



PROPOSED PLAN

Kerr-McGee Chemical Corp–Navassa Superfund Site Operable Unit 1

Navassa, Brunswick County, North Carolina

October 2019

The EPA Invites You to Comment on this Proposed No Action Remedy for Operable Unit 1 of the Kerr-McGee Chemical Corp–Navassa Superfund Site in Navassa, North Carolina

INTRODUCTION

The U.S. Environmental Protection Agency seeks public review and comment on the proposed No Action Remedy for 21.6 acres of the Kerr-McGee Chemical Corp (Kerr-McGee)–Navassa **Superfund** Site (Site) located in the Town of Navassa, Brunswick County, North Carolina (Figure 1). The Site coordinates are 34°14'50.0" North latitude and 77°59'56.5" West longitude.

This **Proposed Plan** presents the basis for determining that no action is necessary for the protection of human health and the environment in the 21.6 acres labeled as Areas 1A, 1B, 2, and "Boundary Area" in Figure 2. The EPA is formally designating this area as **Operable Unit 1 (OU1)**. The remaining 80 acres, consisting of the former facility and the southern marsh will be addressed under subsequent operable units. The 21.6 acres in OU1 are available for commercial, industrial, or recreational land use. A glossary defining key terms is at the end of this document; the key terms appear in bold the first time they are used.

The EPA is the lead agency on this Site. The North Carolina Department of Environmental Quality (NC DEQ) is the support agency. The EPA is issuing this Proposed Plan as part of the EPA's public participation requirements under Section 117 (a) of the **Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)**, as amended, 42 United States Code Section 9617, known as Superfund, and the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**, as set forth in 40 Code of Federal Regulations Section 300.430(f)(2).

This Proposed Plan summarizes and identifies key information from the **Remedial Investigation (RI)** Report and other documents contained in the

COMMUNITY INVOLVEMENT OPPORTUNITIES

Public Comment Period:

Dates: October 9, to November 8, 2019

Purpose: To seek comments on the Proposed Plan for Operable Unit 1 of the Kerr-McGee Chemical Corp–Navassa Superfund Site.

Response to Public Comments:

The EPA will provide a written summary of significant comments, criticisms, and new relevant information submitted during the public comment period and will respond to each issue in the Record of Decision.

Public Availability Session:

2:00 – 4:00 pm, October 15th, 2019

Public Meeting:

6:00 pm, October 15th, 2019
Navassa Community Center
338 Main Street, Navassa, NC

EPA Contacts:

Please direct questions or comments to:
Erik Spalvins, Remedial Project Manager
(404) 562-8938 or via email at spalvins.erik@epa.gov
or

Latonya Spencer, Community Involvement
Coordinator

Toll-free (800) 435-9234 or via email at
Spencer.LaTonya@epa.gov

By mail: U.S. EPA
Atlanta Federal Center
Superfund Remedial Branch
Attention: Erik Spalvins
61 Forsyth Street, S.W.
Atlanta, Georgia 30303

Administrative Record file for this Site. The sampling results and risk analysis show no unacceptable risk to human health in the 21.6-acre OU1 area based on the current and reasonably anticipated future commercial, industrial, or recreational land use. There are soils in OU1 that exceed the “unrestricted use standards” under North Carolina General Statutes 143B-279.9(b)(1) and require institutional controls pursuant to § 143B-279.9 and § 130A-310.3(f). On September 3, 2019 the State informed the Greenfield Environmental Multistate Trust LLC, the Trustee of the Multistate Environmental Response Trust (Multistate Trust), of the requirement to implement institutional controls and on September 11, 2019, the Multistate Trust documented its commitment to establishing permanent institutional controls. The EPA made an ecological risk management decision that ecological exposure after redevelopment would be minimal under the anticipated future condition of OU1 as a commercial, industrial, or recreational land use and that no additional ecological risk assessment is needed in OU1.

The EPA and NC DEQ encourage the public to review these documents for additional details and to gain a more comprehensive understanding of the Site. EPA established a local **Information Repository** where the public may review the Administrative Record at:

- Navassa Community Center, 338 Main Street, Navassa, North Carolina, 28451;
- Leland Library, 487 Village Road NE, Leland, North Carolina, 28451;
- EPA Region 4’s Information Center at 61 Forsyth Street SW, Sam Nunn Atlanta Federal Center, Atlanta, Georgia, 30303; and
- Online information repository available at:
<https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.docdata&id=0403028>

The EPA, in consultation with NC DEQ, may modify the proposed No Action Remedy presented in this Proposed Plan based on new information or public comments received during the public comment period. Therefore, the public is encouraged to review and comment on the proposed No Action Remedy in this Proposed Plan.

To ensure the community’s concerns are being addressed, a public comment period lasting 30 calendar days will be held. During this time, the public is encouraged to submit comments to the EPA on this Proposed Plan. The EPA will also hold a public availability session from 2:00 – 4:00 pm and a public meeting at 6:00 pm on October 15, 2019 near the Site at the Navassa Community Center, 338 Main Street, Navassa, North Carolina, 28451. Comments can also be submitted through the mail, via facsimile, or by email. Please see the text box entitled “Community Involvement Opportunities” for additional details on community participation.

Scope and Role

The national goal for the remedy selection process is to select remedies that are protective of human health and the environment, that maintain protection over time, and that minimize untreated waste. The EPA may determine that no action (i.e., no treatment, no engineering controls or institutional controls) is warranted under the following set of circumstances:

- When a site or a specific problem or area of the site (i.e., operable unit) poses no current or potential threat to human health or the environment;
- When CERCLA does not provide the authority to take remedial action; or
- When a previous response eliminated the need for further remedial response.

