REMOVAL RESPONSE ACTION
FINAL REPORT

New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists
New Kent County, Virginia

PREPARED FOR:

Thomas Liesfeld

Liesfeld Farms
859 Ben Hatcher Road
Waynesboro, GA 30830

May 2019

Draper Aden Associates
Engineering • Surveying • Environmental Services

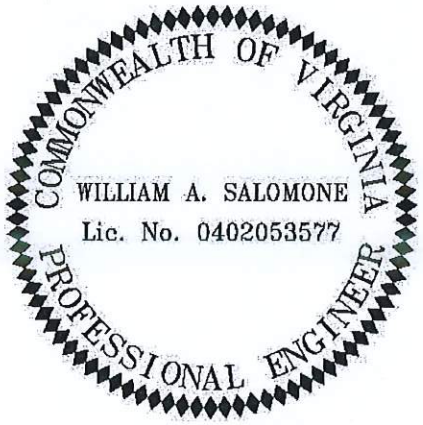
DAA Project Number: **R1534R-12**

CERTIFICATION OF COMPLIANCE

REMOVAL RESPONSE ACTION
FINAL REPORT
New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists
USEPA Docket No. CERC-03-2015-0262DC
New Kent County, Virginia

Except as provided below, I certify that the information contained in or accompanying this Final Report is true, accurate, and complete.

As to the portions of this Final Report for which I cannot personally verify their accuracy, I certify under the penalty of law that this Final Report and all attachments were prepared under my direction or supervision in accordance with a system design to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or person who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Signed: William A Salomone

William A. Salomone, P.E.
Project Coordinator
Virginia Professional Engineers License No: 0402053577

Date: 5/29/2019

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NEW KENT COUNTY, VIRGINIA

REMOVAL RESPONSE ACTION – FINAL REPORT

1.0 INTRODUCTION

The United States Environmental Protection Agency (USEPA) issued an *Administrative Order of Removal Response Action (the Order)* (Docket No. CERC-03-2015-0262DC) to the L-Wood, Inc., Southern Pine Specialists Site in Providence Forge, New Kent County, Virginia, a former wood preserving facility on September 30, 2015. The USEPA determined the basis of the Order as finding the presence of heavy metals in and around the Site that posed a threat to public health, welfare, and/or the environment and determined an actual or threatened release of hazardous substances from the site.

The purpose of the Order is as stated:

> *"…to protect the public health and welfare and the environment by ensuring that a proper removal response action, as defined in Section 101(23) of CERCLA, 42 U.S.C. §9601(23), is conducted to remove sources of contamination to the environment at the Site to prevent the potential for human exposure to contaminated soils and the continued migration of contaminated soil from the Site to the wetlands and the stream system adjacent to the Site"*

The Order identifies the "Respondent" as Mr. Thomas Liesfeld, herein referred to as "the Owner". Draper Aden Associates (DAA) was retained by the Owner to prepare the Response Action Plan (RAP) as required by the Order. The Response Action Plan, was submitted to, and subsequently approved by the USEPA in May, 2016. DAA was also retained by the Owner to provide environmental, engineering and Construction Quality Assurance (CQA) services in support of the Implementation of the Removal Response Action in March 2017. The CQA contract includes the preparation of this Final Report.

The purpose of this Final Report is to summarize the Response Action activities, present the CQA activities performed by DAA, and to present Certification that the work was performed in accordance with the Order and the RAP. The Final Report summarizes the work as performed by the Contractor chosen by the Owner to complete the Response Action Implementation. The Implementation work is herein referred to as "Construction". This Final Report also describes DAA's observations of the Quality Control measures performed by the Contractor, and presents records of correspondence with the

USEPA and the Virginia Department of Environmental Quality (VADEQ). This Final Report is prepared to meet the requirements of Section 8.11 of the Order.

2.0 SITE BACKGROUND

2.1 Site Location

The Site is located at 4101 South Mountcastle Road, Providence Forge, New Kent County, Virginia. The Site, as defined in the Order includes 14.664 acres, consisting of two adjacent parcels (Parcel Numbers/Tax Map Numbers 40-9B and 40-9C). The Site is approximately 1,500 feet south of the intersection of U.S. Route 60 and Routh 615.

2.2 Site History

Beginning in about 1978 and continuing through approximately 1996, various businesses operated a wood preserving facility at the Site. Beginning in 1978, the Site was owned and operated by New Kent Wood Preservatives, Inc. Between 1983 and 1988 the ownership changed several times and operated as Mid-Land Timber Products Company and later Kel-Wood Timber Products Company. In or about 1988, the Owner acquired the Site from a bankruptcy estate and operated a wood preserving facility from 1988 until approximately 1996 under the name "L-Wood, Inc. Southern Pine Specialists" (L-Wood).

Former activities at the site including the production of treated lumber using a pressure vacuum system whereby wood was saturated with chromate copper arsenate ("CCA"), a compound that contains chromium, copper, and arsenic. The process involved placing untreated lumber in a cylinder with pre-mixed CCA and water. Once the cylinder was full, the solution was withdrawn using a vacuum and the treated wood was removed and placed on the drip pad for drying.

In September of 1987, L-Wood, filed a "Notification of Hazardous Waste Activity" with the EPA, stating its generation of hazardous waste listed under 40 C.F.R. Part 261. L-Wood identified itself as a Small Quantity Generator under the Resource Conservation and Recovery Act, 42 U.S.C. § 6901-6992.

The USEPA and the Virginia Department of Environmental Quality (VADEQ) conducted inspections and sampling at the Site from 1985 until 1996 when the wood preserving facility was closed. In February of 2015, the USEPA Region III conducted removal assessment sampling and an Extended Site Inspection of soil, surface water, groundwater, and sediment to determine whether site conditions required removal action. These analyses indicated contamination in the soil surrounding the former process area (former treatment building, former primary drip pad, and former secondary drip pad). Levels of arsenic and chromium in the soils were detected above human health risk-based screening levels ("RSLs") for industrial soils: 3 milligrams/kilogram ("mg/kg") for arsenic and 6.3 mg/kg for hexavalent chromium. Arsenic and chromium were detected in soil and groundwater samples at concentrations that could pose an unacceptable risk to human health under long-term exposure conditions.

In 1996, the USEPA collected samples of soil and groundwater down-gradient of the site, and reported elevated concentrations of arsenic and chromium, whereby indicating off-site migration of these metals. Sediment samples collected from wetlands surrounding the site showed elevated concentrations of arsenic up to 50 times, chromium up to 24 times, and copper up to 8 times the USEPA Region III Biological Technical Assistance Group Regional Screening Levels for ecological risk (arsenic = 9.8 mg/kg; chromium = 43.4 mg/kg; copper = 31.6 mg/kg).

Additional references for the Site and the Order are provided on the USEPA On-Scene Coordinator (OSC) Response Website at:

https://response.epa.gov/site/site_profile.aspx?site_id=9293

2.3 Administrative Order for Removal Response Action

The following requirements of Order were completed with the submittal and approval of the Response Action Plan (RAP):

- Submittal of the RAP to the USEPA detailing the response action to be implemented in accordance with the Order.
- Assessment and evaluation of the soil in the former secondary drip pad area for contamination above the Site cleanup levels for arsenic and/or total chromium.
- Provision of a site-specific health and safety measures, including preparation of a Health and Safety Plan (HASP) for actions performed at the Site.

The Owner is required to complete the following actions in regards to Implementation of the Order:

1. Identify a Project Coordinator, and identify all contractors, subcontractors and supervisory personnel, and/or other persons retained by the Respondent to conduct all or any portion of the response action, and to ensure that such persons retained to perform such response actions must meet the applicable Occupational Safety and Health Administration (OSHA) requirements of 19.C.F.R 1910.120.
2. Install temporary erosion and sedimentation control measures to prevent the migration of hazardous substances into the wetlands and the stream system during the Response Action.
3. Excavate soil contaminated above the Site cleanup levels for arsenic (30 mg/kg) and/or total chromium (63 mg/kg) from the former process area, and the three main drainage ditches.
4. Conduct post-excavation sampling at the base of the excavation (24 inches below existing grade) to confirm that contamination has been reduces to levels at or below the Site cleanup levels.
5. If post-excavation sampling indicates that arsenic and/or total chromium are present above the Site cleanup levels, install an appropriate warning barrier, such as orange plastic fencing at the base of the excavation prior to backfilling in order to warn people that potential exposure to

hazardous substances may occur and that personal protective equipment should be worn to minimize potential exposure if working at that depth.

6. Backfill all excavated areas in the Former Process Areas to original grade or to a grade that facilitates proper drainage with clean, uncontaminated soil amended with up to 5% clean organic matter to reduce the bioavailability of any residual contamination. Restore the three main drainage ditches impacted by any removal activities so that the slope is no steeper than 3:1.
7. Install permanent erosion and sedimentation controls (e.g. crush and run) in the area surrounding the Former Process Area and vegetative cover in the three main drainage ditches at the completion of the response action to stabilize Site soils.
8. Properly off-site dispose of waste material excavated as a result of the Work.
9. Obtain a Hazardous Waste Generator Identification Number if any soil and/or waste material excavated as a result of the response action is determined to be "hazardous waste" in accordance with the Resource Conservation and Recovery Act (RCRA).

Additional details of the requirements stated above are provided in the Order.

2.4 Final Report

In accordance with the Order, the Owner is required to submit a written Final Report to the USEPA within forty-five (45) calendar days following completion of the implementation of the RAP. The Final Report, included herein, details the work undertaken to implement the RAP and the Order, and must be certified by the Respondent.

Per the Order, the USEPA agrees to review the adequacy of the Owner's implementation of the RAP and accomplishment of the items stated in the Order. The USEPA agrees to notify the Respondent, in writing of any discrepancies in the execution of the RAP and the actions required to correct such discrepancies or deficiencies.

3.0 RESPONSE ACTION PLAN

3.1 Response Action Plan Modules

As stated above, the Owner retained DAA to prepare and submit the Response Action Plan, to the USEPA. The RAP, submitted to and subsequently approved by the USEPA in January 2016, includes the following modules:

- Part A - Plan Overview
- Part B - Site Characterization Plan (SCP)

- Part C - Sample Collection Methods and Procedures Plan (SCMAPP)
- Part D - Quality Assurance Project Plan (QAPP)
- Part E - Health and Safety Plan (HASP)
- Part F - Erosion and Sediment Control Plan / Grading Plan
- Part G - Stormwater Management Plan (VSMP) + Stormwater Pollution Prevention Plan (SWPPP)

In accordance with the Order, the Modules present the different stages of the Response Action Plan, broken up by the various tasks required.

The Plan Overview, Part A, describes the overall goals of the Response Action Plan.

The Site Characterization Plan (SCP), Part B, includes the strategy for characterizing the waste mass for disposal purposes based upon chemical analyses of TCLP extracts for arsenic and chromium. The SCP requires waste to be characterized for criteria for potential classification as hazardous waste on the basis of toxicity prior to disposal. The SCP also describes the strategy for verification sampling and analysis, during the excavation phase of the project.

The Sample Collection Methods and Procedures Plan (SCMAPP), Part C, describes the specific protocols for obtaining and chemical analysis of samples.

The Quality Assurance Project Plan (QAPP), Part D, encompasses the manner, in which the quality of data derived during construction of the Response Action, is assured. Quality Assurance requirements and protocols are prescribed for procedures used to obtain soil samples for chemical analysis, and for the analytical methods used by the laboratory.

The Health and Safety Plan (HASP), Part E, describes the responsibilities, training requirements, protective equipment, and the site operating procedures to be used and implemented. It provides for protection of on-site personnel, to the extent practicable, from the potential hazards associated with contacting or handling surface water, sediment, soils, and associated wastes at the Facility. The Health and Safety Plan prescribes procedures to be applied globally, to all persons who enter the property to perform tasks that are directly associated with activities required by the Order. Such activities include, but are not necessarily limited to, those involving contact with soils contaminated above cleanup goals and those involving entry into designated cleanup exclusion zones. In the event that violations of the HASP are observed, either the designated Project Manager, Project Coordinator, or Health and Safety Officer will report the violation to those having the authority to stop the offending practice, namely (1) the person having direct supervision over the individual in violation, (2) USEPA, and/or (3) Owner. DAA personnel are not charged with the authority to stop work on the project.

The Erosion and Sediment Control Plan / Grading Plan, Part F, relates to upholding the established VADEQ protocols for erosion and sediment control and stormwater management and pollution prevention.

The complete RAP documents are provided on the USEPA On-Scene Coordinator (OSC) Response Website as stated above.

