Record of Decision

Operable Unit 2
North Alcoa (Alcoa Properties) Superfund Alternative Site

East St. Louis
St. Clair County, Illinois

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LIST OF ACRONYMS/ABBREVIATIONS

AOC	Administrative Order on Consent
AR	Administrative Record
ARARs	Applicable or Relevant and Appropriate Requirements
BERA	Baseline Ecological Risk Assessment
bgs	Below Ground Surface
BHHRA	Baseline Human Health Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
EJ	Environmental Justice
EJSEAT	Environmental Justice Strategic Enforcement Assessment Tool
EPA	United States Environmental Protection Agency
ESLW	East St. Louis Works (Alcoa facility)
FS	Feasibility Study
FFS	Focused Feasibility Study
IAC	Illinois Administrative Code
IB	Investigative Block
IC	Institutional Control
Illinois EPA	Illinois Environmental Protection Agency
MCL	Maximum Contaminant Level
mg/kg	Milligrams per kilogram
NCP	National Contingency Plan
O&M	Operation and Maintenance
OU	Operable Unit
PCBs	Polychlorinated Biphenyls
pCi/g	Picocuries per gram
pCi/L	Picocuries per liter
RAA	Remedial Action Alternative
RAO	Remedial Action Objective
RDA	Residue Disposal Area
RI	Remedial Investigation
ROD	Record of Decision
RSL	Regional Screening Level
SDWA	Safe Drinking Water Act
SPL	Spent Pot Liner
SVOC	Semi-volatile Organic Compound
TBC	To Be Considered
UECA	Uniform Environmental Covenant Act
VOC	Volatile Organic Compound

This Record of Decision (ROD) documents the selected interim remedy for Operable Unit 2 (OU2) of the North Alcoa (Alcoa Properties) Superfund Alternative Site in East St. Louis, St. Clair County, Illinois. The interim ROD is organized in three sections: Part I contains the Declaration for the ROD, Part II contains the Decision Summary and Part III contains the Responsiveness Summary.

Part I: Declaration

The Declaration summarizes the information presented in the interim ROD and includes the authorizing signature of the Director of the Superfund & Emergency Management Division, United States Environmental Protection Agency (EPA), Region 5.

Site Name and Location

North Alcoa (Alcoa Properties) Superfund Alternative Site – Operable Unit 2
East St. Louis, St. Clair County, Illinois
National Superfund Identification Number: ILSFN0508010

Statement of Basis and Purpose

This decision document presents the selected interim remedy for OU2 of the North Alcoa (Alcoa Properties) Superfund Alternative Site (Site), which was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended, 42 U.S.C. §9601 et seq and, to the extent practicable, the National Oil and Hazardous Substances Contingency Plan (NCP), 40 C.F.R. Part 300. This decision is based on the Administrative Record (AR) file for this Site. The AR Index identifies each of the items comprising the AR upon which the selection of the interim remedial action is based.

The Illinois Environmental Protection Agency (Illinois EPA) has indicated that it will concur with the selected interim remedy.

Assessment of Site

The response action selected in this interim ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

Description of the Selected Remedy

This interim ROD sets forth the interim remedy for soil and waste materials in OU2 of the North Alcoa (Alcoa Properties) Superfund Alternative Site (see Figure 1). EPA previously selected and implemented an interim remedy for soil and waste materials in OU1 and plans to select a future and final remedial action for all three Site OUs, including OU3 addressing the Site-area groundwater.

The selected interim remedy for OU2 is Alternative RAA-3. It will address potential exposure to aluminum smelting waste (bauxite waste material) in the surface soil in OU2 by removing at least the top two feet of contaminated soil and waste materials from designated Site parcels, consolidating the excavated materials below a clean soil cover on OU1, covering the OU2 excavation areas with at least two feet of clean soil and managing contaminated soils and wastes in place. The selected OU2 remedy includes the following components:

- Site clearing and preparation;
- Excavation of no less than 2 feet of bauxite waste material/soil from designated OU2 parcels with consolidation on the OU1 parcel designated as Investigative Block 4a (IB-4a) (See Figure 2);
- Construction of a minimum 2-foot soil cover that complies with solid waste landfill requirements over the OU2 parcel excavation areas and the IB-4a bauxite waste material consolidation area;
- Maintain and reassess existing surface stormwater run-off controls on OU1 and construct on OU1 and OU2 additional stormwater run-off engineering controls as necessary to contain and control on Site the volume of on-Site precipitation from 100-year stormwater event;
- Site restoration and revegetation;
- Recording of appropriate institutional controls (ICs) on the Site parcels; and
- Monitoring of previously sampled IB-5a residences to determine if EPA action levels for indoor radon are exceeded. Construction and operation of a radon mitigation system to reduce the levels of radon below EPA action standards in residences where radon standard is exceeded.

The OU2 remedy also selects excavating and removing the full volume (referred to as "to depth") of bauxite waste and contaminated soil from OU2 residential parcels in IB-5a (see Figure 2), depending on accessibility, constructability and risk to the structural integrity of improvements at the OU2 residential parcels. Removing bauxite waste and contaminated soils to depth eliminates both contaminants and the need to record ICs on these residential properties. Excavated waste will be placed in the IB-4a bauxite waste material consolidation area.

Statutory Determinations

The selected remedy is protective of human health and the environment, complies with federal and State requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

The statutory preference for treatment of principal threat waste does not apply because there is no known principal threat waste in the soil and waste material in OU2.

A review will be conducted every five years after commencement of the remedial action to ensure that the remedy is, or will be, protective of human health and the environment because the OU2 interim remedy will result in hazardous substances remaining on-Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

ROD Data Certification Checklist

The following information is included in the Decision Summary section (Part II) of this ROD. Additional information can be found in the AR file for the Site.

- Chemicals of concern (COCs) and their respective concentrations (Section 5.3.3);
- Baseline risk represented by the COCs (Section 7.0);
- Cleanup levels established for COCs and the basis for the levels (Sections 7.1 and 8.0);
- Assumptions (primarily related to soil exposures) in the baseline risk assessment and the ROD (Sections 7.0);
- Current and reasonably anticipated future land use assumptions used in the baseline risk assessment and ROD (Section 7.0);
- Potential land use that will be available in OU2 as a result of the selected remedy (Section 6.0);
- Estimated capital, operation and maintenance (O&M), and total present worth costs; discount rate; and the number of years over which the remedy cost estimates are projected (Section 9.0); and
- Key factor(s) that led to selecting the remedy (Section 10.0).

Support Agency Acceptance

Illinois Environmental Protection Agency (Illinois EPA) has stated its intent to concur with the selected remedy. EPA will place the State's concurrence letter into the Site AR upon receipt.

Authorizing Signature

6/26/2020

X 

Douglas Ballotti, Director
Superfund & Emergency Management Division
Signed by: DOUGLAS BALLOTTI

Part II: Decision Summary

1.0 Site Name, Location and Description

Name: North Alcoa (Alcoa Properties) Superfund Alternative Site – Operable Unit 2
Location: East St. Louis, St. Clair County, Illinois
National Superfund Identification Number: ILSFN0508010
Lead Agency: EPA
Support Agency: Illinois EPA

The 400-acre North Alcoa (Alcoa Properties) Superfund Alternative Site (Site) is located in a mixed-use area of East St. Louis, St. Clair County, Illinois, about 3 miles east of the Mississippi River. The Site is bounded on the north by Lake Drive, on the east by the Alton and Southern Railway, on the south by Missouri Avenue and on the west by 29th Street (see Figure 1). OU2, the subject of this interim ROD, is a horseshoe shaped area located along the southern, western and northern Site boundaries (see Figure 2).

The Site is not on the National Priorities List but is being managed as a Superfund Alternative Site.

2.0 Site History and Enforcement Actions

2.1 Site History

From about 1903 to 1957, Alcoa, Inc. conducted aluminum manufacturing and chemical production operations at its former East St. Louis Works (ESLW) facility on the south side of Missouri Avenue (see Figure 1). Alcoa operated the ESLW facility primarily to refine bauxite (an aluminum ore) into alumina using the Bayer process, which uses hot sodium hydroxide in a pressurized digester to separate aluminate liquor from insoluble bauxite residues. The facility also produced or used fluoride-based chemicals including cryolite, aluminum fluorides, and hydrofluoric acid.

The bauxite residue remaining after aluminate liquor extraction was known as “red mud” and, after further processing, “brown mud.” Beginning in the early 1900s, Alcoa placed its red and brown mud wastes into disposal areas on its property north of Missouri Avenue, which now comprises the North Alcoa Site. Initially, the bauxite waste material was disposed of along the edges of the former Pittsburgh Lake. Over time, Alcoa constructed three residue disposal areas (RDAs – see Figure 2) at the Site that were contained by gypsum berms to prevent the red and brown muds from eroding away from the disposal areas during precipitation events. The gypsum used in constructing the berms was a byproduct of Alcoa’s chemical operations.

Alcoa’s operations included its cryolite recovery process for which it stockpiled spent pot liner (SPL), a listed hazardous waste (K088), on what is now called Site area IB-3c (see Figure 2) prior to processing it at the ESLW facility.

In about the 1930s, the gypsum berm in RDA1 was breached and a deeply incised, dendritic drainage pattern developed in this area towards the south, allowing bauxite waste material to migrate and accumulate in on-Site areas to the south. Other low-lying areas outside of the RDAs consist of wet areas and uplands that have various fill materials at the surface.

The bauxite waste material generally consists of fine-grained red or brown clay/silt material. The material is thick (or viscous) and retains moisture under normal conditions, but thins or liquifies when shaken, agitated, or otherwise stressed, and can become a semi-solid. The residue has poor trafficability when wet and can be difficult to handle without special equipment, even in dry conditions. The bauxite residue is soft, highly plastic, and not suitable as a subgrade for building construction or redevelopment without extensive engineering.

2.2 Removal Activity and Initial Investigations

From 1996 through 2000, Illinois EPA, the U.S. Army Corps of Engineers, and EPA conducted a series of site investigations on several portions of the North Alcoa Site.

In 1996, Illinois EPA, in cooperation with EPA, conducted a study for the purpose of generating a "CERCLA Redevelopment Assessment" report for the Site. Illinois EPA took 118 soil samples and nine groundwater samples primarily in areas IB-2 and IB-3. Analytical results showed that several hazardous substances were present, including lead, cadmium, arsenic, cyanide, and chromium. In August 1997, Illinois EPA returned to take an additional six sediment and five surface water samples. Data from these new samples also showed elevated levels of lead, arsenic, cadmium and cyanide.

In November 1999, the U.S. Army Corps of Engineers took geotechnical probe samples at the Site, detecting elevated levels of lead and cyanide. On July 5, 2000, an EPA contractor produced a letter report based on 23 samples that detected elevated levels of lead in the red mud/berm edges of the “Brown” or “West” Pond and the cinders south of the bermed ponds. The letter report also documented arsenic in the gypsum berms and cinders; cyanide in the cinders; and chromium in the red mud.

In December 2002, Alcoa and the city of East St. Louis (City) began a remedial investigation and feasibility study (RI/FS) at the Site pursuant to an EPA-issued Administrative Order on Consent (AOC) (see next section). During the RI, 16 piles of SPL material were identified in area IB-3c. By September 2006, EPA characterized the SPL material as a principal threat waste due to its toxicity. Pursuant to a workplan approved by EPA pursuant to the AOC, Alcoa and the City subsequently conducted an expedited removal in accordance with the additional work provisions of the AOC. Alcoa excavated about 1,500 tons of SPL-containing material from a 1.6-acre area and disposed of it off-Site. After removing the SPL material, Alcoa conducted additional confirmation sampling to demonstrate that no further removal of SPL waste or contaminated soil was necessary or practical. Alcoa then placed a geotextile filter fabric over the removal area and covered the geotextile with 6 inches of clean soil (See *Completion Report - Spent Pot Liner Removal (2006)).*

2.3 Enforcement Activities

As stated above, in December 2002, EPA issued an AOC to Alcoa and the City to conduct an RI/FS at the Site. Under the AOC, the City granted access as the Site owner and Alcoa performed the RI/FS work. Several years later, under this order, EPA directed Alcoa to prepare a focused feasibility study report (FFS) that summarized and evaluated information regarding the nature and extent of soil contamination in OU1 to evaluate the OU1 remedial alternatives including remedial alternative enhancements, if any, to accommodate a potential solar reuse opportunity. EPA approved the OU1 FFS in April 2012 and, after issuing a proposed plan for public comment, signed a ROD to select an interim remedial action for OU1 in July 2012.

In 2014, the United States entered into a consent decree (CD) with Settling Defendants Alcoa, the City, and the Alton and Southern Railway Company for the design and construction of the OU1 remedial action. From 2014 to 2016, in accordance with the CD, Alcoa, the City, and Alton and Southern Railway Company completed construction of the OU1 interim remedy. These parties remain responsible for ongoing operation and maintenance (O&M) of the constructed remedy, including maintenance of surface water controls to protect the soil cover and adjacent non-Site properties from stormwater runoff.

During OU1 remedy construction, EPA issued two Explanation of Significance Differences (ESD) to the OU1 ROD, which permitted Alcoa to excavate surficial waste materials from specified areas within OU2 and to consolidate these excavated materials under the OU1 soil cover. These actions both reduced the volume and exposure of remaining contaminated soil and waste material in OU2 and cost-effectively enhanced construction of the OU1 remedy by providing a ready supply of suitable material for proper grading and sloping of the OU1 soil cover. Alcoa marked the OU2 excavation areas with a barrier layer to distinguish the unexcavated depth from cover materials and covered these areas with a minimum of two feet of clean soil. EPA and Illinois EPA provided oversight of all remedial construction activities at the Site.

Under the RI/FS AOC, EPA directed Alcoa to complete a second FFS that summarized and evaluated information regarding the nature and extent of contamination in OU2, so that EPA could issue an interim remedy decision for OU2. EPA approved the FFS for OU2 in September 2019.

3.0 Community Participation

EPA announced the beginning of the RI/FS process at a public meeting on September 3, 2003, at City Hall in East St. Louis. During the meeting, EPA provided a detailed description of the upcoming Site investigations.

EPA released the Proposed Plan for OU1 to the public in April 2012. Copies of all documents EPA used to support the OU1 remedy as outlined in the Proposed Plan were placed into the AR file and made available to the public at City Hall, the East St. Louis Public Library, and EPA Region 5 offices, where Site information repositories had been established. EPA published a notice of the availability of these documents and the release of the OU1 Proposed Plan in the

local *Belleville News Democrat* and the *East St. Louis Monitor*. A 30-day public comment period was held from April 12, 2012 to May 14, 2012 and EPA held a public meeting on April 17, 2012 to present the Proposed Plan to community members and to take comments on the proposed interim cleanup plan for OU1. In response to a timely request, the OU1 Proposed Plan public comment period was extended to June 13, 2012.

Similarly, EPA released the Proposed Plan for OU2 to the public in December 2020. Copies of all documents EPA used to support the OU2 remedy as outlined in the Proposed Plan were placed into the AR file and made available to the public at City Hall, the East St. Louis Public Library, and EPA Region 5 offices, where the Site information repositories are being maintained. EPA published a notice of the availability of these documents and the release of the Proposed Plan in the local *Belleville News Democrat* and the *East St. Louis Monitor*. Originally, EPA planned to hold a 30-day public comment period from December 2, 2019 to January 5, 2020 on the OU2 Proposed Plan, but after receiving a timely request for a 60-day extension of the comment period, EPA complied with that request and extended the comment period until March 5, 2020. EPA held a public meeting at St. Matthew's Church in East St. Louis on December 12, 2019 to present the Proposed Plan to community members. At this meeting, representatives from EPA and Illinois EPA answered questions about the remedial alternatives and issues at the Site and solicited community input on the proposed OU2 interim remedy.

In about 2012, EPA had screened the Site for environmental justice (EJ) concerns as a part of the OU1 remedy selection process. Under EPA Region 5's EJ Assist Tool, which applied the interim version of the national EJ Strategic Enforcement Assessment Tool (EJSEAT), EPA considered census tracts with a score of 1, 2 or 3 to be high-priority potential EJ areas of concern. The EJ Assist Tool returned a score of 2 for the North Alcoa Site area; therefore, it is a high-priority potential EJ area of concern.

In response to the Site area being a high priority potential EJ area of concern, EPA conducted additional outreach measures intended to maximize the ability of local citizens to voice comments or concerns with proposed Site remedial actions. To create an extensive list of community contacts, EPA conducted a door to door neighborhood outreach and compiled a contact list of about 20 neighborhood churches and organizations. EPA used the results of this outreach to develop and serve as the basis for additional outreach during the OU1 remedy selection process. In 2019 and prior to the public meeting discussing the OU2 proposed remedy, EPA updated the OU1 community outreach efforts placing additional area residents on the Site mailing list. These efforts did not go unnoticed by the community, as attendees at the December 2019 Proposed Plan public meeting acknowledged the significant increase in attendance from previous public meetings and expressed support for EPA's efforts.

4.0 Scope and Role of Operable Unit

As with many Superfund sites, the challenges at the North Alcoa Site are complex. As a result, EPA has organized the work into three operable units (OUs):

- Operable Unit 1: Soil and waste contamination at the Site's eastern and interior areas

- Operable Unit 2: Soil and waste contamination at the Site's northern, western and southern areas
- Operable Unit 3: Contamination of the groundwater aquifer

The remedial action selected in this interim ROD will address soil and waste material contamination in OU2.

Previously, EPA addressed OU1 by issuing an interim ROD and overseeing the construction of the OU1 selected remedy by the PRPs, as altered by the two ESDs. The OU1 remedy is now in the operation and maintenance (O&M) phase.

The selected interim remedial action in this ROD will address the remaining surface and subsurface soil and waste contamination at the OU2 parcels, including the two parcels previously excavated during construction of the OU1 remedy, by excavating OU2 contaminated soil/waste material and consolidating it on OU1 on or near the OU1 soil management area. The soil and waste material excavated from OU2 and consolidated in OU1 will then be covered by a two-foot soil cover and a vegetative layer. Stormwater runoff will be managed on-Site in compliance with 40 C.F.R. §122.26.

For OU3, EPA plans to oversee completion of the RI/FS work by the PRPs under the 2002 AOC and issue a future Proposed Plan for a final remedial action for groundwater at the Site. EPA will announce a separate future public comment period for any proposed OU3 remedial action. This OU2 interim action will neither be inconsistent with, nor preclude, selection and implementation of the final Site remedy.

5.0 Site Characteristics

Alcoa has not completed and submitted for EPA approval a final North Alcoa Site RI and FS report. However, Alcoa completed and EPA approved separate Focused Feasibility Study (FFS) reports for OU1 and OU2. The FFS reports contain an overview of site characteristics, chemicals of concern, and risk summaries limited to the OU1 and OU2 areas. This section of the ROD provides an overview of site characteristics, chemicals of concern, and risk summaries for OU2 only (see Figure 1). The data used to support this OU2 action is contained in the OU2 FFS report, which is a part of the Site AR. EPA previously approved Alcoa's FFS for OU1 which is also a part of the Site AR. The results for OU3, Site groundwater, will be presented in the final Site-wide RI/FS report.

