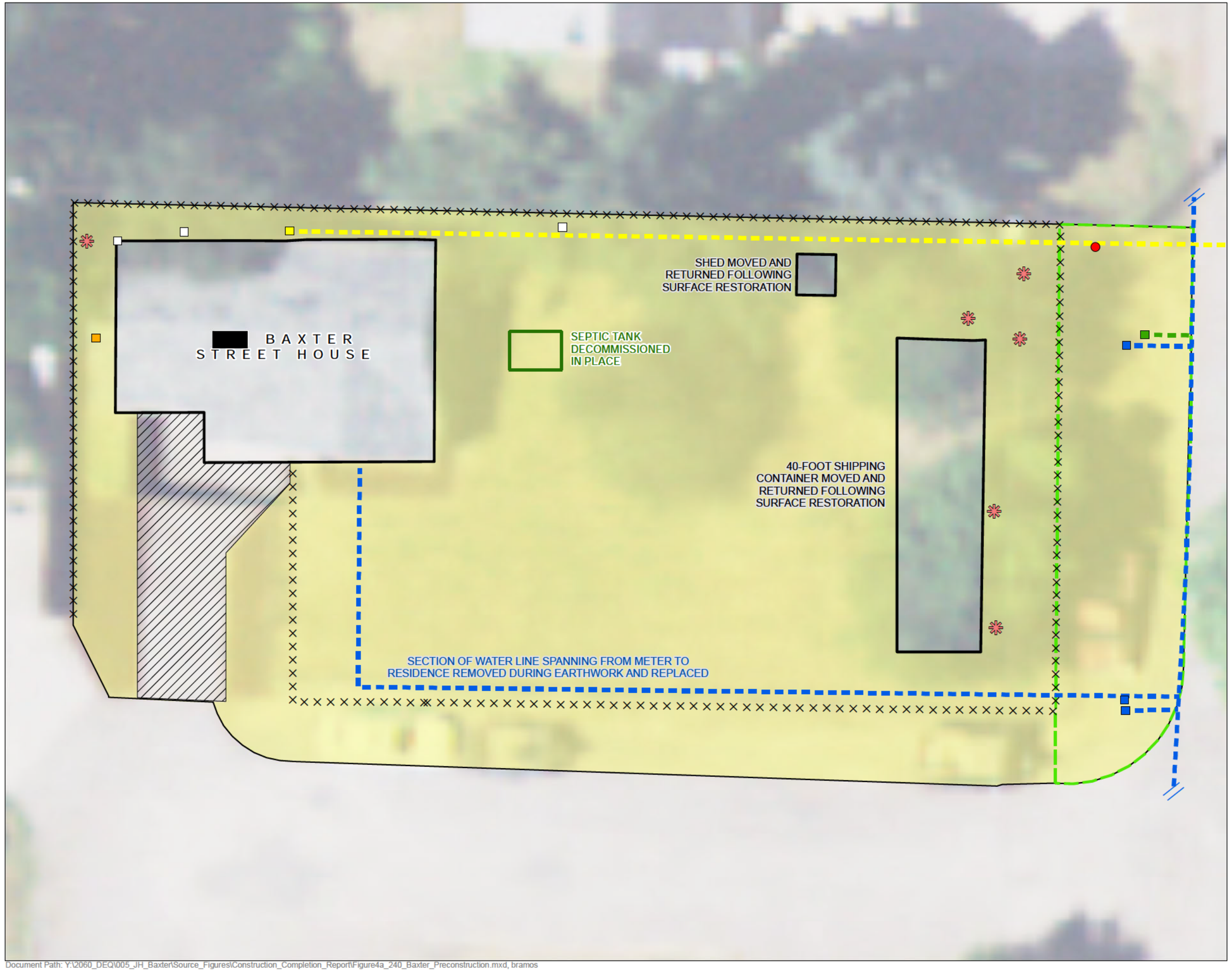
GSI Water Solutions, Inc.

Document Path: Y:\2060_DEQ\005_JH_Baxter\Source_Figures\Construction_Completion_Report\Figure3b_242_AlvaPark_Restoration.mxd, npalmer

FIGURE 4a

SO-06: [redacted] Baxter
Pre-Construction and RA Plan

Offsite Removal Action
Construction Completion Report



LEGEND

- Property of Interest
- Fence
- Tree Stump (>12" diameter) Removed
- Concrete and/or Asphalt Hardscaped Surface
- Temporary Construction Entrance

Surface Soil Removal Depth

- 6-inch

Utilities

- Power/Utility Pole
- Natural Gas Meter
- Sewer Cleanout
- Water Meter
- HVAC
- Unidentified Utility Box

Inferred Utility Line

- Natural Gas
- Sewer
- Water
- Septic Tank

NOTES

1. All feature locations are approximate.
2. Inferred utility locations are estimated based off of field observations or available public utility information from the City of Eugene's GIS mapping hub. Not all utilities shown.
3. This figure should not be used for location of underground utilities or features.

N

0 6 12 18
Feet

Date: October 28, 2024
Data Sources: BLM, ESRI, ODOT, USGS, OSIP Imagery (2018)

GSI Water Solutions, Inc.