3.2 Response Action Construction Contract Documents

On behalf of the Owner, DAA issued the RAP for contractor bid. The Bid Documents submitted to the potential contractors included the standard Bidding Requirements, Agreements, Contract Conditions, and following sections:

- Parts B, E, F & G, listed above
- Technical Specifications
- Addendum No. 1, Dated May 31, 2016
- Addendum No. 2, Dated June 7, 2016
- Addendum No. 3, Dated June 9, 2016

The Owner awarded the Contract to complete the RAP construction to East Coast Athletics, LLC (ECA). The Erosion and Sediment Control Plan/Grading Plans, Technical Specs, and Addendums 1-3 are included in **Appendix A**.

3.3 Project Team

The Owner retained DAA as the Certifying Engineer of Record, to perform construction assistance to the Contractor and Construction Quality Assurance (CQA). DAA presents Certification of the Work performed per the Order. DAA-Environmental division managed CQA, documented daily activities, performed SWPPP inspections, collected verification and sidewall samples, monitored placement of soil and installation of piping, geotextile separation fabric, and recycled granular asphalt material. DAA-Subsurface Utility Engineers (SUE) marked out locations of underground power utilities prior to the start of excavation. DAA-Survey performed pre-construction survey mark out, collected post-excavation elevation data, calculated excavation volumes, and prepared a record survey drawing. DAA-Geotechnical performed compaction testing of the backfill in the road areas.

ECA was retained by the owner to perform all construction, disposal, and site restoration activities.

Analytical testing of imported borrow fill and excavated material was performed by either of two certified laboratories: Air, Water and Soils Laboratory (AWS) Richmond, Virginia, and ENCO Laboratories (ENCO) in Cary, North Carolina.

The USEPA On-Scene Coordinator, Ruth Scharr, provided regulatory oversight of the construction. DAA coordinated the construction schedule and work progress with the USEPA during the construction. Representatives from Tetra Tech, Inc. also performed occasional on-site observations of construction activities in the absence of the USEPA representative.

The VADEQ Site Assessment Manager provided State regulatory oversight and recommendations in cooperation with the USEPA. DAA copied the VADEQ in correspondences with the USEPA to notify the Agency of the construction progress.

DAA provided daily CQA reports to the Owner, USEPA and the VADEQ during construction via web links to the company's project server. DAA also posted results of analytical testing on the project server.

A list of the Project Team is presented below:

ORDER OF RESPONSE ACTION REPRESENTATIVES
Environmental Protection Agency; Washington DC
On-Scene Coordinator (OSC)/ Project Coordinator – Ruth Scharr
USEPA Consultant – Tetra Tech, Inc.

VIRGINIA ORDER OF RESPONSE ACTION REPRESENTATIVES
Virginia Department of Environmental Quality; Richmond Virginia
Site Assessment Manager – Devlin Harris

CQA ENGINEER
Draper Aden Associates; Richmond, Virginia
Senior Project Engineer – William Salomone, P.E.
Lead Technician – Kendall Dunham

DESIGN ENGINEER
Draper Aden Associates; Richmond, Virginia
Program Engineer – Bill Hase, P.E.

RECORD SURVEYOR
Draper Aden Associates; Richmond, Virginia
Survey Project Manager – Marvin Washington

CONTRACTOR
East Coast Athletics, LLC
Construction Manager – Jon Lamb
Site Superintendent/Equipment Operator – Chris Waxmunski

TESTING LABORATORIES
Air, Water, and Soils Laboratory (AWS); Richmond, Virginia
Senior Project Manager – Katrina Cooke

ENCO Laboratories; Cary, North Carolina
Project Manager – Chuck Smith

4.0 RESPONSE ACTION CONSTRUCTION

4.1 Overview

The Order, classified as a Removal Action, requires the Owner to remove surficial soil and gravel where concentrations of metals were detected above the Site Cleanup Criteria, and to properly dispose of excavated material off-site. The Site Cleanup Criteria for Arsenic (As) is 30 mg/kg (or ppm), and for Total Chromium (Cr) is 63 mg/kg (or ppm). Excavated material is referred to in the Order as "New Kent Wood Preservatives Material" or "NKWP Material"

Under contract by the Owner, ECA performed all excavation, backfill, work as required by the Order. The site is sub-divided into Four Excavation Areas, defined in the RAP as:

- Excavation Area 1 (EA1) – 0.77 acres
- Excavation Area 2 (EA2) – 0.56 acres
- Excavation Area 3 (EA3) – 0.53 acres
- Excavation Area 4 (EA4) – 0.57 acres

DAA performed CQA of the site work and collected verification soil samples at the floor of the excavation (24" bgs) as well as samples from the sidewall of the excavation. DAA submitted soil samples to a certified laboratory for analysis to determine concentrations of arsenic and chromium. DAA also reviewed the lab reports and submitted the results to the USEPA and VADEQ.

Per the Order, ECA placed orange safety fencing at the base of the excavation and prior to backfilling in two sections where verification soil samples detected concentrations of arsenic and/or chromium above the Site Cleanup Criteria. The intent of the orange safety fence is to indicate the potential for exposure to metals in the event that future excavation work disturbs the subsoils. Persons excavating contaminated soils should wear personal protective equipment in order to minimize the potential exposure to hazardous substances.

Following completion of the excavation and soil testing, ECA installed clean imported soil and gravel from approved sources to backfill the excavation. ECA restored the disturbed areas to pre-excavation grade. Details of the construction activities are provided in the next section.

4.2 Daily CQA Reports

DAA was contracted by the Owner to perform the following CQA services associated with the Order:

1. On-site observation of the construction activities,
2. Completion of daily site visit reports with photographed documentation of the construction progress,
3. Review of all test data,
4. Review and response to Contractor RFIs related to drawing and specification clarifications,
5. Review and approval of contractor submittals and shop drawings,
6. Attendance at progress meetings
7. Review of deviations from the approved design,
8. Interface with Contractor, USEPA, and VADEQ,
9. Attendance at a final completion inspection with the Owner, ECA, USEPA, and VADEQ,
10. Production of a final CQA report to include the following information:
    - Narrative description of the work and schedule of completion;
    - As-built record drawings provided by Draper Aden Associates;
    - Photographic record of work identified by activity and area;
    - Approved shop submittals;
    - Identification of all deviations from the original contract documents and justification for such deviations;
    - Certification by engineer that the work was constructed in accordance with the contract documents.

4.3 Timeline of Completed Construction

The overall construction Timeline, provided in **Table 1**, lists the major activities performed by ECA including excavation and backfill and site restoration. The following sections detail the activities conducted during construction.

5.0 PRE-CONSTRUCTION ACTIVITIES

5.1 Permits

Prior to construction, a Registration Statement was submitted to VADEQ for the land-disturbing activities to be covered under the General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Construction Activities (VAR10). VADEQ determined that the proposed land-disturbing was covered under the General VDPES Permit since the Site discharges to a surface water identified as impaired, or for which a TMDL waste load allocation has been established

and approved prior to the term of the general permit for (i) sediment or sediment-related parameter or (ii) nutrients. Therefore, the following Part I.B.4 and Part II.A.5 general and Stormwater Pollution Prevention Plan (SWPPP) requirements were implemented:

- Permanent or temporary soil stabilization were applied to denuded areas within seven (7) days after final grade is reached on any portion of the site;
- Nutrients (e.g. fertilizers) were applied in accordance with manufacturer's recommendations or an approved nutrient management plan and were not applied during rainfall events;
- Inspections were conducted at a frequency of (i) at least once every four business days or (ii) at least once every five business days and no later than 48 hours following a measureable storm event. In the event that a measureable storm even occurred when there are more than 48 hours between business days, the inspection was conducted on the next business day; and

The general permit shall expire on June 30, 2019.

As stated in the Erosion and Sediment Control Plan, the Owner must identify a Responsible Land Disturber (RLD), certified through the VADEQ. The RLD must be someone from the project or development team, responsible for carrying out the land-disturbing activities. The RLD acts as the individual liable for the erosion and sediment control measures on site. In the event of a violation, the RLD would be reported to the DEQ, in which case the RLD's certificate could be revoked. Ultimately, however, the landowner is responsible for all land-disturbing activities on the project.

ECA construction manager, Jon Lamb, is the RLD for the construction.

5.2 Part C Addendum – Pre-Excavation Waste Characterization

As stated in Section 3, the Part C Sample Collection Methods and Procedures Plan (SCMAPP) module of the RAP provides field procedure protocols for all phases, including site characterization, and post-excavation verification sampling, with the goal of meeting the requirements of the Order.

The Part C - Addendum 1 module presents additional protocols for *pre-excavation* sampling, testing and waste characterization. In accordance with the SCMAPP portion of the RAP, this process may be performed in lieu of stockpiling of waste for characterization during construction. The Pre-Excavation Test Pit Investigation provided data to determine Waste Characterization of the NKWP Material, which was determined prior to the start of excavation.

The Pre-Excavation Test pit investigation was completed between October 4 and October 6, 2017. The pre-excavation test pit investigation is described in further detail later in this report. A copy of Part C - Addendum 1 and the VADEQ approval letter is provided in **Appendix B**. Following approvals for material disposal location, ECA began site preparation and pre-construction activities at the Site on November 11, 2017.

5.3 Contractor Submittals

Prior to the start of construction, the Contractor (ECA) submitted material specifications to the Project Engineer (DAA) for review and subsequent approval. Examples of the materials included backfill soils and gravel, drain piping, and other miscellaneous items for restoration of the Site. Following approval by the Engineer, DAA also submitted material specifications for backfill soils to the USEPA OSC for review and subsequent approval. The Submittal Log, **Table 2,** presents a list of the approved materials. Copies of the approved submittals including the USEPA-approval records are provided in **Appendix C**.

5.4 Contractor Schedule

Prior to the start of construction, ECA submitted a proposed schedule as required by the Order. A copy of the initial Contractor Schedule is provided in the Submittals, provided in **Appendix C**. The actual construction timeline is provided in **Table 1**.

6.0 CONSTRUCTION ACTIVITIES

6.1 Erosion and Sediment Control

As specified in the design drawings, ECA installed silt fencing along the project perimeter and created sediment traps in the four main drainage areas on site. ECA also installed super silt fence at each Sediment Trap outfall, just behind the silt fence.

DAA designed each of the three sediment traps to treat construction runoff from the site, which is conveyed from three drainage ditches that ultimately discharge offsite. ECA constructed each of the sediment traps with dimensions in accordance with the design drawings. For each sediment trap, ECA installed diversion dikes along the outlet of the excavated area and placed VDOT #1 coarse aggregate and Class 1 riprap on filter fabric, along the center of the diversion dike in accordance with the design drawings.

DAA performed regular SWPPP inspections throughout the course of the project. In doing these inspections, DAA checked the erosion and sediment control measures put in place by ECA. DAA documented and informed ECA of any practices in need of maintenance or repairs.

ECA was responsible for controlling dust in accordance with Virginia Erosion and Sediment Control Handbook, Standard 3.39. Excessive dust was not observed during the excavation and backfill activities, and therefore no control measures were required.

ECA completed installation of the dry swales on March 23, 2018, in accordance with the Design Drawings. ECA completed the removal of the silt fence on April 16, 2018.

Copies of the VPDES Permit and the SWPPP Inspection Logs are provided in **Appendix D**.

6.2 Pre-Construction Testing and Waste Characterization

As stated above, the Part C - Addendum 1 module presents the protocols for pre-excavation sampling, testing and waste characterization, in lieu of stockpiling of waste for characterization during construction as described in the SCMAPP. The Part C - Addendum 1 includes provisions for pre-determining the acceptability of the excavated material for Beneficial Use at Weanack Land LLC. (Weanack), located in Charles City County, VA.

In accordance with the Part C Addendum, ECA and DAA completed test pit excavation inside the four Excavation Areas (EA1, EA2, EA3 and EA4) between October 4 and October 6, 2017. ECA excavated one test pit at a frequency of 2,500 square feet to a depth of 2 feet below ground surface for each Excavation Area.

DAA observed that the majority of the test pits (TP) contained approximately 6" to 24" of fill material above native brown silty sand. Fill material consists of layers of brown and black granular material consisting primarily of gravel/sand mixtures. The black material consists of a VDOT#3 stone mixed with silty sand and has a layer thickness of 6" to 12". This layer occurs between ~1" and 6" below the existing grade. In some test pits, the material above the black material consists of a 6" to 12" – thick layer of brown/gray granular fill consisting of silty sand and 1/2" - 3/4" pebbles.

At each of the test pits, DAA collected 1 grab sample from the excavation between 1" to 12" below ground surface (bgs) and a second grab sample between 12" to 24" bgs. Grab samples were homogenized into two composite samples for each area, one for each depth excavated (1"-12" and 12"-24").