The 400-acre Site contains six main disposal areas, each with a number of named subareas. Individual areas and subareas are referred to as Investigative Blocks (IB). The six disposal areas were formed as Alcoa conducted aluminum manufacturing and chemical production operations at its former ESLW facility south of Missouri Avenue (see Figure 1) and used the property on the north side of Missouri Avenue to store or dispose of its process materials and wastes. For reference, Figure 2 highlights each investigative area listed below:

- IB-1 Residue Disposal Areas **(OU1)**
    1. IB-1a RDA 1 (The Old Pond)

2. IB-1b RDA 2 (The Brown Mud Pond)
3. IB-1c RDA 3 (The Red Mud Pond)

- IB-2 Gypsum Dike Areas **(OU1)**

- IB-3 Other Areas of Alcoa Activities **(portions of OU1 and 2)**
    1. IB-3a Brick Works/Childs Property
    2. IB-3b Redevelopment Area
    3. IB-3c SPL Stockpiling Area

- IB-4 Areas of No Known Alcoa Activities **(portions of OU1 and OU2)**
    1. IB-4a North Wet Area
    2. IB-4b Triangle Wet Area
    3. IB-4c Ball Fields
    4. IB-4d Berm Wet Area
    5. IB-4e Active Commercial Area

- IB-5a – Residential Area **(OU2)**

- IB-6a – Former US Steel Drum Area **(OU2)**

5.1 Conceptual Site Model

A conceptual site model (CSM) for was developed during the RI/FS to identify appropriate human exposure pathways and receptors for evaluation in the risk assessment. Disposal of bauxite waste material into and around the former Pittsburgh Lake resulted in widespread soil contamination across the Site, both at the surface and in the subsurface. A general identification of exposure pathways, exposure routes, and receptors was included in the risk assessment section of the OU2 FFS report. The remedial action selected in this interim ROD for OU2 will address the risk to human receptors primarily due to direct contact exposure to contaminated soil and waste materials at OU2.

5.2 Physical Characteristics

5.2.1 Site Geology

The Site is located in an area known as the American Bottoms, which consists of up to 120 feet of unconsolidated alluvial fill overlying Mississippian- and Pennsylvanian-age bedrock. The unconsolidated deposits are composed of ancestral Mississippi River alluvium, much of which are eroded and reworked glacial outwash deposits. Generally, there are two recognized unconsolidated formations in the valley fill: the Cahokia Formation and the underlying Henry Formation. The Cahokia Formation is a floodplain deposit that is typically 30 to 50 feet thick. The upper 15 to 30 feet consists of fine-grained clay and silt materials. The lower part of the formation contains sand lenses and the sediments generally coarsen with depth. The Henry Formation consists of sand and gravel glacial outwash deposits that can be up to 120 feet thick.

The lower, more permeable portions of the Cahokia and the Henry Formation make up the American Bottoms Aquifer.

5.2.2 Hydrogeologic Conditions

The Site-area groundwater table is found at about 8-16 feet below ground surface (bgs) in the American Bottoms Aquifer and Site data indicate that the groundwater does not discharge to any on-Site surface water bodies. The aquifer is very transmissive, with groundwater flowing to the west/southwest beneath the Site towards the Mississippi River.

Groundwater is not used as a drinking water source in the City. A survey completed during the RI found no potable-use wells in the vicinity and a 1997 City ordinance[1] restricts groundwater use within City limits.

5.2.3 Surface Water Hydrology

The Mississippi River is about three miles west of the Site and there are no significant surface water features located between the Site and the River. Frank Holten State Park is east of the Site and it contains several large lakes, but these upgradient surface water features are not hydraulically connected to the Site via surface water or groundwater pathways.

The existing sewer infrastructure in the Site area is not capable of accepting significant stormwater drainage from the Site due to capacity limitations. Therefore, stormwater runoff from OU1 is managed on-Site in three stormwater detention ponds in compliance with 40 C.F.R. §122.26. The detention ponds collect stormwater runoff from the OU1 soil cover and help to minimize surface runoff onto the adjacent off-Site properties. In addition, Alcoa constructed a vegetated soil berm along a portion of the north and northwestern Site boundaries to prevent runoff onto the adjacent properties. These stormwater control measures have provided temporary relief to the adjacent properties from Site runoff, but the stormwater controls will need to be reassessed during the OU2 remedy design to determine what additional measures may be necessary to control stormwater once the OU2 contaminated soil and bauxite waste material are consolidated on OU1.

5.3 Nature and Extent of Contamination

Prior to issuing the RI/FS AOC to the PRPs in December 2002, EPA and Illinois EPA had studied the nature and extent of contamination at the Site during several investigations, identifying several contaminants of concern (COCs). This section of the ROD summarizes the information available from these investigations, including the type of contamination, known or suspected sources of contamination, affected media, and the extent of contamination. The concentrations of the contamination detected in the samples were compared to human health and ecologically based criteria in the companion risk assessments.

[1] EPA has yet to review this ordinance for enforceability, but it will be addressed as part of our evaluation of Site-wide institutional control measures.

5.3.1 Contaminants of Concern

EPA identified arsenic, aluminum, lead, and radium isotopes 226 and 228 as COCs at OU2. A brief description of some toxicological effects follows.

Short term exposure to arsenic may cause adverse effects in the gastrointestinal tract, heart, vascular system, blood, nervous system, eyes, nose, and skin. Arsenic has been found to cause lung cancer when inhaled and to cause skin cancer when ingested.

Lead is a highly toxic metal. Lead affects the nervous system and can cause health effects ranging from behavioral problems and learning disabilities to seizures and death. Children who are six years old and younger are most at risk.

Some studies have indicated that exposure to high levels of aluminum may cause Alzheimer's disease or cause people to develop bone or brain diseases.

Radium isotopes 226 and 228 form when isotopes of uranium or thorium radioactively decay. Radium occurs naturally at very low levels in virtually all rock, soil, water, plants, and animals, although when uranium (or thorium) occurs in high levels in rock, radium is also found in high levels. Radium isotopes 226 and 228 also radioactively decay, emitting alpha-particle and gamma radiation and yielding other radioactive daughter product elements, which in turn can radioactively decay to form radon gas.

Alpha-particle radiation is a concern if radium is taken into the body through inhalation or ingestion, which increases the risk of developing such diseases as lymphoma, bone cancer, and diseases that affect the formation of blood, such as leukemia and aplastic anemia. Gamma radiation can expose individuals to ionizing radiation, even at a distance. External exposure to radium's gamma radiation increases the risk of cancer to varying degrees in all tissues and organs.

5.3.2 Source of Contaminants of Concern

The byproducts of Alcoa's aluminum smelting and chemical operations at its ESLW facility, bauxite waste material and gypsum, are the primary sources of the Site COCs. These wastes were deposited directly in and around the former Pittsburgh Lake, that encompassed most of OU1 and OU2 (*see* Figures 3 and 4). The bauxite waste material was placed in and around the former lake and the gypsum was used as dikes around the three RDAs within IB-1.

5.3.3 Nature and Extent of Contamination

In accordance with the 2002 AOC for RI/FS, which directed the PRPs to further characterize the nature and extent of contamination at the Site, Alcoa collected soil (surface and subsurface), sediment, surface water, and groundwater samples. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, metals, and radionuclides. Many samples were found to contain concentrations of metals above EPA Industrial Regional Screening Levels (RSLs), which are

typically used as a preliminary screening tool to help to focus further characterization efforts and subsequent risk analyses for those contaminants exceeding RSLs.

Generally, metals contamination is found where Alcoa disposed of its bauxite waste material, gypsum byproducts, and other waste. The RI found these waste materials to essentially be co-located. The depth of all the waste material is not completely known because of the lack of historical information regarding the depth of the former Pittsburg Lake.

The RI found OU2 surface soil and co-located bauxite waste material samples to be contaminated with radium 226 (ranging from 0.324 picocuries per gram (pCi/g) to 13.69 pCi/g), radium 228 (ranging from 0.47 pCi/g to 17.60 pCi/g); and total radium (ranging from 0.698 pCi/g to 30.67 pCi/g), which exceed the standards listed at 40 C.F.R. Part 192, *Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings* (*see* Figure 6 and Table 1).

Surface and subsurface soil and waste samples in OU2 are contaminated with arsenic (maximum detection at 57 milligrams per kilogram (mg/kg) or "parts per million"); chromium (maximum detection at 359 mg/kg); lead (maximum detection at 2,170 mg/kg); thallium (maximum detection at 3.71 mg/kg); and vanadium (maximum detection at 487 mg/kg)(See Table 1). These maximum detections exceed their respective RSLs (RSL arsenic – 3 mg/kg; RSL chromium – 6.3 mg/kg; RSL lead – 800 mg/kg; RSL thallium – 1.2 mg/kg; and RSL vanadium – 5800 mg/kg).

The RI found subsurface soil and waste samples in OU2 contaminated with radium 226 (ranging from 0.221 pCi/g to 16.8 pCi/g), radium 228 (ranging from 0.47 pCi/g to 17.6 pCi/g), uranium 238 (ranging from 0.661 pCi/g) to 5.46 pCi/g), and total radium (ranging from 0.05 pCi/g to 30.5 pCi/g. (See Figure 7 and Table 3). Arsenic (maximum detection at 54 mg/kg), chromium (maximum detection at 620 mg/kg), lead (maximum detection at 1100 mg/kg), and thallium (maximum detection at 3.22 mg/kg) were also detected in subsurface soils at levels that exceed their respective RSLs.

In December 2016, due to the presence of bauxite waste material, which contains radium, within on-Site residential property subsurface soils, Alcoa conducted radon gas testing in accordance with the requirements of Illinois Administrative Code (IAC) Title 32 Part 422 in four residences located in IB-5a. All four residences showed radon concentrations in living spaces at less than the EPA action level of 4 picocuries per liter (pCi/L). However, one residence had a radon measurement of 5.2 pCi/L (the average measured concentration from two sampling units) in an unfinished basement that is currently not used as living space. Alcoa offered to install a radon mitigation unit at the residence, but the homeowner declined the offer. Monitoring of radon levels in these residences will continue throughout the remedy implementation phase. Construction and operation of radon mitigation systems will be provided where needed and access is provided by the homeowner.

Alcoa continues to implement the groundwater RI and EPA will evaluate the groundwater results before issuing a future Site-wide Proposed Plan. Alcoa has collected groundwater samples at seven locations from three monitoring events (See Figure 5). Alcoa initially installed four

monitoring well clusters and began sampling in 2004. Additional wells were installed as part of a supplemental investigation and were sampled beginning in 2016. Preliminary analysis of 12 years of groundwater sampling results shows limited impacts from the Site, including inconsistent sporadic exceedances of metals and other federal Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) and of Illinois groundwater quality standards (Title 35 IAC 620 for Class I groundwater) at different monitoring locations. Constituents that have been detected at levels slightly exceeding their respective MCLs include gross alpha-particle radiation, antimony, arsenic, thallium, fluoride and radium. Lead exceed its action level under the SDWA Lead and Copper Rule (See Figure 8). Constituents that have been detected above 35 IAC 620 standards, in addition to MCLs, include iron, manganese, sulfate and total dissolved solids. Alcoa will continue to collect groundwater quality information on a biannual basis until EPA selects a final remedy for the Site.

6.0 Current and Potential Future Land Use

The Site is located in a mixed commercial/industrial/residential area of East St. Louis. The property to the north and west of the Site is zoned as residential or urban land use. Frank Holten State Park is located to the east of the Site. The area southwest of the Site and south of Missouri Avenue is zoned industrial while the Site itself is zoned industrial/commercial by the City. Because of the lack of cohesiveness nature of the red mud and brown mud deposited in and on OU1 and OU2, it is unlikely that future land use would entail heavy industrial use without first taking expensive engineering measures to support infrastructure. However, the Site, when construction is complete, could perhaps support light industrial use, such as a solar farm development. (See Comment 15 in Part III, Responsiveness Summary of this ROD.)

7.0 Summary of Site Risks

Human Health Risk

EPA conducted a baseline human health risk assessment (BHHRA) that evaluated potential carcinogenic risks and hazards to human health and the environment from exposure to contaminants in the OU2 area, in present and reasonably anticipated future exposure scenarios, as summarized in the OU2 FFS report. The BHHRA evaluated the following exposure scenarios for human contact with contaminated soil and/or bauxite waste material:

- Current/future resident
- Current/future youth trespasser
- Current/future industrial worker
- Future construction worker

EPA's target risk range for Superfund site cleanups is 1×10^{-4} to 1×10^{-6} (one in ten thousand to one in a million) excess lifetime cancer risk (ELCR). EPA takes action when risks exceed 1×10^{-4} ECLR based on reasonably anticipated future land use and Site-specific exposure scenarios. For non-carcinogens, EPA calculates a Hazard Index value, with values over 1 presenting an adverse risk.

The BHHRA evaluated hazards from exposure to Site soils and waste materials in the OU2 area via inhalation, ingestion and direct contact, and identified the following exposure scenarios as exceeding an ELCR of 1 x 10^{-4} and/or a Hazard Index greater than 1 (See Table 2):

- Current and future on-Site resident
- Current and future industrial worker

Exposure to radium 226 and radium 228 in OU2 presents the majority of the calculated potential human health carcinogenic risks. Exposure to arsenic, aluminum, and iron presents the majority of the potential human health non-cancer risks. Non-radiological constituents are collocated with radiological constituents and will be addressed by the selected remedial action.

Ecological Risk

EPA conducted a baseline ecological risk assessment (BERA) in 2010 for the OU1 FFS and concluded that no unacceptable ecological risks existed at the Site. Ecological risks were evaluated for wide-ranging receptors on a Site-wide basis and on an IB basis for receptors with small ranges. The 2010 BERA concluded that under the baseline conditions, very low risks to local populations of wide-ranging upland receptors (represented by whitetail deer, coyote, and red-tailed hawk) may be predicted. Also, very low risks were predicted for local populations of individual small-home range receptors.

For the OU2 action, EPA conducted an evaluation of current potential ecological risks in the OU2 FFS because the 2016 OU1 remedial actions had created open, grassy areas (*e.g*. the soil covers) that could be construed as improved habitat for birds and mammals and because portions of OU2 may also contain suitable habitat. However, the Site is not currently being managed as an ecological habitat and current and future Site use is industrial/commercial.

An evaluation of ecological risks from the COCs detected in surface soil samples collected from IB-3b, IB-4c, and IB-6a was conducted, as these are the only IBs where potential ecological habitat in OU2 is present. EPA concluded that ecological risks to receptors exposed to the COCs in OU2 are expected to be similar to or lower than the risks calculated for OU1 in the 2010 BERA, because contaminant levels in OU2 are generally lower than levels in OU1.

7.1 Basis for Interim Response Action

The interim response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

8.0 Remedial Action Objectives

Remedial action objectives (RAOs) are specific goals developed to protect human health and the environment based on unacceptable risks calculated in the Site-specific risk assessment. The RAOs provide the basis for developing cleanup options that will be protective of human

health and the environment. The RAOs address Site-related receptor and pathway risks and hazard exceedances based on the results of the BHHRA.

EPA has established the following RAO for OU2:

- Prevent human exposure (through absorption, inhalation, and ingestion) from contaminants exceeding the EPA baseline risk range of 10^{-4} to 10^{-6}, non-carcinogenic hazards greater than 1, including radium and other radionuclides, and aluminum, lead, and arsenic found in bauxite waste material.

9.0 Description of Alternatives

CERCLA Section121(b)(1), 42 U.S.C. §9621(b)(1), mandates that remedial actions must be protective of human health and the environment, be cost-effective, comply with applicable or relevant and appropriate requirements, and utilize permanent solutions, alternative treatment technologies, and resource recovery alternatives to the maximum extent practicable.

EPA evaluated six potential remedial alternatives to address the Site RAOs. Common elements included in remedial alternatives RAA-2, RAA-3, RAA-4 and RAA-5 are as follows:

- Excavation and consolidation of not less than the top two feet of soil and bauxite waste material found within OU2 IB areas;
- Removal of as much bauxite waste material as is safely possible from the on-Site residential properties in IB-5a, depending on accessibility, constructability and risk to the structural integrity of improvements, with the goal of complete removal. Excavation depths on each property will be determined in the remedial design process which may include additional pre-design sampling to more fully determine nature and extent of bauxite waste material on individual properties;
- Backfilling of excavated areas with a minimum of two feet of ARAR-compliant soil in accordance with 35 IAC 807.305(c) and 807.502;
- Placement of a minimum of two feet of an ARAR-compliant soil cover over an on-Site consolidation area located in IB-4a in compliance with 35 IAC 807.305(c) and 35 IAC 807.502;
- Institutional controls in the form of restrictive covenants to ensure long-term protectiveness of excavated areas, long-term performance of installed ARAR-compliant soil covers, and long-term protection and risk reduction from Site waste materials; and
- Long-term operation and maintenance of excavation areas and installed ARAR soil covers in accordance with 35 IAC 807.502.
- Stormwater controls, including reassessment of existing stormwater controls.
- Monitoring of previously sampled IB-5a residences will determine if EPA action levels for indoor radon are exceeded. Construction and operation of a radon mitigation system to reduce the levels of radon below EPA action standards in residences where radon standard is exceeded.

Remedial Action Alternative (RAA) 0 – No Action

EPA includes a "No-Action" RAA as a baseline for comparison to the other cleanup alternatives. The no action alternative does not include any physical remedial measures to address any Site-related media in OU2. Since no action would be taken, this alternative would not protect human health and the environment from either current or future potential human health risks.

Estimated Capital Costs: $0
Estimated O&M Costs: $0
Estimated Present Worth Cost: $0

RAA-1 – Restricted Access

This alternative uses a mix of physical barriers and ICs to prevent or prohibit access to the OU2 bauxite waste material disposal areas. A fence would be constructed, as necessary, around the OU2 soil and waste material contamination areas and signs would be posted to restrict access. ICs would consist of durable environmental easements and restrictive covenants compliant with the Illinois Uniform Environmental Covenant Act (IUECA) to preclude land uses inconsistent with the remedy and to maintain the Site fence and any other physical access controls to ensure long term protectiveness.

Estimated Capital Cost: $95,000
Estimated Annual O&M Cost: $42,000
Estimated Present Worth Costs: $137,000

RAA-2 – Excavation and Off-Site Disposal of Bauxite Waste Material; Residuals Containment Under an ARAR-Compliant Soil Cover; On-Site Stormwater Management; ICs

This alternative consists of the excavation of approximately 40,000 cubic yards of near-surface bauxite waste material to a depth of at least two feet from IB-3b, IB-4e, IB-5a, and IB-6a, as well as from the previously excavated IB-3a and IB-4c, if present, with off-Site disposal at a permitted solid waste landfill. Soil backfill would be placed in areas where bauxite waste material is excavated. All backfilled areas would then be covered with a minimum two-foot ARAR-compliant vegetated soil cover in accordance with 35 IAC 807.305(c). Covers would be subject to ongoing O&M in accordance with 35 IAC 807.502.

At IB-5a, a pre-design field investigation would be conducted as part of the final design to determine the full depth of bauxite waste material on each of the residential parcels and to determine if all the bauxite waste material could be safely excavated to depth, depending on accessibility, constructability and risk to the structural integrity of improvements. The goal is to completely remove the bauxite waste material to remove risk and avoid the need to record ICs on the parcels.

Excavated areas would be backfilled with a minimum two-foot ARAR-compliant soil cover and vegetated. Stormwater controls would comply with 40 C.F.R. § 122.26 and the substantive

provisions of Illinois' general permit ILR10 for discharges made entirely on Site. This alternative includes existing stormwater controls installed as part of the OU1 remedy construction. These stormwater controls consist of regrading of IB-4c and soil berms constructed on the northern and western property boundary, which divert stormwater discharges away from the on-Site IB-5a residential properties, and away from off-Site adjacent properties. These stormwater improvements are currently providing stormwater control for the OU1 area and would be augmented as necessary in the final OU2 remedy design to comply with the stormwater control requirements for OU2.