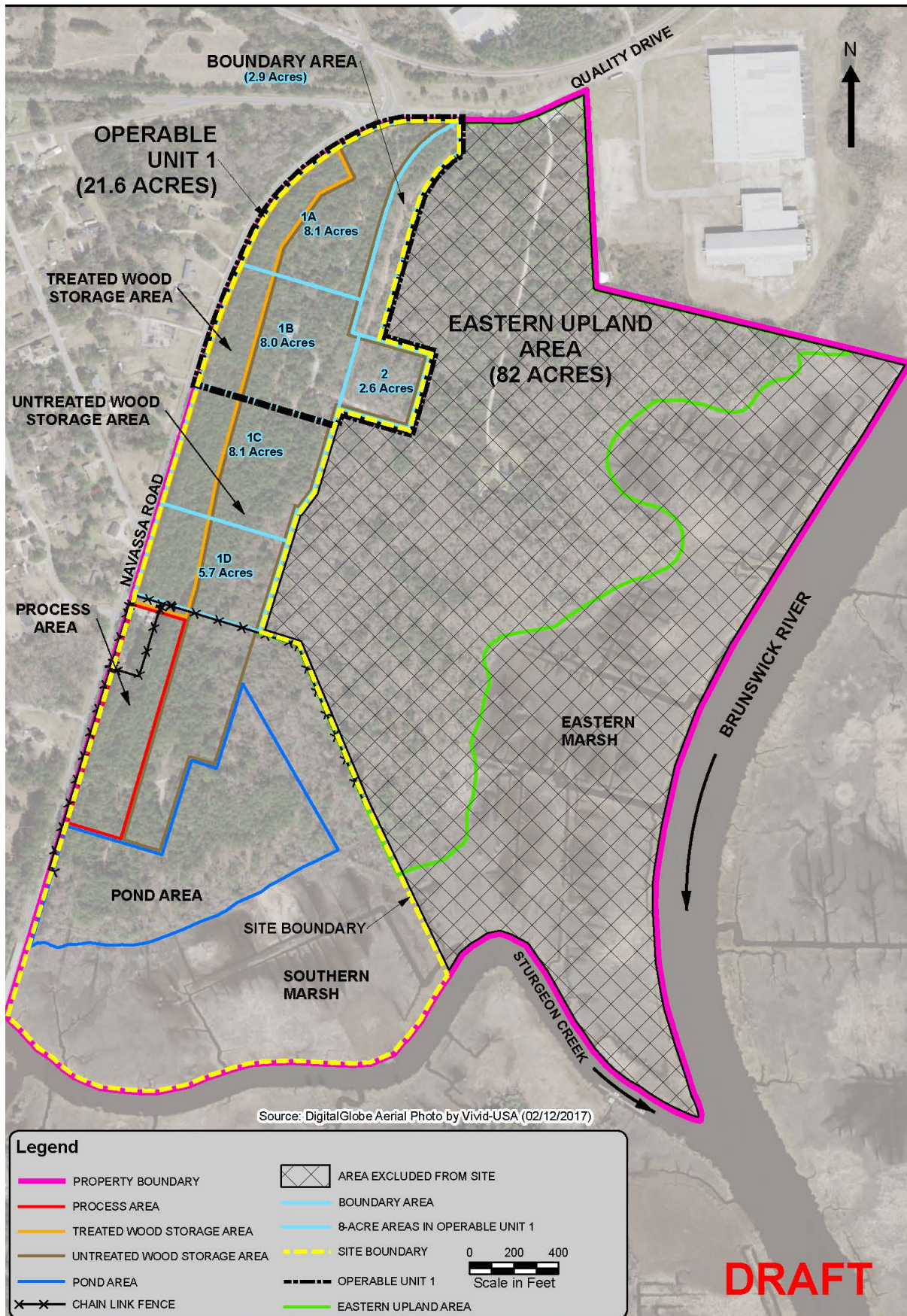
The EPA has determined that the 21.6-acre OU1 poses no current or potential threat to human health or the environment under the current and reasonably anticipated future land use (commercial, industrial or recreational) consistent with local zoning, community input, and State-required institutional controls. The proposed No Action Remedy applies to Areas 1A, 1B, 2, and the “Boundary Area”, as depicted on Figure 2. The **groundwater** under OU1 is not contaminated.

The proposed No Action Remedy for OU1 does not limit the investigation or cleanup of the remainder of the Site. The EPA will designate future operable units as needed. The remainder of the Site will be addressed in future decision documents which will also be subject to public comment.

Figure 1. Property and Site Location



Figure 2. Extent of Site, Operable Unit 1 and Eastern Upland Area



SITE BACKGROUND

Site Description and Regional Background

The former facility covers about 70 acres of a 154-acre property, which is bounded to the north by Quality Drive and the former Rampage Boat Company, to the east by the Brunswick River, to the south by Sturgeon Creek, and to the west by Navassa Road. The Site consists of the 70-acre former wood treating facility and about 30 acres of the marsh to the south of the former facility. The remainder of the property is about 82 acres which is not part of the Site and is called the “Eastern Upland Area.” The focus of this Proposed Plan is OU1 which includes 21.6 acres of the former wood treating facility and is located on the northern portion of the Site (Figure 2).

The Brunswick River influences both the historical and future uses of the property. The property was a rice plantation prior to the American Civil War. After the Civil War, the community developed a rural-industrial economy. A bluff adjacent to the property allowed barges to unload freight and became the location for a rail line connecting Wilmington to the rest of the United States. The bluff was used by the Navassa Guano Company, which imported guano from the Caribbean island of Navassa. Eventually, four fertilizer companies operated in the vicinity of the Site. A railyard developed in Navassa, as did other wood treating companies. The entirety of the community’s riverfront is currently occupied by three parcels; the Site, an empty fertilizer plant which is vacant but ready for reuse, and an industrial parcel that is under contract for light industrial use.

Historically, the 154-acre property provided housing, jobs and recreation for the community. Historical aerial photos (Figures 3 and 4) show agriculture, homes, a baseball field, and footpaths to the marsh.

Site Ownership

The plant was built by Gulf States Creosoting Company in 1936. American Creosoting purchased the facility in 1958 and sold it to Kerr-McGee in 1965. Kerr-McGee discontinued Site operations in 1974. Kerr-McGee decommissioned and dismantled the plant in 1980.

Kerr-McGee owned the property as a 244-acre parcel until 1991. In 1991, Kerr-McGee transferred 92 acres of marsh to the State of North Carolina, after which Kerr-McGee’s property totaled about 152 acres. Historical real estate documents incorrectly reported the total acreage as 300 acres.

In March 2006, Kerr-McGee created Tronox, LLC (Tronox) as a spin-off corporation, and Tronox assumed responsibility for the Site. Anadarko Petroleum acquired Kerr-McGee in August 2006. In January 2009, Tronox filed for Chapter 11 bankruptcy protection in federal court.

In February 2011, the Tronox bankruptcy settlement established the Multistate Environmental Response Trust to own and assume responsibility for hundreds of Tronox-owned sites, including this Site. Greenfield Environmental Multistate Trust LLC (Multistate Trust) is the Trustee of the Multistate Environmental Response Trust. The Multistate Trust operates pursuant to the Tronox Bankruptcy Consent Decree and Environmental Settlement Agreement and pursuant to the February 14, 2011, Environmental Response Trust Agreement.

In 2016, the Multistate Trust purchased two 1-acre residential parcels in the interior of the Eastern Upland Area, increasing the property’s size to 154 acres.

Contaminated Media

Based on historical aerial photos (Figures 3 and 4), Kerr-McGee used about 70 acres along Navassa Road for the wood treating operations. Creosote from the wood treating operations contaminated soil, groundwater, and

marsh sediments with polycyclic aromatic hydrocarbons (PAHs), phenols, and three compounds closely associated with the PAHs (1,1-biphenyl, carbazole and dibenzofuran). The contaminant that poses the most risk is the PAH Benzo(a)pyrene.

History of Site Operations

The wood treating facility operated from 1936 to 1974. The facility treated wood for railroad ties, utility poles, and pilings. Kerr-McGee discontinued Site operations in 1974. Kerr-McGee decommissioned and dismantled the plant in 1980.

The EPA has limited information about the operations at the facility. Most information about plant operations are from a six-page letter from Kerr-McGee dated August 14, 1984. The 1984 letter describes plant operations from 1965 to 1974 when operations were discontinued. Kerr-McGee reported that it used only creosote as a preservative. Aerial photos provide the only information about the Site prior to 1965. Figures 3 and 4 show selected historical aerial photographs that were reviewed during the investigation (1938, 1951, 1969, and 1975).