DAA also collected four discrete samples of the soil component of the black material for full TCLP testing. Following completion of the soil sampling, ECA backfilled each test pit excavation with the excavated material.

DAA delivered the composite samples to Air, Water & Soil Laboratories, Richmond, VA (AWS) for analysis in accordance with the Weanack Land Criteria per Permit VPA00579 or for full TCLP testing. A summary of the pre-excavation analytical data used for Waste Characterization is provided in **Table 3**. The laboratory data and reports for the Pre-Excavation Analytical testing is provided in **Appendix E.**

6.2.1 Weanack Land Beneficial Use

Weanack Land Reclamation Project, a facility located at 461 Shirley Plantation Road in Charles City, Virginia, and managed by Weanack under Mr. Charles Carter (Operator).

Prior to the start of excavation Weanack requested approval from the VADEQ under Section 9VAC20-81-97 of the *Virginia Solid Waste Management Regulations* (*VSWMR*), to allow beneficial use of contaminated surficial fill material excavated from the site under the USEPA Order. The request is not a proposal to manage solid or hazardous waste materials at Weanack Land, but for management of the NKWP material in accordance with its Authorization to Manage Pollutants Permit, and for use as structural fill.

The Weanack site contains basins, permitted for management of approved dredged material by the operator. In order to place dredged materials by heavy equipment, the basins are accessible by a series of internal dike roadways. The basin and roadways are located on privately owned land used for dredge placement, and are not open to the public. The areas along the sides of the internal roadways are heavily vegetated. These structures are overtopped with silty materials from episodes of dredged material placement and require resurfacing in order to maintain operation. Weanack proposed to use approved material from the NKWP site as structural fill and as road re-surfacing. The basins were designed, permitted and built with an external perimeter dike, which serves to contain the dredged material and contains surface runoff within the basin. The NKWP material was not used on the perimeter dikes, or outside of the basin. Following placement and compaction, the operator placed seed over the surface to establish a vegetative cover for stabilization purposes.

Prior to final approval of the NKWP material for beneficial use, the Owner conducted chemical analysis of the soil using the Dredge Disposal Criteria, which is based on the Virginia Pollution Abatement (VPA) Permit. Soil material not meeting the Criteria requires disposal at a permitted landfill and is not suitable for beneficial use.

Weanack requested approval from the VADEQ to manage the NKWP material at Weanack Land in a letter to Mr. Jason Miller (VADEQ) dated July 21, 2017 (**Appendix B**, Attachment 1). The VADEQ approved the BUD in a letter to Mr. Charles Carter (Operator) from Mr. Jason Miller dated August 17, 2017 (**Appendix B**, Attachment 2). The Part C-Addendum 1 document supplements the approved SCMAPP.

DAA submitted the laboratory results of the composite samples collected under the pre-excavation test pit investigation to the VADEQ and to Mr. Carter for review. Upon review of the laboratory data, Mr. Carter compared the data to the Weanack Land Criteria and approved for material excavated from EA1, EA3, EA4, and the lower 12" layer of EA2 for Beneficial Use at Weanack Land. The material sample representing the upper 12" layer of EA2, showed concentrations of constituents above the Weanack Land Criteria and therefore this layer was not approved for disposal at Weanack.

A copy of the approval correspondence by the Weanack Land operator is provided in **Appendix F**.

6.2.2 Landfill Disposal

As stated above, laboratory results for the pre-excavation test pit samples and noted concentrations were above the Weanack Land Criteria for arsenic in the samples collected in the upper 12" layer of material from Excavation Area 2.

DAA submitted an application to Republic Services, Inc. for disposal of the Excavation Area 2 (Upper) material. The application included the laboratory results for the TCLP samples collected for the pre-excavation test pit investigation. Republic Services approved the material for disposal at the King and Queen Landfill, located in Plymouth, Virginia.

A copy of the approval correspondence by the landfill operator is provided in **Appendix F**. The quantity of the material disposed at King and Queen Landfill is provided below.

6.3 Excavation

6.3.1 Limits of Excavation

As described above, the limits of excavation defined in the RAP is subdivided into four Areas. Prior to the start of excavation DAA-SUE marked out the subsurface utilities and DAA-Survey marked out the limits of the excavation. ECA contacted Miss Utility to locate public utilities.

ECA began excavation work on the east site of the property inside EA1, around the outside of the wood storage building (former secondary drip pad), and progressed toward the west. After completion of EA1 backfill, ECA proceeded to the east side of EA3, followed by EA4 and EA2. ECA completed the final portion of the excavation located in the floor of the wood storage building in EA1. ECA excavated a total of 8,103 cubic yards of soil/gravel and hauled the material offsite.

ECA coordinated all work with the site tenants to ensure that construction activities minimized disturbance with ongoing operations. ECA managed site access as well as vehicle and pedestrian traffic to provide for safe ingress and egress. ECA staged the work in order to maintain sufficient roads and constructed temporary ramps as needed to maintain traffic flow.

ECA hauled and placed all material excavated from EA1, EA3, EA4, and the lower 12" layer of EA2 at Weanack Land. ECA hauled and disposed of material excavated from the upper 12" layer of EA2 at King and Queen Landfill.

The design limits of excavation and the four Excavation Areas are shown on the design drawings provided in **Appendix A.**

6.3.2 As-Built Drawing

Under contract by ECA, DAA surveyors collected elevation data of the floor of the excavation. The post-excavation survey was completed in five phases. DAA calculated the area and the volume of the excavation based on a comparison of the pre-excavation and post-excavation survey data. DAA produced an as-built drawing showing the base of the excavation elevation, the area of the excavation in square feet, and the volume of the excavation in cubic yards.

DAA surveyors field marked the three areas where orange safety fencing barriers were installed at the base of excavation to indicate areas, below the maximum excavated depth, where arsenic and/or chromium were detected at levels above the site cleanup criteria.

DAA surveyors recorded the locations of the three dry swales installed by ECA, which are permanent Stormwater Best Management Practices (BMPs) in accordance with the approved design.

The as-built surveys drawing includes all data described above including the post-excavation elevations, volume of material removed, areas of barrier fencing, and locations of the dry swales.

The as-built survey drawing is provided in **Appendix G**.

6.4 Offsite Material Management and Landfill Disposal

6.4.1 Weanack Land Beneficial Use

ECA hauled and placed approximately 6,647 cy of excavated material at Weanack Land. ECA spread and leveled this excavated material to rebuild the roadways at the Weanack site.

ECA measured the volume of excavated material hauled and placed at Weanack Land using the quantities measured from the excavation survey data collected by DAA and the volume hauled to the landfill.

ECA managed material at the site in accordance with the Weanack Land Permit requirements in coordination with the Operator.

6.4.2 Offsite Material Management - Municipal Landfill Disposal

In accordance with the Part C - Addendum 1, excavated material not meeting the Weanack Land Criteria or the criteria for Hazardous Waste per RCRA regulations was disposed at a Permitted Solid Waste Landfill.

ECA excavated material from the upper 12" layer of EA2, and hauled and disposed of the material at King and Queen Landfill in Plymouth, Virginia. A total of 1,761.75 tons of material was hauled to the landfill. Based on an assumed typical density of 1.21 tons/cy, it is estimated that ECA disposed of a total volume of 1,456 cy of material at King and Queen Landfill.

6.4.3 Off-Site Disposal and Beneficial Use Quantities

The table below summarizes the source and volume of material hauled to each location.

AREA ID	LAYER DEPTH	VOLUME, (CY)	DISPOSAL
EXCAVATION AREA 1 (EA1)	Ground-12"	2,829	Weanack Land (Beneficial Use)
	12" - 24"		
EXCAVATION AREA 2 (EA2)	Ground-12"	1,456	King and Queen Landfill
	12" - 24"	339	Weanack Land (Beneficial Use)
EXCAVATION AREA 3 (EA3)	Ground-12"	1,555	Weanack Land (Beneficial Use)
	12" - 24"		
EXCAVATION AREA 4 (EA4)	Ground-12"	1,924	Weanack Land (Beneficial Use)
	12" - 24"		
TOTAL EXCAVATION VOLUME		**8,103**	

The table below provides the volume of excavated material hauled per final location:

DISPOSAL/BUD LOCATION	VOLUME, (CY)
Weanack Land	6,647
King and Queen Landfill	1,456
Total Volume	**8,103**

The volume of excavated material hauled and placed at Weanack Land was calculated based on the subtracting the volume of material hauled to the Landfill from the total volume of material excavated.

A summary table tracking the amount of material disposed at the landfill is provided in **Table 4**. King and Queen Landfill waste manifests are provided in **Appendix H**.

6.5 Analytical Sampling and Testing

6.5.1 General Sampling Procedures

DAA followed the sampling protocol of the Part C SCMAPP for collection of soils for analytical testing. DAA collected all soil samples using clean spoons. DAA decontaminated the sampling equipment with liquinox, critical cleaning liquid, and thoroughly rinsed with distilled water prior to collecting each sample. DAA followed the Part C sampling protocol following both the pre-excavation test pit investigation and the removal excavation sampling.

Soil samples collected for analytical testing were identified based on the Excavation Area (EA1, EA2, EA3 EA4), purpose/type of the sample collected (e.g. verification or sidewall).

Four of these sample categories are associated with pretesting of imported fill material collected at the borrow source. Two sample categories are listed for analysis of pre-excavated materials. Two sample categories are listed for either the floor of the excavation (verification samples) or from the Sidewall of the Excavation (Side Wall Samples). Sample IDs for material collected from the site begin with the Excavation Area Number (e.g. "EA1).

A list of the samples and the ("Sample ID") or typical (Sample ID formats) is provided below:

1) Imported Borrow Fill Soil ("Engineered Soil Mix")
2) Imported Borrow Fill Soil ("Backfill Material")
3) Imported Borrow Fill Soil ("Millings")
4) Imported Borrow Fill Soil ("TS-1")
5) Pre-Excavation Test Pit Soil Samples for Weanack Land Criteria Analysis (EA#-1-12)
6) Pre- Excavation Test Pit Soil Samples for full TCLP Analysis. (EA#-1-TCLP)
7) Post-excavation Verification Soil Samples (EA# - CS-1)
8) Post-excavation Side Wall Soil Samples (EA#- SW# - 12)

IDs for samples collected in the layer 0" to 12" below existing ground end in "-12". Sample IDs for samples collected in the layer between 12" to 24" below existing ground end in "-24".

6.5.2 Lab Qualifications

Per the Order, analytical laboratories performing testing of excavated NKWP soil or imported backfill material are required to have a Quality Assurance Program Plan that complies with the USEPA guidance document EPA/240/B-01/003 (also known as QA/R-5). Both AWS and ENCO provided documentation

of this compliance. Copies of the lab qualifications are provided in **Appendix I**.

The majority of the project samples were analyzed by AWS. During construction, AWS reported an equipment breakdown causing delays in the turn around time for analysis. During that time, verification and sidewall samples taken were sent to ENCO for analysis. The samples analyzed by ENCO included all of EA4.

6.5.3 Verification Sampling

Following completion of soil and gravel removal from each Excavation Area, DAA collected verification samples of soil from the floor of the excavation. DAA collected verification samples at a minimum frequency of one sample per 2,500 square feet (sf) of the excavated area. DAA sub-divided each of the Excavation Areas into 2,500 square foot section on a field map. Samples IDs from each section identify both the Excavation Area and the Section inside the Excavation Area.

A total of 61 verification samples were collected from the floor of the excavation. DAA delivered all soil samples to either AWS or ENCO for analysis for comparison with the Site Cleanup Criteria stated in the Order. A total of 3 of the 61 samples exceeded the site cleanup criteria for either arsenic (30 mg/kg) and/or total chromium (63 mg/kg).

The locations of verification samples are shown on **Figure 1.** A summary of the results reported for arsenic and chromium for the verification Samples are provided in **Table 5.** Certificates of Analyses for the verification sampling analysis are provided in **Appendix J**.

6.5.4 Sidewall Sampling

In accordance with the Order, DAA collected samples from the sidewall of the excavation at a frequency of one sample per 50 feet of the sidewall. At each location, one soil sample was collected at a depth of 0”-12”, and a second sample was collected at a depth of 12”-24”. Sidewall samples were not collected at the sidewall of the excavation where potential lateral excavation beyond the limits shown in the design were not feasible. For example, no sidewall samples were collected where the excavation area borders a building pad.

A total of 70 sidewall samples were collected and analyzed by the laboratory for concentrations of arsenic and chromium. A total of 26 of the 70 samples exceeded the site cleanup criteria for either arsenic (30 mg/kg) and/or total chromium (63 mg/kg).