Overall Site preparation activities would include installing a security fence and preparing access roads and staging areas in work zones.

Each investigative block would be addressed as follows:

IB-3a. As a part of the OU1 remedial action, Alcoa excavated bauxite waste material from IB-3a to a depth of two feet, consolidated the excavated material on-Site, backfilled the excavated area with a minimum two-foot ARAR-compliant soil cover, and graded and revegetated the excavated area. The OU1 remedy did not excavate all bauxite waste material from the top two feet of IB-3a. Under this alternative, any remaining near-surface bauxite waste material in IB-3a would be excavated to a depth of at least two feet and disposed of off-Site. Newly excavated areas would be backfilled with a minimum two-foot ARAR-compliant soil cover and revegetated. The previously installed OU1 ARAR-compliant soil cover would remain in place and long-term O&M would be conducted in accordance with 35 IAC 807.502. Stormwater controls would comply with 40 C.F.R. §122.26.

IB-3b. Bauxite waste material in IB-3b would be excavated to a depth of at least two feet and disposed of off-Site. Excavated areas would be backfilled with a minimum two feet of ARAR-compliant cover soil and vegetated and long-term O&M would be conducted in accordance with 35 IAC 807.502. Stormwater controls would comply with 40 C.F.R. §122.26.

IB-4c. As a part of the OU1 remedial action, Alcoa had excavated bauxite waste material from IB-4c to a depth of two feet, consolidated the excavated material on-Site, backfilled the excavated area with a minimum two-foot ARAR-compliant soil cover, and graded and revegetated the excavated area. The OU1 remedy did not excavate all bauxite waste material from the top two feet of IB-4c. Under this alternative, any remaining near-surface bauxite waste material in IB-4c would be excavated to a depth of at least two feet and disposed of off-Site. Newly excavated areas would be backfilled with a minimum two-foot ARAR-compliant soil cover and revegetated. The previously installed OU1 ARAR-compliant soil cover would remain in place and long-term O&M would be conducted in accordance with 35 IAC 807.502. Stormwater controls would comply with 40 C.F.R. §122.26.

IB-4e. Bauxite waste material on the parcels known as 330 N. 29th Street, 2950 Illinois Avenue, and Number 02200307003 would be excavated to a depth of at least two feet and disposed of off-Site. Excavated areas would be backfilled with a minimum two feet of ARAR-compliant cover soil. The soil cover would be resurfaced with aggregate to replace existing aggregate (at

the "330 N. 29th Street" and "Number 02200307003" properties) or would be revegetated (the "2950 Illinois Avenue" property). Stormwater controls would comply with 40 C.F.R. § 122.26.

IB-5a. Bauxite waste material on the residential properties adjacent to Louisiana Boulevard would be excavated to a depth of at least two feet and disposed of off-Site. A pre-design field investigation would be conducted as part of the final design to determine the full depth of bauxite waste material on each of these residential parcels to determine if all the bauxite waste material could be safely excavated to depth, depending on accessibility, constructability and risk to the structural integrity of improvements. The goal is to completely remove the bauxite waste material to remove risk and avoid the need to record ICs on the parcels. Excavated areas would be backfilled with a minimum two-foot ARAR-compliant soil cover and vegetated. Stormwater controls would comply with 40 C.F.R. § 122.26.

IB-6a. Bauxite waste material in IB-6a would be excavated to a depth of at least two feet and disposed of off-Site. Excavated areas would be backfilled with a minimum two feet of ARAR-compliant cover soil and vegetated and long-term O&M would be conducted in accordance with 35 IAC 807.502. Stormwater controls would comply with 40 C.F.R. §122.26.

Under Alternative RAA-2, ICs would be recorded to establish durable environmental easement and restrictive covenants compliant with IUECA. The ICs would prohibit remedy disturbance, restrict potential receptors from contacting subsurface soils and/or remaining bauxite waste material and prohibit any redevelopment unless EPA determines a proposed redevelopment will not adversely impact the remedy and is compatible with the remedy.

This alternative requires long-term monitoring and maintenance of installed soil covers.

Estimated Capital Costs: $7,831,300
Estimated Annual O&M costs: $40,000
Estimated Present Worth Costs: $9,390,000

RAA-3 – Excavation of Bauxite Waste Material with Consolidation and Management Under an ARAR Compliant Soil Cover in OU1; Residuals Containment Under an ARAR-Compliant Soil Cover; On-Site Stormwater Management; ICs

Alternative RAA-3 is EPA's selected remedy.

This alternative consists of the excavation of approximately 40,000 cubic yards of near-surface bauxite waste material to a depth of at least two feet from IB-3a, IB-3b, IB-4c, IB-4e, IB-5a, and IB-6a (see Figure 10). The excavated bauxite waste material would be transported and consolidated on IB-4a in OU1 (see Figure 9). The consolidation area in IB-4a and the excavated areas in OU2 would be backfilled with a minimum two-foot ARAR-compliant soil cover and seeded to meet the requirements of 35 IAC 807.305(c), and maintained in accordance with 35 IAC 807.502.

Stormwater controls would comply with 40 C.F.R. §122.26 and Illinois' general permit ILR10. The existing stormwater controls that were installed as part of the OU1 remedy construction,

which consisted of the regrading of IB-4c and construction of soil berms on the northern and western property boundary, currently divert stormwater discharges away from the IB-5a residential properties to other on-Site areas and would need to be updated or reconfigured once the OU2 bauxite waste material is placed under the soil cover.

At IB-5a, a pre-design field investigation would be conducted as part of the final design to determine the full depth of bauxite waste material on each of the residential parcels and to determine if all the bauxite waste material could be safely excavated to depth, depending on accessibility, constructability and risk to the structural integrity of improvements. The goal is to completely remove the bauxite waste material to remove risk and avoid the need to record ICs on the parcels.

Overall Site preparation activities would include installing a security fence and preparing access roads and staging areas.

Each investigative block would be addressed as follows:

IB-3a. As a part of the OU1 remedial action, Alcoa had excavated bauxite waste material from IB-3a to a depth of two feet, consolidated the excavated material in IB-4a (in OU1), backfilled the excavated area with a minimum two-foot ARAR-compliant soil cover, and graded and revegetated the excavated area. The OU1 remedy did not excavate all bauxite waste material from the top two feet of IB-3a. Under this alternative, any remaining near-surface bauxite waste material in IB-3a would be excavated to a depth of at least two feet and would also be consolidated in IB-4a. Newly excavated areas would be backfilled with a minimum two-foot ARAR-compliant soil cover and revegetated. The previously installed OU1 ARAR-compliant soil cover would remain in place and long-term O&M would be conducted in accordance with 35 IAC 807.502. Stormwater controls would comply with 40 C.F.R. §122.26 and Illinois' general permit ILR10.

IB-3b. Bauxite waste material in IB-3b would be excavated to a depth of at least two feet and would be consolidated in IB-4a. Excavated areas would be backfilled with a minimum two feet of ARAR-compliant cover soil and vegetated and long-term O&M would be conducted in accordance with 35 IAC 807.502. Stormwater controls would comply with 40 C.F.R. §122.26 and Illinois' general permit ILR10.

IB-4c. As a part of the OU1 remedial action, Alcoa had excavated bauxite waste material from IB-4c to a depth of two feet, consolidated the excavated material on-Site (in OU1), backfilled the excavated area with a minimum two-foot ARAR-compliant soil cover, and graded and revegetated the excavated area. The OU1 remedy did not excavate all bauxite waste material from the top two feet of IB-4c. Under this alternative, any remaining near-surface bauxite waste material in IB-4c would be excavated to a depth of at least two feet and would also be consolidated in IB-4a. Newly excavated areas would be backfilled with a minimum two-foot ARAR-compliant soil cover and revegetated. The previously installed OU1 ARAR-compliant soil cover would remain in place and long-term O&M would be conducted in accordance with 35 IAC 807.502. Stormwater controls would comply with 40 C.F.R. §122.26 and Illinois' general permit ILR10.

IB-4e. Bauxite waste material on the IB-4e parcels known as 330 N. 29th Street, 2950 Illinois Avenue, and Number 02200307003 would be excavated to a depth of at least two feet and consolidated in IB-4a. Excavated areas would be backfilled with a minimum two feet of ARAR-compliant cover soil. The soil cover would be resurfaced with aggregate to replace existing aggregate (at the "330 N. 29th Street" and "Number 02200307003" properties) or would be revegetated (the "2950 Illinois" property). Stormwater controls would comply with 40 C.F.R. § 122.26 and Illinois' general permit ILR10.

IB-5a. Bauxite waste material on the residential properties adjacent to Louisiana Boulevard would be excavated to a depth of at least two feet and consolidated in IB-4a. A pre-design field investigation would be conducted as part of the final design to determine the full depth of bauxite waste material on each of these residential parcels to determine if all the bauxite waste material could be safely excavated to depth, depending on accessibility, constructability and risk to the structural integrity of improvements. The goal is to completely remove the bauxite waste material to reduce risk and avoid the need to record ICs on the parcels. Excavated areas would be backfilled with a minimum two-foot ARAR-compliant soil cover and vegetated. Stormwater controls would comply with 40 C.F.R. § 122.26 and Illinois' general permit ILR10.

IB-6a. Bauxite waste material in IB-6a would be excavated to a depth of at least two feet and consolidated in IB-4a. Excavated areas would be backfilled with a minimum two feet of ARAR-compliant cover soil and vegetated and long-term O&M would be conducted in accordance with 35 IAC 807.502. Stormwater controls would comply with 40 C.F.R. §122.26 and Illinois' general permit ILR10.

Under Alternative RAA-3, ICs would be recorded to establish durable environmental easement and restrictive covenants compliant with IUECA. The ICs would prohibit remedy disturbance, restrict potential receptors from contacting subsurface soils and/or remaining bauxite waste material and prohibit any redevelopment unless EPA determines that a proposed redevelopment will not adversely impact the remedy and is compatible with the remedy.

Estimated Capital Costs: $3,400,000
Estimated Annual O&M costs: $40,000
Estimated Present Worth Costs: $4,110,000

RAA-4 – Excavation of Bauxite Waste Material with Consolidation and Management Under an ARAR Compliant Soil Cover in OU2; Residuals Containment Under an ARAR-Compliant Soil Cover; Capping of IB-3b and IB-6a; On-Site Stormwater Management; ICs

This alternative consists of the excavation of a total of about 20,000 cubic yards of near-surface bauxite waste material to a depth of at least two feet from IB-4e and IB-5a and from IB-3a and IB-4c, if present. Excavated areas would be backfilled with a minimum two-foot ARAR-compliant soil cover and seeded to meet the requirements of 35 IAC 807.305(c), and maintained in accordance with 35 IAC 807.502. The excavated material would be consolidated on IB-4c and a two-foot ARAR-compliant soil cover would be installed to meet the requirements of 35 IAC

807.305(c), and maintained in accordance with 35 IAC 807.502. Areas IB-3b and IB-6a would be covered the same two-foot soil cover where near-surface bauxite residue is located.

Stormwater controls would comply with 40 C.F.R. §122.26 and Illinois' general permit ILR10. The existing stormwater controls that were installed as part of the OU1 remedy construction, which consisted of the regrading of IB-4c and construction of soil berms on the northern and western property boundary, currently divert stormwater discharges away from the IB-5a residential properties to other on-Site areas and would need to be updated or reconfigured once the OU2 bauxite waste material is placed under the soil cover.

At IB-5a, a pre-design field investigation would be conducted as part of the final design to determine the full depth of bauxite waste material on each of the residential parcels and to determine if all the bauxite waste material could be safely excavated to depth, depending on accessibility, constructability and risk to the structural integrity of improvements. The goal is to completely remove the bauxite waste material to reduce risk and avoid the need to record ICs on the parcels.

Overall Site preparation activities would include installing a security fence and preparing access roads and staging areas.

Each investigative block would be addressed as follows:

IB-3a. As a part of the OU1 remedial action, Alcoa had excavated bauxite waste material from IB-3a to a depth of two feet, consolidated the excavated material in IB-4a (in OU1), backfilled the excavated area with a minimum two-foot ARAR-compliant soil cover, and graded and revegetated the excavated area. The OU1 remedy did not excavate all bauxite waste material from the top two feet of IB-3a. Under this alternative, any remaining near-surface bauxite waste material in IB-3a would be excavated to a depth of at least two feet and would be consolidated in IB-4c. Newly excavated areas would be backfilled with a minimum two-foot ARAR-compliant soil cover and revegetated. The previously installed OU1 ARAR-compliant soil cover would remain in place and long-term O&M would be conducted in accordance with 35 IAC 807.502. Stormwater controls would comply with 40 C.F.R. §122.26 and Illinois' general permit ILR10.

IB-3b. Near-surface bauxite waste material in IB-3b would be covered by a minimum two feet of ARAR-compliant cover soil and vegetated. Long-term O&M would be conducted in accordance with 35 IAC 807.502 and stormwater controls would comply with 40 C.F.R. §122.26 and Illinois' general permit ILR10.

IB-4c. As a part of the OU1 remedial action, Alcoa had excavated bauxite waste material from IB-4c to a depth of two feet, consolidated the excavated material on-Site (in OU1), backfilled the excavated area with a minimum two-foot ARAR-compliant soil cover, and graded and revegetated the excavated area. The OU1 remedy did not excavate all bauxite waste material from the top two feet of IB-4c. Under this alternative, any remaining near-surface bauxite waste material in IB-4c would be excavated to a depth of at least two feet and would be consolidated in a separate consolidation area in IB-4c. Excavated areas would be backfilled with a minimum two-foot ARAR-compliant soil cover and revegetated. The previously installed OU1 ARAR-

compliant soil cover would remain in place and long-term O&M would be conducted in accordance with 35 IAC 807.502. Stormwater controls would comply with 40 C.F.R. §122.26 and Illinois' general permit ILR10.

IB-4e. Bauxite waste material on the IB-4e parcels known as 330 N. 29th Street, 2950 Illinois Avenue, and Number 02200307003 would be excavated to a depth of at least two feet and consolidated in IB-4c. Excavated areas would be backfilled with a minimum two feet of ARAR-compliant cover soil. The soil cover would be resurfaced with aggregate to replace existing aggregate (at the "330 N. 29th Street" and "Number 02200307003" properties) or would be revegetated (the "2950 Illinois Avenue" property). Stormwater controls would comply with 40 C.F.R. § 122.26 and Illinois' general permit ILR10.

IB-5a. Bauxite waste material on the residential properties adjacent to Louisiana Boulevard would be excavated to a depth of at least two feet and consolidated in IB-4c. A pre-design field investigation would be conducted as part of the final design to determine the full depth of bauxite waste material on each of these residential parcels to determine if all the bauxite waste material could be safely excavated to depth, depending on accessibility, constructability and risk to the structural integrity of improvements. The goal is to completely remove the bauxite waste material reduce risk and to avoid the need to record ICs on the parcels. Excavated areas would be backfilled with a minimum two-foot ARAR-compliant soil cover and vegetated. Stormwater controls would comply with 40 C.F.R. § 122.26 and Illinois' general permit ILR10.

IB-6a. Near-surface bauxite waste material in IB-6a would be covered by a minimum two feet of ARAR-compliant cover soil and vegetated. Long-term O&M would be conducted in accordance with 35 IAC 807.502 and stormwater controls would comply with 40 C.F.R. §122.26 and Illinois' general permit ILR10.

Under Alternative RAA-4, ICs would be recorded to establish durable environmental easement and restrictive covenants compliant with IUECA. The ICs would prohibit remedy disturbance, restrict potential receptors from contacting subsurface soils and/or remaining bauxite waste material and prohibit any redevelopment unless EPA determines that a proposed redevelopment will not adversely impact the remedy and is compatible with the remedy.

Estimated Capital Costs: $4,165,700
Estimated Annual O&M Costs: $40,000
Estimated Present Worth Costs: $5,022,400

RAA-5 – Excavation of Bauxite Waste Material with Consolidation and Management Under an ARAR Compliant Soil Cover in OU1; Residuals Containment Under an ARAR-Compliant Soil Cover; Capping of IB-3b and IB-6a; On-Site Stormwater Management; ICs

This alternative consists of the excavation of a total of about 20,000 cubic yards of near-surface bauxite waste material to a depth of at least two feet from IB-4e and IB-5a and from IB-3a and IB-4c, if present. Excavated areas would be backfilled with a minimum two-foot ARAR-compliant soil cover and seeded to meet the requirements of 35 IAC 807.305(c), and maintained in accordance with 35 IAC 807.502. The excavated material would be consolidated entirely on-

Site on IB-4a and a two-foot ARAR-compliant soil cover would be installed to meet the requirements of 35 IAC 807.305(c), and maintained in accordance with 35 IAC 807.502. Areas IB-3b and IB-6a would be covered the same ARAR-compliant two-foot soil cover where near-surface bauxite residue is located.

At IB-5a, a pre-design field investigation would be conducted as part of the final design to determine the full depth of bauxite waste material on each of the residential parcels and to determine if all the bauxite waste material could be safely excavated to depth, depending on accessibility, constructability and risk to the structural integrity of improvements. The goal is to completely remove the bauxite waste material to reduce risk and avoid the need to record ICs on the parcels.

Stormwater controls would comply with 40 C.F.R. §122.26 and Illinois' general permit ILR10. The existing stormwater controls that were installed as part of the OU1 remedy construction, which consisted of the regrading of IB-4c and construction of soil berms on the northern and western property boundary, currently divert stormwater discharges away from the IB-5a residential properties to other on-Site areas and will need to be updated or reconfigured once the OU2 bauxite waste material is placed under the soil cover.

Prior to implementing the soil cover, Site preparation activities would include installing a security fence and preparing access roads and staging areas.

Each investigative block would be addressed as follows:

IB-3a. As a part of the OU1 remedial action, Alcoa had excavated bauxite waste material from IB-3a to a depth of two feet, consolidated the excavated material in IB-4a (in OU1), backfilled the excavated area with a minimum two-foot ARAR-compliant soil cover, and graded and revegetated the excavated area. The OU1 remedy did not excavate all bauxite waste material from the top two feet of IB-3a. Under this alternative, any remaining near-surface bauxite waste material in IB-3a would be excavated to a depth of at least two feet and would be consolidated in IB-4a. Newly excavated areas would be backfilled with a minimum two-foot ARAR-compliant soil cover and revegetated. The previously installed OU1 ARAR-compliant soil cover would remain in place and long-term O&M would be conducted in accordance with 35 IAC 807.502. Stormwater controls would comply with 40 C.F.R. §122.26 and Illinois' general permit ILR10.

IB-3b. Near-surface bauxite waste material in IB-3b would be covered by a minimum two feet of ARAR-compliant cover soil and vegetated. Long-term O&M would be conducted in accordance with 35 IAC 807.502 and stormwater controls would comply with 40 C.F.R. §122.26 and Illinois' general permit ILR10.

IB-4c. As a part of the OU1 remedial action, Alcoa had excavated bauxite waste material from IB-4c to a depth of two feet, consolidated the excavated material on-Site (in OU1), backfilled the excavated area with a minimum two-foot ARAR-compliant soil cover, and graded and revegetated the excavated area. The OU1 remedy did not excavate all bauxite waste material from the top two feet of IB-4c. Under this alternative, any remaining near-surface bauxite waste material in IB-4c would be excavated to a depth of at least two feet and would also be

consolidated in IB-4a. Newly excavated areas would be backfilled with a minimum two-foot ARAR-compliant soil cover and revegetated. The previously installed OU1 ARAR-compliant soil cover would remain in place and long-term O&M would be conducted in accordance with 35 IAC 807.502. Stormwater controls would comply with 40 C.F.R. §122.26 and Illinois' general permit ILR10.