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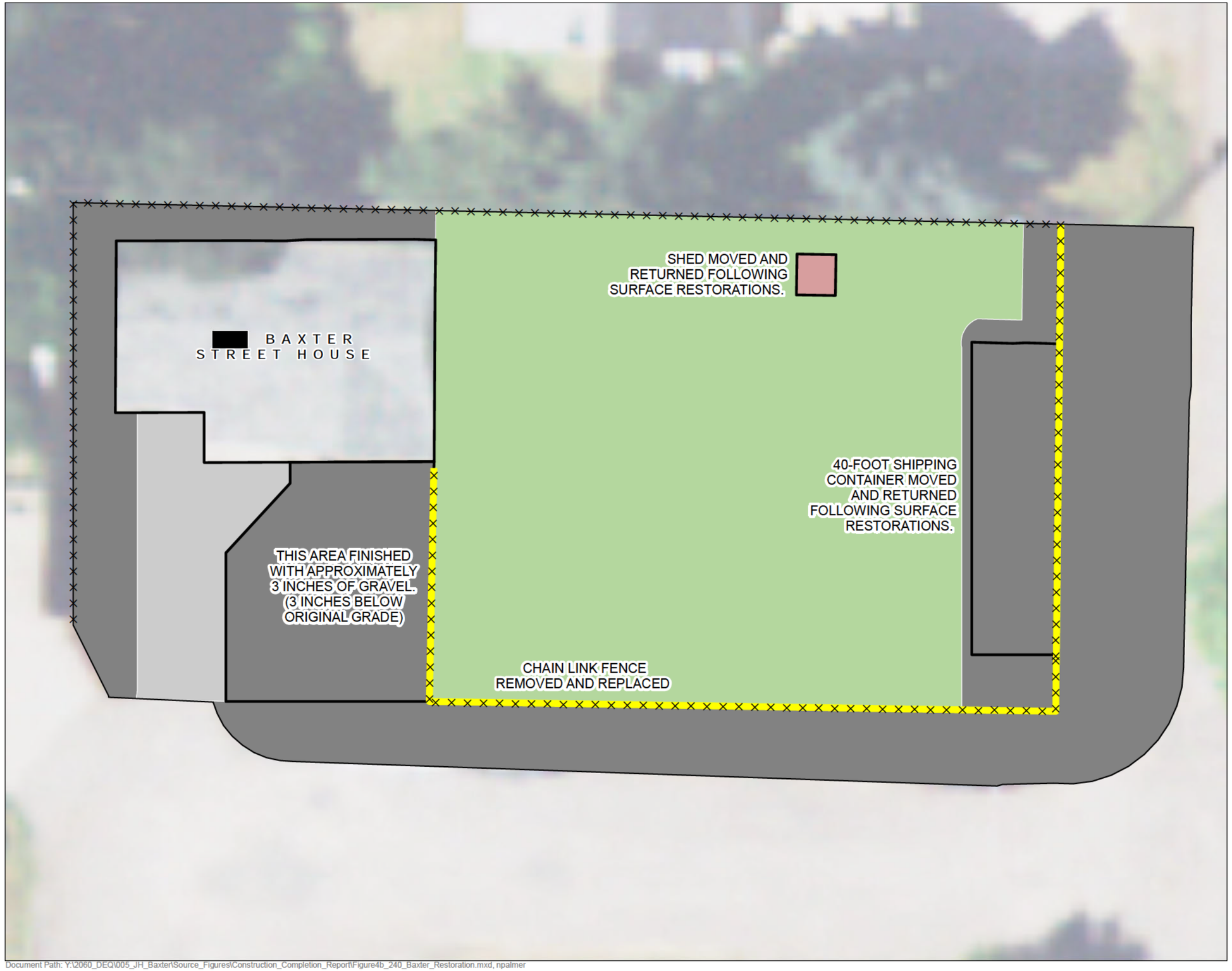

FIGURE 4b

SO-06: Baxter
Restoration Plan

Offsite Removal Action
Construction Completion Report

LEGEND

- Property of Interest
- Fence
- Repaired and/or Replaced Fence Section

Finished Surface

- Bare Soil
- Gravel Surface
- Concrete/Asphalt
- Sod

NOTE
All feature locations are approximate.

N

0 6 12 18
Feet

Date: January 10, 2025
Data Sources: BLM, ESRI, ODOT, USGS, OSIP Imagery (2018)

GSI Water Solutions, Inc.

Document Path: Y:\2060_DEQ\005_JH_Baxter\Source_Figures\Construction_Completion_Report\Figure4b_240_Baxter_Restoration.mxd, npalmer