The locations of sidewall samples are shown on **Figure 2.** A summary of the results reported for arsenic and chromium for the Sidewall Samples are provided in **Table 6.** Lab reports for the sidewall sampling analysis are provided in **Appendix K.**

6.6 Imported Borrow Backfill Material

6.6.1 Backfill Soil

The design included placement of 16 inches of clean backfill material at the bottom of the excavated areas. ECA submitted specifications for the proposed backfill soil from Schreiber Mulch and Materials of Providence Forge, VA. DAA collected a soil sample of the imported backfill material, a sandy clay soil at the Schreiber pit. DAA delivered a sample of the backfill material to AWS, in Richmond, VA, for Arsenic and Chromium analysis.

DAA reviewed the backfill material specifications and laboratory testing results and compared the results with the project specifications. DAA submitted the material specifications to the USEPA and the VADEQ for review and subsequent approval.

ECA placed backfill material in two 8"-lifts in the excavated areas. Each lift was compacted with a vibratory smooth drum roller. ECA imported a total of 7,239 cy of backfill material to the site. DAA and ECA observed the placement of the backfill material to ensure compliance with the specifications.

A copy of the material submittal and approval record is provided in **Appendix C.** The summary of the imported backfill volume is provided in **Table 7.** Copies of the imported backfill load tickets are provided in **Appendix L**.

6.6.2 Topsoil

The Final Grading Plan includes placement of a maximum 2-foot surface layer of amended soil in grassed areas. ECA submitted specifications and test results for imported topsoil supplied by Schreiber Mulch and Materials. DAA delivered a sample of the backfill material to AWS, in Richmond, VA, for Arsenic and Chromium analysis.

DAA reviewed the material specifications and laboratory testing results and compared the results with the project specifications. DAA submitted the material specifications to the USEPA-OSC and the VADEQ for review and subsequent approval.

Following completion of the excavation, ECA installed topsoil in restored grassed areas. DAA observed the placement of the topsoil to ensure compliance with the specifications. ECA imported a total of 133 cy of topsoil material to the site.

A copy of the material submittal and approval record is provided in **Appendix C.** The summary of the imported topsoil volume is provided in **Table 8.** Copies of the imported backfill load tickets are provided in **Appendix L**.

6.6.3 Engineered Fill

The Final Grading Plan includes the installation of three dry swales installed as permanent Stormwater Best Management Practices. The Dry Swale design includes the placement of 24" surface layer of engineered soil mixture above a drainage medium. ECA submitted specifications and test results for imported engineered soil mix supplied by Schreiber Mulch & Materials of Providence Forge, VA. The engineered soil mixture product consists of 87% sand, 3.8% silt, and 9% clay. DAA collected a sample of the engineered soil mixture at the Schreiber facility and delivered the sample to Air Water & Soil Laboratories, in Richmond, VA, to measure the concentration of arsenic and chromium.

DAA CQA reviewed the material specifications and laboratory testing results and compared the results with the project specifications. DAA submitted the material specifications to the USEPA and the VADEQ for review and subsequent approval.

ECA installed 24" of engineered soil mix at the surface of the three dry swales above the drainage layer stone. ECA imported a total of 290.5 cy of engineered fill material to the site. DAA observed the placement of the engineered soil mixture to ensure compliance with the specifications.

A copy of the material submittal and approval record is provided in **Appendix C.** The summary of the imported Engineered Fill volume is provided in **Table 9.** Copies of the imported backfill load tickets are provided in **Appendix L**.

6.6.4 Granular Asphalt Millings

The design requires the surfaces of excavated driving areas to be backfilled with an 8" layer of VDOT #21B aggregate. ECA submitted specifications for the use of recycled granular asphalt material supplied by Lee Hy Paving Corporation in Providence Forge, VA as an alternate to the #21B aggregate material shown in the drawings.

DAA collected a sample of the granular asphalt at the Lee Hy facility and delivered the sample to Air Water and Soil Laboratories for Arsenic and Chromium analysis. DAA submitted the material specifications to the USEPA and the VADEQ for review and subsequent approval.

Following completion of the placement and compaction of backfill material, ECA placed an 8" layer of approved recycled granular asphalt material from Lee Hy Paving to restore the road surfaces. ECA compacted the road surfaces with a vibratory smooth drum roller. ECA imported a total of 5,158.6 tons of granular asphalt to the site. DAA observed the placement and compaction of the recycled granular asphalt millings to ensure compliance with the specifications.

A copy of the material submittal and approval record is provided in **Appendix C.** The summary of the imported asphalt millings volume is provided in **Table 10.** Copies of the imported backfill load tickets are provided in **Appendix L**.

6.7 Compaction Testing

As stated above, ECA placed backfill material in two 8"-thick lifts. ECA performed compaction testing of the first lifts by proof-rolling the sections with a fully loaded dump truck. ECA repaired sections not passing the proof-roll testing by scarifying the soil with the excavator followed by re-compaction. ECA installed the second 8" lift of backfill in sections passing the proof-rolling.

Prior to installation of the road surface material, DAA-Geotechnical performed nuclear density testing of the second lift of backfill material in the road portions of each Excavation Area. Density tests were performed at a minimum frequency of one test per 2,500 square foot of fill area. The maximum dry density criteria proctor for the backfill material used for the compaction testing was submitted by ECA. The density test results show a minimum of 95% maximum dry density based on the data included in the submittal.

DAA performed CQA observation of all compaction testing. A copy of DAA's density test reports are provided in **Appendix M.**

6.8 Permanent Stormwater Best Management Practices (BMPs)

As stated above, the Final Site Grading Plan includes the three new dry swales installed as permanent Stormwater Best Management Practices. The intended purpose of each of the dry swales is a pre-treatment system that temporarily stores and filters stormwater prior to offsite discharge. The primary components of the dry swales include a drainage medium, filter fabric, engineered soil mixture and landscape plantings. DAA inspected the installation of the three dry swales to ensure compliance with the design. The underdrain piping components of the dry swales were not installed due to the feasibility of installing discharge piping to an outfall on a site with a relatively flat topography. The design drawing show check dams in the dry swales. DAA Surveyors recorded the locations of dry swales on the as-built drawing.

The drainage medium used in the dry swales is the imported engineered fill soil discussed the previous sections. ECA planted a total of twenty-four Autumn Olives, six 4-5' Eastern Red Cedars, and six 4-5' River Birches. The placement of the plantings in accordance with the design drawings;

The Owner or Site Operator is required to maintain the dry swales in accordance with Section 9 of the Virginia DEQ Stormwater Design Specification No. 10. Dry swales require minimal maintenance other than regular lawn mowing, pruning, and management of shrubs. Long-term maintenance of the dry swales is included in the VADEQ Design Specification No. 10, provided in **Appendix N.**

6.9 Site Restoration

ECA performed the following site restoration work in accordance with the design:

1. Final backfill and stabilization of all excavations and areas of disturbance.
2. Installation of culvert inlet/outlet protection
3. Placement of permanent seed, mulch and fertilizer over disturbed sections to be restored as grassed areas.
4. Installation of soil stabilization blanket (EC-2) in drainage channels with permanent seeding.
5. Intallation of permanent BMPs.
6. Removal of temporary Erosion and Sediment Control features (silt fence)

ECA installed compacted recycled asphalt over areas restored as road and parking, and placed topsoil over areas restored as grass. ECA placed fertilizer and straw mulch over seeded areas. All site restoration was completed as observed in the final site walk meeting on May 11, 2018.

6.10 Correspondence

DAA maintained correspondence with ECA, USEPA, and VADEQ throughout the course of the construction. Copies of email conversations are provided in **Appendix F.**

6.11 Daily Reports

DAA completed Daily QA Reports, made available for the VADEQ and USEPA every week on DAA's ftp website. These reports included notes about equipment on site, equipment used, daily activities performed, daily progress made, other events that may have occurred, as well as documentary photographs. Daily QA Reports include representative photographs taken of the site conditions from each day. DAA posted Daily reports on DAA's ftp website and provided access to the USEPA, VADEQ and the owner. The Daily Reports are included in **Appendix O**.

7.0 APPROVED FIELD MODIFICATIONS TO RESPONSE ACTION

7.1 Sidewall Sampling Criteria

The RAP requires collecting soil samples from the sidewalls of the excavation at a frequency of one sample per every 50 linear feet. The RAP requires samples to be collected and tested with the same protocol as the verification samples.

The RAP requires that if samples show concentrations of arsenic and/or total chromium, that excavation will proceed into the sidewall until the concentrations are below the cleanup criteria. The RAP states the following:

> *"At each sidewall soil sample location, additional soil samples will be obtained at a distance of approximately 20 feet in the outward direction. Samples will be obtained at depths deemed appropriate with respect to the corresponding sidewall samples. We refer to such samples as 'outward verification samples.'*

- *If the concentration of either arsenic or total chromium in an outward verification samples exceed its removal response action goal, then excavation will proceed in the outward direction to that point, after which another cycle of verification sampling and analysis will be conducted.*

- *If the concentration of both arsenic and total chromium in the outward verification sample are less than their respective removal response action goals, then excavation will proceed in the outward direction for a distance of approximately another 10 feet, after which another cycle of verification sampling and analysis will be conducted*.

As stated in previous sections, the goal of the pre-excavation sampling is to classify the material for waste disposal prior to performing excavation work. It was determined that any potential sidewall excavation would increase the excavation beyond the proposed limits whereby material would be removed and disposed without proper waste classification. An action to increase the excavation footprint requires modifications to the erosion and sediment control features as well as the limits of disturbance established in the VPDES permit. DAA noted that increasing the excavation footprint would also cause traffic circulation issues due to potential relocation of the tenant's wood products stockpiled on site.

DAA discussed these challenges with the USEPA OSC, and proposed to collect sidewall samples without immediate excavation, and to continue with the work progress. DAA proposed for sidewall sample data to be evaluated after completion of backfill. The USEPA OSC agreed to this change and presented the modified procedures for sampling and excavation. Following review of the data, the USEPA also provided a Decision Document in a letter to DAA dated September 19, 2018. The letter states that "…no further response action is required under this Order". A copy of the correspondences with the USEPA and the letter are included in **Appendix F**.

7.2 Outer Area Soil Characterization

The Site Characterization Plan portion of the RAP included soil samples collected outside of the property fence line. Analytical results for six of these samples showed concentrations for the constituents of concern that exceeded the site cleanup levels.

Following completion of the Removal Action inside of the property boundary, DAA, under USEPA observation, performed hand excavation in these 6 locations and collected soil samples for analytical testing. The test results showed the presence of arsenic and chromium present in the subsurface soils. The 6 locations outside of the fence line are also referred to as "hot spots" in the field reports.

The USEPA and VADEQ evaluated the results of these samples and provided a detailed description of the findings in a Memo (to File) dated September 19, 2019. The USEPA also provided a Decision Document in a letter to DAA dated September 19, 2018. The letter provides a modification to Section

5.0, of Part A of the RAP and states that "…no further response action is comparerequired under this Order". A copy of the USEPA Memo and the USEPA letter are included in **Appendix F**.

7.3 Drainage Modifications

The design plans included the installation of five proposed new corrugated metal pipe (CMP) stormwater culverts, identified as (C-1, C-2A, C-2B, C-3, C-4, and C-5) and located within EA1 and EA2.

Modification 1) ECA suggested the use of reinforced concrete pipe (RCP) in lieu of the corrugated metal pipes proposed in the drawings. RCP is generally more durable than CMP and provides extended longevity considering the industrial activity on the site. DAA proposed the modification to the Owner via email, and the Owner agreed to this change.

Modification 2) Following ECA's backfill of the excavation and prior to placement of the granular asphalt layer, ECA and DAA reviewed the proposed drainage structures in relationship to the discharge topography. The Project Team determined that elimination of all of the culverts except for C-5 would be a viable option. ECA and DAA planned the installation of a gravel swale between C-2A/B and C-4 to discharge water to C-5. Also, to eliminate C-1 and C-3 and to replace these structures with a gravel swale. The gravel swales were field-fit to discharge stormwater in the same direction as was proposed in the design. ECA and DAA discussed these modifications with the Owner and the property tenants, who agreed to these changes. The drainage modifications created an increase in the drivable area of the site and will help to elevate ponding during heavy rainfall events. The property tenant requested the elimination of C-4, which may cause stormwater from the Refractory Building roof to pool and flood the Sawmill building. Culvert C-5 discharges to SCC-1 and Dry Swale #1, per the design.

Per the design drawings, ECA installed permanent riprap inlet and outlet protection at the culvert outlet in EA1-Section 13.