In its 1984 letter, Kerr-McGee provided the following summary of plant operations for the period of 1965 to 1974:

Pre-cut hardwood lumber was used by the plant as a raw material. In preparing for treating, the wood was sized, classified, and stacked in the plant yard for a period of one year to dry the wood. The dried wood was pressure treated in one of two treatment cylinders using a creosote and oil solution. The size of each cylinder was 8-foot diameter by 140 feet long. The creosote solution was stored in above-ground steel tanks contained within a dike. The treated product was stored in the yard until final shipment to customers.

The wastewater generated by the facility was collected and discharged to three surface impoundments in series. The first two impoundments were used to settle the creosote preservative which was reclaimed and reused in the production process. The ponds were installed by Gulf States Creosoting Company. Each pond's size was approximately 60 feet by 125 feet by six feet deep. The effluent from the two impoundments was recycled to a condenser as make-up cooling water with excess wastewater discharged to an evaporation pond installed by Kerr-McGee in 1971. The pond was 200 feet by 300 feet with a variable depth. The plant also maintained a 140 feet by 170 feet fire water storage pond and a 0.5 acre boiler water storage pond.

Kerr-McGee decommissioned and dismantled the plant in 1980. Kerr-McGee reported that it dismantled and sold as scrap all plant equipment, treatment cylinders, buildings, and tanks. Kerr-McGee reforested the area by planting pine trees. The 1984 letter from Kerr-McGee is the only documentation of the decommissioning of the facility; there are no work plans, reports, photos, surveys, analytical results, or construction reports. At present, there are some building foundations present at the Site, and the only intact railroad tracks are a 10 to 15-foot long segment that is set into a concrete slab.

Description of removal or previous remedial actions conducted under other authorities

Kerr-McGee decommissioned the facility in 1980 and provided little documentation. It appears the decommissioning was voluntary and not coordinated with any State or Federal cleanup programs.

Figure 3. Historical Aerial Photographs 1938 and 1951

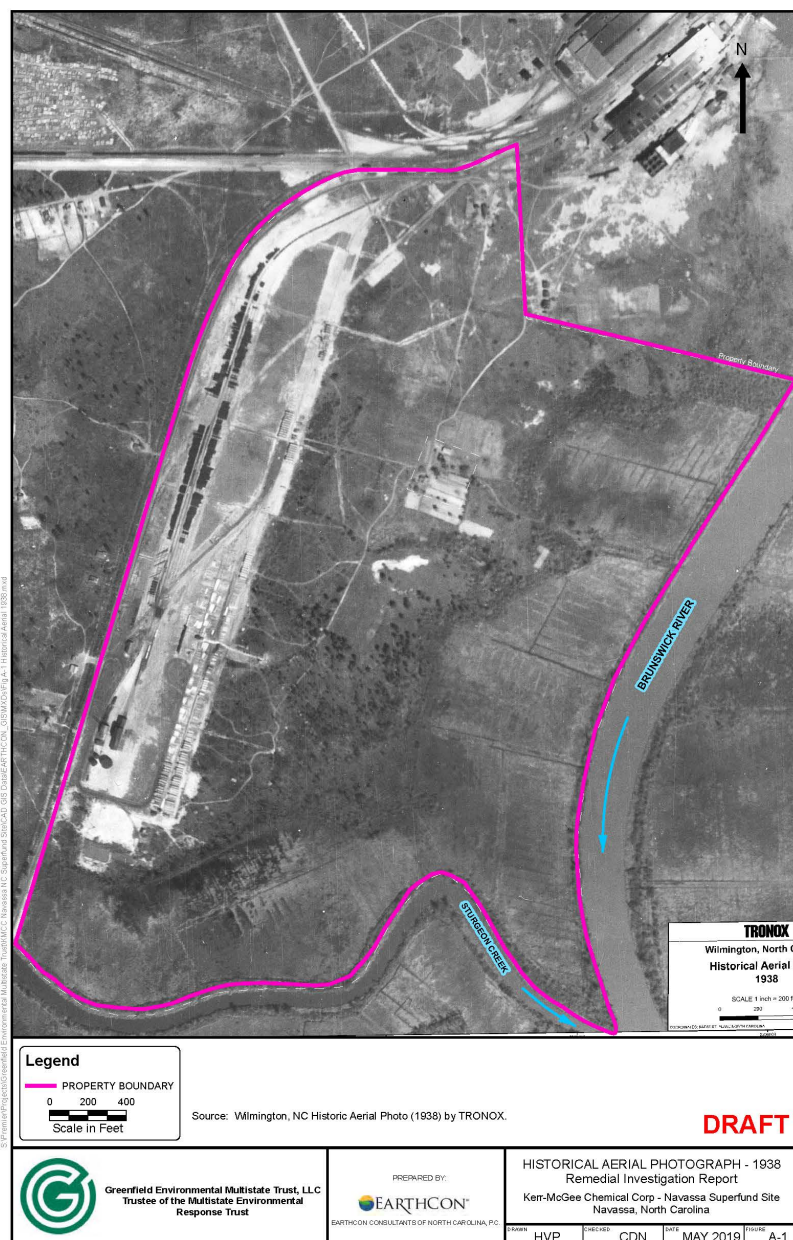
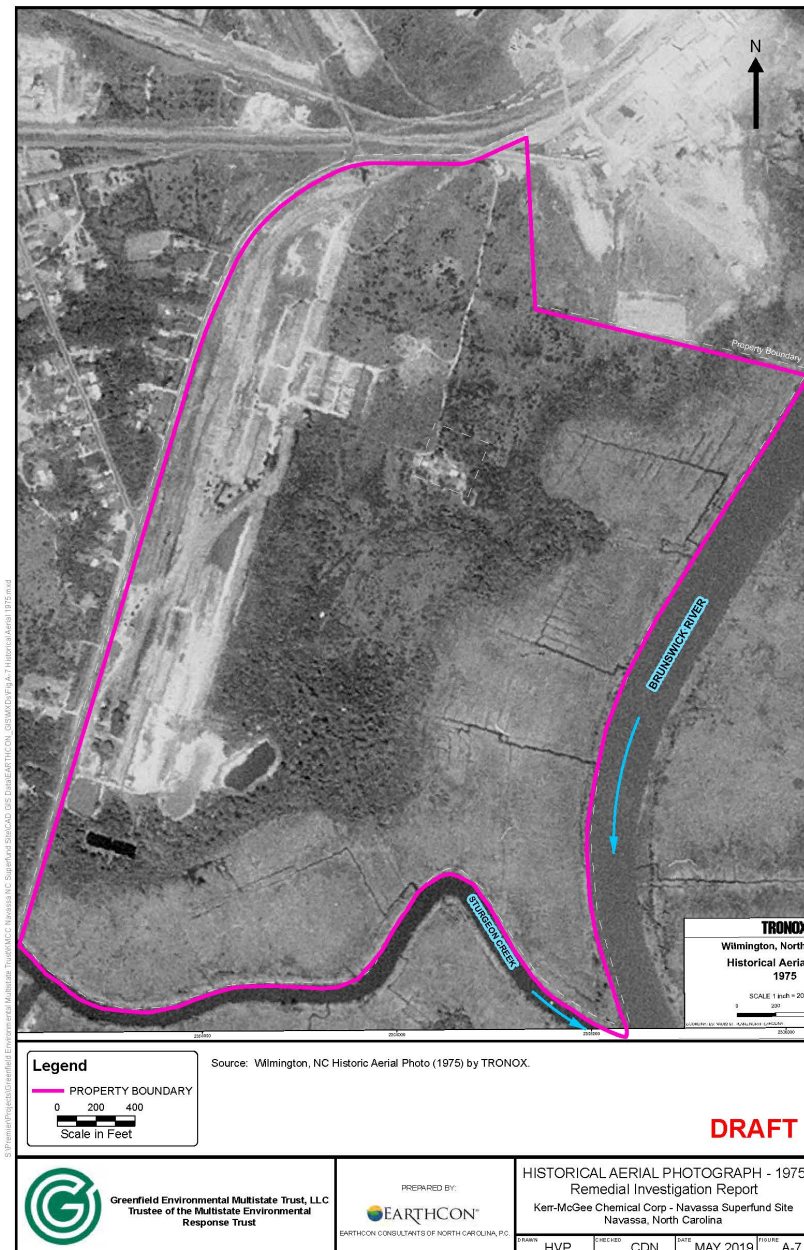
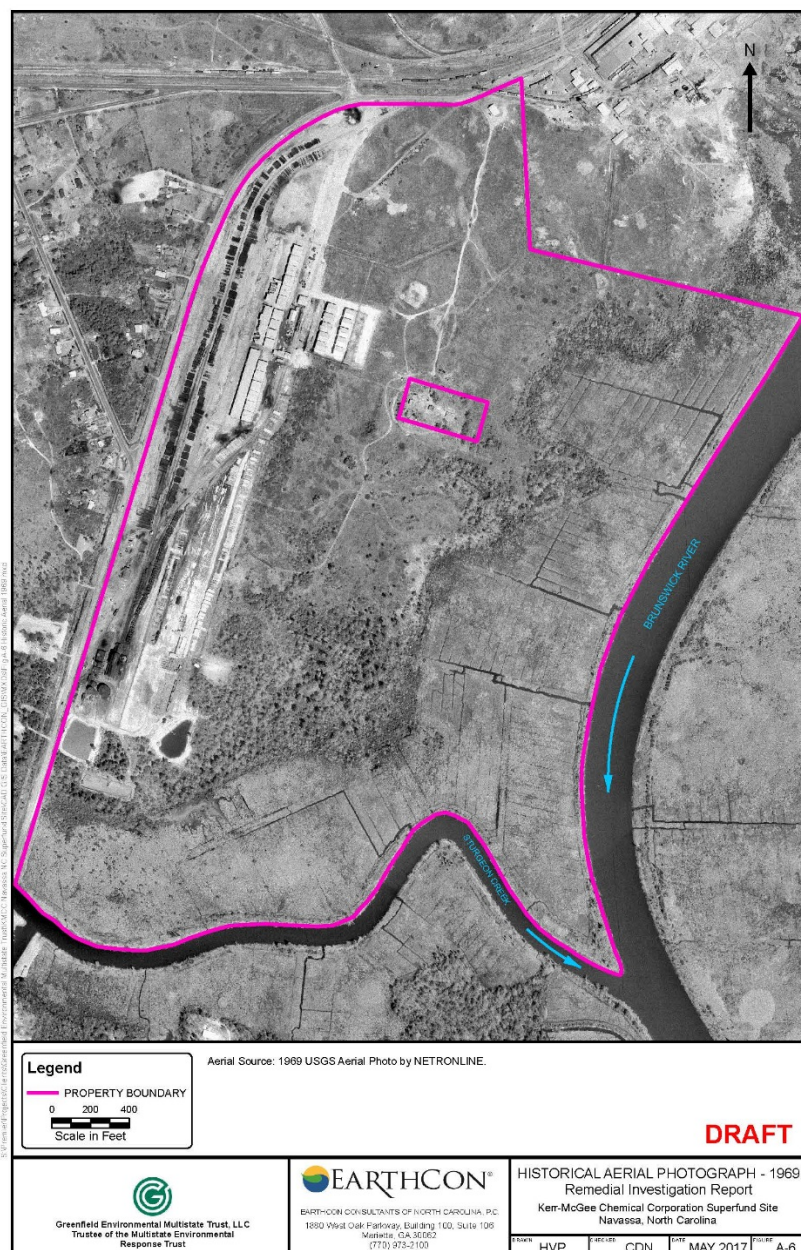