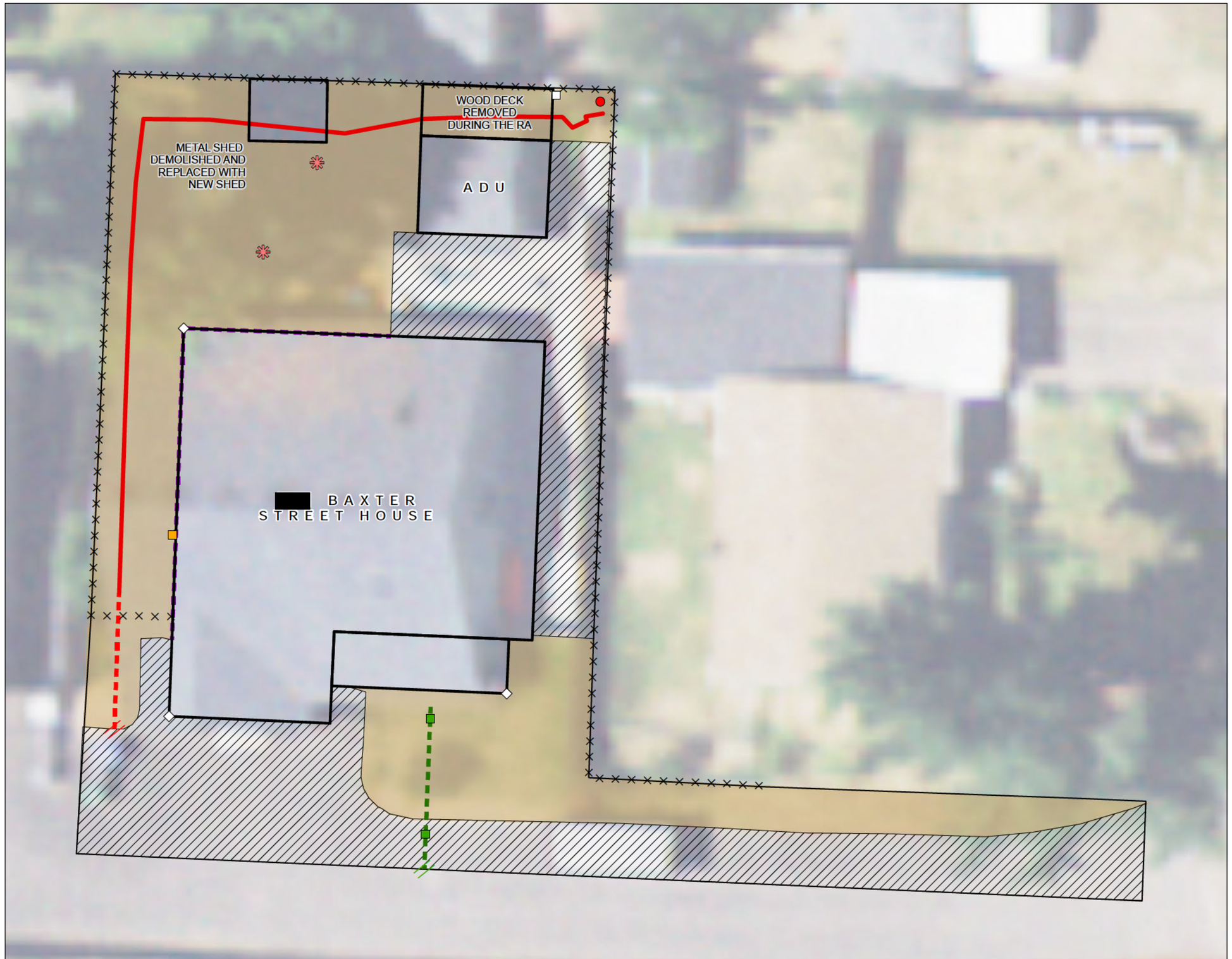

FIGURE 5a

DU-09: [redacted] Baxter
Pre-Construction and RA Plan

Offsite Removal Action
Construction Completion Report

LEGEND

- Property of Interest
- Fence
- Tree Stump (>12" diameter) Removed
- Concrete and/or Asphalt Hardscaped Surface

Surface Soil Removal Depth

- 18-inch

Utilities

- Power/Utility Pole
- Sewer Cleanout
- HVAC
- Roof Drain (discharging underground)
- Unidentified Utility Box

Surveyed Utility Line

- Electric, in ground

Inferred Utility Line

- Electric, in ground
- Roof Drain
- Sewer

NOTES

1. All feature locations are approximate.
2. Inferred utility locations are estimated based off of field observations or available public utility information from the City of Eugene's GIS mapping hub. Not all utilities shown.
3. This figure should not be used for location of underground utilities or features.

N

0 6 12 18
Feet

Date: October 15, 2024
Data Sources: BLM, ESRI, ODOT, USGS, OSIP Imagery (2018)

GSI Water Solutions, Inc.

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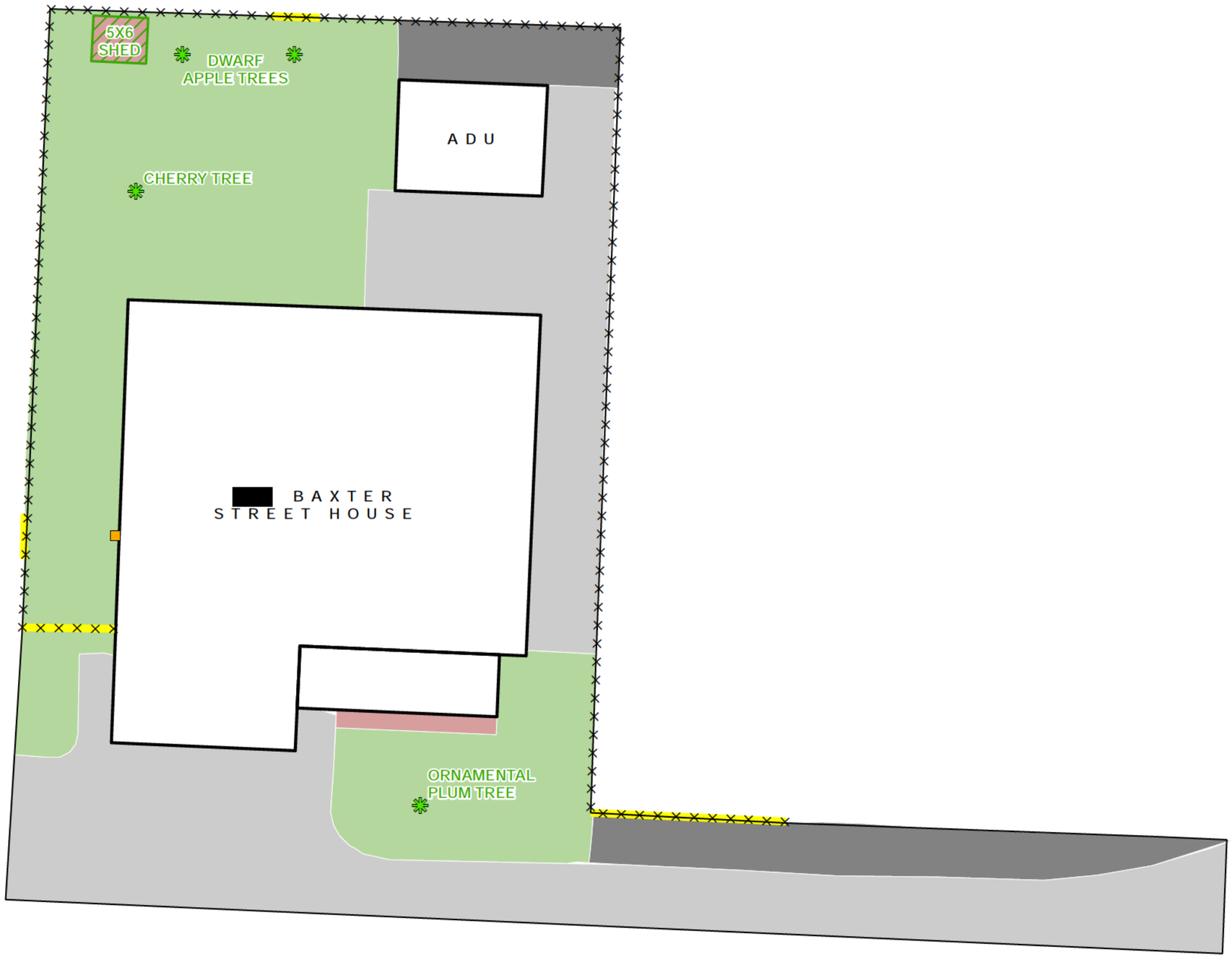

FIGURE 5b

DU-09: [redacted] Baxter
Restoration Plan

Offsite Removal Action
Construction Completion Report

LEGEND

- Property of Interest
- Fence
- Repaired and/or Replaced Fence Section
- Tree or Shrub Planted During RA
- HVAC
- Added Structure

Finished Surface

- Bare Soil
- Gravel Surface
- Concrete/Asphalt
- Sod

NOTE
All feature locations are approximate.