IB-4e. Bauxite waste material on the IB-4e parcels known as 330 N. 29th Street, 2950 Illinois Avenue, and Number 02200307003 would be excavated to a depth of at least two feet and consolidated in IB-4a. Excavated areas would be backfilled with a minimum two feet of ARAR-compliant cover soil. The soil cover would be resurfaced with aggregate to replace existing aggregate (at the "330 N. 29th Street"" and "Number 02200307003" properties) or would be revegetated (the "2950 Illinois Avenue" property). Stormwater controls would comply with 40 C.F.R. § 122.26 and Illinois' general permit ILR10.

IB-5a. Bauxite waste material on the residential properties adjacent to Louisiana Boulevard would be excavated to a depth of at least two feet and consolidated in IB-4a. A pre-design field investigation would be conducted as part of the final design to determine the full depth of bauxite waste material on each of these residential parcels to determine if all the bauxite waste material could be safely excavated to depth, depending on accessibility, constructability and risks to the structural integrity of improvements. The goal is to completely remove the bauxite waste material to reduce risk and avoid the need to record ICs on the parcels. Excavated areas would be backfilled with a minimum two-foot ARAR-compliant soil cover and vegetated. Stormwater controls would comply with 40 C.F.R. § 122.26 and Illinois' general permit ILR10.

IB-6a. Near-surface bauxite waste material in IB-6a would be covered by a minimum two feet of ARAR-compliant cover soil and vegetated. Long-term O&M would be conducted in accordance with 35 IAC 807.502 and stormwater controls would comply with 40 C.F.R. §122.26 and Illinois' general permit ILR10.

Under Alternative RAA-5, ICs would be recorded to establish durable environmental easement and restrictive covenants compliant with IUECA. The ICs would prohibit remedy disturbance, restrict potential receptors from contacting subsurface soils and/or remaining bauxite waste material and prohibit any redevelopment unless EPA determines that a proposed redevelopment will not adversely impact the remedy and is compatible with the remedy.

Estimated Capital Costs: $2,993,800
Estimated Annual O&M Costs: $40,000
Estimated Present Worth Costs: $3,627,800

10.0 Comparative Analysis of Alternatives

Section 121(b) (1) of CERCLA identifies several factors that EPA is required to consider in its assessment of remedial alternatives. Building on these specific statutory mandates, the NCP articulates nine evaluation criteria to be used in assessing the individual remedial alternatives. The purpose of this evaluation is to promote consistent identification of the relative advantages and disadvantages of each alternative, thereby guiding selection of remedies offering the most

effective and efficient means of achieving site remediation goals. While all of the nine criteria are important, they are weighed differently in the decision making process depending on whether they evaluate protection of human health and the environment or compliance with federal and State requirements, standards, and criteria (threshold); consider technical or economic merits (balancing criteria); or involve evaluation from the State and the public that may influence the final remedy selection (modifying criteria). Each of these nine criteria is described below.

Threshold Criteria

1. **Overall Protection of Human Health and the Environment** focuses on how an alternative achieves protection over time and indicates how each source of contamination would be minimized, reduced, or controlled through treatment, engineering, or institutional controls. The evaluation of the degree of overall protection associated with each alternative is based largely on the exposure pathways and scenarios set forth in the baseline human health risk assessment.
2. **Compliance with ARARs** addresses whether alternatives meet applicable or relevant and appropriate federal and State requirements.

Balancing Criteria

3. **Long Term Effectiveness and Permanence** addresses the results of a remedial action in terms of the risk remaining at the Site after response objectives have been met.
4. **Reduction of Toxicity, Mobility or Volume through Treatment** addresses the statutory requirement for selecting remedial actions that employ treatment technologies that reduce the toxicity, mobility or volume of the hazardous constituents present in the impacted media to the maximum extent practicable.
5. **Short-Term Effectiveness** addresses the effects of the alternatives during the construction and implementation phases (i.e. remediation risks) until the remedial action objectives are met.
6. **Implementability** considers the technical and administrative feasibility of implementing the remedial alternative, including factors such as the relative availability of goods and services.
7. **Cost** includes estimated capital, annual O&M costs, and net present value of capital and O&M costs including long term monitoring.

Modifying Criteria

8. **State Agency Acceptance** considers whether the State support Agency concurs with the selected remedy for the Site.
9. **Community Acceptance** addresses the public's general response to the remedial alternatives and the preferred alternative presented in the Proposed Plan. Each of the nine evaluation criteria are discussed below with respect to the alternatives under consideration for this interim action.

Each of the nine evaluation criteria are discussed below with respect to the alternatives under consideration for this interim action.

10.1 Overall Protection of Human Health and the Environment

Alternatives RAA-0 and RAA-1 are not protective of human health and the environment because they do not address the risks posed by human exposure to Site contamination as presented in the risk assessment. RAA-1 requires ICs and restricts access to the areas containing bauxite waste material with fencing that must be maintained but does not provide a soil cover to help prevent direct contact with or contain Site contaminants.

Alternatives RAA-2, RAA-3, RAA-4 and RAA-5 are protective of human health and the environment as they include a combination of ICs and the excavation of bauxite waste material, placement of an ARAR-compliant minimum two-foot soil cover over bauxite waste material remaining in place, and either consolidation and management on-Site or disposal off-Site of excavated materials in a manner that eliminates exposure and addresses unacceptable risk.

RAA-2 includes disposal of excavated materials in a permitted solid waste landfill. RAA-3 and RAA-5 include consolidation of excavated materials in OU1, while RAA-4 includes consolidation of excavated materials in OU2. RAA-4 and RAA-5 excavate and consolidate or dispose of less materials than RAA-2 and RAA-3; and include capping of IB-3b and IB-6a with a minimum two feet of ARAR-compliant soil, in addition to excavation of bauxite waste material in IB-3a, IB-4c, and IB-5a.

10.2 Compliance with ARARs

<u>Stormwater Controls</u>

EPA identifies the substantive requirements of 40 C.F.R. § 122.26 as an ARAR, which requires controls to discharge surface stormwater flow from a property such as the Site. However, EPA is specifying that the Site surface stormwater flow be discharged and contained entirely on Site. The Site record documents that there is no nearby off-Site surface water body that can accept the Site's surface stormwater flow without potentially impacting flooding of adjacent properties. The Site record also documents that the local sewer system does not have the capacity to accept any of the Site's stormwater flow. The Site remedy therefore requires on-Site control of the Site stormwater. Any potential discharges are subject to ILR10, Illinois' general State-wide permit and require the completion of a stormwater pollution prevention plan for the Site (See Table 4).

The OU1 Site remedy was designed and constructed to control stormwater flow from OU1 on-Site through berms and grading, collecting the surface stormwater flow in three detention ponds installed as part of the OU1 remedy. Site investigations document that any selected remedy must provide on-Site storm water control. Off-Site storm water control is not viable since there is no nearby direct discharge location and the local sewer system will not accept a high flow volume.

Alternatives RAA-0 and RAA-1 do not comply with the appropriate ARAR for stormwater controls. RAA-5 potentially creates issues with stormwater management in the area by placing two feet of ARAR-compliant soil in IB-3b and IB-6a over very flat ground that could result in migration of stormwater away from the installed remedy into surrounding properties. RAA-2, RAA-3, and RAA-4 would be designed and implemented to comply with 40 C.F.R. § 122.26.

Landfill Requirements

RCRA

In the OU1 ROD, EPA and Illinois EPA determined that the SPL is a listed hazardous waste under the Resource Conservation and Recovery Act (RCRA) (listed hazardous waste K088), and identified and evaluated the landfill closure requirements that may be "applicable or relevant and appropriate requirements" to address the SPL. EPA and Illinois EPA also determined that the Site's bauxite waste material is a solid waste under RCRA and identified and evaluated the landfill closure requirements that may be "applicable or relevant and appropriate requirements" to address that waste material. Those evaluations remain relevant to the ARAR evaluation for the bauxite waste material to be addressed under the OU2 remedy. As previously outlined in the OU1 FFS, EPA determined that the RCRA Subtitle C hazardous waste landfill requirements are not "applicable" to the Site's bauxite waste material based on the Bevill Amendment to RCRA. The Bevill Amendment provides that Site solid waste from the extraction, beneficiation, and processing of ores and minerals is excluded from the definition of a listed hazardous waste. (See Section 3001(b)(3)(A)(ii) of RCRA and 40 C.F.R. Section 261.4(b)(7)). However, as discussed further below, the RCRA Subtitle C hazardous waste landfill requirements may be "relevant and appropriate to the handling of bauxite waste material in OU2.

The Bevill Amendment exemption does not, however, affect CERCLA jurisdiction over bauxite waste material where this material contains hazardous substances that could pose a threat to human health and the environment, and does not preclude a determination that the RCRA Subtitle C requirements are "relevant and appropriate requirements" for the bauxite waste material.

In particular, RCRA provides that Bevill wastes shall be "subject only to regulation under other applicable provisions of Federal or State law in lieu of" Subtitle C. 42 U.S.C. 6921(b)(3)(A). Even though the RCRA Subtitle C landfill requirements are not "applicable" to the Site's bauxite waste material, the requirements found in RCRA Subtitle C may be "relevant and appropriate" on a case-by-case basis. (See also 55 Fed. Reg.8666 (March 8, 1990)). If the bauxite residue area contains hazardous substances that have been or threaten to be released and pose a threat to human health and the environment, then a CERCLA analysis may select a RCRA Subtitle C hazardous waste cover requirement as "relevant and appropriate." Since a release or threat of release of hazardous substances to the environment (*e.g.*, soil, groundwater, and surface water) has been documented at the Site, the RCRA Subtitle C requirements may be "relevant and appropriate" to the OU2 remedy.

Where RCRA Subtitle C is consistent with an EPA-authorized State hazardous waste landfill requirement, EPA identifies the EPA-authorized state requirement for purposes of the ARAR.

Illinois has received EPA authorization of its hazardous waste landfill requirements (51 Fed. Reg. 3778, January 30, 1986, as amended). Therefore, the requirements of 35 IAC Part 724 would apply if RCRA Subtitle C requirements are found to be relevant and appropriate requirements to a Site.

For the reasons discussed below, the RCRA Subtitle C requirements are considered to be relevant to the Site's bauxite waste material but are not considered to be appropriate requirements. Section 300.400(g)(2) of 40 C.F.R. provides eight criteria to evaluate whether a requirement, such as RCRA Subtitle C, "addresses problems or situations sufficiently similar to the circumstances of the release or remedial action contemplated, and whether the requirement is well suited to the site, and therefore is both relevant and appropriate." Based on the criteria of 40 C.F.R. §300.400(g)(2)(i), the RCRA Subtitle C requirement is not well suited to the Site. Specifically, a significant purpose of a multilayer RCRA Subtitle C hazardous waste cover is to prevent infiltration of surface waters through the waste, leaching hazardous waste constituents to the groundwater. However, the RI and FFS document that OU2 wastes reside in the groundwater strata and that a RCRA Subtitle C hazardous waste cover would not be expected to significantly impact the flow of surface water through the OU2 wastes or the flow of waste constituents from the wastes to the groundwater.

40 CFR Pt. 192

The health and environmental protection standards for uranium and thorium mill tailings, 40 C.F.R. Part 192, is not considered applicable to the Site's bauxite (red mud) residue because the bauxite waste material at the Site resulted from the disposal of residuals from an aluminum smelting operation and not from uranium or thorium mill tailings. However, this provision is relevant to any area on the Site where material remaining in place would exceed the 5 pCi/g of radium in soil concentration standard. Should this level be found within the bauxite waste material area, this provision would require a landfill cover and a land use restriction prohibiting building on the Site.

The Site's land use restrictions may allow enclosed structures only where both appropriate radon mitigation measures are taken, and measures are taken to prevent unacceptable levels of radon decay products in the enclosed structures. This mandate is a health based standard and applies to combined level of radium 226 and 228 because this risk is additive. As the combined levels of radium 226 and 228 exceed this standard in the bauxite waste material, this regulation is relevant and appropriate, and use restrictions are required where the standard is exceeded. (See Table 4). Based on this analysis, the proposed landfill cover and closure ARARs controlling the OU2 remedy is 40 C.F.R. Part 192.

35 IAC 212.301 (Fugitives)

EPA has identified 35 IAC 212.301 as applicable, which prohibits the generation of visible fugitive particulate matter during construction. Additionally, EPA has also identified 35 IAC 724.654 as relevant and appropriate regulations for any soils that are temporarily staged or stockpiled before being moved to the on-Site consolidation area (See Table 4).

Uniform Environmental Covenants Act 765 ILCS §122/1

EPA has identified the Uniform Environmental Covenants Act 765 ILCS § 122/1 as a To Be Considered (TBC) for the completion of any necessary environmental restrictive covenants for any impacted properties that require long-term restrictions (ICs).

Illinois Urban Manual

EPA has identified the Illinois Urban Manual as a TBC to provide guidance on best management practices for soil erosion and sediment control during construction.

Subtitle D

The ARAR analysis included in the OU2 FFS identified the ARAR requirement for OU2 to be a soil cover complying with the provisions of 35 IAC 807.305(c) over the soils/waste materials, which includes two feet of suitable material (defined as uncontaminated, cohesive soil that can be compacted) and closure of the Site consistent with 35 IAC 807.502 to minimize further maintenance and control post-closure releases.

Alternatives RAA-0 and RAA-1 do not comply with the appropriate ARARs for the waste material cover. RAA-2, RAA-3, RAA-4 and RAA-5 would be designed and implemented to comply with all Site ARARs. Specifically, the soil cover over the waste materials and post-closure maintenance would comply with 35 IAC 807.305(c) and 35 IAC 807.502 requirements.

10.3 Long-Term Effectiveness and Permanence

The evaluation of alternatives under this criterion addresses the results of a remedial action in terms of the risk remaining at the Site after response objectives have been met.

RAA-0 and RAA-1 are not effective in the long term nor are they permanent. However, fencing can protective in the short term by preventing access to the Site and associated exposure to waste materials.

RAA-2, RAA-3, RAA-4 and RAA-5 are all effective over the long term. RAA-2 is the most effective and permanent due to the disposal of all excavated waste materials in an off-Site permitted landfill. RAA-3 is more effective and permanent in the long term than RAA-4 because using IB-4a for consolidation of excavated materials is more efficient for O&M purposes and has less potential to adversely impact stormwater management on surrounding properties without additional stormwater protection measures by capping consolidated waste on extremely flat ground, as would be done under RAA-4. RAA-5 incorporates the benefit of using IB-4a for excavated waste consolidation but also potentially creates issues with stormwater management in the area by placing two feet of ARAR-compliant soil in IB-3b and IB-6a on very flat ground that could result in issues with stormwater migrating away from the installed remedy into the surrounding area.

10.4 Reduction of Toxicity, Mobility or Volume

This evaluation criterion addresses the statutory requirement for selecting remedial actions that employ treatment technologies that reduce the toxicity, mobility, or volume of the hazardous constituents present in the impacted media to the maximum extent practicable.

The containment technologies identified in all alternatives are not treatment technologies and therefore, do not use treatment to reduce toxicity, mobility, or volume of contamination within the soil matrix. Treatment technologies are not included in any of the alternatives because treatment of high-volume, low-toxicity soil is not technically feasible or economically reasonable at the Site. Also, Alcoa's 2006 removal action had removed the SPL, a principal threat waste, for off-Site disposal.

Excavation and consolidation of the bauxite waste material with construction of an ARAR-compliant soil cover and stormwater controls would reduce the potential mobility of contaminants leaching from the bauxite, reduce the overall footprint of surficial bauxite at the Site, and control the flow of stormwater from the Site to adjacent parcels and to on-Site residential properties.

10.5 Short-Term Effectiveness

This evaluation criterion addresses the effects of the alternatives during the construction and implementation phases (*i.e.*, remediation risks) until the RAOs are met.

RAA-1 could be implemented in the shortest time frame without any adverse impacts from the installation of access restrictions such as fencing and could be completed in a matter of months. The construction work for RAA-2, RAA-3, RAA-4 and RAA-5 could be completed in approximately eight months. Any adverse impacts to workers or to the surrounding area from excavation and consolidation of waste materials and installation of the soil cover can be properly managed through Site-specific health and safety planning and compliance with standard cover installation practices.

RAA-2 is the least effective in the short term due to the potential impact to the community during off-Site transportation of excavated waste materials.

RAA-4 would not be as short-term-effective as RAA-3 and RAA-5 due to the potential for increased stormwater impacts in the IB-4c area from the consolidation of excavated waste materials over IB-4c’s extremely flat current grade and the lack of sufficient area to manage stormwater issues. In contrast, RAA-3 and RAA-5 use IB-4a as the consolidation area for excavated soils/waste materials, allowing the use of existing ponds for stormwater management. RAA-4 also involves consolidating and constructing an ARAR-compliant cover over the extremely flat current grade in IB-3b and IB-6a with similar stormwater management issues.

Like RAA-4, RAA-5 would have adverse stormwater impacts associated with installing an ARAR-compliant cover over areas IB-3b and IB-6a. RAA-4 is therefore not as short-term-effective as RAA-3, which doesn't place a cover over those areas.

RAA-3 involves the least impact to areas receiving excavated waste materials and remedy cover, and the use of IB-4a as the consolidation area for excavated soils/waste materials allows use of existing ponds for stormwater management.

10.6 Implementability

This evaluation criterion considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

All alternatives are readily implementable. Installation of fencing is a typical construction activity. Development of and implementation of enforceable restrictive covenants is also a typical activity. The existing Site restrictions can be readily updated and appended as part of this criterion and the City of East St. Louis has indicated a willingness to complete this task quickly.

Most of the tasks in RAA-2, RAA-3, RAA-4 and RAA-5 are common, reliable construction activities that do not entail any significant technical difficulties. Some aspects of these alternatives, such as negotiating with property owners, may impact the overall implementability but are expected to be resolved expeditiously.

Alternatives that involve excavating and removing bauxite residues in select locations beyond the minimum two feet of excavation to the extent safely and technically feasible, depending on accessibility, constructability and risk to the structural integrity of improvements, such as at specified properties in IB-5a, may present a challenge. This concern is equally applicable to RAA-2, RAA-3, RAA-4 and RAA-5. Under any of these alternatives, excavations would proceed to the extent feasible.

10.7 Cost

The estimated capital, O&M, and present worth costs for the remedial alternatives are as follows:

Alternative	Capital Cost	O&M Cost	Present Worth Cost
RAA-1 Restricted Access	$95,000	$42,000	$137,000
RAA-2 Excavation and Capping -- Off-Site Disposal	$7,831,300	$40,000	$9,390,000
RAA-3 Excavation and Capping -- On-Site Consolidation in OU1	$3,400,000	$40,000	$4,110,000
RAA-4	$4,165,700	$40,000	$5,022,400

Excavation and Capping -- On-Site Consolidation in OU2			
RAA-5 Excavation and Capping -- On-Site Consolidation in OU1	$2,993,800	$40,000	$3,627,800

10.8 State Acceptance

The Illinois EPA has indicated support of the selection of Alternative RAA-3 for OU2 of the Site and has stated its intent to concur with the selected remedy. Illinois EPA's concurrence letter will be added to the AR upon receipt.