7.4 Duplicate Samples

The QAPP portion of the RAP specifies for duplicate samples to be collected for verification sampling. DAA and the USEPA determined it was excessive to take a duplicate sample for each day in the field, plus one additional sample for every 20 samples submitted to the laboratory. USEPA OSC gave DAA the authority to take additional verification samples over the entire excavation area, in lieu of collection of duplicate samples. The USEPA OSC made this decision based on soil sampling variability. The Order required that one soil sample be obtained every 2,500 sf. DAA surveys show approximately 115,000 sf of removed material, requiring 48 samples to be collected. DAA exceeded this amount by taking 10 extra soil samples for a total of 58. AWS and ENCO conducted laboratory analyses for the soil verification and sidewall samples.

8.0 QUALITY ASSURANCE AND QUALITY CONTROL

Quality Control (QC) and Quality Assurance (QA) activities were performed by both the Contractor and the Engineer during the construction process to ensure that the Order was completed to industry standards. The following section lists the QA and QC activities performed in accordance with the approved Order and the RAP.

8.1 Quality Control

The following QC activities were performed by ECA and DAA during the construction process.

1. Prior to excavation, DAA determined if soil to be excavated from the site could be classified as hazardous waste under RCRA requirements. DAA reported results of these tests to the USEPA and determined that a portion of the excavated material was acceptable for disposal at a Subtitle D solid waste landfill.

2. DAA classified the waste material by collecting pre-excavation composite soil samples for analysis at a certified lab. DAA reviewed the pre-excavation soil sample analytical results to determine the waste material classification: hazardous or non-hazardous. Analytical results below the Weanack Land Criteria (non-hazardous) indicated that the waste material would fall under the Beneficial Use Determination for Weanack Land. After reviewing the laboratory results, EA1, EA3, EA4, and the 12"-24" layer of EA2 were acceptable for disposal at Weanack Land. Waste material outside of the Weanack Land Criteria, the 0"-12" layer of EA2, required disposal at a Permitted Solid Waste Landfill (King and Queen Landfill in Plymouth, VA).

3. DAA also collected soil samples at the bottom of the excavation. Both sets of samples showed analytical results below the site cleanup levels, therefore requiring no further action. DAA followed the quality control procedures in the QAPP for verification sampling. DAA and the USEPA determined it was excessive to take a duplicate sample for each day in the field plus one additional sample for every 20 samples submitted to the laboratory.

4. Under contract with ECA, DAA-Survey staked out the construction limits including, silt fence alignment, limits of excavation, and BMP locations prior to excavation. DAA-SUE located existing buried utilities. ECA contacted Miss Utility to detect and mark the public-owned buried utility lines on site. If necessary during later phases of construction, ECA ensured all buried utility lines were re-marked before continuing excavation work.

5. During excavation, ECA performed field survey to ensure the depth of excavation.

6. DAA performed QC procedures for sample collection in accordance with the SCMAPP portion of the RAP. DAA used dedicated stainless steel spoons to collect all soil samples. DAA performed decontamination procedures for the sampling equipment as listed in the SCMAPP, including the following:

- Wash with non-phosphate detergent and a brush, to thoroughly remove contamination.
- Rinse with potable or distilled water.
- Double rinse with potable or distilled water.
- Dry with clean paper towels.

7. ECA and DAA visually inspected imported materials, including clean backfill, engineered fill, topsoil and granular asphalt. ECA observed for change in material gradation, excess moisture, and presence of large organic matter or debris such as branches, roots, stumps, or rocks. ECA rejected only several loads of backfill over the course of construction, on the basis of high clay content. ECA also observed several loads with high moisture content. ECA spread the high-moisture soil over the site and allowed to dry prior to performing compaction work.

8. ECA field-surveyed the elevation of the backfill to ensure proper lift height, final grading and drainage in accordance with the design.

9. ECA placed the 16" backfill layer in two 8-inch lifts. ECA compacted each lift with a vibratory smooth drum roller. ECA performed a proof roll with a fully loaded dump truck on the compacted first lift. DAA and ECA visually approved the proof roll before ECA proceeded to install the second lift.

10. DAA visually observed ECA's installation of geotextile fabric placed over the backfill material and under the granular asphalt for compliance with the design specifications.

11. DAA visually examined ECA's placement of recycled granular asphalt material over the geotextile for compliance with the specifications.

12. DAA visually examined ECA's placement of topsoil and engineered fill materials for compliance with the specifications.

13. The QAPP specifies the laboratory analyses methods required by the EPA. The principal analytical method to be used for extraction of soil and sediment samples was SW 846 3050B. The principal analytical method for chemically analyzing soil and sediment samples for *arsenic* and *chromium* shall be SW 846 6010C (inductively coupled plasma - atomic emission spectroscopy). The laboratory may also use the following alternative analytical methods for chemically analyzing soil and sediment samples for *arsenic* and *chromium*, if warranted for technical reasons (rather than a matter of convenience): SW 846 7010 (graphite furnace - atomic absorption spectrophotometry). Alternative analytical methods could be employed, provided that the justification was technical (rather than a matter of convenience), the laboratory limit-of-quantitation for the subject constituent was less than the assessment criterion for that sample, or the EPA had approved the use of the alternative method.

8.2 Quality Assurance

The Order states the following regarding Quality Assurance:

> *"The Respondent shall use quality assurance, quality control, chain of custody procedures in accordance with the following documents while conducting all sample collection and analysis activities required by this Order:*
> *a) "EPA NEIC Policies and Procedures Manual" (EPA Document 330/9-78-001-R(revised November 1984));*
> *b) "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," (December 1980)); and*
> *c) "QA/QC Guidance for Removal Activities," (EPA/540/G/90/004 (April 1990))""*

DAA performed the following QA activities during construction with the objective of meeting the Quality Assurance specified in the RAP:

1. DAA completed Daily QA Reports, made available for the VADEQ and USEPA every week on DAA's ftp website. These reports included notes about equipment on site, equipment used, daily activities performed, daily progress made, QC procedures performed by the Contractor, issues encountered, subcontractor activities and other miscellaneous activities. The QA reports included representative photographs showing site activities and conditions. The Daily Reports are included in **Appendix O**.

2. Upon receipt of the certificates-of-analysis, DAA reviewed the laboratory analytical results. All laboratory analytical results were assessed prior to backfilling. DAA approved each section of the Excavation Area for backfill. In sections where analytical results were above the site cleanup levels, a barrier was required at the base of the excavation. In three 2,500 sf sections, orange safety fencing was placed 24" bgs to signify that contamination is likely still present beyond the point of the barrier. ECA began backfilling each excavated area only after DAA approval of that area.

3. DAA used quality control procedures for sample collection as stated in the previous section.

4. DAA used chain of custody procedures for sample collection in accordance with the RAP.

9.0 SUMMARY RESPONSE ACTION IMPLEMENTATION

As stated in Section 4, the Order, classified as a Removal Action, requires the Owner to remove surficial soil and gravel with contaminants above the Site Cleanup Criteria, and to properly dispose of all

excavated material offsite. The following section summarizes the Order and presents a description of how the RAP and construction met these requirements.

The goals of the response action as stated in the Order are as follows:

- Remove sources of contamination at the Site:
    a) to prevent the continued migration of hazardous substances from the Site to wetlands and the stream system adjacent to the Site, and
    b) to avoid the potential for human exposure,
- Properly dispose of contaminated waste material,
- Identify where contamination may still be present below 24'' of excavation,
- Locate areas of contamination laterally and determine if further excavation is required,
- Install clean imported soil and gravel material to pre-excavation grades.

On behalf of the Owner, DAA as the Engineer, and ECA, the Contractor, performed the response action implementation work in coordination with the USEPA as summarized in this report. The Response Action Implementation construction consisted of the following activities:

- pre-excavation testing,
- installation of temporary erosion and sediment control measures,
- excavation and proper disposal of waste material,
- post-excavation sampling,
- installation of warning barriers, where required,
- backfilling with clean soil material,
- installation of permanent erosion and sediment control measures,
- site restoration.

The following lists the requirements with regards to Implementation the Order, and the Owner Response that was completed to meet each of the requirements:

1. Identify a Project Coordinator, and identify all contractors, subcontractors and supervisory personnel, and/or other persons retained by the Respondent to conduct all or any portion of the response action, and to ensure that such persons retained to perform such response actions meet the applicable Occupational Safety and Health Administration (OSHA) requirements of 19.C.F.R 1910.120.

    Owner Response: Prior to the start of work, DAA identified the Project Coordinator and the Contractor to the USEPA. A copy of these correspondences are included in ***Appendix F.***

2. Install temporary erosion and sedimentation control measures to prevent the migration of hazardous substances into the wetlands and the stream system during the Response Action.

   Owner Response: Prior to the start of construction, ECA installed temporary erosion and sediment control measures on the site, including silt fence and sediment traps. The E&SC work is shown in the Daily CQA reports.

3. Excavate soil contaminated above the Site cleanup levels for arsenic (30 mg/kg) and/or total chromium (63 mg/kg) from the former process area, and the three main drainage ditches.

   Owner Response: ECA excavated a total of 8,103 cubic yards of soil/gravel from the four excavation areas at the site (EA1, EA2, EA3, and EA4) and hauled the material offsite. These areas include the former process areas, drip pad area, and the three main drainage ditches as stated in the order.

4. Conduct post-excavation sampling at the base of the excavation (24 inches below existing grade) to confirm that contamination has been reduced to levels at or below the Site cleanup levels.

   Owner Response: DAA collected verification samples at the bottom of excavation and submitted for lab analysis to determine if contamination was present below the 24"depth of excavation. A minimum of one sample was collected per 2,500 sf of area excavated. Three verification samples resulted in concentrations above the site cleanup levels for arsenic and/or chromium.

5. If post-excavation sampling indicates that arsenic and/or total chromium are present above the Site cleanup levels, install an appropriate warning barrier, such as orange plastic fencing at the base of the excavation prior to backfilling in order to warn people that potential exposure to hazardous substances may occur and that personal protective equipment should be worn to minimize potential exposure if working at that depth.

   Owner Response: Laboratory results for three verification samples showed concentrations of arsenic and/or chromium above the site cleanup criteria. ECA installed orange safety fencing as a warning barrier at the floor of excavation. DAA surveyors field marked the three areas where orange safety fencing barriers were installed at the base of excavation to indicate areas, below the maximum excavated depth, where arsenic and/or chromium were detected at levels above the site cleanup criteria. The as-built surveys drawing shows the areas of barrier fencing.

6. Backfill all excavated areas in the Former Process Areas to original grade or to a grade that facilitates proper drainage with clean, uncontaminated soil amended with up to 5% clean organic matter to reduce the bioavailability of any residual contamination. Restore the three

Main Drainage Ditches impacted by any removal activities so that the slope is no steeper than 3:1.

Owner Response: ECA placed clean backfill material in the excavation and graded the final surface in accordance with the design drawings. ECA placed amended soil in all areas restored as grass areas. ECA submitted specifications and test results for imported topsoil supplied by Schreiber Mulch and Materials. A copy of the material submittal is provided in ***Appendix C****. ECA constructed three main drainage ditches in accordance with the design drawings having a longitudinal slope of 0.5%. ECA installed clean topsoil in the channels covered with EC-2 stabilization matting and permanent seeding to establish vegetation, in accordance with the design drawings.*

7. Install permanent erosion and sedimentation controls (e.g. crush and run) in the area surrounding the Former Process Area and vegetative cover in the three main drainage ditches at the completion of the response action to stabilize Site soils.

   Owner Response: ECA completed installation granular asphalt as permanent site stabilization over all surfaces restored as roads and/or parking. ECA constructed the three main drainage ditches, installed a new culvert with permanent inlet/outlet protection as well as three new dry swales, in accordance with the Design Drawings.

8. Properly off-site dispose of waste material excavated as a result of the Work.

   Owner Response: ECA excavated material from the upper 12" layer of EA2, and hauled and disposed of the material at King and Queen Landfill in Plymouth, Virginia. A total of 1,761.75 tons of material was hauled to the landfill. ECA excavated approximately 6,647 cy of material from EA1, EA3, EA4 and the lower 12" layer from EA2, and placed the material at Weanack Land. ECA spread and leveled this excavated material to rebuild the roadways at the Weanack site beneficial use. The volume of excavated material hauled and placed at Weanack Land was determined by the total amount of material excavated, as determined by field survey, less the volume of material hauled to the Landfill.

9. Provide a site-specific health and safety measures, including preparation of a Health and Safety Plan (HASP) for actions performed at the Site.

   Owner Response: The HASP was provided as Part E of the RAP. ECA was provided a copy of the HASP prior to the start of construction.