DU-09: PLANT SCHEDULE

Quantity	Common Name	Approximate Size
1	Flowering Plum	15-gallon
1	Yoshino Flowering Cherry	15-gallon
2	Dwarf Apple	10-gallon

N

0 6 12 18
Feet

Date: January 10, 2025
Data Sources: BLM, ESRI, ODOT, USGS, OSIP Imagery (2018)

GSI Water Solutions, Inc.

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FIGURE 6a

DU-10: Baxter
Pre-Construction and RA Plan

Offsite Removal Action
Construction Completion Report

LEGEND

- Property of Interest
- Fence
- Protected Tree and Root Structure
- Critical Root Zone
- Concrete and/or Asphalt Hardscaped Surface

Surface Soil Removal Depth

- 6-inch
- 12-inch
- 18-inch

Utilities

- Power/Utility Pole
- Natural Gas Meter
- Water Meter
- Roof Drain (discharging underground)

Surveyed Utility Line

- Natural Gas
- Sewer
- Water

Inferred Utility Line

- Sewer
- Water
- Septic Tank

NOTES

1. All feature locations are approximate.
2. Inferred utility locations are estimated based off of field observations or available public utility information from the City of Eugene's GIS mapping hub. Not all utilities shown.
3. This figure should not be used for location of underground utilities or features.

N

0 5 10 15
Feet

Date: October 28, 2024
Data Sources: BLM, ESRI, ODOT, USGS, OSIP Imagery (2018)

GSI Water Solutions, Inc.

Document Path: Y:\2060_DEQ\005_JH_Baxter\Source_Figures\Construction_Completion_Report\Figure6a_220_Baxter_Preconstruction.mxd, bramos

FIGURE 6b

DU-10: [redacted] Plan

Offsite Removal Action
Construction Completion Report

LEGEND

- Property of Interest
- Fence
- Repaired and/or Replaced Fence Section
- Tree, Shrub, or Bulb Planted During RA
- Protected Tree and Root Structure
- Added Structure

Finished Surface

- Seed
- Gravel Surface
- Concrete/Asphalt
- Wood Chips

NOTE
All feature locations are approximate.

DU-10: PLANT SCHEDULE

Quantity	Common Name	Approximate Size
1	Dwarf Japanese Maple	15-gallon
4	Rose bushes	3- and 5-gallon
4	Iris	1-gallon
1	Lilac bush	1-gallon

N

0 5 10 15
Feet

Date: October 28, 2024
Data Sources: BLM, ESRI, ODOT, USGS, OSIP Imagery (2018)

GSI Water Solutions, Inc.

Document Path: Y:\2060_DEQ\005_JH_Baxter\Source_Figures\Construction_Completion_Report\Figure6b_220_Baxter_Restoration.mxd, bramos