10.9 Community Acceptance

During the public comment period, many in the community expressed support for RAA-3. EPA has prepared a Responsiveness Summary that summarizes the public comments and EPA's responses to those comments. The Responsiveness Summary is included in Part III of this ROD.

11.0 Principal Threat Waste

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a Site, wherever practical. The principal threat concept is applied to the characterization of "source material" at a Superfund Site. Source material includes or contains hazardous substances, pollutants or contaminants that act as a source for migration of contaminants to groundwater, surface water or air, or acts as a source for direct exposure. EPA has defined principal threat wastes as those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur.

There is no principal threat waste on OU2. In 2006, Alcoa had conducted a removal action at the Site to address SPL, which is a listed hazardous waste (KO88). The SPL is a principal threat waste because it is highly toxic. The SPL was disposed of off-Site.

12.0 Selected Remedy

EPA has selected Alternative RAA-3 as the interim remedy for OU2.

12.1 Summary of the Rationale for the Selected Remedy

EPA considers Alternative RAA-3 to be an interim remedy for the Site. This interim action is intended to address soil and waste material contamination issues in OU2 while EPA evaluates Site groundwater data and a final remedy for the Site.

Based on the information available, the selected remedy satisfies the following statutory requirements of CERCLA Section 121(b): 1) it is protective of human health and the environment; 2) it complies with ARARs specific to the interim OU2 action; 3) it is cost-

effective; and 4) utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

The interim remedy does not meet the statutory preference for the use of treatment which permanently and significantly reduces the volume, toxicity, or mobility of hazardous substances. The 2006 removal action removed SPL, a principal threat waste and disposed of it off-Site. Waste to be addressed by this interim action is low level contamination that is cost-effectively managed on-Site with containment measures. Treatment of the high volume, low-toxicity bauxite waste material/contaminated soil is not cost effective.

The selected interim remedy will be effective in the long-term and unacceptable short-term impacts are not expected to occur. The selected remedy is cost-effective because its costs are proportional to the overall effectiveness as indicated by the long-term and short-term effectiveness and the degree of treatment practicable. The remedy is readily implementable, supported by the Illinois EPA, and generally accepted by the public. The selected remedy presents the best balance of the NCP remedy selection criteria.

12.2 Description of Remedial Components

The selected interim action addresses the risks calculated for OU2 and includes the following source control activities:

- Preparation of Site access roads and material staging areas;
- Grading/reconsolidation of on-Site soil and waste;
- Placement of a minimum two-foot soil cover in compliance with 35 IAC 807.305(c) over excavated areas and soil consolidation areas;
- Stormwater management in compliance with 40 C.F.R. §122.26 and ILR10;
- Installation of clean water conveyance to manage stormwater along Lake Drive;
- Fencing around OU2, as necessary;
- Establishment of ICs in the form of restrictive covenants for OU2 areas where waste remains, restricting future use to industrial/commercial (or residential for the IB-5a properties) and precluding disturbance of the remedy components;
- O&M of the soil covers in compliance with 35 IAC 807.502 and 40 C.F.R. Part 192; and
- Monitoring of previously sampled IB-5a residences to determine if EPA action levels for indoor radon are exceeded. Construction and operation of a radon mitigation system to reduce the levels of radon below EPA action standards in residences where radon standard is exceeded.

12.3 Summary of the Estimated Remedy Costs

The estimated capital cost for Alternative RAA-3 is $3,400,000. It is estimated that it will cost $40,000 per year to monitor and maintain the remedy, for a present worth cost estimate of $4,110,000. The information for the cost estimate summary is based on best available information regarding the anticipated scope of the selected remedy. This is an order of

magnitude engineering cost estimate that is expected to be within +50/-30 percent of the actual project cost.

12.4 Expected Outcomes of the Selected Remedy

Alternative RAA-3 will protect human health and the environment under reasonable future industrial/commercial land use scenarios in OU2 (or for residential land use scenarios for the residential properties in IB-5a) by containing the bauxite waste material in place, preventing direct access to the material, and preventing the further migration of surface contaminants from OU2.

13.0 Statutory Determinations

Under CERCLA Section 121 and the NCP, the lead Agency must select remedies that are protective of human health and the environment, attain federal and state requirements that are applicable or relevant and appropriate for this remedial action (or invoke an appropriate waiver), are cost effective, and utilize permanent solutions to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the toxicity, mobility or volume of hazardous wastes as a principal element and a bias against off-Site disposal of untreated wastes. The following sections discuss how the select remedy addresses these statutory requirements.

13.1 Protection of Human Health and the Environment

The selected remedy is an interim remedy. It will be protective of human health and the environment for the risks associated with OU2. The selected remedy will provide adequate steps to reduce the mobility of wastes at OU2 by excavating bauxite waste material and by placing a soil cover over wastes remaining, which provides for direct contact exposure protection. The selected remedy will not pose unacceptable short-term risks during construction and can accommodate appropriate future Site redevelopment at OU2.

13.2 Compliance with ARARs

The selected remedy is expected to comply with the state and federal ARARs that are specific to the scope of this interim action. Upon the completion of the Site RI/FS, EPA will propose a remedial action for groundwater and finalize the OU1 and OU2 interim actions, which will achieve all final Site ARARs. The ARARs for this interim action are listed in Section 10.2 above. All federal and any more stringent State ARARs identified for this interim action will be met.

13.3 Cost-effectiveness

EPA has determined that the selected remedy is cost effective, will be protective and represents a reasonable level of protectiveness for the money to be spent. In making this determination, the following definition was used: “[a] remedy shall be cost effective if its costs are proportional to

the overall effectiveness." (4O CFR 300.430(f)(1)(ii)(D)). "Overall effectiveness" was evaluated by assessing three of the five balancing criteria (long term effectiveness and permanence, reduction of toxicity, mobility or volume through treatment, and short-term effectiveness). Overall effectiveness was then compared to cost to determine cost-effectiveness. The relationship to the overall effectiveness of this interim remedial action was determined to be proportional to its costs; therefore, the remedy represents a reasonable level of protectiveness for the money spent. The estimated present worth of the selected interim remedial action is $4,110,000.

13.4 Utilization of Permanent Solutions and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Practicable

The interim remedial action uses permanent solutions and treatment to the maximum extent practicable. The 2006 removal of the SPL waste materials addressed the principal threat waste and removed it from the Site. The high volume and low toxicity of the bauxite waste materials in the OU2 area makes treatment impractical. The selected soil cover will be designed to be permanent and long lasting.

13.5 Preference for Treatment as a Principal Element

The selected remedial action does not address the statutory preference for treatment as a principal element. However, the previous removal and off-Site disposal of the SPL material removed this principal threat waste from the Site. Treating the high volume, low toxicity bauxite waste materials remaining in the OU2 area is not technically feasible or economically reasonable.

13.6 Five-Year Review Requirements

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-Site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of the remedial action to ensure that the selected remedy is, or will be, protective of human health and the environment. The five-year review (FYR) process is ongoing for the OU1 remedy and the first FYR was completed in March 2019.

14.0 Documentation of Significant Changes

The Proposed Plan for OU2 identified Alternative RAA-3 as the preferred interim remedial action for the Site. The Proposed Plan comment period ran from December 2, 2019 to March 5, 2020. CERCLA Section 117(b) and the NCP at 300.430(f)(5)(iii) require an explanation of significant changes from the remedy presented in the Proposed Plan that was published for public comment. Upon review of all written and verbal comments submitted during the comment period, EPA determined that a significant change to the remedy as identified in the Proposed Plan was not necessary.

Part III: Responsiveness Summary

In accordance with CERCLA Section 117, 42 U.S.C. §9617, EPA released the Proposed Plan and AR on December 2, 2019, and the public comment period ran through March 5, 2020, to allow interested parties to comment on the Proposed Plan for this Site. EPA held an availability session and public meeting on December 12, 2019, at St. Matthews Church in East St. Louis, Illinois. Approximately 50 people attended the evening public meeting and hearing, and approximately 30 people attended the afternoon availability session. Representatives from the Illinois EPA, the City of East St. Louis, Alcoa, and local media were present at the public meeting.

This Responsiveness Summary provides both a summary of the public comments EPA received regarding the Proposed Plan for OU2 and EPA's answers to those comments.

EPA received written comments (via fax, regular and electronic mail) and verbal comments at the public meeting. Copies of all of the comments received (including the verbal comments contained in the transcript from the public meeting) are included in the AR for the Site. EPA, in consultation with the Illinois EPA, carefully considered all comments prior to selecting the interim remedy in this ROD. A complete copy of the Proposed Plan, AR, and other pertinent documents are available at the East St. Louis, Illinois Public Library, 5300 State Street, East St. Louis, Illinois; East St. Louis City Hall, 301 Riverpark Drive, East St. Louis, Illinois, St. Matthews Baptist Church, 2908 Louisiana Blvd, East St. Louis, and EPA Region 5, 77 West Jackson, Chicago, Illinois. Documents can also be viewed at: https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0508010

EPA received comments from the general public and the City of East St. Louis. For purposes of this Responsiveness Summary, the comments are summarized, and similar comments may have been consolidated or grouped by issue. Comments in their entirety can be found in the AR.

The comments are organized as follows:

Comments from the City of East St. Louis

Comment 1

A City representative expressed support for Alternative RAA-3 at the public meeting.

Response 1

EPA appreciates the support for the selected remedy.

Comments from the General Public

Comment 2

A commenter from the Golden Gardens neighborhood questioned why addresses in Centreville and Alorton to the northeast were left out of the cleanup and whether politics played a role in that decision.

Response 2

EPA researched available Site information and collected samples in areas on and around the Site where historical information indicated that waste was disposed. This collected data confirmed that contamination was present in areas where historically waste had been disposed but did not indicate that contamination had migrated away from the Site towards these neighborhoods. This is documented in the OU1 FFS report and summarized in the OU1 ROD. The selected remedy, Alternative RAA-3, will prevent any future migration of contaminated soils/waste materials in the OU2 area by covering impacted areas with a two-foot soil cover.

Comment 3

A commenter expressed support for RAA-3 but asked that it be combined with RAA-1 in order to allow for vegetative growth to ensure the long-term permanence of the soil cover.

Response 3

Alternative RAA-3 includes the placement of the remedy soil cover and includes the proper establishment and maintenance of a vegetative cover to prevent erosion and ensure long-term protection from the waste materials, so there is no need to select the no action alternative as well.

Comment 4

A commenter who owns property within OU2 within area IB-4e questioned when actual remediation would occur and mentioned the presence of two monitoring wells on the property used for periodic monitoring. They requested information on how their property would be remediated and who is liable for the cleanup if the owner passes.

Response 4

EPA appreciates the question about the timing of remediation activities within OU2 and specifically on the owner's property. After this ROD is issued, EPA will negotiate a legal agreement with the PRPs. EPA anticipates that the PRPs will agree to conduct the cleanup, will complete the cleanup design in early 2021, and will then construct the remedy, with EPA and Illinois EPA oversite. The current property owner, City of East St. Louis, and Alcoa are two PRPs at the site.

The ROD remedy would require the PRPs to obtain access to all OU2 properties targeted for remediation. EPA, Illinois EPA and the PRPs will develop a schedule for this work which will be shared with affected property owners as part of that request for access. The access agreements will address any property specific details or accommodations. The PRPs must complete the access agreements for each property before remediation begins. The monitoring wells on this

property will be used, with the continued permission of the property owner, for ongoing groundwater monitoring to complete the Site investigation. The PRPs are and will remain liable for all of this work, both now and into the future.

Comment 5

A commenter stated that they had been in the area for a long period of time and wondered about cumulative exposure from the Site and asked what the cancer risks would be to the surrounding community until the remedy was constructed.

Response 5

EPA understands the concerns of those who have lived near the Site for many years. EPA cannot estimate the historical risk to a specific individual. EPA has approved an assessment of potential risk at OU1 and OU2 due to exposure to unremediated Site contaminants, for both the long-term residential use exposure scenario and for the commercial/industrial use exposure scenario. For residential use, the OU2 FFS summarized the residential risks associated with long-term exposure and identified the potential that such exposure to Site contaminants over a long period of time may result in additional chances of contracting cancer. These risks were calculated for exposure to both surface and subsurface soils/waste materials.

Each individual residential property within OU2 is unique and may have contamination at the surface, in the subsurface (at depth), or both. The information that has been collected to date shows that there is no bauxite waste material at the surface on any of these residential properties. The risks on residential properties are calculated for long term exposure (20-30 years); the amount of time for cleanup to be completed on each property is very small, on the order of weeks.

Precautions to prevent any exposure to contaminants and dust during cleanup and backfilling activities will be taken so that any impacts to property owners are mitigated. EPA encourages each property owner to raise to EPA and the PRPs each specific concern that they want addressed as part of construction. EPA will work with the PRPs to ensure that each concern is addressed to the owner’s satisfaction and safety.

The selected remedy will take approximately eight months to build and is designed to provide complete protection from these calculated risks. The PRPs will maintain the soil covers into the future and place appropriate restrictions on the land, providing long-term protection from exposure to contaminated soils/waste materials for the surrounding neighbors.

Comment 6

A commenter asked whether the bauxite was brought to the Site from the south and whether it could be dug up and sent back to its origin.

Response 6

EPA acknowledges and appreciates the commenter's request to consider removal of all bauxite waste material from the Site. EPA screened removal of all Site wastes as part of the remedy selection process for OU1 and determined that the costs, risks and benefits of this alternative did not merit full consideration. Early in that process, Alcoa evaluated removal of all Site waste in accordance with EPA's preliminary screening analysis of effectiveness, implementability and cost, and complete removal was further evaluated up to the OU1 Proposed Plan.

In an April 5, 2012 letter, which is part of the OU1 AR, Alcoa estimated that over 3 million cubic yards of bauxite waste material are present above ground in the OU1 area and assumed that there may be as much as 6.5 million cubic yards present below ground. The nature of the waste material makes it difficult to manage and ultimately remove. Most of this material would have to be stabilized before removal due to its engineering properties. There would be an inordinate amount of truck traffic on area roads that would be disruptive to local traffic as well as increasing noise to the area surrounding the Site.

It would also be difficult to dispose of this material due to the enormous volume of material that would require excavation, stabilization and removal. Finally, the cost estimate given to remove the materials above ground was in excess of $280 million and to remove the below ground waste as well, in excess of $500 million. EPA screened this alternative from further consideration for those reasons. OU2 contains the same waste materials and the same challenges with removal as outlined above.

Comment 7

A commenter stated that the financial consequences of restrictive covenants, restrictions on usage of property, and the inability to enjoy outdoor activities on the property and on the nearby ballfields, all had led to severe loss in property value. The commenter indicated that information from several borings immediately adjacent to several homes indicated bauxite was present at depth and could be located underneath the homes and impossible to completely remove. The commenter indicated that long term exposure to the bauxite could continue as a result. The commenter also voiced concerns with dust from excavation activities migrating away from the work areas.

The commenter also referenced the calculated risk presented in the FFS report as unacceptable and objected to the use of restrictive covenants on individual properties as overly burdensome, both on current residents as well as future buyers. Finally, the commenter stated that any restrictive covenants placed on any impacted properties would not last into perpetuity. As a result, the commenter is recommending that EPA require Alcoa to offer all affected IB-5a residents and all the houses along Louisiana Boulevard between the west end of IB-5a and St. Matthew’s Church a buyout and relocation to avoid future exposure to the bauxite residue, acceptance of which would be voluntary.

Response 7

EPA understands the issues associated with private properties currently located on portions of the Site and the concerns these property owners have with respect to potential exposure and

potential future usage restrictions. The OU2 selected remedy will be protective of current property uses and will reduce future risk by removing waste from these properties to the extent feasible. If any bauxite waste remains on residential properties after excavation because it could not be safely excavated to depth, institutional controls will be placed on the property to manage the residual risk. Contamination on OU2 property, such as the ballfields, will also be addressed by the OU2 remedy but are not available for public use at this time. These ballfields were closed by the City many years ago and cannot be used at present due to contamination present. The remedy provides for restoring both the grade and vegetation on all excavated areas.

The remedy requires access from each impacted property owner to perform the remedial activities, including sampling to further refine the extent and presence of bauxite waste material on the properties, for use in the remedy design. This includes sampling near the homes to determine if bauxite is present close to the building foundations, which may impact waste removal efforts. The information collected to date shows that there is no bauxite at the surface on any of these residential properties.

Concerns regarding disruption to property usage, details of property restoration, any necessary future property restrictions, and other related issues will depend on a number of factors currently unknown, such as the proximity of waste to each impacted structure, the depth of waste and the technical ability to remove this waste without significant adverse impact on the structures. Such issues will be evaluated during the remedy design. Based on existing information, consideration of the commenter's request to require the PRPs to submit purchase offers for potentially impacted properties is premature. This response does not preclude the PRPs and the property owners from engaging in such discussions, and it is our understanding that the PRPs may have already initiated some discussions.

The remedy requires that excavation activities are implemented with minimal impacts to the neighborhood. There will be dust control via frequent watering of excavation areas, trucks, and equipment as well as air monitoring during construction to demonstrate that dust issues are controlled. EPA and Illinois EPA will oversee this work. Property owners and residents will be informed of work to be performed and any monitoring results on and near their properties.

Restrictive covenants placed on any OU2 property where remaining Site waste presents an unacceptable residual risk will "run with the land." This means that they will always be in place on the title and any property sale will have to ensure that they remain in place. EPA requires this to ensure that implemented remedies are effective, permanent, and protective in the long term.

EPA selected alternative RAA-3 to provide appropriate short and long-term protection from risks posed by Site waste in addition to minimizing risks to property owners during implementation. EPA will assist individual property owners in understanding what remediation will be done on their properties and will require access before performing necessary work. Nothing precludes the PRPs and impacted property owners from discussing at any time, buyouts and relocation. It is EPA's understanding that Alcoa is already engaged in some of these discussions.

Comment 8

A commenter noted that ecological life was more prevalent in the past and that it had disappeared over the years of Site operation and wondered why the Proposed Plan indicated that there was no ecological risk calculated for the Site.

Response 8

EPA acknowledges the comment. Many years ago, before waste disposal at the Site, ecological populations may have been more prevalent but waste disposal most likely drove these populations to other more desirable locations, such as nearby Frank Holten State Park. Past waste disposal operations destroyed any suitable habitat on-Site and the current and anticipated Site use is commercial/industrial. When the Site remedies are implemented, it is expected that habitat quality will improve, as is starting to occur in the OU1 area where remedy construction was completed in 2016. As such, wildlife may eventually return to the Site area, due to the improved on-Site habitat.

Comment 9

A commenter asked why the regulation for a soil cover was only two feet and wondered if erosion would be an issue over time.

Response 9

The regulation is a State regulation for solid waste landfills and is considered appropriate for capping Site wastes. This cover will be maintained over time to ensure that it remains protective. This includes revegetation if needed and timely repair of identified erosion to ensure that the cover continues to provide the needed protection..

Comment 10

A commenter asked why there was no remedy for groundwater for the Site.

Response 10

EPA determined that additional data collection is appropriate before proceeding with a groundwater remedy. Alcoa has collected groundwater quality data during the Site investigation and will continue to collect groundwater data over the next five years. EPA will assess the results of this sampling and make a remedy decision for groundwater as a separate OU3 remedy action.

Comment 11

Several commenters asked about standing water on-Site after rain events, water on private properties that resulted from area flooding, and stated that mosquitos were an issue. They also

asked EPA to increase their public engagement and education efforts around area flooding and to include monitoring to reflect long term water conditions in the Site area to help in the development of a long-term and permanent solution to water issues. Finally, the commenters asked EPA to use any available resources to investigate the ongoing area flooding issue and take any actions to protect area residents from flooding from failing infrastructure.