10. Obtain a Hazardous Waste Generator Identification Number if any soil and/or waste material excavated as a result of the response action is determined to be "hazardous waste" in accordance with the Resource Conservation and Recovery Act (RCRA).

Owner Response: DAA collected four discrete samples of the soil for full TCLP testing. The analytical tests of the site soils for pre-excavation and post-excavation sampling did not detect concentrations of constituents above the RCRA levels and no samples were determined to be classified as hazardous waste.

10.0 FUTURE SITE USE LIMITATIONS

As required by the Virginia Department of Emergency Management, "*the Owner shall prepare an environmental covenant for the property deed. The covenant will be based on the guidance provided under the Uniform Environmental Covenants Act (UECA). The Owner has prepared a UECA, which was siged by the VADEQ as the "Agency". The UECA is filed at the New Kent County Courthouse. The Covenant for the NKWP Site includes:*

- *Site limitations for future development*
- *Limitations for re-zoning*
- *Identify the areas of elevated contaminants in the post-excavation (areas of orange fence)*
- *Identify the locations of the Permanent BMPs, (dry swales)*

APPENDIX A

DESIGN DOCUMENTS

APPENDIX B

RESPONSE ACTION PLAN – PART C – SCMAPP ADDENDUM 1

APPENDIX C

SUBMITTALS

APPENDIX D

VPDES PERMIT AND SWPPP INSPECTION LOGS

APPENDIX E

PRE-EXCAVATION ANALYTICAL DATA

APPENDIX F

CORRESPONDENCE

APPENDIX G

RECORD DRAWING

APPENDIX H

SOLID WASTE DISPOSAL TRACKING RECORDS

APPENDIX I

LABORATORY QUALIFICATIONS

APPENDIX J

VERIFICATION SAMPLING – ANALYTICAL DATA

APPENDIX K

SIDEWALL SAMPLING – ANALYTICAL DATA

APPENDIX L

IMPORTED MATERIAL TRACKING RECORDS

APPENDIX M

COMPACTION TEST DATA

APPENDIX N

DRY SWALE SPECIFICATIONS – VADEQ STORMWATER DESIGN SPECIFICATION NO. 10

APPENDIX O

DAILY CONSTRUCTION CQA REPORTS

FIGURES

Draper Aden Associates
Engineering • Surveying • Environmental Services
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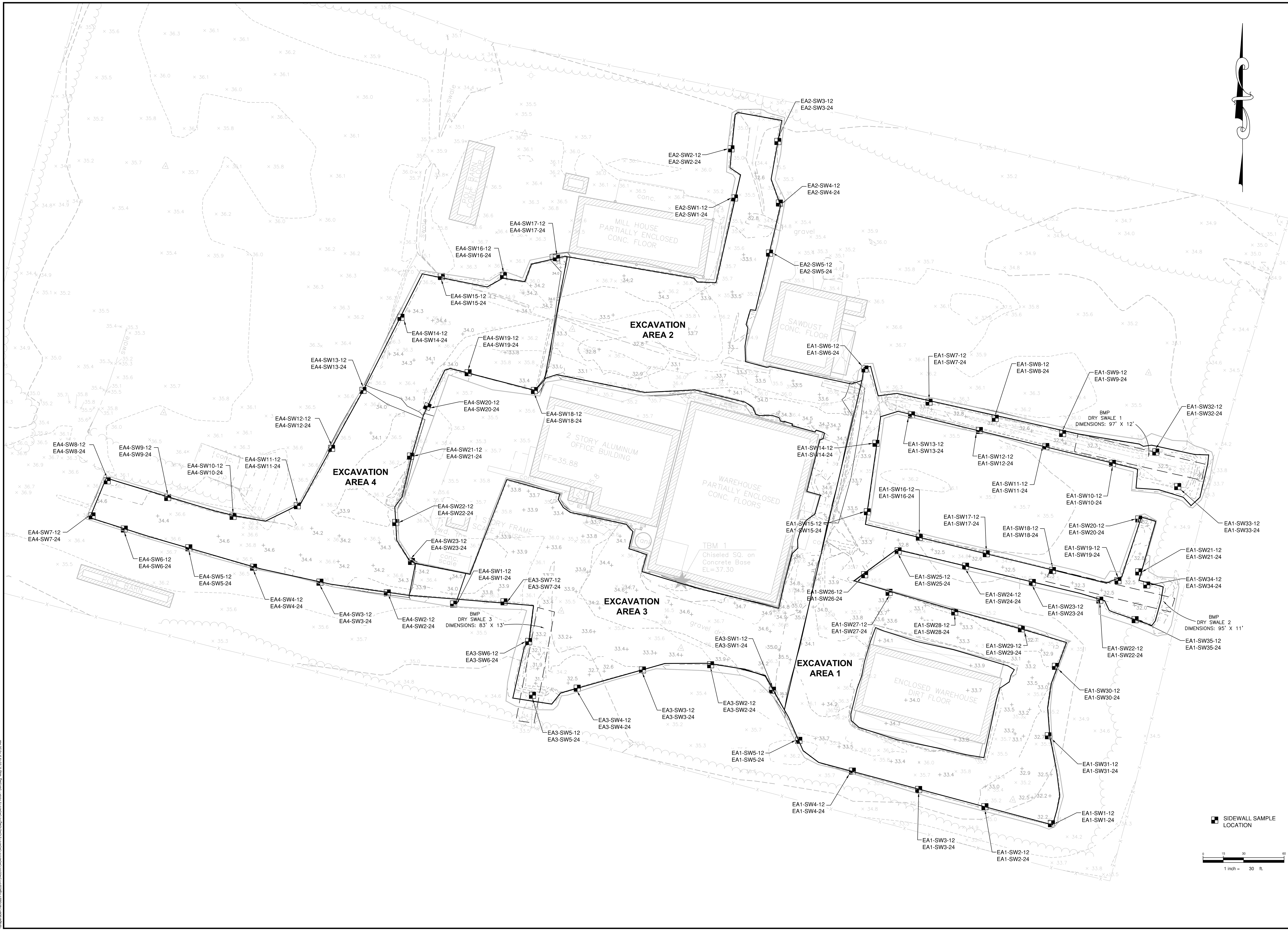
• Blacksburg, VA • Charlottesville, VA • Hampton Roads, VA
• Raleigh, NC • Fayetteville, NC • Northern Virginia

VERIFICATION SAMPLING LOCATION MAP
L-WOOD, INC.
SOUTHERN PINE SPECIALISTS
NEW KENT COUNTY, VIRGINIA

REVISIONS

DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
SCALE:	1"=30'
DATE:	6/27/2018
PROJECT NUMBER:	R15434R-12

FIGURE 1



EXCAVATION AREA 1
EXCAVATION AREA 2
EXCAVATION AREA 3
EXCAVATION AREA 4
MILL HOUSE PARTIALLY ENCLOSED CONC. FLOOR
SAWDUST CONC. FLOOR
2 STORY ALUMINUM OFFICE BUILDING
FF=35.88
WAREHOUSE PARTIALLY ENCLOSED CONC. FLOORS
ENCLOSED WAREHOUSE DIRT FLOOR
POLE BARN CONC. PARK
POLE BARN
1 STORY FRAME SCALE HOUSE
TBM 1 Chiseled SQ. on Concrete Base EL=37.30
gravel
BMP DRY SWALE 1 DIMENSIONS: 97' X 12'
BMP DRY SWALE 2 DIMENSIONS: 95' X 11'
BMP DRY SWALE 3 DIMENSIONS: 83' X 13'
EA2-SW1-12 EA2-SW1-24
EA2-SW2-12 EA2-SW2-24
EA2-SW3-12 EA2-SW3-24
EA2-SW4-12 EA2-SW4-24
EA2-SW5-12 EA2-SW5-24
EA4-SW1-12 EA4-SW1-24
EA4-SW2-12 EA4-SW2-24
EA4-SW3-12 EA4-SW3-24
EA4-SW4-12 EA4-SW4-24
EA4-SW5-12 EA4-SW5-24
EA4-SW6-12 EA4-SW6-24
EA4-SW7-12 EA4-SW7-24
EA4-SW8-12 EA4-SW8-24
EA4-SW9-12 EA4-SW9-24
EA4-SW10-12 EA4-SW10-24
EA4-SW11-12 EA4-SW11-24
EA4-SW12-12 EA4-SW12-24
EA4-SW13-12 EA4-SW13-24
EA4-SW14-12 EA4-SW14-24
EA4-SW15-12 EA4-SW15-24
EA4-SW16-12 EA4-SW16-24
EA4-SW17-12 EA4-SW17-24
EA4-SW18-12 EA4-SW18-24
EA4-SW19-12 EA4-SW19-24
EA4-SW20-12 EA4-SW20-24
EA4-SW21-12 EA4-SW21-24
EA4-SW22-12 EA4-SW22-24
EA4-SW23-12 EA4-SW23-24
EA3-SW1-12 EA3-SW1-24
EA3-SW2-12 EA3-SW2-24
EA3-SW3-12 EA3-SW3-24
EA3-SW4-12 EA3-SW4-24
EA3-SW5-12 EA3-SW5-24
EA3-SW6-12 EA3-SW6-24
EA3-SW7-12 EA3-SW7-24
EA1-SW1-12 EA1-SW1-24
EA1-SW2-12 EA1-SW2-24
EA1-SW3-12 EA1-SW3-24
EA1-SW4-12 EA1-SW4-24
EA1-SW5-12 EA1-SW5-24
EA1-SW6-12 EA1-SW6-24
EA1-SW7-12 EA1-SW7-24
EA1-SW8-12 EA1-SW8-24
EA1-SW9-12 EA1-SW9-24
EA1-SW10-12 EA1-SW10-24
EA1-SW11-12 EA1-SW11-24
EA1-SW12-12 EA1-SW12-24
EA1-SW13-12 EA1-SW13-24
EA1-SW14-12 EA1-SW14-24
EA1-SW15-12 EA1-SW15-24
EA1-SW16-12 EA1-SW16-24
EA1-SW17-12 EA1-SW17-24
EA1-SW18-12 EA1-SW18-24
EA1-SW19-12 EA1-SW19-24
EA1-SW20-12 EA1-SW20-24
EA1-SW21-12 EA1-SW21-24
EA1-SW22-12 EA1-SW22-24
EA1-SW23-12 EA1-SW23-24
EA1-SW24-12 EA1-SW24-24
EA1-SW25-12 EA1-SW25-24
EA1-SW26-12 EA1-SW26-24
EA1-SW27-12 EA1-SW27-24
EA1-SW28-12 EA1-SW28-24
EA1-SW29-12 EA1-SW29-24
EA1-SW30-12 EA1-SW30-24
EA1-SW31-12 EA1-SW31-24
EA1-SW32-12 EA1-SW32-24
EA1-SW33-12 EA1-SW33-24
EA1-SW34-12 EA1-SW34-24
EA1-SW35-12 EA1-SW35-24
SIDEWALL SAMPLE LOCATION
0 15 30 60
1 inch = 30 ft.