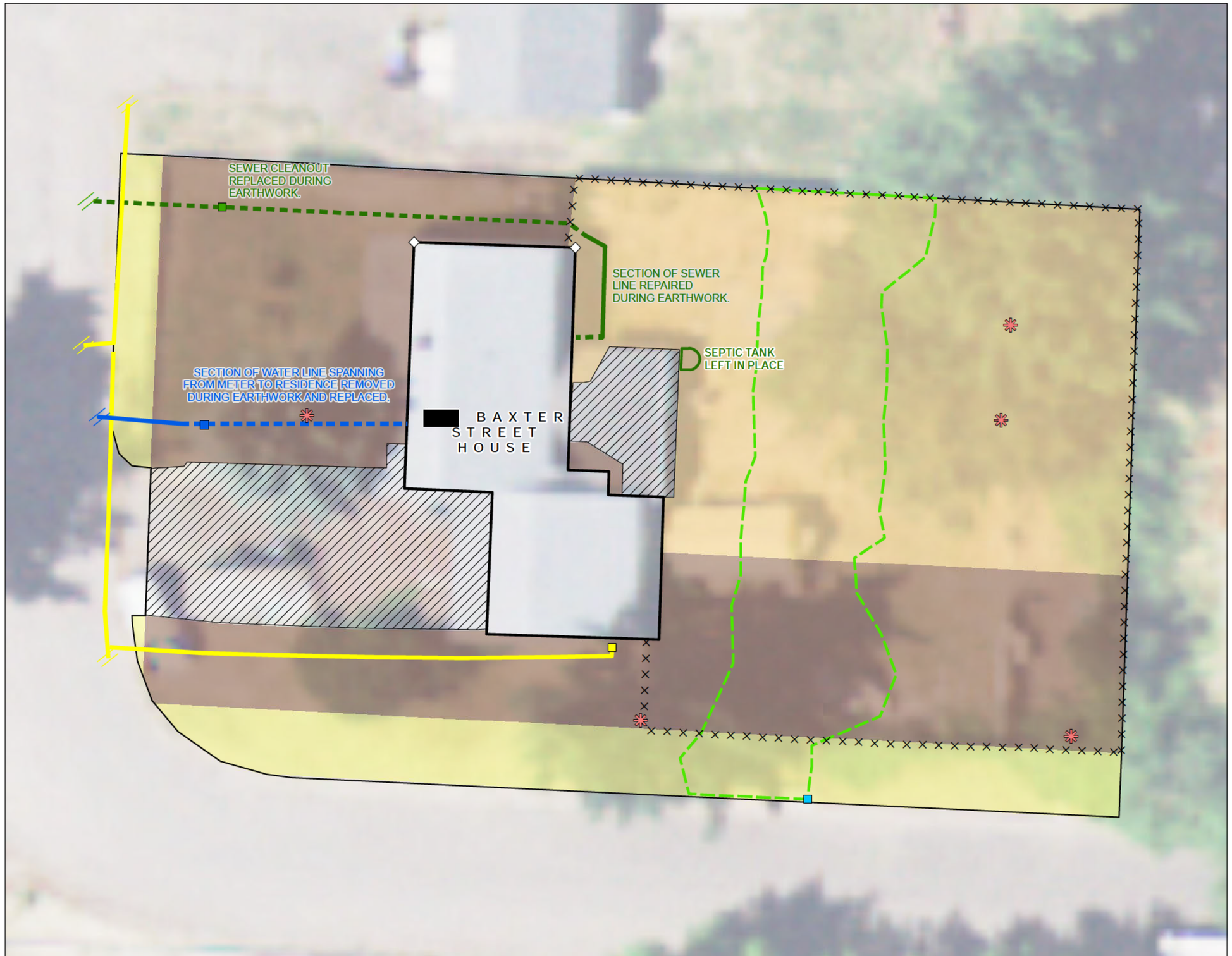


FIGURE 7a

DU-11: [redacted] Baxter
Pre-Construction and RA Plan

Offsite Removal Action
Construction Completion Report

LEGEND

- Property of Interest
- Fence
- Tree Stump (>12" diameter) Removed
- Concrete and/or Asphalt Hardscaped Surface
- Temporary Construction Entrance

Surface Soil Removal Depth

- 6-inch
- 12-inch
- 24-inch

Utilities

- Natural Gas Meter
- Sewer Cleanout
- Stormwater Catch Basin Inlet
- Water Meter
- Roof Drain (discharging underground)

Surveyed Utility Line

- Natural Gas
- Sewer
- Water

Inferred Utility Line

- Sewer
- Water
- Septic Tank

NOTES

1. All feature locations are approximate.
2. Inferred utility locations are estimated based off of field observations or available public utility information from the City of Eugene's GIS mapping hub. Not all utilities shown.
3. This figure should not be used for location of underground utilities or features.

N

0 7 14 21
Feet

Date: October 15, 2024
Data Sources: BLM, ESRI, ODOT, USGS, OSIP Imagery (2018)

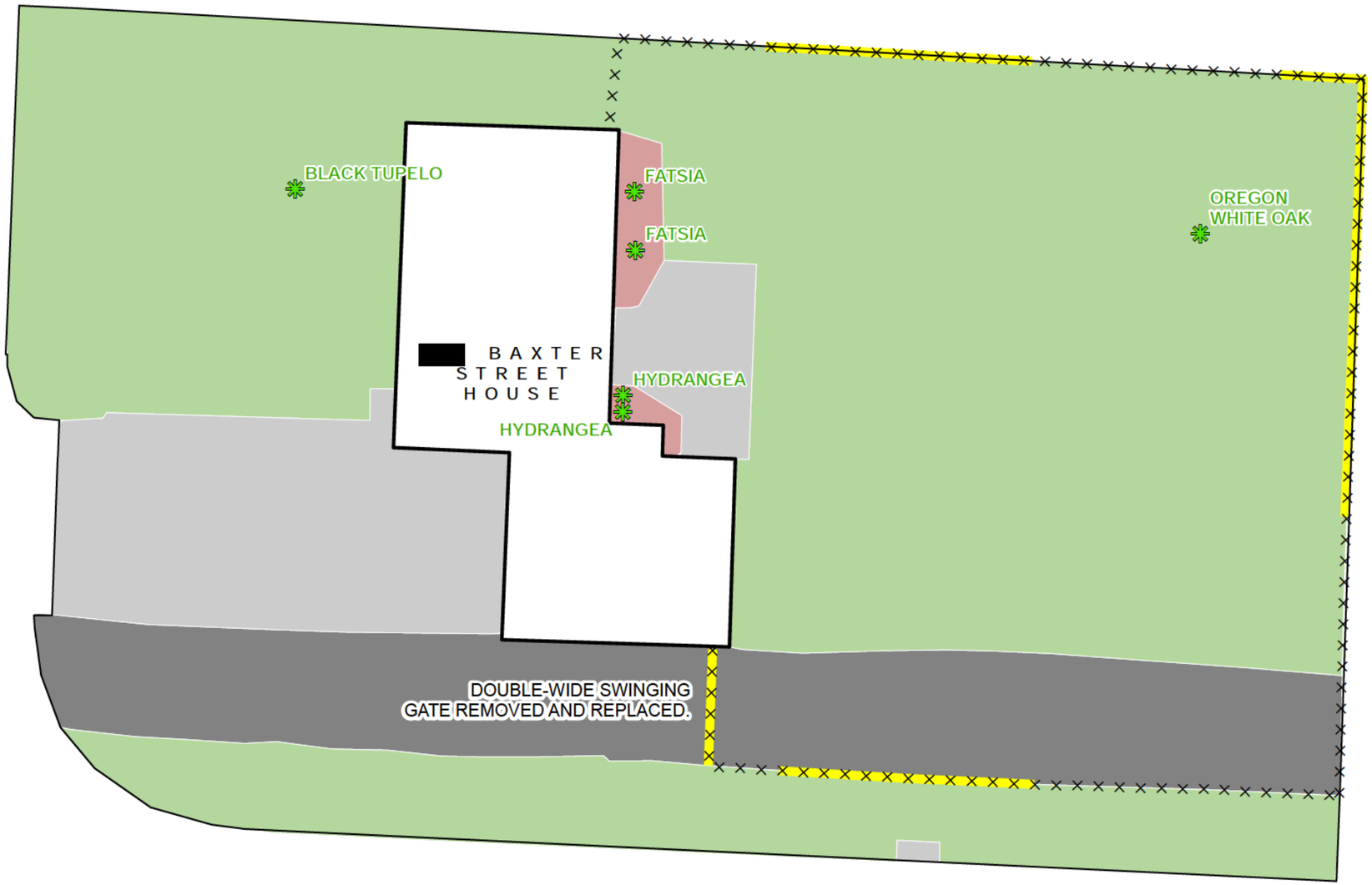
GSI Water Solutions, Inc.