Figure 4. Historical Aerial Photographs from 1969 and 1975



History of CERCLA Activity

The following is a summary of the Site history. A detailed history of the Site is provided in the RI Report, Section 1.3.3. Site Administrative History.

Investigation by Kerr-McGee and Tronox 2003–2009

In March 2003, the North Carolina Department of Environment and Natural Resources (NCDENR) recommended that the Site be considered for further evaluation by the EPA. The EPA and Kerr-McGee entered an Administrative Order on Consent for the performance of an Expanded Site Inspection, which is a step in the Superfund Site Evaluation process. The August 2005 Expanded Site Inspection Report documented creosote contamination at the Site and recommended additional Site assessment.

In July 2006, the EPA and Tronox entered into an Administrative Order on Consent to conduct the Remedial Investigation and Feasibility Study (RI/FS) under the Superfund Alternative Approach. Under the Superfund Alternative Approach, the listing of the Site on the **National Priorities List (NPL)** was deferred. Tronox conducted several investigations but did not finalize the risk assessments or the RI Report.

In January 2009, Tronox filed for Chapter 11 bankruptcy protection in federal court. Tronox was no longer able to conduct the RI/FS.

EPA Takeover and NPL Listing 2010

On March 8, 2010, the EPA formally took over marsh and groundwater sampling activities from Tronox. In April 2010, the EPA placed the Site on the Superfund Program's NPL. The EPA's NPL listing package identified about 100 acres along Navassa Road and Sturgeon Creek as the total area used in the manufacturing process. This corresponds to the 70-acre former facility and the 30-acre Southern Marsh. The Site is defined as the former facility and other locations where the contamination has come to be located, such as the Southern Marsh. Figure 2 shows the extent of the property and the Site. The area labeled as the "Eastern Upland Area" in Figure 2 is not part of the Site and could be separated from the Site as a new parcel.

Investigation by Multistate Environmental Response Trust 2011–Present

In February 2011, the Tronox bankruptcy settlement established the Multistate Trust to own and assume responsibility of this Site. The Multistate Trust is performing Environmental Actions at the Site for the beneficiaries of the Multistate Trust: the United States and the State of North Carolina.