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SIDEWALL SAMPLING LOCATION MAP
L-WOOD, INC.
SOUTHERN PINE SPECIALISTS
NEW KENT COUNTY, VIRGINIA

REVISIONS

DESIGNED BY:	
DRAWN BY:	CAM
CHECKED BY:	JEK
SCALE:	1"=30'
DATE:	4/24/2018
PROJECT NUMBER:	R15434R-12

FIGURE 2

TABLES

Table 1

New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action

Important Project Dates

DAA No. R15434R-12

July 27, 2018

Date	Event
11/6/2017	Limits of excavation staked
11/14/2017	Silt fence installed
11/15/2017	Start of excavation in EA1
11/22/2017	EA1 excavation complete
11/27/2017	Start of excavation in EA3
11/29/2017	DAA surveyors for EA1
11/29/2017	Backfill material in EA1
12/5/2017	Backfill material in EA1 complete
12/5/2017	Compaction test in EA1
12/5/2017	12'' culvert pipe replaced 10'' metal pipe in EA1-Section 13
12/7/2017	Recycled granular asphalt material in EA1
12/8/2017	Recycled granular asphalt material in EA1 complete
12/12/2017	EA3 excavation complete
12/12/2017	DAA surveyors for EA3
12/12/2017	Start of excavation in EA4
12/13/2017	Backfill material in EA3
12/13/2017	Orange safety fencing installed in EA3-Sections 3 and 4
12/15/2017	Backfill material in EA3 complete
12/18/2017	Compaction test in EA3
12/19/2017	Recycled granular asphalt material in EA3
12/20/2017	Recycled granular asphalt material in EA3 complete
12/20/2017	DAA surveyors in EA4 driveway and location of orange safety fencing in EA3
12/21/2017	Backfill material for driveway in EA4
12/21/2017	Backfill material for driveway in EA4 complete

Table 1
New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action
Important Project Dates
DAA No. R15434R-12
July 27, 2018

Date	Event
12/22/2017	Compaction test in EA4 driveway
12/22/2017	Topsoil in EA3
12/22/2017	Topsoil complete in EA3
12/22/2017	Topsoil in EA1
12/22/2017	Recycled granular asphalt material in EA4 driveway
12/22/2017	Recycled granular asphalt material in EA4 driveway complete
12/22/2017	EA4 excavation complete
1/2/2018	Start of excavation in EA2
1/8/2018	DAA surveyors in EA4
1/19/2018	EA2 excavation complete
1/22/2018	Backfill material in EA4
1/22/2018	DAA surveyors in EA2
1/24/2018	Compaction test in EA4
1/25/2018	Recycled granular asphalt material in EA4
1/25/2018	Backfill material in EA2
1/25/2018	Orange safety fencing installed in EA1-Section 1
1/26/2018	Backfill material in EA2 complete
1/31/2018	Compaction test in EA2
2/1/2018	Recycled granular asphalt material in EA4 complete
2/1/2018	Recycled granular asphalt material in EA2
2/1/2018	Recycled granular asphalt material in EA2 complete
2/7/2018	Rip-rap installed at inlet and outlet of culver in EA1-Section 13 and EA2-Section 1
2/7/2018	Removed silt fence from driveway area in EA4 to Sediment Basin #4 in EA3
2/7/2018	Backfill in portion of Sediment Basin #1
2/7/2018	Removed silt fence around Sediment Basin #1 in EA2
3/9/2018	Sediment Basin #4 dug out to meet design drawing specifications
3/9/2018	Backfill material in portion of Sediment Basin #1

Table 1

New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action

Important Project Dates

DAA No. R15434R-12

July 27, 2018

Date	Event
3/9/2018	Installation of #57 stone, geotextile fabric, and engineered soil mix in Dry Swale #4
3/9/2018	Installation of #57 stone, geotextile fabric, and engineered soil mix in Dry Swale #4 complete
3/14/2018	Backfill material in Sediment Basin #1 complete
3/14/2018	Installation of #57 stone, geotextile fabric, and engineered soil mix in Dry Swale #3
3/14/2018	Installation of #57 stone, geotextile fabric, and engineered soil mix in Dry Swale #3 complete
3/14/2018	Installation of #57 stone, and geotextile fabric, and engineered soil mix in Dry Swale #2
3/15/2018	Installation of #57 stone, and geotextile fabric, and engineered soil mix in Dry Swale #2 complete
3/23/2018	Installation of plant species (Autumn Olive, Eastern Red Dedar, and River Birch) in Dry Swale #1, #2, and #3
4/16/2018	Removed remaining silt fence in EA3
4/16/2018	Start of excavation in EA1 under wood storage building
4/18/2018	Excavation in EA1 under wood storage building complete
4/19/2018	DAA surveyors in EA1 under wood storage building and location of orange safety fencing in EA2
4/19/2018	Backfill material in EA1 under wood storage building
4/19/2018	Backfill material in EA1 under wood storage building complete
4/19/2018	Recycled granular asphalt material in EA1 under wood storage building
4/19/2018	Recycled granular asphalt material in EA1 under wood storage building complete
5/11/2018	Final Walk-through meeting with ECA, Owner, VADEQ, and EPA
5/14/2018	Stake out of off-site excavation areas
5/30/2018	Excavation of off-site material
6/21/2018	Excavation of off-site material

Table 2
New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action
Submittal Log
DAA No. R1543R-12
July 27, 2018

Specification/ Drawing	Description	Date Received	Date Returned	Status Returned	Date Approved	Notes
MISC-01	Preliminary Submittal List	N/A	N/A	N/A	N/A	
MISC-02	Road Surface Gravel - Concrete/Asphalt Millings	10/11/2017	11/29/2017	Approved	11/30/2017	
403-01	Corrugated Metal Pipe	10/5/2017	10/13/2017	Approved	10/13/2017	Not used
502-01	PVC Pipe	10/5/2017	10/13/2017	Approved	10/13/2017	Not used
503-01	Safety Fence	10/5/2017	10/13/2017	Approved	10/13/2017	
01330-01	Geotextile Separation Fabric	10/5/2017	10/13/2017	Approved	10/13/2017	
01340-01	Silt Fence	10/5/2017	10/13/2017	Resubmit	10/13/2017	Super Silt Fence not submitted
01370-01	Construction Schedule	11/20/2017	11/20/2017	Submitted	11/20/2017	
02200-01	Backfill Soil	10/11/2017	11/27/2017	Approved	11/27/2017	
02200-02	Engineered Soil Mix	10/11/2017	11/30/2017	Approved	11/30/2017	
02200-03	Topsoil	12/15/2017	1/3/2018	Approved	1/3/2018	
02480-01	Seed and Fertilizer					Not submitted due to seasonal planting schedule

Table 3

New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action

Pre-Excavation Sampling Results

DAA No. R15434R-12

July 27, 2018

Sample ID	Sample Type	Sample Depth	Parameter	Sample Results (mg/kg dry)	Weanack Land Exclusion Criteria (mg/kg dry)[2]	USEPA Site Cleanup Levels (mg/kg) [1]	Sample Results (mg/L) [3, 4]
EXCAVATION AREA 1							
EA-1-12	**Composite**	1" to 12"	Arsenic	19.1	41	30	-
			Chromium	36.9	1,200	63	-
EA-1-24	**Composite**	12" to 24"	Arsenic	4.5	41	30	-
			Chromium	9.9	1,200	63	-
EA-1-TCLP	**Grab**	18" to 24"	TCLP Arsenic	-	-	-	<0.100
			TCLP Chromium	-	-	-	<0.100
EXCAVATION AREA 2							
EA-2-12	**Composite**	1" to 12"	Arsenic	**83.4**	41	30	-
			Chromium	135.0	1,200	63	-
EA-2-24	**Composite**	12" to 24"	Arsenic	8.5	41	30	-
			Chromium	11.4	1,200	63	-
EA-2-TCLP	**Grab**	18" to 24"	TCLP Arsenic	-	-	-	<0.100
			TCLP Chromium	-	-	-	<0.100
EXCAVATION AREA 3							
EA-3-12	**Composite**	1" to 12"	Arsenic	16.2	41	30	-
			Chromium	28.6	1,200	63	-
EA-3-24	**Composite**	12" to 24"	Arsenic	39.1	41	30	-
			Chromium	49.3	1,200	63	-
EA-3-TCLP	**Grab**	18" to 24"	TCLP Arsenic	-	-	-	<0.100
			TCLP Chromium	-	-	-	<0.100
EXCAVATION AREA 4							
EA-4-12	**Composite**	1" to 12"	Arsenic	19.8	41	30	-
			Chromium	30.3	1,200	63	-
EA-4-24	**Composite**	12" to 24"	Arsenic	1.6	41	30	-
			Chromium	5.6	1,200	63	-
EA-4-TCLP	**Grab**	18" to 24"	TCLP Arsenic	-	-	-	<0.100
			TCLP Chromium	-	-	-	<0.100

Notes:

1. USEPA - Site Cleanup Levels Per Order CERC-03-2015-0262DC, §8.3.d ".arsenic 30 mg/kg and/or total chromium (63mg/kg).:"
2. Weanack Land Exclusion Criteria per Permit (VPA00579)
3. Reporting limit for TCLP Arsenic and TCLP Chromium is 0.100 mg/L.
4. Under Resource Conservation and Recovery Act (RCRA 40 CFR 261.24) the TCLP Regulatory level for Arsenic is 5.0 mg/L and Chromium is 5.0 mg/L.

Table 4

New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action

King and Queen County Landfill Disposal

DAA No. R15434R-12

July 27, 2018

King and Queen County Landfill Disposal		
Date	**Volume (tons)**	**Volume (cy)**
11/29/2017	292.05	216.33
1/2/2018	185.15	137.15
1/3/2018	198	146.67
1/10/2018	220.6	163.41
1/11/2018	309.82	229.50
1/12/2018	40.36	29.90
1/15/2018	285.48	211.47
1/16/2018	230.29	170.59
Total	**1761.75**	**1305.0**

Table 5
New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action
Sediment Basin Soil Sample Verification Results
DAA No. R15434R-12
July 27, 2018

Sediment Basin Samples		
Sample ID	**Arsenic (mg/kg dry)**	**Chromium (mg/kg dry)**
EA2-SB-1	2.01	5.27
EA1-SB-2	1.51	5.21
EA1-SB-3	1.05	5.00
EA3-SB-4	1.06	7.34

1) Lab results provided by Air, Water, and Soils Laboratory in Richmond, Virginia

2) Samples shown in **bold,** levels of Arsenic and/or Chromium detected above site cleanup criteria (Arsenic - 30 mg/kg, Chromium - 63 mg/kg)

Table 5
New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action
Excavation Area 1 Soil Sample Verification Results
DAA No. R15434R-12
July 27, 2018

Excavation Area 1 Samples		
Sample ID	**Arsenic (mg/kg dry)**	**Chromium (mg/kg dry)**
EA1-CS-1	<1.03	3.77
EA1-CS-2	<1.03	4.69
EA1-CS-2B	<1.00	4.84
EA1-CS-3	<1.05	4.47
EA1-CS-3A	2.31	7.51
EA1-CS-3B	<1.03	5.07
EA1-CS-4	<1.00	4.13
EA1-CS-4A	<1.00	3.98
EA1-CS-4B	<1.00	3.70
EA1-CS-5	<1.00	11.0
EA1-CS-6	5.91	14.7
EA1-CS-6B	5.97	25.1
EA1-CS-7	7.66	20.8
EA1-CS-7A	0.557	6.25
EA1-CS-7B	9.85	18.2
EA1-CS-8	<1.02	5.11
EA1-CS-8A	<0.500	4.97
EA1-CS-8B	1.20	8.56
EA1-CS-9	<1.02	7.96
EA1-CS-9B	1.73	7.43
EA1-CS-10	<1.00	5.54
EA1-CS-11	<1.07	4.84
EA1-CS-12	0.586	5.99
EA1-CS-13	<4.21	<4.21
EA1-CS-14	2.26	7.17

1) Lab results provided by Air, Water, and Soils Laboratory in Richmond, Virginia

2) Samples shown in **bold,** levels of Arsenic and/or Chromium detected above site cleanup criteria (Arsenic - 30 mg/kg, Chromium - 63 mg/kg)

Table 5
New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action
Excavation Area 2 Soil Sample Verification Results
DAA No. R15434R-12
July 27, 2018

Excavation Area 2 Samples		
Sample ID	**Arsenic (mg/kg dry)**	**Chromium (mg/kg dry)**
EA2-CS-1	**73.2**	**101**
EA2-CS-2	3.20	7.49
EA2-CS-3	<1.04	4.34
EA2-CS-4	<1.00	5.61
EA2-CS-5	1.36	7.03
EA2-CS-6	7.34	5.21
EA2-CS-7	<1.06	5.47
EA2-CS-8	<1.05	4.08
EA2-CS-9	1.51	7.96
EA2-CS-10	2.48	7.61

1) Lab results provided by Air, Water, and Soils Laboratory in Richmond, Virginia

2) Samples shown in **bold,** levels of Arsenic and/or Chromium detected above site cleanup criteria (Arsenic - 30 mg/kg, Chromium - 63 mg/kg)

Table 5
New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action
Excavation Area 3 Soil Sample Verification Results
DAA No. R15434R-12
July 27, 2018

Excavation Area 3 Samples		
Sample ID	**Arsenic (mg/kg dry)**	**Chromium (mg/kg dry)**
EA3-CS-1	1.31	17.0
EA3-CS-2	8.79	8.39
EA3-CS-3	**59.10**	41.30
EA3-CS-4	**199**	**203**
EA3-CS-5	1.59	6.70
EA3-CS-6	<1.02	5.44
EA3-CS-7	<1.00	5.97
EA3-CS-8	<1.02	7.05
EA3-CS-9	<1.00	4.33
EA3-CS-10	1.11	6.35

1) Lab results provided by Air, Water, and Soils Laboratory in Richmond, Virginia

2) Samples shown in **bold,** levels of Arsenic and/or Chromium detected above site cleanup criteria (Arsenic - 30 mg/kg, Chromium - 63 mg/kg)

Table 5
New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action
Excavation Area 4 Soil Sample Verification Results
DAA No. R15434R-12
July 27, 2018