Document Path: Y:\2060_DEQ\005_JH_Baxter\Source_Figures\Construction_Completion_Report\Figure7a_215_Baxter_Preconstruction.mxd, npalmer

FIGURE 7b

DU-11: [redacted] Baxter
Restoration Plan

Offsite Removal Action
Construction Completion Report



LEGEND

- Property of Interest
- Fence
- Repaired and/or Replaced Fence Section
- Tree or Shrub Planted During RA

Finished Surface

- Bare Soil
- Gravel Surface
- Concrete/Asphalt
- Sod

NOTE
All feature locations are approximate.

DU-11: PLANT SCHEDULE

Quantity	Common Name	Approximate Size
1	Black Tupelo	15-gallon
2	Hydrangea	1-gallon
2	Fatsia	1-gallon
1	Oregon White Oak	15-gallon

N

0 7 14 21
Feet

Date: October 15, 2024
Data Sources: BLM, ESRI, ODOT, USGS, OSIP Imagery (2018)

GSI Water Solutions, Inc.

Document Path: Y:\2060_DEQ\005_JH_Baxter\Source_Figures\Construction_Completion_Report\Figure7b_215_Baxter_Restoration.mxd, npalmer

FIGURE 8a

DU-15: [redacted] Baxter
Pre-Construction and RA Plan

Offsite Removal Action
Construction Completion Report

LEGEND

- Property of Interest
- Fence
- Tree Stump (>12" diameter) Removed
- Protected Tree and Root Structure
- Concrete and/or Asphalt Hardscaped Surface
- Temporary Construction Entrance

Surface Soil Removal Depth

- 6-inch
- 12-inch

Utilities

- Natural Gas Meter
- Sewer Cleanout
- Water Meter
- HVAC
- Roof Drain (discharging underground)

Surveyed Utility Line

- Natural Gas
- Sewer
- Water

Inferred Utility Line

- Natural Gas
- Roof Drain
- Sewer
- Water
- Septic Tank

NOTES

1. All feature locations are approximate.
2. Inferred utility locations are estimated based off of field observations or available public utility information from the City of Eugene's GIS mapping hub. Not all utilities shown.
3. This figure should not be used for location of underground utilities or features.

N

0 7 14 21
Feet

Date: October 15, 2024
Data Sources: BLM, ESRI, ODOT, USGS, OSIP Imagery (2018)

GSI Water Solutions, Inc.

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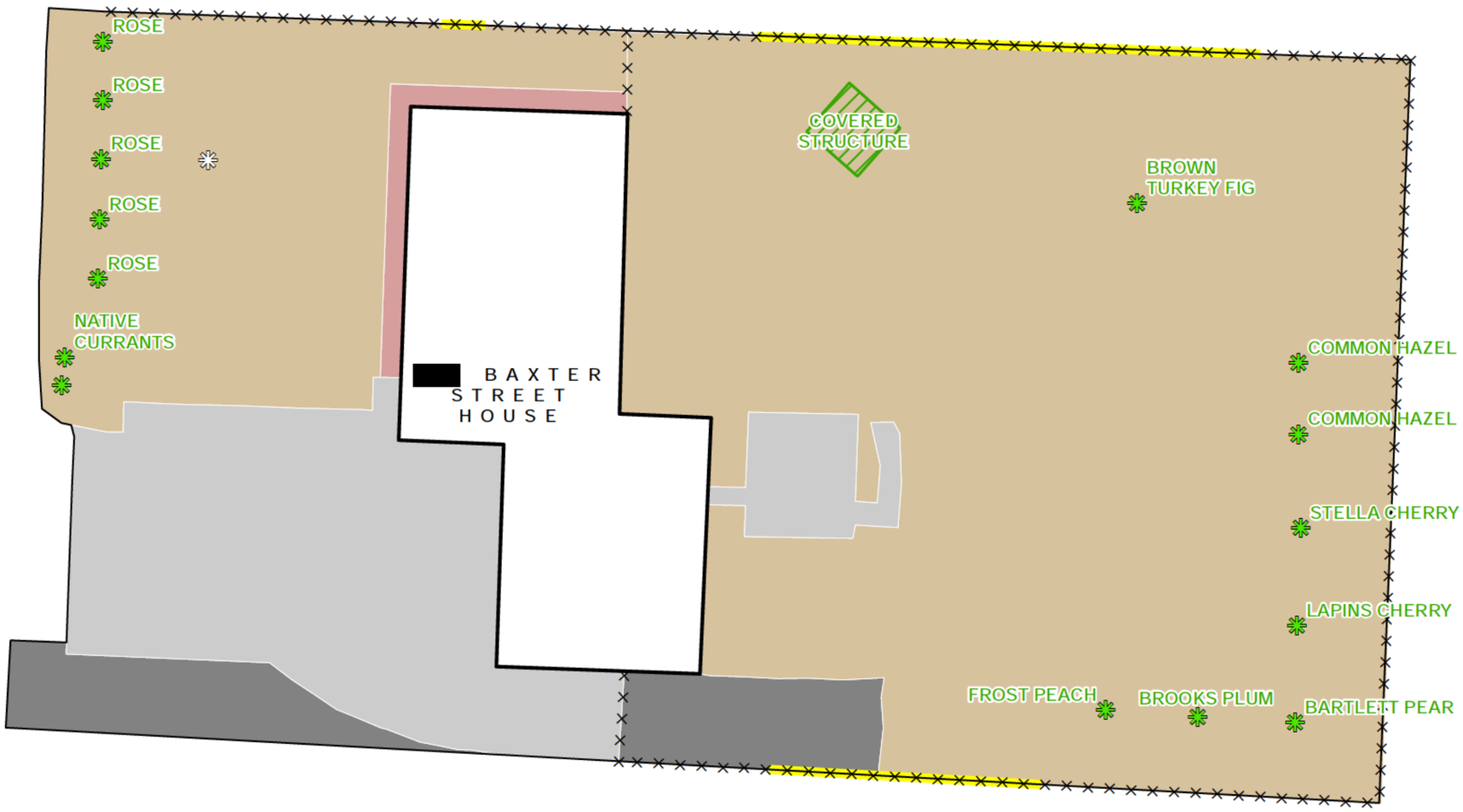
FIGURE 8b