Summary of Federal and State Investigations

Beginning in the 1980s, multiple parties performed environmental investigations at the Site, including: Kerr-McGee, North Carolina Department of Environment, Health and Natural Resources (NCDEHNR) (subsequently the NCDENR and now known as NC DEQ), the North Carolina Department of Transportation (NCDOT), the EPA, and the Multistate Trust. Investigations include the following:

- NCDEHNR Site Inspection;
- NCDEHNR Site Inspection Prioritization;
- NCDEHNR Memorandum of Off-Site Visit;
- NCDOT Preliminary Site Assessment;
- NCDOT Soil Assessment;

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- NCDENR Site Re-Assessment;
 - Expanded Site Inspection;
 - Pre-Remedial Investigation Soil Sampling;
 - Remedial Investigation;
 - 2018 Trenching Study; and
 - 2019 Soil Sampling.

The 2019 RI Report includes a detailed summary of Site investigations undertaken up to March 2017. The RI report documented contamination in surface soils, subsurface soils, groundwater and marsh sediment, and the presence of free-phase creosote in the subsurface and in marsh sediments. To expedite decision making for areas of the Site with lower concentrations of creosote-related constituents, the 2018 Trenching Study and the 2019 Soil Sampling were conducted in the Treated and Untreated Wood Storage Areas of the Site. Results of these studies are described in the following sections. Groundwater sampling in the OU1 area did not find constituents present at concentrations above detection limits.

2018 Trenching Study

In May 2018, concurrent with the preparation of the RI report and the risk assessments, the Site team (the EPA, NC DEQ and the Multistate Trust) conducted a trenching study to confirm whether Site conditions in the Treated and Untreated Wood Storage Areas support the reasonably anticipated future land use. The Multistate Trust dug 2,100 linear feet to form ten 4-foot deep trenches, targeting areas of interest based on historical photos and surface debris. This effort identified areas of previously unknown subsurface debris and visible soil contamination. The trenching study did not identify free-phase creosote in the wood storage areas. During the trenching study, Multistate Trust contractors collected soil samples from 23 subsurface locations for laboratory analysis. The February 2019 Revised Northern Area Trench Evaluation contains the detailed results of the trench study.

2019 Soil Sampling

The trench study provided information that challenged the assumptions about the wood storage areas. The Site team was evaluating the Treated and Untreated Wood Storage Areas each as separate *exposure units*. Dividing the Site into exposure units is a way to estimate risk across a portion of the Site. After the trench study, the EPA decided to divide the facility into smaller exposure units based on anticipated future land use and arranged from the north to the south: three 8-acre exposure units (Areas 1A, 1B, and 1C); one 5.7-acre exposure unit (Area 1D); and one 2.6-acre exposure unit (Area 2) (Figure 5). Smaller exposure units were selected to reflect typical industrial-size parcels similar to the parcels proposed in the conceptual redevelopment plans developed with the community's involvement. The Site team evaluated the existing data for each exposure unit and developed a sampling approach to supplement the existing data and fully characterize the exposure units. The number and location of samples in each area are documented in the June 2019 OU1 Soil Sampling Work Plan prepared by the Multistate Trust and reviewed and approved by the EPA and NC DEQ. The Multistate Trust conducted soil sampling from June 10 to June 14, 2019. The collective sampling results for OU1, including the data from the 2019 soil sampling, are discussed in the Nature and Extent section of this Proposed Plan while the risk evaluation is discussed in the Summary of Site Risks section of this Proposed Plan.

Site Characteristics

Geographic and Topographic Factors

The main topographic and geographic features of the Site are its location along the marshes of the Brunswick River and Sturgeon Creek.

Reasonably Anticipated Future Land Use

The Site is zoned industrial at present. Across Navassa Road to the west is an area with mostly residential and some commercial zoning. The riverfront properties to the north are zoned industrial. South of Sturgeon Creek, the waterfront land use is single-family residential and recreational.

In 2017 and 2018, the Multistate Trust voluntarily led a Redevelopment Planning Initiative to work with the community to develop reuse scenarios that reflect community priorities. The community-developed reuse scenarios combine commercial, industrial, cultural and recreational land uses. Potential risks under cultural use scenarios are evaluated under commercial and recreational exposure assumptions.

Based on the local zoning designation and on the redevelopment discussions with the local government and the community, the reasonably anticipated future land uses are commercial, industrial or recreational development.

In addition, on September 3, 2019, the State informed the Multistate Trust of the requirement to implement institutional controls under North Carolina General Statutes 143B-279.9(b)(1) because soil exceeds “unrestricted use standards.” On September 11, 2019, the Multistate Trust documented its commitment to establishing permanent institutional controls.

Nature and Extent of Contamination in Operable Unit 1

This discussion of the nature and extent of contamination discussion is focused on the 21.6-acre OU1 area. Operable Unit 1 consists of Areas 1A, 1B, 2, and the Boundary Area. The other parts of the Site will be addressed under future Proposed Plans. The chemical that poses the most risk is Benzo(a)pyrene. The minimum and maximum surface soil detections of Benzo(a)pyrene are listed for each area in micrograms per kilogram (µg/kg), or parts per billion.

Area 1A is the northernmost 8 acres and based on historical aerials was the least intensely used part of the Site. Less than half of Area 1A is covered by operations in the 1969 aerial. The concentrations of Benzo(a)pyrene in surface soil range from non-detect (less than 22 µg/kg) to 6,060 µg/kg.