Response 11

The Site remedy selection process addresses risks and impacts at and emanating from the Site; however it does not resolve community concerns unrelated to Site risks. Site records document that the area in and around the Site historically has had surface water drainage issues. The record documents that a portion of the Site is fill material in a former lake. The OU1 and OU2 RODs select interim remedies designed to collect, and control on-Site, stormwater sufficient for the volume of on-Site rainwater expected from a 100-year flood event. These on-Site controls were and will be developed to prevent the volume of an on-Site 100-year rainfall event from contributing to flooding impacts on adjacent properties and from burdening the local stormwater infrastructure. EPA has also worked with the local health department to address mosquito issues.

After the OU2 soil cover is installed and vegetation is established, standing water issues on the edges of the Site should be minimized. As was communicated at the public meeting, the OU2 areas have not been remediated yet. The construction of the OU2 remedy will include significant grading and grass to stabilize the soil cover. The OU2 remedy will be designed with slopes to direct stormwater towards the Site interior and its stormwater collection and holding areas.

EPA established an extensive mailing list of interested Site stakeholders. EPA went door to door and handed out information in different parts of the City. EPA will strive to expand this mailing list to reach as many residents as possible, to help to communicate Site progress to the surrounding neighborhood. The recent Site public meeting had the largest attendance of any meeting held for the Site in the past. EPA plans to work with the community to develop a Community Advisory Group for the Site area, A CAG serves as the focal point for the exchange of information among the local community, EPA, and the State regulatory agency, regarding cleanup of a Superfund site.

Once the OU2 remedy is constructed, on-Site stormwater will be controlled to prevent a 100-year on-Site flood event from adversely impacting properties neighboring the Site or the local stormwater system. Flooding concerns in the vicinity of the Site related to the local stormwater control system will not be addressed by this remedy implementation. It is EPA's understanding that this process is ongoing, and EPA will provide as much assistance as possible.

Comment 12

A number of commenters asked about access to information and whether someone who lived in the Site area could serve as a conduit for information. They further indicated that their level of trust would be increased if someone from the area served this purpose.

Response 12

As stated at the meeting, EPA encourages a Community Advisory Group be formed and will be sending out information on getting this started in the near term. EPA will work with this group to ensure that people get accurate and timely information about Site activities and schedules.

Comment 13

A commenter thanked Alcoa for returning to the area to build remedies to address contamination caused by Alcoa operations.

Response 13

EPA acknowledges the comment and Alcoa's response actions at this Site. Alcoa is studying and remediating the Site in accordance with legal agreements with EPA. Alcoa has been responsive to EPA and Illinois EPA oversight, addressing any remedy related issues in a timely manner. EPA anticipates that the OU2 remedy construction will begin in 2021 with EPA and Illinois EPA oversight.

Comment 14

A commenter asked if the radioactive levels in the ground would always be the same or whether it would decrease over time.

Response 14

Radioactivity does decrease in strength over time, but it is a very slow process that can take many years. The half-life for radium 226 is 1600 years and for radium 228 is 5.75 years. The selected remedies for OU1 and OU2 will address the risks associated with exposure to bauxite waste to provide protection from exposure to radioactivity in the near term. These remedies will be maintained into the future so that this protection is permanent.

Comment 15

Many commenters asked about potential solar development at the Site.

Response 15

Solar development is not part of EPA's remedy selection for the Site. However, in consultation with the City and Alcoa, EPA selected OU1 and OU2 remedies that could be consistent with solar redevelopment. EPA encourages Site redevelopment that retains the Site remedy's protectiveness. Alcoa has prepared remedy design documents showing that solar development can be safely built over the soil cover remedies. EPA will review any Site redevelopment plan and will prevent any redevelopment which may adversely impact the protectiveness of the installed remedies. EPA will continue to work with the City to provide assistance as they pursue Site redevelopment.

Comment 16

A commenter asked how public input was factored into EPA remedy decisions and whether EPA would proceed if area residents objected.

Response 16

EPA carefully considers all substantive comments received on remedy decisions and summarizes our response to comments in a responsiveness summary, such as this. EPA can modify or change components of the proposed remedy based on comments received. If no one was in support of the remedy and offered a reasonable alternative, EPA would entertain an alternate. However, comments received for this proposed remedy plan indicated broad support for the proposed remedy alternative, so the proposed remedy was not modified.

Comment 17

A commenter asked if solar energy created by a future solar farm at the Site would be used to reduce electric rates in the area.

Response 17

This comment is not related to the remedy selection. The attorney for the City was present at the meeting and addressed this comment. EPA encourages the commenter to read the meeting transcript for a greater understanding of the City's position.

Comment 18

Several commenters asked for additional time to present comments on EPA's Proposed Plan due to its importance and its complexity and its impacts on properties adjacent to the Site.

Response 18

EPA received a request for a 60-day extension to the 30-day comment period, both at the meeting and in writing. The initial request for a 60-day extension was immediately granted, and the extensive Site mailing list was notified both by postcard as well as through ads placed in the *East St. Louis Monitor* and the *Belleville News Democrat*. This extended comment period expired on March 5, 2020.

Comment 19

Commenters asked for extra storm drains or pipes to keep the area floodwaters out of people's homes. Commenters also asked if EPA's remedy could include improvements for the area storm sewers to increase capacity and performance during rain events.

Response 19

EPA remedies do not include improvements to nearby infrastructure unless they are needed as part of the Site remedy. The Site selected remedies do not propose using any infrastructure near the Site to manage or control stormwater that falls on the Site. Specifically, the OU1 and OU2 RODs selected remedies to manage and control a 100-year on-Site stormwater event entirely on-Site, including contouring portions of the Site to prevent stormwater from moving off-Site.

EPA understands that the community surrounding the Site has significant stormwater management concerns and has communicated resident's stormwater management concerns to the City on numerous occasions in the past. Stormwater management in the OU1 area of the Site includes ponds which are functioning to control flow and manage stormwater to the Site interior. In the past, the City and Alcoa have responded to flooding conditions on properties neighboring the Site by creating temporary stormwater controls along the northern Site boundary. The OU2 ROD selects a remedy to update and augment these controls as necessary to prevent adverse stormwater impacts to the neighboring properties from rain events occurring on the Site.

The OU1 and OU2 ROD remedies to manage stormwater on-Site is and will continue to be a priority for EPA. EPA will carefully review the stormwater control design plans. Improvements to the existing stormwater protections, including the existing berms, will be studied during the OU2 remedy design to determine any future stormwater protection needs. Vegetation and grading of installed soil covers in the OU2 area will be designed to direct any rainwater away from the properties adjacent to the Site. EPA will also continue to work with the City to communicate Site remediation progress and address any Site related issues as quickly as possible.

Comments from the Illinois EPA

Comment 20

Illinois EPA commented that there were inconsistencies in the way the Proposed Plan presented the contaminants contributing to Site risks and/or hazards, particularly with respect to vanadium and listed other inorganic contaminants that were not described as contributing significant risk in the risk summary. Illinois EPA requested that the ROD clearly present the chemicals contributing to Site risks.

Response 20

Vanadium was incorrectly listed as contributing to OU2 risks in the Proposed Plan. The ROD risk summary has been revised to indicate that arsenic and aluminum are the major contributors to non-carcinogenic risk and to more clearly describe contaminants contributing to Site risks and hazards.

Comment 21

Illinois EPA commented that the ROD could benefit from a clear statement that arsenic and aluminum are associated with the areas to be remediated and contributors to Site risk, and that the selected remedial action will address them.

Response 21

As outlined in response 20, the ROD was revised to clearly state that these inorganic contaminants are collocated on-Site, and the remedial action will address all contaminants present.

Comment 22

Illinois EPA commented that the ROD include a brief summary outlining risks from lead.

Response 22

The ROD has been updated with this information.

Comment 23

Illinois EPA asked that the ROD include a clear description of which contaminants of concern are driving the remedial action.

Response 23

The ROD has been updated to address this comment, indicating that radium 226 and 228 are driving the excess lifetime cancer risk and that aluminum, iron, and arsenic are driving the non-cancer risks.

Comment 24

Illinois EPA asked that the selected remedy description be updated to include explicit references to long term operation and maintenance and institutional controls as common elements for all alternatives.

Response 24

The ROD has been updated to address this comment, including multiple references to 35 IAC 807.502 and explicit references to long-term operation and maintenance requirements for all remedy alternatives.

Comment 25

Illinois EPA commented that 35 IAC 811 is not the State equivalent to RCRA Subpart C, and that 35 IAC 724 is the proper reference.

Response 25

The ROD has been updated to address this comment.

Comment 26

Illinois EPA commented that a number of potential ARARs had not been included in the Proposed Plan and described their potential inclusion as follows:

35 IAC 212.301 as applicable for any fugitive particulate matter
35 IAC 724.654 as relevant and appropriate for managing any staging piles for hazardous wastes
35 IAC 807.305(c) additional details to be added to the what is in current published regulations
35 IAC 807.502 should be replaced by 35 IAC 811 regulations for closure due to vagueness in the existing regulation
35 IAC 811.111 as relevant and appropriate for post closure maintenance
765 ILCS Section 122/1 as a To Be Considered (TBC)
NPDES Permit Number ILR10
40 C.F.R. 122.26 for inclusion of a stormwater pollution prevention plan
Illinois Urban Manual as a TBC for best management practices for construction sites

Response 26

The ROD has been updated in the following manner:

- 35 IAC 212.301 – **applicable**, as a prohibition on generation of visible fugitive particulate matter during remedy cover construction. **Included.**
- 35 IAC 724.654 – **relevant and appropriate**, if soil/waste material is temporarily staged or stockpiled before being moved to the on-Site consolidation area. **Included.**
- 35 IAC 807.305 (c) **relevant and appropriate**- EPA had already identified this citation as relevant and appropriate. Illinois EPA had identified additional construction details not specified in the cited provision. Illinois EPA did not provide authority supporting the specified construction standards. Therefore, the additional construction standards that Illinois EPA requested are not ARARs.
- 35 IAC 807.502 replaced by 35 IAC 811 regulations. 35 IAC 807.502 is identified as relevant and appropriate. The OU1 ROD, in which Illinois EPA concurred, identified 35 IAC 807.502 as the ARAR rather than 35 IAC 811. The record contains no site-specific basis to replace this OU1 ARAR with 35 IAC 811, and this comment may raise concerns of inconsistent application of identified regulatory requirements. **Not included.**
- 35 IAC 811.111 – relevant and appropriate for post closure O&M. EPA previously determined that 35 IAC 811 requirements were relevant but not appropriate for OU1. **EPA has determined that these requirements remain relevant but not appropriate for OU2**. The existing ARAR 35 IAC 807.502 requirements for OU1 are working effectively at maintaining the OU1 soil cover and remain relevant and appropriate. **Not included.**
- 765 ILCS Section 122/1- **TBC**. **Included.**
- NPDES Permit Number ILR10, as applying to any construction Sites that discharge stormwater, including the preparation and submittal of a storm water pollution prevention plan (SWPP). EPA has already identified the requirements at 40 C.F.R. Part 122.26 as ARARs, the requirements of which will be included in a SWPP for any off-site stormwater discharge. Since the OU2 ROD remedy does not discharge stormwater

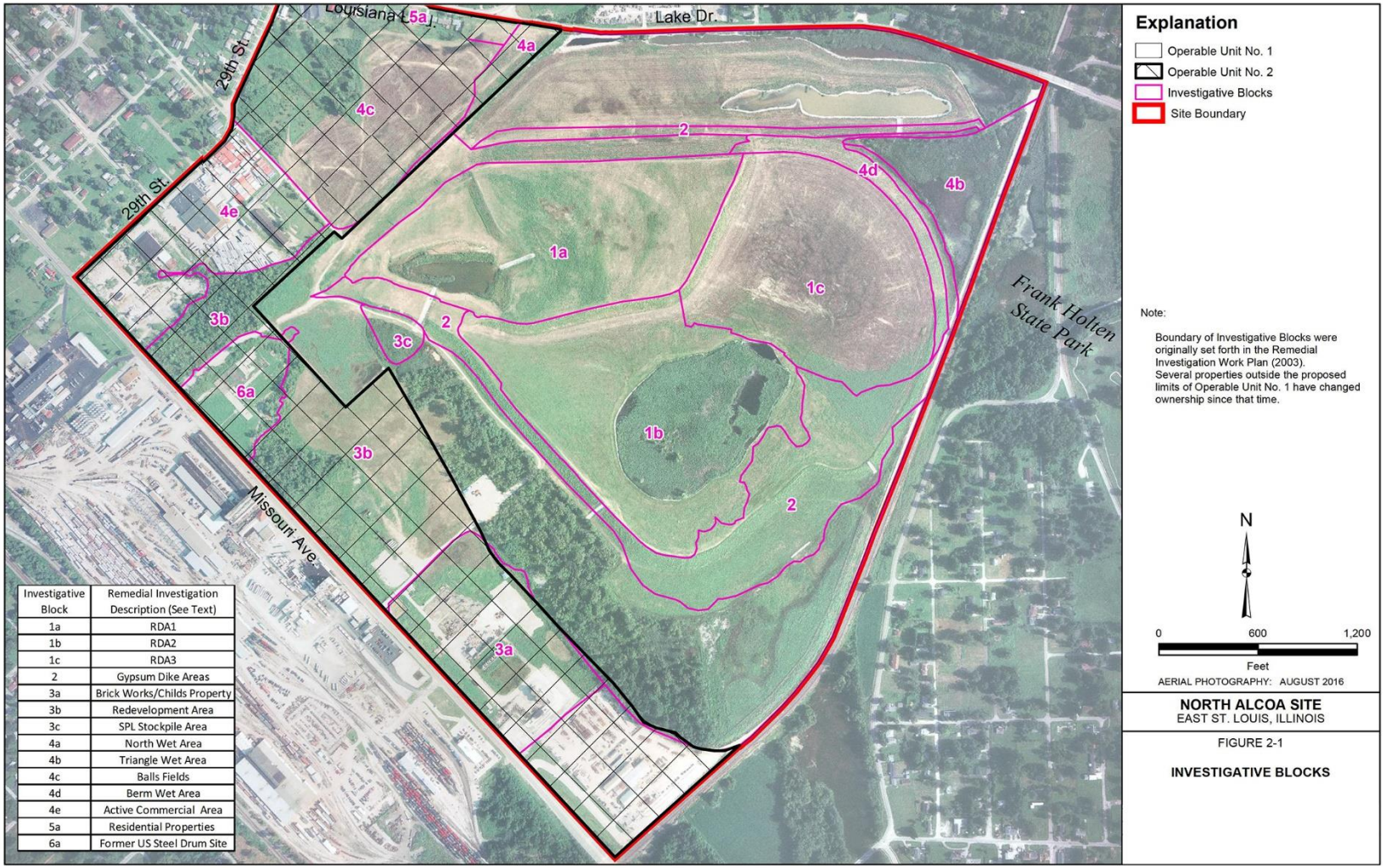
off-Site, a permit will not be required, however the implemented remedy must comply with substantive requirements to manage stormwater on-Site as part of this remedial action. **Included**

- Illinois Urban Manual as a TBC, which provides standards for best management practices for soil erosion and sediment control at construction sites. (https://illinoisurbanmanual.org/ **Included as TBC.**

Figures

Figure 1: Site Operable Unit Map

Figure 2: Investigative Block Map



Investigative Block	Remedial Investigation Description (See Text)
1a	RDA1
1b	RDA2
1c	RDA3
2	Gypsum Dike Areas
3a	Brick Works/Childs Property
3b	Redevelopment Area
3c	SPL Stockpile Area
4a	North Wet Area
4b	Triangle Wet Area
4c	Balls Fields
4d	Berm Wet Area
4e	Active Commercial Area
5a	Residential Properties
6a	Former US Steel Drum Site

