UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5

IN THE MATTER OF: U.S. Smelter and Lead Refinery, Inc. Site in East Chicago, Lake County, Indiana Atlantic Richfield Company, The Chemours Company FC, LLC, E. I. du Pont de Nemours and Company, Mueller Industries, Inc., United States Metals Refining Company, and U.S.S. Lead Refinery, Inc., Respondents. Proceeding under Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. § 9606(a).	CERCLA Docket No. V-W-18-C-002 **UNILATERAL ADMINISTRATIVE ORDER FOR INTERIOR REMOVAL ACTIONS IN ZONE 2 AND ZONE 3 OF OPERABLE UNIT 1 OF THE U.S. SMELTER AND LEAD REFINERY, INC. SUPERFUND SITE**

TABLE OF CONTENTS

I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Order ("Z2&3 Interior UAO") is issued under the authority vested in the President of the United States by Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act, (CERCLA), 42 U.S.C. § 9606(a). This authority was delegated to the Administrator of the United States Environmental Protection Agency ("EPA") by Executive Order No. 12580, 52 Fed. Reg. 2923 (Jan. 23, 1987), and further delegated to the Regional Administrators by EPA Delegation Nos. 14-14A and 14-14B. On May 11, 1994, this authority was further redelegated by the Regional Administrator of EPA Region 5 to the Superfund Division Director of Region 5 by EPA Regional Delegation No. 14-14B.

2. This Z2&3 Interior UAO pertains to property located at the U.S. Smelter and Lead Refinery Inc., Site in East Chicago, Lake County, Indiana (the "USS Lead Site" or the "Site"). This Z2&3 Interior UAO requires Respondents to conduct removal actions (specifically, "Z2&3 Interior Sampling and Cleaning Work") to abate an imminent and substantial endangerment to the public health or welfare or the environment that may be presented by the actual or threatened release of hazardous substances at or from the Site.

3. EPA has notified the State of Indiana (the "State") of this action pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

II. PARTIES BOUND

4. This Z2&3 Interior UAO applies to and is binding upon Respondents and their successors and assigns. Any change in ownership or control of the Site or change in the corporate or partnership status of a Respondent, including, but not limited to, any transfer of assets or real or personal property, shall not alter Respondents' responsibilities under this Z2&3 Interior UAO.

5. Respondents are jointly and severally liable for implementing all activities required by this Z2&3 Interior UAO. Compliance or noncompliance by any Respondent with any provision of this Z2&3 Interior UAO shall not excuse or justify noncompliance by any other Respondents. No Respondent shall interfere in any way with performance of the Z2&3 Interior Work in accordance with this Z2&3 Interior UAO by any other Respondent. In the event of the insolvency or other failure of any Respondent to implement the requirements of this Z2&3 Interior UAO, the remaining Respondents shall complete all such requirements.

6. Respondents shall provide a copy of this Z2&3 Interior UAO to each contractor hired to perform the Z2&3 Interior Work required by this Z2&3 Interior UAO and to each person representing any Respondents with respect to the Site or the Z2&3 Interior Work, and shall condition all contracts entered into hereunder upon performance of the Z2&3 Interior Work in conformity with the terms of this Z2&3 Interior UAO. Respondents or their contractors shall provide written notice of the Z2&3 Interior UAO to all subcontractors hired to perform any portion of the Z2&3 Interior Work required by this Z2&3 Interior UAO. Respondents shall nonetheless be responsible for ensuring that their contractors and subcontractors perform the Z2&3 Interior Work in accordance with the terms of this Z2&3 Interior UAO.

III. DEFINITIONS

7. Unless otherwise expressly provided in this Z2&3 Interior UAO, terms used in this Z2&3 Interior UAO that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Z2&3 Interior UAO or in appendices to or documents incorporated by reference into this Z2&3 Interior UAO, the following definitions shall apply:

a. "Action Memorandum–4th Amendment" or "Fourth Amendment" shall mean the document titled "Action Memorandum–4th Amendment" transmitted by EPA Region 5 to EPA Headquarters on October 24, 2016, and signed by the Assistant Administrator of the Office of Land and Emergency Management of the U.S. Environmental Protection Agency on October 28, 2016. The Fourth Amendment is attached as Appendix F.