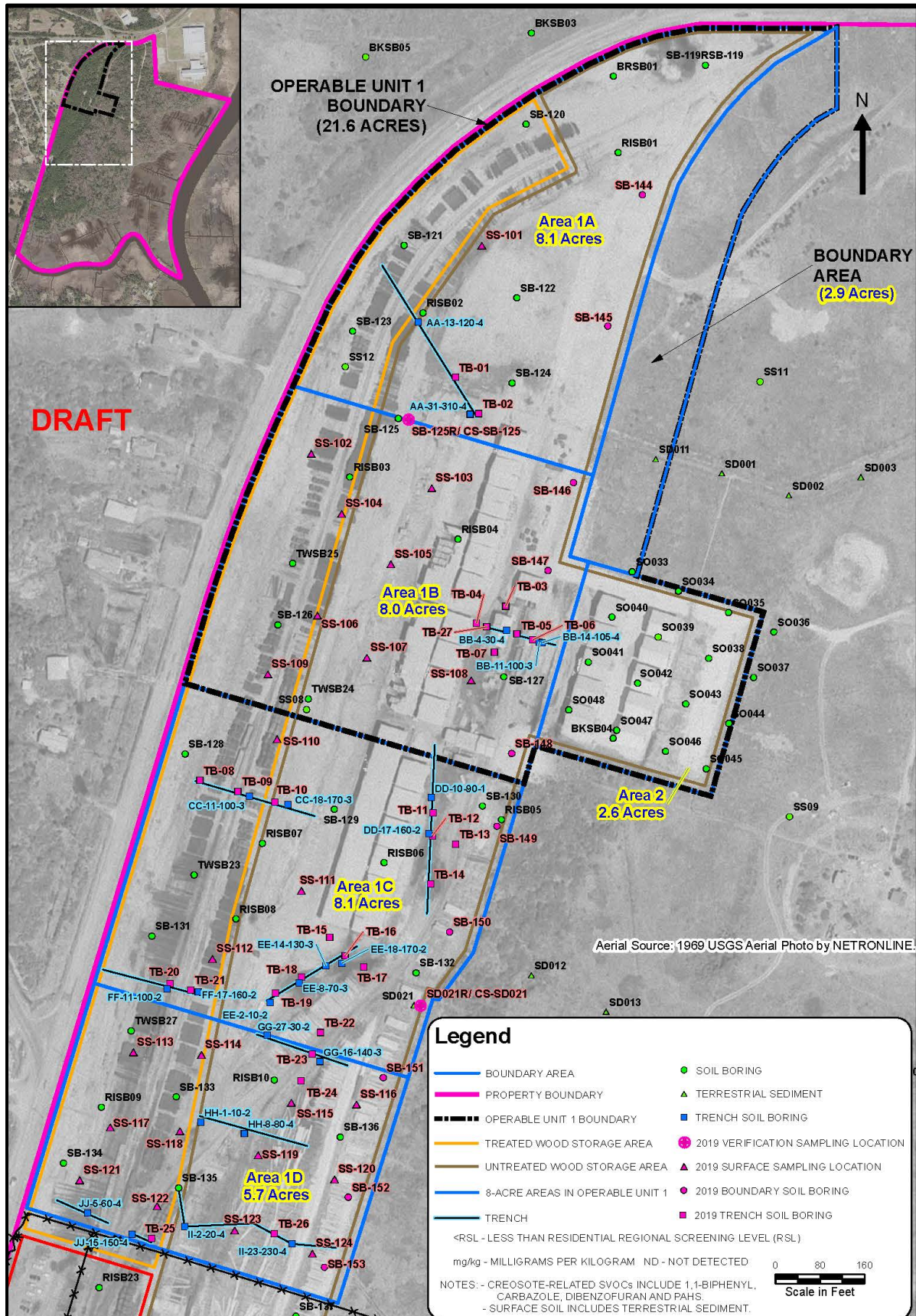
Area 1B is the second northernmost 8 acres and includes several buildings and stacks of wood in historical aerials. More than half of Area 1B is covered by operations in the 1969 aerial. The concentrations of Benzo(a)pyrene in surface soil range from 85.2 µg/kg to 11,100 µg/kg.

Area 2 is a 2.6-acre area west of Area 1B. Area 2 appears to be covered by sheds or buildings in the 1969 aerial and unused in aerial photos prior to 1966. The concentrations of Benzo(a)pyrene in surface soil range from 3.78 µg/kg to 1,030 µg/kg.

Based on the presence of creosote-related PAHs at concentrations above the screening levels, risk assessments were conducted for Areas 1A, 1B and 2. The results of the risk assessments are presented in the Summary of Site Risks section of this Proposed Plan.

During the 2019 Soil Sampling activities, a 2.6-acre area east of Area 1A was identified as containing soils with concentrations of creosote-related PAHs above screening levels. This Boundary Area was added to OU1 as shown on Figure 2.

Figure 5. Exposure Units from June 2019 OU1 Sampling Work Plan



Summary of Site Risks

CERCLA risk assessment work was begun by Kerr-McGee and transitioned to Tronox in 2006. Tronox did not finalize either ecological or human health risk assessments prior to the Tronox bankruptcy in 2009. The Multistate Trust resumed the risk assessment efforts and completed an April 2019 Site-wide Human Health Risk Assessment (HHRA) and a February 2019 Baseline Ecological Risk Assessment (BERA) focused on the Southern Marsh. In June 2019, to supplement both the BERA and HHRA, the Multistate Trust collected 105 additional soil samples over 32 acres. The Multistate Trust prepared an addendum to the Site-wide HHRA in the August 2019 Human Health Risk Assessment Addendum (HHRA Addendum) which incorporates all the data collected for the OU1 area. On August 27, 2019, the NC DEQ prepared a residential risk evaluation of OU1 to evaluate whether the OU1 area meets the State's "unrestricted use standards" under North Carolina General Statutes 143B-279.9(b)(1).

The human health discussion that follows summarizes the Site-wide HHRA, the HHRA Addendum and the NC DEQ 2019 Residential Risk Evaluation. The ecological risk discussion that follows summarizes a screening level evaluation of ecological risks in the OU1 area.

April 2019 Site-wide Human Health Risk Assessment

The HHRA uses a four-step process to assess site-related cancer risks and noncancer health hazards. The four-step process is comprised of: hazard identification, exposure assessment, toxicity assessment, and risk characterization.

Hazard Identification

Chemicals of potential concern (COPCs) in environmental media (e.g., soil and groundwater) are identified through comparisons of maximum detected concentrations to conservative, risk-based screening levels and where relevant, to Site-specific background levels. Exceedances of screening levels do not in themselves indicate an unacceptable risk. Rather, exceedance of a screening level indicates the need for further evaluation in the HHRA. The EPA utilized the regional screening level, or RSL, for residential soil to select COPCs for OU1. The residential soil RSL is based on an excess cancer risk of $1\text{E-}06$ (1 in 1,000,000) or a hazard quotient (HQ) of 0.1 for noncancer effects. The initial screening of COPCs was conducted against residential RSLs because the reasonably anticipated future land use was uncertain and had not been narrowed when the HHRA began. The following soil COPCs were detected at concentrations above screening levels in the 2019 HHRA:

Treated Wood Storage Area

Parameter	Surface Soil COPCs	Subsurface Soil COPCs
PAHs	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Indeno(1,2,3-cd)pyrene	Benzo(a)pyrene
Inorganics	Aluminum Arsenic Thallium	None

Untreated Wood Storage Area

Parameter	Surface Soil COPCs	Subsurface Soil COPCs
PAHs	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(k)fluoranthene Dibenzo(a,h)anthracene Indeno(1,2,3-cd)pyrene	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(a,h)anthracene
SVOCs	None	2,6-Dinitrotoluene
Inorganics	Arsenic Hexavalent Chromium	None

Exposure Assessment

The exposure assessment estimates the intensity, frequency and duration of human exposure to a chemical in the environment and consists of the following three basic steps:

- Characterization of the exposure setting (physical environment and potential receptors);
- Identification of exposure pathways (constituent sources, exposure points and exposure routes); and
- Quantification of path-way specific exposures (exposure point concentrations, or EPCs, calculation of receptor intakes and exposure assumptions).

The 2019 Site-wide HHRA evaluated exposure for the following current and future receptors:

- Future Indoor Workers;
- Future Outdoor Workers;
- Future Construction Workers; and
- Current and Future Adolescent Trespassers.

The 2019 Site-wide HHRA evaluated the following exposure pathways:

- Ingestion of contaminated soil;
- Dermal contact with contaminated soil; and
- Inhalation of vapors volatilized from soil and particulates as fugitive dust.