Figure 3: Extent of Surficial Bauxite in OU2

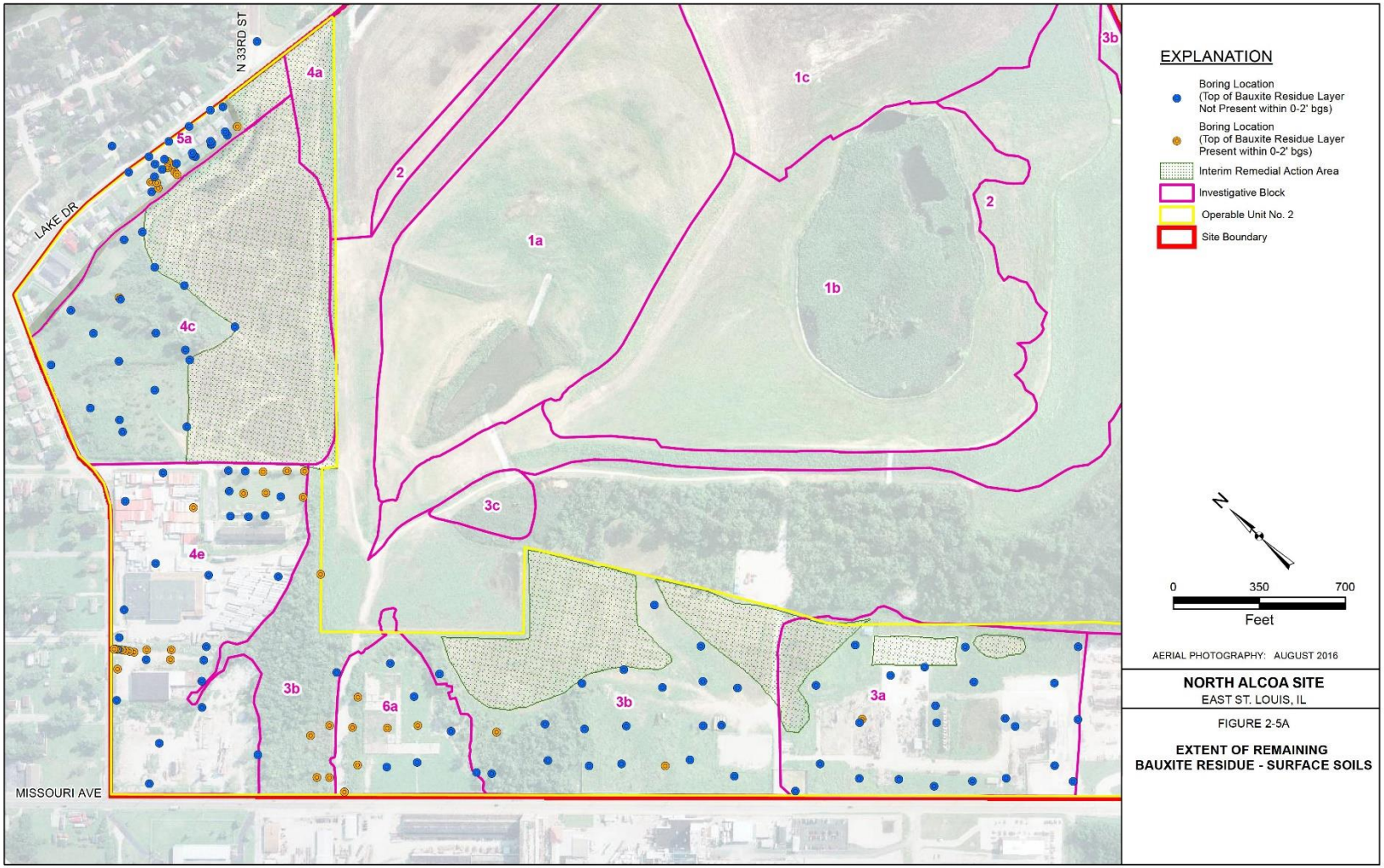


Figure 4: Extent of Subsurface Bauxite in OU2

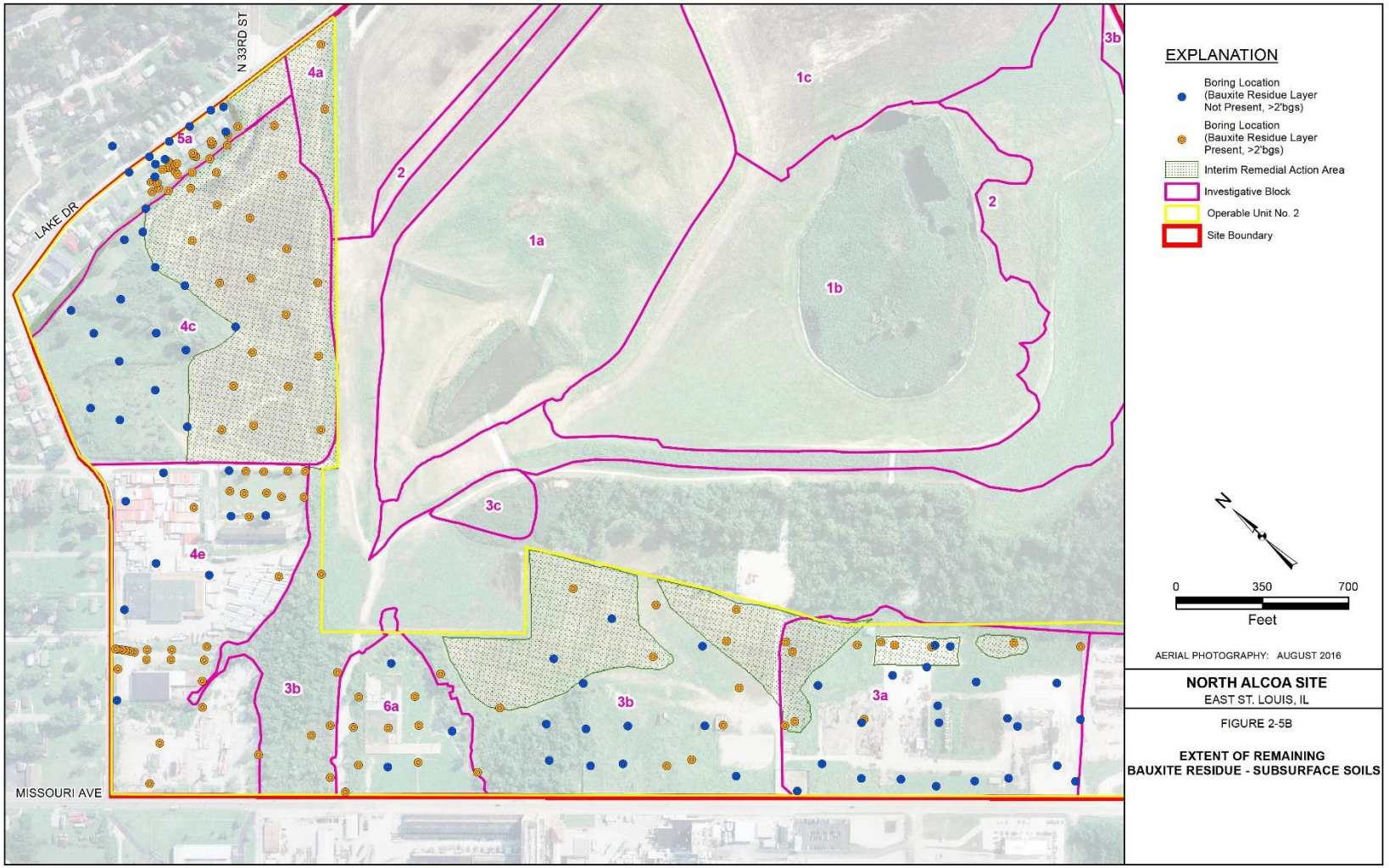


Figure 5: Groundwater Monitoring Locations

Figure 6: Total Radium in Surface Soils OU2

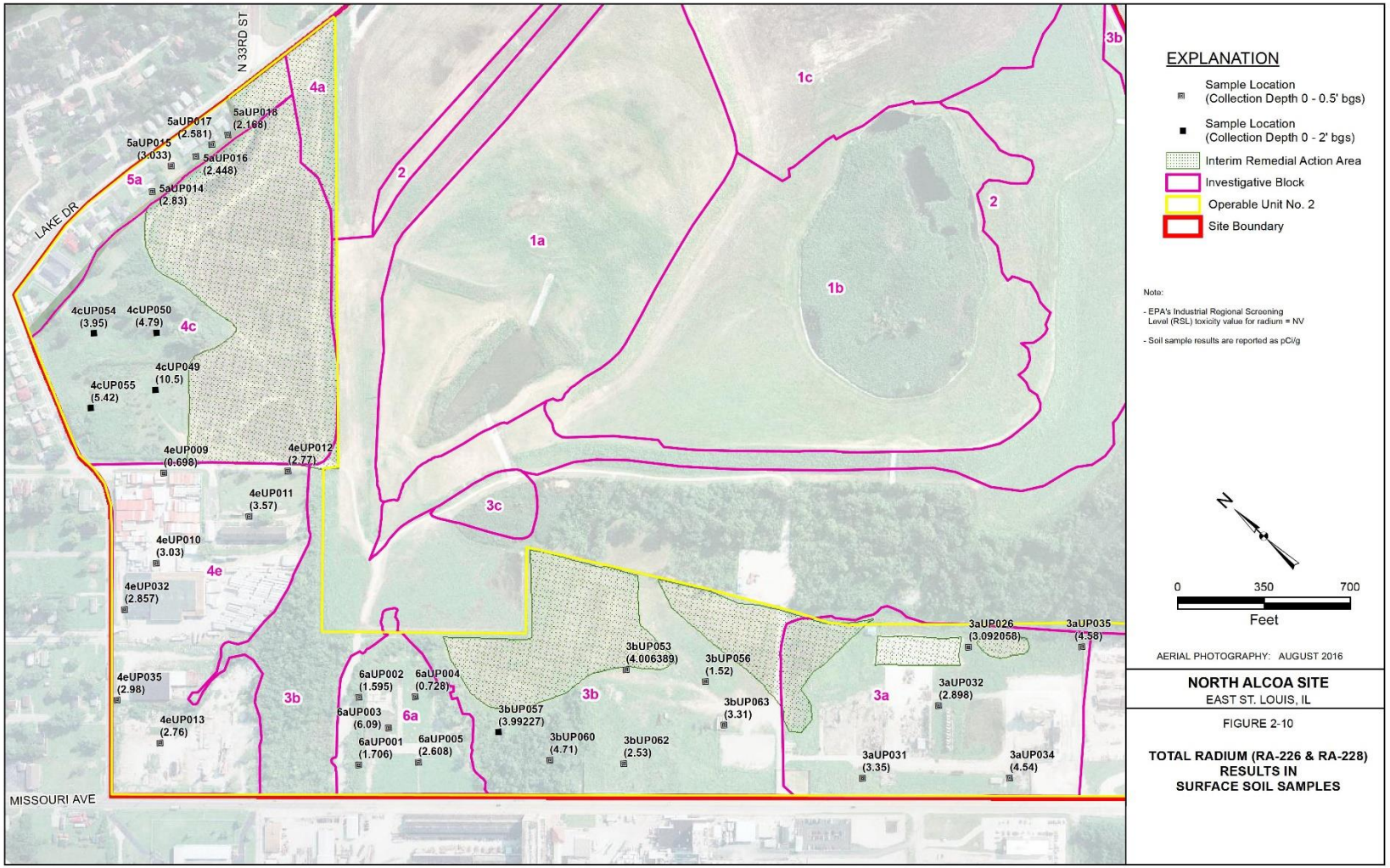


Figure 7: Total Radium in Subsurface Soils – OU2

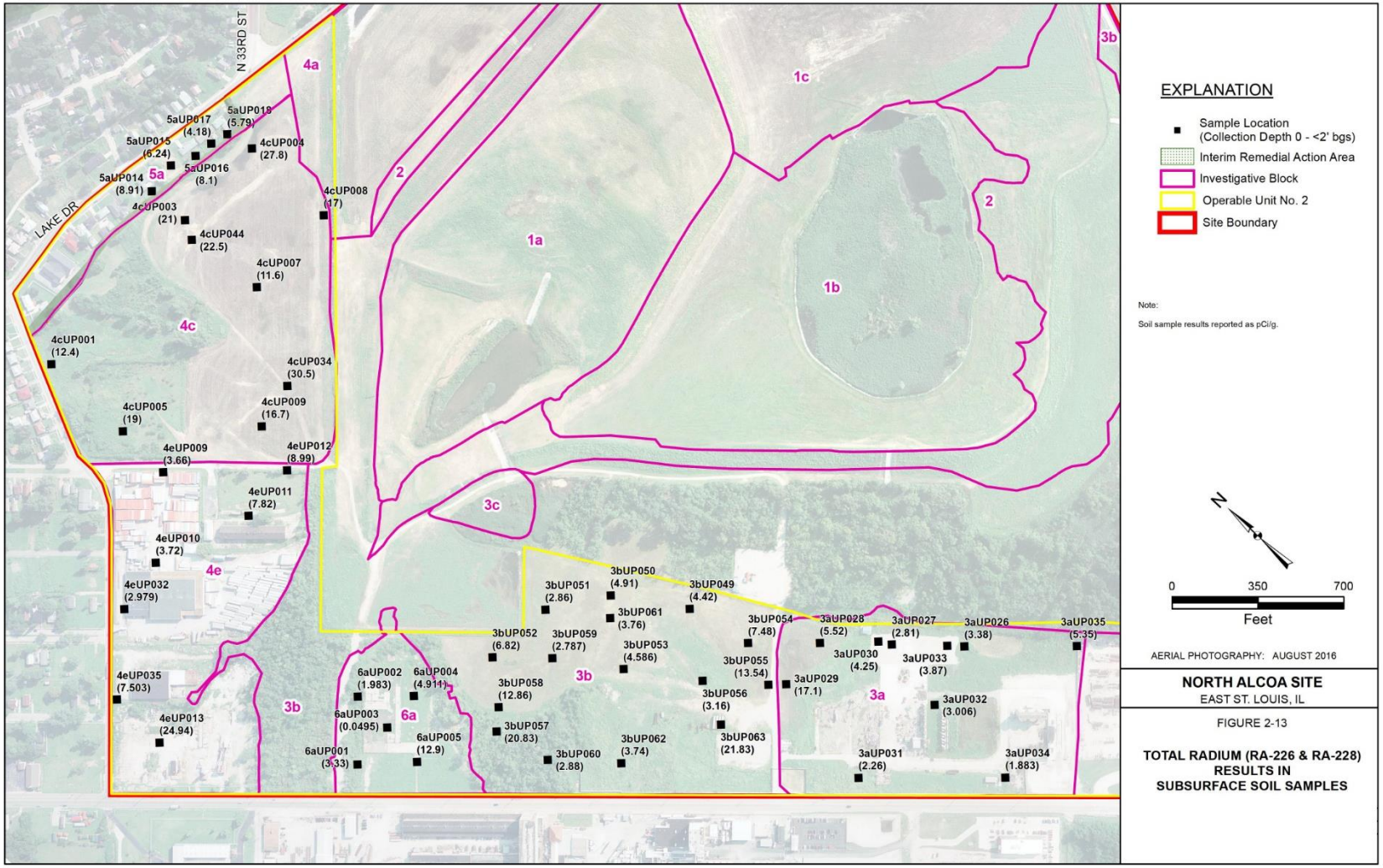


Figure 8: Historical Groundwater Exceedances

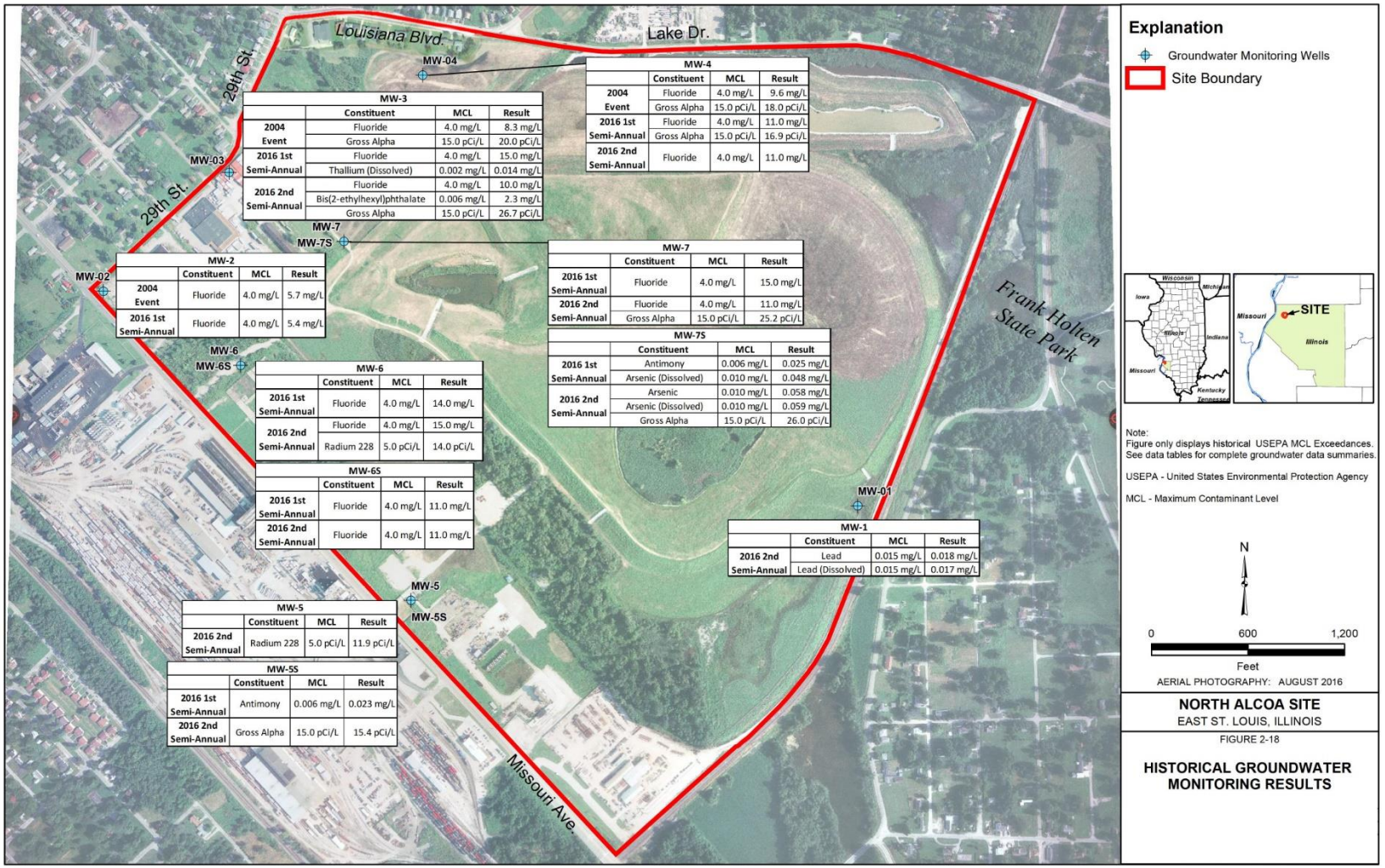


Figure 9: OU2 Waste Relocation Areas

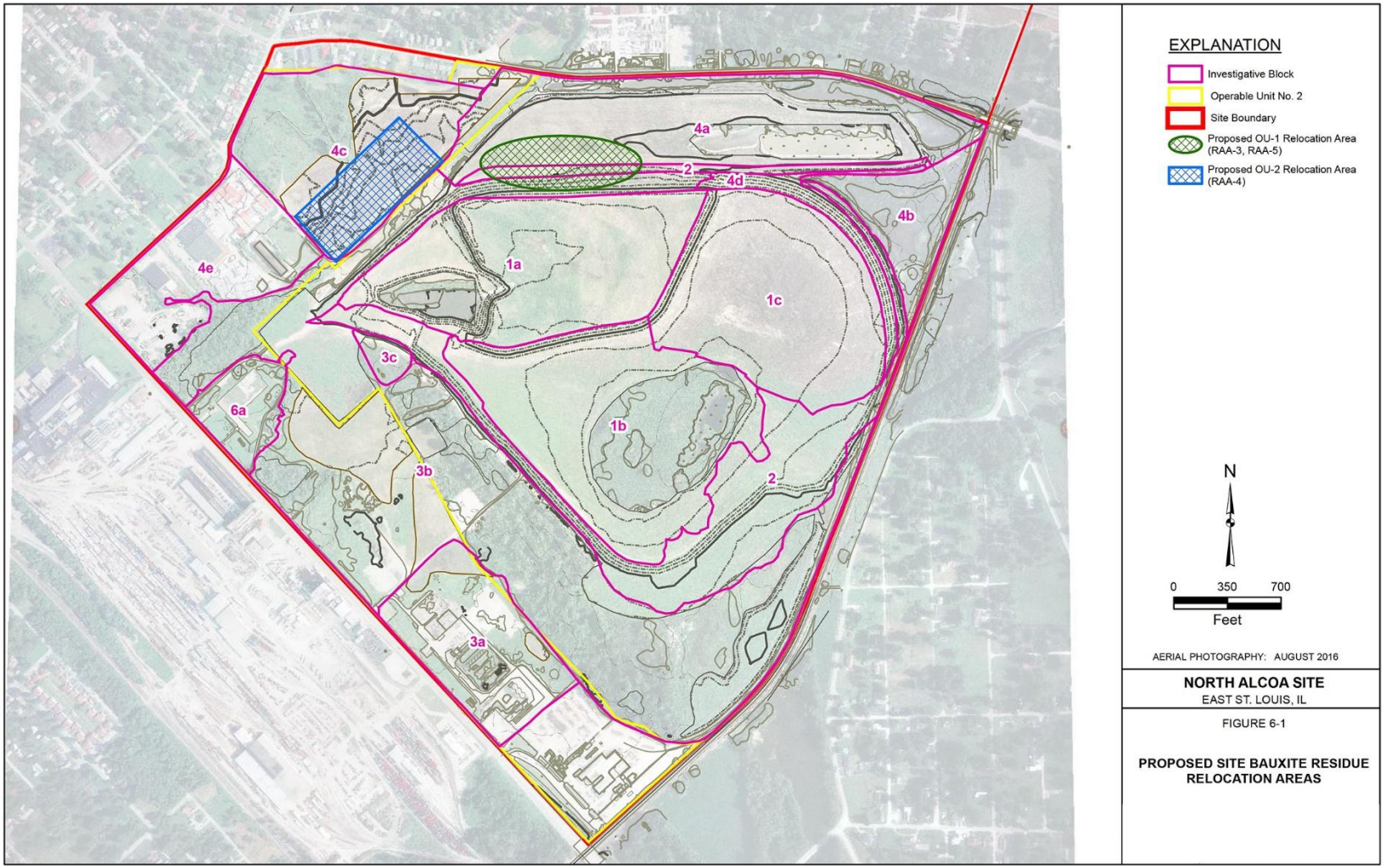
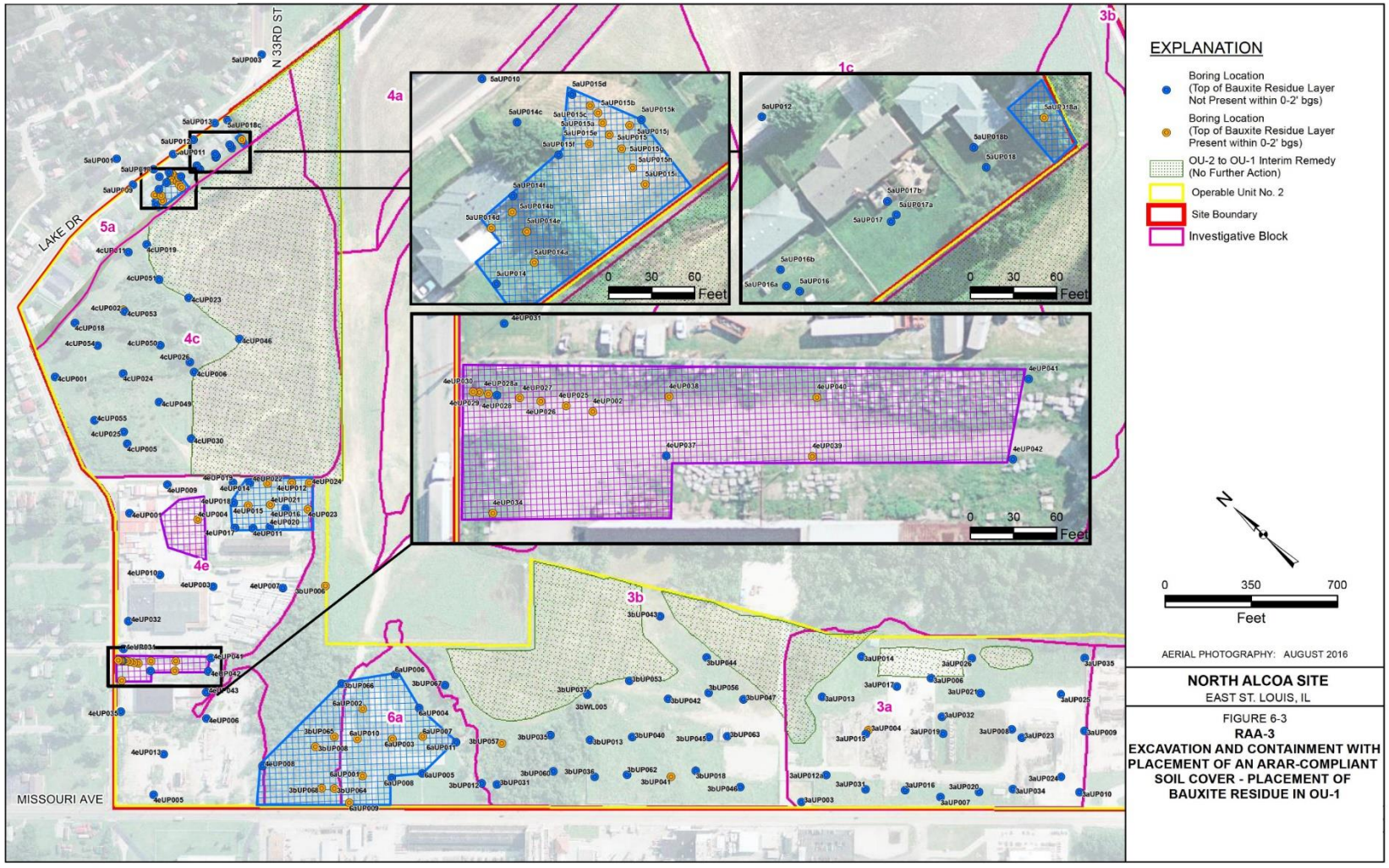