DU-15: [redacted] Baxter
Restoration Plan

Offsite Removal Action
Construction Completion Report



LEGEND

- Property of Interest
- Fence
- Repaired and/or Replaced Fence Section
- Tree or Shrub Planted During RA
- Protected Tree and Root Structure
- Added Structure

Finished Surface

- Bare Soil
- Gravel Surface
- Concrete/Asphalt
- Wood Chips

NOTE
All feature locations are approximate.

DU-15: PLANT SCHEDULE

Quantity	Common Name	Approximate Size
1	Bartlett Pear	7-gallon
1	Brooks Plum	5-gallon
1	Brown Turkey Fig	5-gallon
2	Common Hazel	5-gallon
1	Frost Peach	5-gallon
1	Lapins Cherry	7-gallon
2	Native Currants	1-gallon
5	Rose	1-gallon
1	Stella Cherry	5-gallon

N

0 7 14 21
Feet

Date: October 15, 2024
Data Sources: BLM, ESRI, ODOT, USGS, OSIP Imagery (2018)

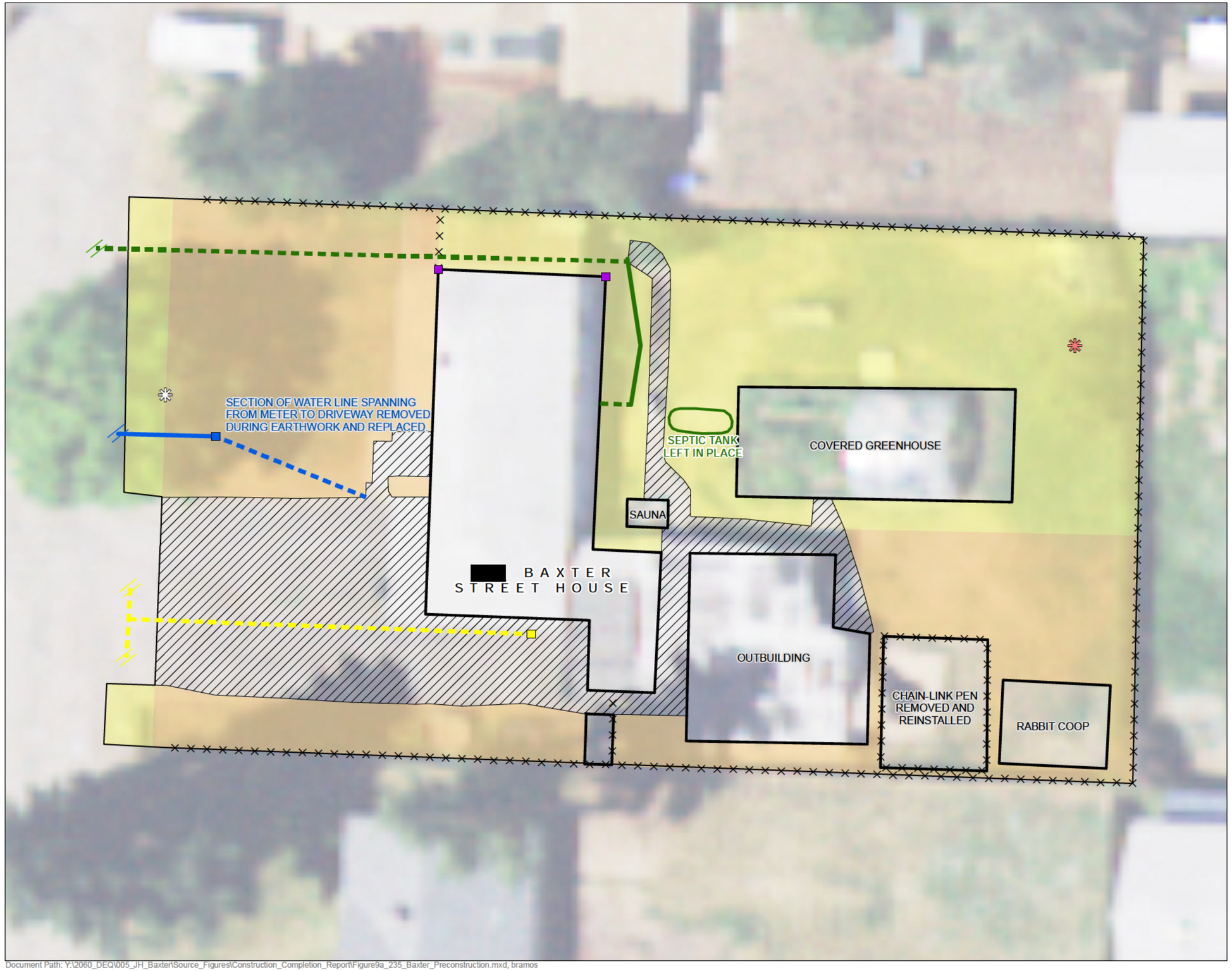
GSI Water Solutions, Inc.