Toxicity Assessment

The toxicity assessment describes the relationship between an estimated dose of a chemical and potential likelihood of an adverse health effect. The purpose of the toxicity assessment is to quantitatively estimate

inherent toxicity of COPCs for use in risk characterization. Potential effects of chemicals are separated into two categories: carcinogenic (cancer) and non-carcinogenic (non-cancer) effects. The toxicity assessment identifies the toxicity values (i.e., slope factors and reference doses) for COPCs and applies the toxicity values to the estimated doses calculated in the exposure assessment to calculate carcinogenic risk and noncarcinogenic hazard.

Risk Characterization

The objective of the risk characterization step is to integrate the information developed in the exposure assessment and the toxicity assessment into an evaluation of the potential current and future unacceptable health risks associated with the COPCs at the Site. Carcinogenic risk is expressed as Excess Lifetime Cancer Risk (ELCR). ELCR values greater than 1E-04 (1 in 10,000) are above the cancer risk range and indicate unacceptable carcinogenic risk. ELCR values within the cancer risk range of 1E-04 to 1E-06 are considered acceptable, and ELCR values below 1E-06 represent minimal carcinogenic risk. The ELCR values for all current and reasonably anticipated land use scenarios evaluated (commercial, industrial or recreational) were below or within the acceptable cancer risk range for both Wood Storage Areas.

Noncarcinogenic hazards are based on an HQ threshold of 1.0. An HQ above 1.0 indicates unacceptable noncarcinogenic risk, while an HQ below 1.0 is considered acceptable. The HQ calculated for all current and reasonably anticipated land use scenarios evaluated (commercial, industrial or recreational) for both Wood Storage Areas are considered acceptable.

Because no chemicals contributed to unacceptable health risks, the 2019 HHRA identified no chemicals of concern (COCs) for either Wood Storage Area. The 2019 HHRA estimated unacceptable carcinogenic and noncarcinogenic risks in the Pond and Process Areas, but those areas are outside the scope of this Proposed Plan and will be addressed in future operable units.

August 2019 Human Health Risk Assessment Addendum

The August 2019 Human Health Risk Assessment Addendum (HHRA Addendum) was prepared to incorporate the June 2019 soil sampling data and to use smaller exposure units based on the reasonably anticipated future land use (commercial, industrial or recreational). The HHRA Addendum uses the same overall approach for estimating risks as the 2019 Site-wide HHRA. The following soil COPCs were detected at concentrations above screening levels in the HHRA Addendum:

Exposure Area	Surface Soil COPCs	Subsurface Soil COPCs
Area 1A	PAHs Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Indeno(1,2,3-cd)pyrene	No COPCs

Exposure Area	Surface Soil COPCs	Subsurface Soil COPCs
Area 1B	<u>PAHs</u> Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Indeno(1,2,3-cd)pyrene <u>Pesticide</u> Pentachlorophenol	<u>PAHs</u> Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Fluoranthene Indeno(1,2,3-cd)pyrene Phenanthrene <u>SVOCs</u> Dibenzofuran
Area 2	<u>PAHs</u> Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(a,h)anthracene	No COPCs

The HHRA Addendum evaluated exposure for the following receptors:

- A current or future teenage trespasser or recreational user;
- A future indoor worker;
- A future outdoor worker; and
- A future construction worker.

The HHRA Addendum evaluated the following exposure pathways:

- Ingestion of contaminated soil;
- Dermal contact with contaminated soil; and
- Inhalation of vapors volatilized from soil and particulates as fugitive dust.

The HHRA Addendum risk levels based on commercial, industrial, or recreational land use are the basis for this Proposed Plan. The HHRA Addendum concluded “Based on the findings of this HHRA Addendum, the overall risk from soil is acceptable for the reasonably anticipated future land use (i.e., commercial, industrial or recreational) for the five exposure areas (Areas 1A, 1B, 1C, 1D and 2) evaluated. However, the overall risk from soils is unacceptable for lifetime residents in Area 1C based on exceedance of the target risk of 1×10^{-4} . Based on current and future expected land use (i.e., non-residential), no exposure area requires additional evaluation in the following step of the CERCLA process, the Feasibility Study.”

The carcinogenic and noncarcinogenic estimates from the HHRA Addendum are summarized below:

Area	Use Scenario	Excess Lifetime Carcinogenic Risk	Non-Cancer Hazard
1A			
	Teenage trespasser/walking recreator	1.1 E-06 (1.1 in 1,000,000)	0.005
	Indoor worker	*	*
	Outdoor worker	1.7 E-06 (1.7 in 1,000,000)	0.01
	Construction worker (subsurface soil)	*	*
1B			
	Teenage trespasser/walking recreator	1.8 E-06 (1.8 in 1,000,000)	0.008
	Indoor worker	*	*
	Outdoor worker	3.0 E-06 (3.0 in 1,000,000)	0.02
	Construction worker (subsurface soil)	1.5 E-07 (1.5 in 10,000,000)	0.05
2			
	Teenage trespasser/walking recreator	2.3 E-07 (2.3 in 10,000,000)	0.001
	Indoor worker	*	*
	Outdoor worker	3.8 E-07 (3.8 in 10,000,000)	0.002
	Construction worker (subsurface soil)	*	*
*No COPCs were identified			

The 2019 Soil Sampling Investigation also found that the release of COPCs extends into a 2.6-acre Boundary Area, but not further into the Eastern Upland Area. Therefore, the boundary of the Site is shown in Figure 2. The boundary sampling results could inform the subdivision of the parcel to separate the Site from the land that is outside the Site boundary. One advantage of subdividing the parcel would be to document eligibility for non-Superfund government programs for the land outside the Site boundary.

NC DEQ 2019 Residential Risk Evaluation

The 2019 Residential Risk Evaluation evaluates whether the soils in OU1 are acceptable for residential use under North Carolina General Statutes § 143B-279.9(b)(1). The Residential Risk Evaluation concludes that OU1 is not acceptable for residential use or specific commercial uses such as daycares and schools.

On September 3, 2019, NC DEQ formally notified the Multistate Trust of the requirement under North Carolina General Statutes § 143B-279.9 and § 130A-310.3(f) to implement institutional controls, including permanent institutional controls to prevent residential land use on the property in the form of a restrictive covenant or covenants that meet all of the requirements of the North Carolina General Statutes, including North Carolina General Statutes § 143B-279.9 and § 130A-310.3(f). On September 11, 2019, the Multistate Trust documented its commitment to establishing permanent institutional controls.

Ecological Risks

During the scoping of the BERA, the EPA and NC DEQ decided the full BERA process was needed on the Southern Marsh, but not on the upland areas of the Site, based on the assumption that a human health cleanup would be protective of ecological receptors in the upland areas. After the HHRA Addendum indicated that OU1 met the human health criteria for No Action, the EPA conducted a screening level ecological risk assessment based on birds foraging in OU1 and found no risks from low molecular weight (LMW) PAHs and possible risks from high molecular weight (HMW) PAHs. The analysis, “Semi-Screening Level Ecological Risk Assessment Calculations for Upland Areas 1A, 1B and 2 of the Kerr-McGee Chemical Company Site”, included all surface soil data collected through June 2019.