Figure 10: RAA-3 Proposed Excavation/Capping



Tables

Table 1: Chemical Composition of Bauxite and Gypsum

SUMMARY OF THE CHEMICAL COMPOSITION OF BAUXITE RESIDUE AND GYPSUM NORTH ALCOA SITE, EAST ST. LOUIS, ILLINOIS

Detected Chemical	Surface Soil Samples						Subsurface Soil Samples					
Metals	Bauxite Residue (IB-1) (mg/kg)			Gypsum (IB-2) (mg/kg)			Bauxite Residue (IB-1) (mg/kg)			Gypsum (IB-2) (mg/kg)		
	No.	Avg	Max	No.	Avg	Max	No.	Avg	Max	No.	Avg	Max
Aluminum	56	62,370	127,000	18	7,513	61,100	61	64,868	96,200	11	9,665	32,200
Antimony	38	3.74	9.46	4	3.06	4.62	35	4.2	31.4	1	4.07	4.07
Arsenic	56	23.7	76.2	9	11.9	43.7	60	32.8	170	9	13	66.7
Barium	56	101	794	18	129	292	61	116	274	11	125	273
Cadmium	39	4.0	23.7	17	0.982	7.25	40	1.63	9.52	7	0.484	1.61
Chromium	56	479	1,100	18	34.4	306	61	361	947	11	14.6	42.6
Cobalt	52	2.0	12.8	6	1.14	2.69	57	2.52	48.2	8	3.56	14.5
Copper	56	14	41.7	18	12.7	138	61	19	243	11	11.4	33.4
Lead	56	143	1,290	18	690	1,230	61	103	1,280	11	603	2,250
Manganese	56	328	1,480	18	37.5	259	61	435	2,380	11	263	1,660
Mercury	56	0.293	0.91	18	0.209	0.657	60	0.315	0.757	11	0.129	0.61
Nickel	56	7.37	23.2	15	3.21	25	61	7.66	52.1	10	8.37	35.6
Selenium	20	5.44	16	3	3.12	3.58	38	7.8	181	3	5.22	13.3
Silver	37	1.85	3.23	12	0.323	0.597	41	2.44	7.52	4	0.482	0.819
Thallium	28	5.82	19.8	1	10.4	10.4	34	10.2	195	4	3.08	7.09
Vanadium	56	637	1,220	17	91.3	950	61	531	1,190	11	50.3	326
Zinc	53	49	227	18	73	370	60	21.0	88.7	11	35.3	92.5
Wet Chemistry												
pH (s.u.)	56	7.3	12.0	18	4.6	7.6	61	7.6	12.2	11	4.8	8.3
Fluoride	56	55.7	419	18	49	156	61	78.3	624	11	46.5	148
Cyanide	23	4.65	29.4	4.0	9.1	21.4	22	32.1	143	5	1.47	3.8

Notes:
1. Volatile and semi-volatile organic compounds were only sporadically detected in these materials.
2. Data from RI Report Section 4.0.

Table 2: Cumulative Risks for OU2

CUMULATIVE RISK, CHEMICAL AND RADIOLOGICAL
NORTH ALCOA SITE, EAST ST. LOUIS, ILLINOIS

Risk Screening Results			IB-3a >Industrial Risk-based Values	IB-3b >Industrial Risk-based Values	IB-4c[1] >Industrial Risk-based Values	IB-4e >Industrial Risk-based Values	IB-6a >Industrial Risk-based Values	>Res ba
Timeframe	**Exposure Scenario**	**Type of Risk**						
Current (Surface Soil)	Industrial Worker	Chemical Cancer Risk	9.34E-06	9.77E-06	1.06E-05	6.44E-06	5.26E-06	No
		Radiological Cancer Risk	**1.61E-04**	**1.56E-04**	**3.28E-04**	**1.47E-04**	**1.89E-04**	No
		Chem. + Rad. Cancer Risk	**1.70E-04**	**1.66E-04**	**3.39E-04**	**1.53E-04**	**1.94E-04**	No
		Noncancer HI	0.04	0.05	0.06	0.04	0.03	No
	Youth Trespasser	Chemical Cancer Risk	1.07E-06	8.69E-07	6.53E-07	4.41E-07	4.02E-07	No
		Radiological Cancer Risk	1.38E-06	1.33E-06	2.86E-06	1.27E-06	1.62E-06	No
		Chem. + Rad. Cancer Risk	2.45E-06	2.20E-06	3.51E-06	1.71E-06	2.02E-06	No
		Noncancer HI	0.005	0.007	0.009	0.005	0.004	No
	Residential Scenario (or Surface Soil for Hypothetical Resident)	Chemical Cancer Risk	6.36E-05	5.43E-05	4.08E-05	2.72E-05	2.49E-05	
		Radiological Cancer Risk	**5.26E-04**	**5.08E-04**	**1.07E-03**	**4.81E-04**	**6.18E-04**	
		Chem. + Rad. Cancer Risk	**5.90E-04**	**5.62E-04**	**1.11E-03**	**5.08E-04**	**6.43E-04**	
		Noncancer HI	1	2	2	1	1	
	Residential Background	Radiological Cancer Risk	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	**4**
Future (All Soil)	Construction Worker	Chemical Cancer Risk	8.04E-07	1.19E-06	6.67E-07	1.33E-06	9.80E-07	No
		Radiological Cancer Risk	9.70E-06	1.14E-05	1.01E-05	1.30E-05	9.12E-06	No
		Chem. + Rad. Cancer Risk	1.05E-05	1.26E-05	1.08E-05	1.43E-05	1.01E-05	No
		Noncancer HI	0.5	0.2	0.4	0.4	0.4	No
	Industrial Worker	Chemical Cancer Risk	8.37E-06	1.23E-05	7.17E-06	1.48E-05	1.04E-05	No
		Radiological Cancer Risk	**3.12E-04**	**3.74E-04**	**3.28E-04**	**4.30E-04**	**2.96E-04**	No
		Chem. + Rad. Cancer Risk	**3.20E-04**	**3.86E-04**	**3.35E-04**	**4.45E-04**	**3.06E-04**	No
		Noncancer HI	0.09	0.05	0.10	0.2	0.1	No
	Youth Trespasser	Chemical Cancer Risk	8.74E-07	1.35E-06	4.82E-07	1.56E-06	8.64E-07	No
		Radiological Cancer Risk	2.75E-06	3.21E-06	2.86E-06	3.67E-06	2.58E-06	No
		Chem. + Rad. Cancer Risk	3.62E-06	4.56E-06	3.34E-06	5.23E-06	3.44E-06	No
		Noncancer HI	0.01	0.007	0.01	0.03	0.03	No
	Residential Scenario (or Surface/Subsurface Soil for Hypothet. Resident)	Chemical Cancer Risk	5.22E-05	8.19E-05	2.98E-05	9.96E-05	5.27E-05	
		Radiological Cancer Risk	**1.02E-03**	**1.22E-03**	**1.07E-03**	**1.40E-03**	**9.64E-04**	
		Chem. + Rad. Cancer Risk	**1.07E-03**	**1.30E-03**	**1.10E-03**	**1.50E-03**	**1.02E-03**	
		Noncancer HI	**2**	**2**	1	**2**	**2**	

[1]No Current Industrial Worker, but a Future Industrial Worker with contact only with surface soil COPCs is included.

[2]The IB-5a surface soil RME radionuclide concentrations are lower than the average background concentration for Ra-226, Ra-228, and Th-232, leading to a risk less than that from background for IB5a surface so

Table 3: Vertical Extent of Bauxite in OU2

Boring ID	Observed Top of Bauxite Residue (ft bgs)	Observed Vertical Extent of Bauxite Residue (ft bgs)	Area Excavated During Interim Remedial Action*
3aUP001	2.5	7.5	Yes
3aUP002	0.5	10.0	Yes
3aUP004	0.5	8.0	No
3aUP005	3.0	10.0	Yes
3aUP027	2.0	3.0	Yes
3aUP028	1.2	2.0	Yes
3aUP029	0.5	2.0	Yes
3aUP030	2.0	7.0	Yes
3aUP035	4.0	8.0	No
3bUP008	0.6	10.0	No
3bUP010	0.0	8.0	Yes
3bUP012	3.5	10.0	No
3bUP014	0.0	0.5	Yes
3bUP016	0.0	8.0	Yes
3bUP018	4.0	8.5	No
3bUP049	1.0	1.25	Yes
3bUP050	0.0	1.2	Yes
3bUP051	0.0	1.2	Yes
3bUP052	0.0	0.8	Yes
3bUP054	1.0	2.0	Yes
3bUP055	0.0	2.0	Yes
3bUP057	1.8	2.0	No
3bUP058	1.5	7.0	Yes
3bUP063	6.0	10.0	No
4cUP002	1.0	2.0	No
4cUP003	1.0	2.0	Yes
4cUP004	0.5	2.0	Yes
4cUP007	0.5	2.0	Yes
4cUP008	1.0	2.0	Yes
4cUP009	0.5	2.0	Yes
4cUP034	1.0	12.0	Yes
4cUP035	3.4	12.4	Yes
4cUP036	3.7	12.0	Yes
4cUP037	8.2	11.5	Yes
4cUP038	7.8	11.0	Yes
4cUP039	7.8	10.4	Yes
4cUP043	1.5	7.8	Yes
4cUP044	0.4	5.5	Yes
4cUP045	4.4	7.0	Yes
4cUP047	2.8	7.0	Yes
4cUP048	1.2	3.2	Yes
4eUP011	8.0	10.0	No
4eUP012	1.0	10.0	No
4eUP013	3.0	10.0	No

5aUP014	4.0	6.0	No
5aUP015	1.8	4.2	No
5aUP016	2.4	7.0	No
5aUP017	4.0	7.2	No
5aUP018	3.2	7.2	No
6aUP001	1.5	10.0	No
6aUP002	1.0	10.0	No
6aUP003	1.5	10.0	No
6aUP004	3.5	10.0	No
6aUP005	2.0	7.0	No

*Interim action excavations did not remove full extent of bauxite present at all locations

Table 4: ARARs for OU2

Action	Requirement	Citation
Stormwater Management	Stormwater discharges applicable to State NPDES programs	• 40 C.F.R. 122.26 • Illinois ILR10
Landfill Capping	Regulations for capping solid waste facilities	• 35 IAC 807.305(c) • 35 IAC 807.502
Fugitive dust control	Prohibition on generation of visible fugitive particulate matter during remedy cover construction	• 35 IAC 212.301
Temporary soil stockpiling	If soil is temporarily staged or stockpiled before being moved to the on-Site consolidation area.	• 35 IAC 724.654
Landfill Capping for Radionuclide Wastes	Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings	• 40 C.F.R. Part 192

Appendix

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR THE
NORTH ALCOA (ALCOA PROPERTIES) SITE
EAST ST. LOUIS, ST. CLAIR COUNTY, ILLINOIS

UPDATE 4
NOVEMBER, 2019
SEMS ID:

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	950550	12/19/13	Weddell, R., Alcoa, Inc.	Novak, D., U.S. EPA	Technical Memo: Results of Field Sampling Plan Addendum Investigation for IB-4c ("Ball Field Area") IB-3a, and IB-3b ("Paule Property")	62
2	950551	5/8/14	Weddell, R., Alcoa, Inc.	Novak, D., U.S. EPA	Revised Phase 2 - Field Sampling Plan Addendum Investigation for IB-4c ("Ball Field Area")	10
3	950552	6/26/14	McKay, C., Tetra Tech	Weddell, R., Alcoa, Inc.	Technical Memo: Site Reconnaissance - {OU-2} IB-3a and -3b ("Paule Property")	46
4	950553	7/28/14	Morosky, R. M., Alcoa, Inc.	Novak, D., U.S. EPA	Transmittal Report of Revised Phase 2 Field Sampling Plan Addendum Investigation Results - OU2 to OU-1 Removal Action Proposal	988
5	950554	10/1/14	Karl, R., U.S. EPA	File	Explanation of Significant Differences	13
6	950555	10/17/14	Morosky, R. M., Alcoa, Inc.	Novak, D., U.S. EPA	Revised Phase 2 Field Sampling Plan Addendum Investigation Results - OU2 to OU-1 Removal Action Proposal	988

7	950556	3/18/15	McKay, C., Tetra Tech	Morosky, R. M., Alcoa, Inc.	Technical Memo: Revised OU-2 Areas IB-3a and IB-3b ("Paule Property") Field Sampling Plan	6
8	950557	7/24/15	Morosky, R. M., Alcoa, Inc.	Novak, D., U.S. EPA	Transmittal Report of Revised OU2 Area IB-3a and IB-3b ("Paule Property") Field Sampling Plan Investigation Results/ OU-2 to OU-1 Removal Action Proposal	222
9	950558	9/22/15	Karl, R., U.S. EPA	File	Second Explanation of Significant Differences	14
10	950559	10/9/15	Morosky, R. M., Alcoa, Inc.	Novak, D., U.S. EPA	Revised Supplemental Remedial Investigation Workplan	51
11	950560	11/22/16	Fox Fire Scientific	U.S. EPA	Residential Radon Sampling Plan for Residential Properties in the Vicinity of the North Alcoa Site	62
12	950564	12/7/19	AmeriChoice	Alcoa, Inc.	{Redacted} Radon Test Results	30
13	950561	8/28/19	Novak, D., U.S. EPA	Morosky, R. M., Alcoa, Inc.	U.S. EPA - Approval Letter of OU-2 Focused Feasibility Study Report	2
14	950565	10/14/19	Tetra Tech	Alcoa, Inc. City of East St. Louis, IL	{Redacted} OU-2 Revised Focused Feasibility Study	8,707
15	950568	11/13/19	U.S. EPA	General Public	OU-2 Proposed Final Plan	44
16	950567	11/22/19	U.S. EPA	General Public	OU-2 Proposed Final Plan - Draft Fact Sheet	8

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR THE
NORTH ALCOA (ALCOA PROPERTIES) SITE
EAST ST. LOUIS, ST. CLAIR COUNTY, ILLINOIS

UPDATE 5
May 13, 2020
SEMS ID: 956208

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	956210	8/12/19	Ammon, D., Head Quarters U. S. EPA	Novak, D., U.S. EPA	Email Letter re: Concurrence on Radiation Consultation Proposed Plan	8
2	956181	12/12/19	Pohlman, USA Court Reporting	U.S. EPA	(Redacted) USEPA Public Meeting re: Proposed Soil Cleanup Plan	122
3	956177	12/19/19	St. Olaf College	Muhtsun, R., U.S. EPA	(Redacted) Email re: USEPA Proposed Cleanup for Contaminated Soil	1
4	956184	12/20/19	Metz, K., Upchurch Cement Company, Inc.	Muhtsun, R., U.S. EPA	Letter re: Comments on Public Meeting of 12/12/2019	1
5	956179	1/1/20	Concerned Citizen, Golden Gardens, IL	Novak, D., U.S. EPA	(Redacted) Email re: Comment from Concerned Citizen on Proposed Cleanup and the Impact on surrounding Towns and Citizens	1

6	956183	2/27/20	Falco, C, IEPA	Novak, D., U.S. EPA	Letter re: Public Comments of the Proposed Plan	3
7	956175	3/5/20	Washington University Law Student	Muhtsun, R., U.S. EPA	(Redacted) Later re: Comments on Prosed Plan for OU 2	18
8	956185	3/5/20	Eagle Legal Services MSTLEOHC Earth Justice NRDC	Muhtsun, R., U.S. EPA	Email - Comments Regarding Evidence of Water Conditions and Flooding on 1/11/2020	3
9	956186	4/27/20	U. S. EPA	File	Alcoa Properties - EJScreen Report (Version 2019)	3
10	956187	4/27/20	U. S. EPA	File	Alcoa Properties - EJScreen ACS Summary Report	3
11	------	------	------	------	*Record of Decision (ROD) Pending*	------