Document Path: Y:\2060_DEQ\005_JH_Baxter\Source_Figures\Construction_Completion_Report\Figure8b_225_Baxter_Restoration.mxd, npalmer

FIGURE 9a

SO-07: [redacted] Baxter
Pre-Construction and RA Plan

Offsite Removal Action
Construction Completion Report



LEGEND

- Property of Interest
- Fence
- Tree Stump (>12" diameter) Removed
- Protected Tree and Root Structure
- Concrete and/or Asphalt Hardscaped Surface

Surface Soil Removal Depth

- 6-inch
- 12-inch

Utilities

- Natural Gas Meter
- Water Meter
- Irrigation Control Box

Surveyed Utility Line

- Sewer
- Water

Inferred Utility Line

- Natural Gas
- Sewer
- Water
- Septic Tank

NOTES

1. All feature locations are approximate.
2. Inferred utility locations are estimated based off of field observations or available public utility information from the City of Eugene's GIS mapping hub. Not all utilities shown.
3. This figure should not be used for location of underground utilities or features.

N

0 7 14 21
Feet

Date: October 28, 2024
Data Sources: BLM, ESRI, ODOT, USGS, OSIP Imagery (2018)

GSI Water Solutions, Inc.

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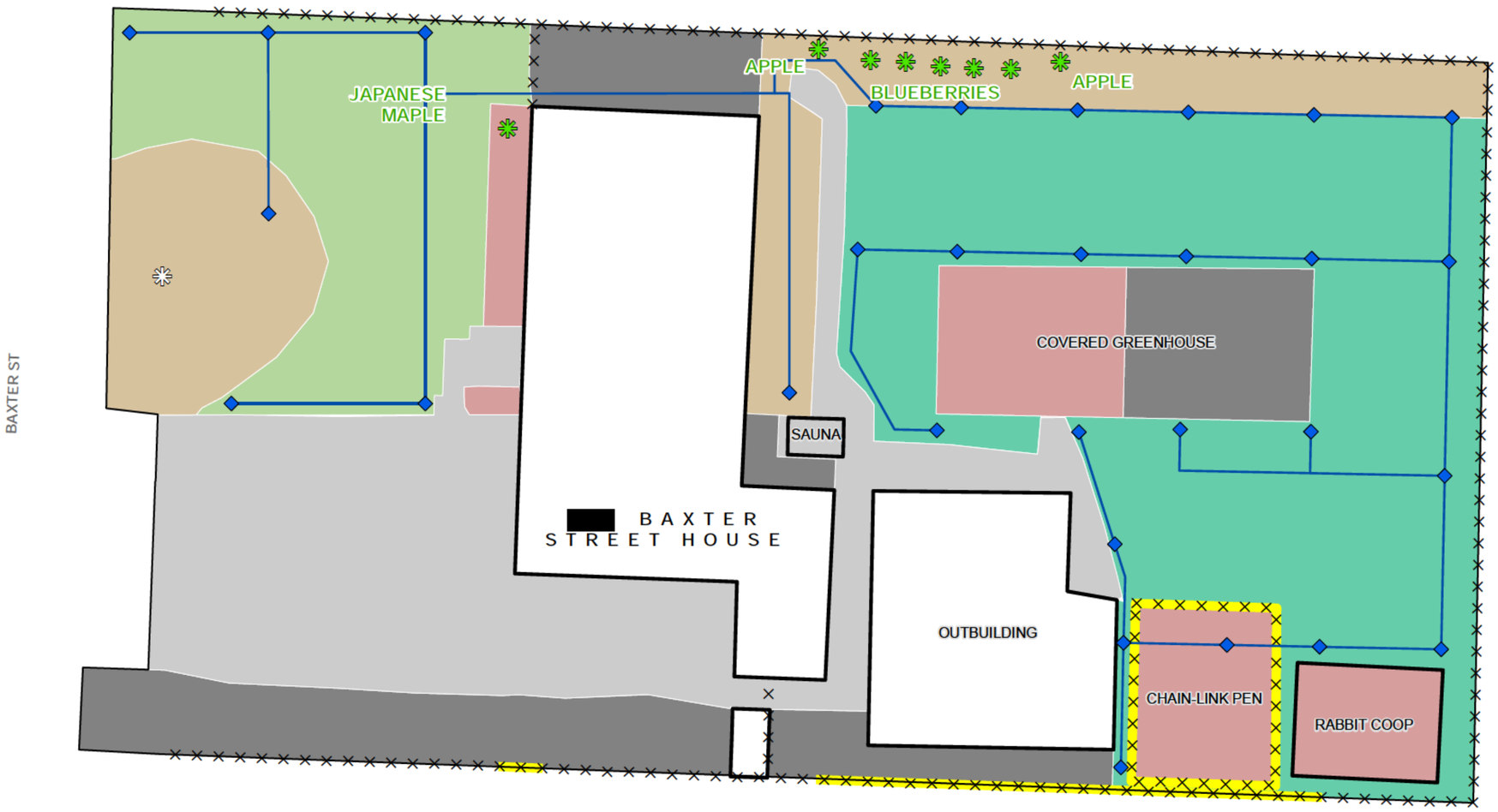
FIGURE 9b

SO-07: [redacted] Baxter
Restoration Plan

Offsite Removal Action
Construction Completion Report



LEGEND

- Property of Interest
- Fence
- Repaired and/or Replaced Fence Section
- Irrigation Line
- Sprinkler Head
- Tree or Shrub Provided to Resident During RA
- Protected Tree and Root Structure

Finished Surface

- Bare Soil
- Seed
- Gravel Surface
- Concrete/Asphalt
- Sod
- Wood Chips

NOTES

1. All feature locations are approximate.
2. Replacement irrigation line and sprinkler head configuration shown is approximate and estimated based off field observations. Irrigation system layout was determined in coordination with the property owner.
3. SO-07 resident elected to plant the provided trees and shrubs themselves.

SO-07: PLANT SCHEDULE

Quantity	Common Name	Approximate Size
2	Apple	10-gallon
5	Blueberry	3-gallon
1	Japanese Maple	10-gallon

N

0 7 14 21
Feet

Date: January 10, 2025
Data Sources: BLM, ESRI, ODOT, USGS, OSIP Imagery (2018)

GSI Water Solutions, Inc.

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