Because there are no established ecological screening levels for birds exposed to PAHs, the EPA’s Risk Assessor prepared a simplified food chain model to estimate the upper bound of potential risk. The estimate is intentionally conservative and likely overestimates the risk. The food chain model assumes birds forage only in the OU1 area. The analysis used the 95% Upper Confidence Limit of PAH concentrations in surface soils to develop HQs based on the toxicity values associated with the lowest observed adverse effect level for birds (LOAEL HQs). The analysis estimated an upper bound of potential risk from HMW PAHs for American Robins as follows: HQ of 9 in Area 1A, HQ of 22 in Area 1B and HQ of 3 in Area 2. For the American Woodcock, the analysis estimated an HQ of 15 assuming foraging across all of OU1. There were no risks associated with exposure to LMW PAHs.

If the expected land use of OU1 was wilderness, the EPA would conduct sampling of earthworms and other invertebrate to refine this conservative risk estimate. However, the expected land use for OU1 is commercial, industrial, or recreational. The EPA anticipates that within five years the exposure pathways will likely be eliminated by redevelopment. The EPA is making the risk management decision that no additional ecological risk assessment is warranted for OU1 because the potential ecological exposure would be acceptable under the anticipated future land use of OU1 as commercial, industrial or recreational.

The rest of the soils at the Site are more contaminated than OU1 and may be subject to additional ecological risk assessment such as sampling earthworms and insects to refine the food chain models.

Summary of the Preferred Alternative

The 21.6-acre OU1 area poses no current or potential threat to human health or the environment under the current and reasonably anticipated future land uses (commercial, industrial, or recreational) and therefore meets the EPA’s criterion for a No Action Remedy. The future land use is based on community input through the Redevelopment Planning Initiative, the local zoning designation, discussion with local government, and the State’s statutory requirement for a restrictive covenant to prevent residential use or specific commercial uses such as daycares and schools.

Because the 21.6-acre OU1 area is adjacent to the 82-acre “Eastern Upland Area,” the proposed No Action Remedy would create about 100 contiguous acres that are available for reuse.

The EPA in consultation with the State of North Carolina may modify the proposed No Action Remedy presented in this Proposed Plan based on new information or comments received during the public comment period.

State Acceptance

State acceptance of the preferred alternative will be documented in the ROD following review of comments received on the Proposed Plan. NC DEQ has been actively involved in the Site investigation and risk

assessment activities. NC DEQ has indicated a willingness to accept the No Action Remedy pending review of any public comments.

Description of major public participation activities initiated prior to the issuance of the Proposed Plan

The EPA, NC DEQ, and the Multistate Trust hold quarterly meetings with the public, local government, and community groups. The Multistate Trust posts the meeting presentations and factsheets on <http://multi-trust.org/navassa-north-carolina>.

Community Acceptance

Community acceptance of the proposed No Action Remedy will be evaluated after the public comment period ends. Comments received during the public comment period will be addressed and responses will be presented in the **Responsiveness Summary** which will be included in the ROD.

Community Participation

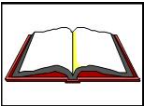
The EPA seeks public review and comments on this Proposed Plan and on the EPA's proposed No Action Remedy for OU1. The Information Repository and Administrative Record for the Kerr-McGee Chemical Corp–Navassa Superfund Site are available at:

- Navassa Community Center, 338 Main Street, Navassa, North Carolina, 28451;
- Leland Library, 487 Village Road NE, Leland, North Carolina, 28451;
- EPA Region 4's Information Center at 61 Forsyth Street SW, Sam Nunn Atlanta Federal Center, Atlanta, Georgia, 30303; and
- Online information repository available at:
<https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.docdata&id=0403028>

The EPA will accept public comments for at least 30 days and the comment period will be extended if requested by the public during the initial public comment period. Comments may be submitted by mail, email, or phone. The EPA will provide a written summary of significant comments, criticisms, and new relevant information submitted during the public comment period and will respond to each issue in the Record of Decision.

The EPA will conduct a public availability session and a public meeting on October 15, 2019 at the Navassa Community Center, 338 Main Street, Navassa to explain the Proposed Plan and No Action Remedy and to accept public comments verbally and in writing. The public availability session will be from 2:00 – 4:00 pm. The public meeting will be at 6:00 pm, October 15th, 2019.

Please direct comments or questions to: Erik Spalvins, Remedial Project Manager, at spalvins.erik@epa.gov, (404) 562-8938, or to Latonya Spencer, Community Involvement Coordinator, at spencer.latonya@epa.gov, or toll free at (800) 435-9234.



GLOSSARY

Administrative Record (AR): Material documenting EPA's selection of cleanup remedies at Superfund Sites, a copy of which is placed in the **Information Repository** near the Site.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA): A federal law (also known as **Superfund**) passed in 1980 and modified in 1986 by the Superfund Amendment and Reauthorization Act (SARA); the act created a trust fund, to investigate and cleanup abandoned or uncontrolled hazardous waste sites. The law authorizes the federal government to respond directly to releases of hazardous substances that may endanger public health or the environment. EPA is responsible for managing the Superfund.

Chemicals of Concern (COCs): Chemical constituents associated with a Superfund Site that have been released into the environment and pose a risk to human health.

Feasibility Study (FS): A study of the applicability or practicability of a proposed action or plan conducted after the Remedial Investigation to determine what alternatives or technologies could be applicable to clean up the site-specific COCs.

Groundwater: The supply of fresh water found beneath the Earth's surface (usually in aquifers) which is often used for drinking water.

Information Repository: A library or other location where documents and data related to a Superfund project are placed to allow public access to the material.

Institutional Controls: Restriction that prevents an owner inappropriately developing a property. The restriction is designed to reduce exposure to hazardous substances to workers or the general public and maintain the integrity of the remedy. Restrictive covenants are a form of institutional controls.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): The Federal Regulation that guides the Superfund program. The NCP was revised in February 1990.

National Priorities List (NPL): List of sites under EPA's Superfund program, which investigates and cleans up hazardous sites nationwide.

Proposed Plan: A Superfund public participation fact sheet that summarizes the preferred cleanup strategy for a Superfund Site.

Record of Decision (ROD): A public document that describes the rationale for the selection of a Superfund remedy.

Remedial Investigation / Feasibility Study (RI/FS): A two-part investigation conducted to fully assess the nature and extent of a release, or threat of release, of hazardous substances, pollutants, or contaminants, and to identify alternatives for cleanup. The Remedial Investigation gathers the necessary data to support the corresponding Feasibility Study.

Responsiveness Summary: A summary of oral and written comments received by EPA during a comment period on key EPA documents, and EPA's responses to those comments. The responsiveness summary is a key part of the ROD, highlighting community concerns for EPA decision-makers.

Superfund: The common name for the program operated under the legislative authority of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), the federal law that mandates cleanup of abandoned hazardous waste sites

Superfund Alternative Approach (SAA): The Superfund Alternative Approach is an alternative to listing a site on the NPL. The SAA uses the same process and standards for investigation, cleanup, and community involvement as sites on the NPL.