Excavation Area 4 Samples		
Sample ID	**Arsenic (mg/kg dry)**	**Chromium (mg/kg dry)**
EA4-CS-1	0.927	3.53
EA4-CS-2	0.681	3.93
EA4-CS-3	4.89	9.05
EA4-CS-4	1.79	4.25
EA4-CS-5	8.00	4.46
EA4-CS-6	7.54	8.95
EA4-CS-7	0.789	3.21
EA4-CS-8A	0.905	3.34
EA4-CS-8B	0.858	4.47
EA4-CS-9A	1.61	4.89
EA4-CS-9B	0.872	3.54
EA4-CS-10A	1.24	3.69
EA4-CS-10B	1.35	4.75

1) Lab results provided by ENCO Laboratories in Cary, North Carolina

2) Samples shown in **bold,** levels of Arsenic and/or Chromium detected above site cleanup criteria (Arsenic - 30 mg/kg, Chromium - 63 mg/kg)

Table 6
New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action
Excavation Area 1 Soil Sample Sidewall Results
DAA No. R15434R-12
July 27, 2018

Sample Depth 0''-12'' bgs		
Sample ID	**Arsenic (mg/kg dry)**	**Chromium (mg/kg dry)**
EA1-SW1-12	**96.8**	**115.0**
EA1-SW2-12	**39.9**	41.3
EA1-SW3-12	**74.7**	**74.4**
EA1-SW4-12	**31.0**	42.7
EA1-SW5-12	25.9	35.2
EA1-SW6-12	**57.5**	**115.0**
EA1-SW7-12	**40.3**	42.1
EA1-SW8-12	<9.82	9.1
EA1-SW9-12	17.0	5.0
EA1-SW10-12	14.3	18.8
EA1-SW11-12	17.7	26.1
EA1-SW12-12	14.8	13.7
EA1-SW13-12	20.0	36.7
EA1-SW14-12	18.5	28.8
EA1-SW15-12	17.9	31.3
EA1-SW16-12	20.0	42.8
EA1-SW17-12	10.9	16.7
EA1-SW18-12	13.6	13.1
EA1-SW19-12	<5.21	7.6
EA1-SW20-12	**36.9**	41.7

Sample Depth 12''-24'' bgs		
Sample ID	**Arsenic (mg/kg dry)**	**Chromium (mg/kg dry)**
EA1-SW1-24	<10.4	7.63
EA1-SW2-24	<10.3	<5.15
EA1-SW3-24	<10.0	7.8
EA1-SW4-24	<0.500	4.29
EA1-SW5-24	<9.80	4.87
EA1-SW6-24	<10.1	3.7
EA1-SW7-24	<11.0	5.78
EA1-SW8-24	<10.2	5.1
EA1-SW9-24	<10.6	5.22
EA1-SW10-24	<10.3	0.3
EA1-SW11-24	<5.38	10.9
EA1-SW12-24	<5.28	<1.06
EA1-SW13-24	7.33	8.42
EA1-SW14-24	<5.16	9.04
EA1-SW15-24	<5.22	5.51
EA1-SW16-24	<4.95	7.35
EA1-SW17-24	<5.18	6.31
EA1-SW18-24	<5.08	8.19
EA1-SW19-24	<5.31	7.14
EA1-SW20-24	<5.20	4.32

1) Lab results provided by Air, Water, and Soils Laboratory in Richmond, Virginia

2) Samples shown in **bold,** levels of Arsenic and/or Chromium detected above site cleanup criteria (Arsenic - 30 mg/kg, Chromium - 63 mg/kg)

Table 6

New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action

Excavation Area 1 Soil Sample Sidewall Results

DAA No. R15434R-12

July 27, 2018

Sample Depth 0''-12'' bgs		
Sample ID	**Arsenic (mg/kg dry)**	**Chromium (mg/kg dry)**
EA1-SW21-12	**92.5**	**95.9**
EA1-SW22-12	**31.9**	26.8
EA1-SW23-12	6.5	10.0
EA1-SW24-12	8.0	13.1
EA1-SW25-12	**73.4**	**73.0**
EA1-SW26-12	22.8	36.4
EA1-SW27-12	10.1	38.4
EA1-SW28-12	17.9	45.6
EA1-SW29-12	19.5	32.2
EA1-SW30-12	**36.7**	49.0
EA1-SW31-12	**47.6**	**54.8**
EA1-SW32-12	10.9	16.0
EA1-SW33-12	<5.17	9.0
EA1-SW34-12	<5.29	7.1
EA1-SW35-12	24.5	17.8

Sample Depth 12''-24'' bgs		
Sample ID	**Arsenic (mg/kg dry)**	**Chromium (mg/kg dry)**
EA1-SW21-24	<5.19	10.1
EA1-SW22-24	<5.21	5.78
EA1-SW23-24	<5.28	3.98
EA1-SW24-24	<5.05	6.7
EA1-SW25-24	<5.18	10.1
EA1-SW26-24	11.8	17.3
EA1-SW27-24	<5.14	6.22
EA1-SW28-24	<5.25	4.84
EA1-SW29-24	<5.13	4.87
EA1-SW30-24	<5.16	7.16
EA1-SW31-24	<5.22	5.39
EA1-SW32-24	<5.48	4.06
EA1-SW33-24	<5.12	4.78
EA1-SW34-24	<4.97	11.2
EA1-SW35-24	<5.40	13.3

1) Lab results provided by Air, Water, and Soils Laboratory in Richmond, Virginia

2) Samples shown in **bold,** levels of Arsenic and/or Chromium detected above site cleanup criteria (Arsenic - 30 mg/kg, Chromium - 63 mg/kg)

Table 6

New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action

Excavation Area 2 Soil Sample Sidewall Results

DAA No. R15434R-12

July 27, 2018

Sample Depth 0''-12'' bgs		
Sample ID	**Arsenic (mg/kg dry)**	**Chromium (mg/kg dry)**
EA2-SW1-12	**87.2**	**70.8**
EA2-SW2-12	2.18	6.59
EA2-SW3-12	1.84	4.79
EA2-SW4-12	1.10	3.8
EA2-SW5-12	7.66	8.58

Sample Depth 12''-24'' bgs		
Sample ID	**Arsenic (mg/kg dry)**	**Chromium (mg/kg dry)**
EA2-SW1-24	<1.13	4.38
EA2-SW2-24	2.35	9.15
EA2-SW3-24	2.81	5.02
EA2-SW4-24	<1.11	2.98
EA2-SW5-24	<1.03	6.05

1) Lab results provided by Air, Water, and Soils Laboratory in Richmond, Virginia

2) Samples shown in **bold,** levels of Arsenic and/or Chromium detected above site cleanup criteria (Arsenic - 30 mg/kg, Chromium - 63 mg/kg)

Table 6

New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action

Excavation Area 3 Soil Sample Sidewall Results

DAA No. R15434R-12

July 27, 2018

Sample Depth 0''-12'' bgs		
Sample ID	**Arsenic (mg/kg dry)**	**Chromium (mg/kg dry)**
EA3-SW1-12	3.17	12.7
EA3-SW2-12	**96.0**	**63.2**
EA3-SW3-12	**88.9**	**181.0**
EA3-SW4-12	**58.0**	**63.5**
EA3-SW5-12	**48.5**	**76.2**
EA3-SW6-12	**54.3**	**90.3**
EA3-SW7-12	28.6	36.5

Sample Depth 12''-24'' bgs		
Sample ID	**Arsenic (mg/kg dry)**	**Chromium (mg/kg dry)**
EA3-SW1-24	**49.20**	**66.50**
EA3-SW2-24	<1.00	4.72
EA3-SW3-24	1.65	11.00
EA3-SW4-24	<1.01	6.30
EA3-SW5-24	<1.00	4.31
EA3-SW6-24	1.49	11.40
EA3-SW7-24	<1.04	5.56

1) Lab results provided by Air, Water, and Soils Laboratory in Richmond, Virginia

2) Samples shown in **bold,** levels of Arsenic and/or Chromium detected above site cleanup criteria (Arsenic - 30 mg/kg, Chromium - 63 mg/kg)

Table 6
New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action
Excavation Area 4 Soil Sample Sidewall Results
DAA No. R15434R-12
July 27, 2018

Sample Depth 0''-12'' bgs		
Sample ID	**Arsenic (mg/kg dry)**	**Chromium (mg/kg dry)**
EA4-SW1-12	14.0	14.5
EA4-SW2-12	13.1	17.7
EA4-SW3-12	1.37	4.65
EA4-SW4-12	1.92	5.34
EA4-SW5-12	1.51	6.24
EA4-SW6-12	7.47	16.8
EA4-SW7-12	7.99	17.1
EA4-SW8-12	5.32	10.3
EA4-SW9-12	4.56	7.22
EA4-SW10-12	1.12	2.55
EA4-SW11-12	0.821	1.64
EA4-SW12-12	5.81	6.59
EA4-SW13-12	**67.7**	**312**
EA4-SW14-12	**65.6**	**169**
EA4-SW15-12	**59.8**	**119**
EA4-SW16-12	**46.2**	29.7
EA4-SW17-12	**83.1**	**162**
EA4-SW18-12	3.45	10.0
EA4-SW19-12	**30.8**	25.1
EA4-SW20-12	**71.5**	**152**
EA4-SW21-12	9.68	9.61
EA4-SW22-12	**37.2**	**67.3**
EA4-SW23-12	13.9	17.4

Sample Depth 12''-24'' bgs		
Sample ID	**Arsenic (mg/kg dry)**	**Chromium (mg/kg dry)**
EA4-SW1-24	1.27	4.11
EA4-SW2-24	0.4315	2.91
EA4-SW3-24	0.955	3.88
EA4-SW4-24	0.831	3.47
EA4-SW5-24	1.28	4.53
EA4-SW6-24	1.62	4.10
EA4-SW7-24	1.70	4.89
EA4-SW8-24	11.2	21.4
EA4-SW9-24	10.2	20.2
EA4-SW10-24	13.3	60.2
EA4-SW11-24	7.91	57.2
EA4-SW12-24	0.904	3.61
EA4-SW13-24	1.44	3.75
EA4-SW14-24	1.26	4.64
EA4-SW15-24	1.25	3.80
EA4-SW16-24	0.996	3.77
EA4-SW17-24	2.13	4.17
EA4-SW18-24	1.30	10.4
EA4-SW19-24	3.88	3.70
EA4-SW20-24	0.761	2.77
EA4-SW21-24	1.37	3.42
EA4-SW22-24	0.977	2.92
EA4-SW23-24	0.759	3.45

1) Lab results provided by ENCO Laboratories in Cary, North Carolina

2) Samples shown in **bold,** levels of Arsenic and/or Chromium detected above site cleanup criteria (Arsenic - 30 mg/kg, Chromium - 63 mg/kg)

Table 7
New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action
Schreiber Mulch and Materials Backfill Material
DAA No. R15434R-12
July 27, 2018

Imported Backfill Material	
Date	**Volume (CY)**
11/29/2017	390.7
11/30/2017	738
12/1/2017	404
12/4/2017	148
12/5/2017	480
12/13/2017	842
12/14/2017	416
12/15/2017	236
12/21/2017	790.5
1/21/2018	124
1/22/2018	730
1/25/2018	516
1/26/2018	820
3/9/2018	90
3/26/2018	36
4/18/2018	22
4/19/2018	456
Total	**7239.2**

Table 8
New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action
Schreiber Mulch and Materials Topsoil Material
DAA No. R15434R-12
July 27, 2018

Imported Topsoil Material	
Date	**Volume (CY)**
12/21/2017	19.0
12/22/2017	114.0
Total	**133.0**

Table 9
New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action
Schreiber Mulch and Materials Engineered Fill Material
DAA No. R15434R-12
July 27, 2018

Imported Engineered Fill Material	
Date	**Volume (CY)**
3/9/2018	73.5
3/13/2018	27.0
3/14/2018	99.0
3/15/2018	91.0
Total	**290.50**

Table 10
New Kent Wood Preservatives, Inc. Site/L-Wood, Inc. Southern Pine Specialists – Removal Response Action
Lee Hy Paving Corp. Recycled Granular Asphalt Material
DAA No. R15434R-12
July 27, 2018

Imported Recycled Granular Asphalt Material		
Invoice	**Weight (tons)**	**Volume (CY)**
12/7/2017	980.4	810.2
12/19/2017	598.3	494.5
12/20/2017	107.8	89.1
12/22/2017	552.9	457.0
1/25/2018	679.1	561.3
2/1/2018	1754.9	1450.4
4/19/2018	485.2	401.0
Total	**5158.63**	**4263.50**

Note:
1. Volume of asphalt assumes 1.21 tons/cy.