b. "Action Memorandum–5th Amendment" or "Fifth Amendment" shall mean the document titled "Action Memorandum–5th Amendment" transmitted by EPA Region 5 to EPA Headquarters on February 28, 2017, and signed by the Acting Assistant Administrator of the Office of Land and Emergency Management of the U.S. Environmental Protection Agency on March 14, 2017. The Fifth Amendment is attached as Appendix G.

c. "Affected Property" shall mean all real property at the Site and any other real property where EPA determines, at any time, that access is needed to implement the Z2&3 Interior Sampling and Cleaning Work.

d. "ARC" shall mean Atlantic Richfield Company.

e. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601-9675.

f. "Chemours" shall mean The Chemours Company FC, LLC.

g. "Day" or "day" shall mean a calendar day. In computing any period of time under this Z2&3 Interior UAO, where the last day would fall on a Saturday, Sunday, or federal or State holiday, the period shall run until the close of business of the next working day.

h. "DuPont" shall mean E. I. du Pont de Nemours and Company.

i. "Effective Date" shall mean the effective date of this Z2&3 Interior UAO as provided in Section VIII.

j. "Efficacy Sampling" shall mean sampling performed after each indoor cleaning and re-cleaning to ensure that those cleanings are effective.

k. "EPA" shall mean the United States Environmental Protection Agency and its successor departments, agencies, or instrumentalities.

l. “EPA Hazardous Substance Superfund” shall mean the Hazardous Substance Superfund established by the Internal Revenue Code, 26 U.S.C. § 9507.

m. “IDEM” shall mean the Indiana Department of Environmental Management and any successor departments or agencies of the State.

n. “Interest” shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year. Rates are available online at https://www.epa.gov/superfund/superfund-interest-rates.

o. “Interior Screening Level” shall mean 316 milligrams per kilogram (mg/kg) for lead and 26 mg/kg for arsenic.

p. “Mueller” shall mean Mueller Industries, Inc.

q. “NCP” or “National Contingency Plan” shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

r. “OU1” or “Operable Unit 1” shall mean the surface and subsurface soil of the area located inside the red highlighted boundaries on Appendix B. OU1 is generally bounded on the north by East Chicago Avenue; on the east by Parrish Avenue; on the south by East 151st Street/149th Place; and on the west by the Indiana Harbor Canal.

s. “OU2” or “Operable Unit 2” shall mean groundwater associated with the Site as well as the surface soil, subsurface soil, and sediments located inside the blue highlighted boundaries on Appendix A. The area within the blue highlighted boundaries on Appendix B consists of approximately 79 acres, is commonly known as 5300 Kennedy Avenue, and is generally bounded on the north by the Indiana Harbor Belt Railroad; on the east by Kennedy Avenue; on the south and west by the Grand Calumet River; and on the northwest by the Indiana Harbor Canal.

t. “Owner” shall mean a person who owns the Affected Property that a residence is located on.

u. “Paragraph” or “¶” shall mean a portion of this Z2&3 Interior UAO identified by an Arabic numeral and/or an upper or lower case letter.

v. “Parties” shall mean EPA and Respondents.

w. “Personally Identifiable Information” or “PII” means “Personally Identifiable Information” as defined in 2 C.F.R. § 200.79 and EPA’s Privacy Policy, and generally includes information that can be used to distinguish, trace, or identify an individual’s identity, including personal information which is linked or linkable to an individual. Personally Identifiable Information includes but is not limited to names, addresses, GPS coordinates,

telephone numbers, fax numbers, email addresses, social security numbers, or labels (including, e.g., character strings linked with real estate depicted in maps or assigned to sampling data) or other personal information that can be linked to an individual. EPA's Privacy Policy is available at https://www.epa.gov/privacy/epa-policy-21510-privacy-policy.

x. "RCRA" shall mean the Resource Conservation and Recovery Act, also known as the Solid Waste Disposal Act, 42 U.S.C. §§ 6901-6992.

y. "Record of Decision" or "ROD" shall mean the EPA Record of Decision relating to Operable Unit 1 at the Site signed on November 30, 2012, by the Director of the Superfund Division, EPA Region 5, or his/her delegate, and all attachments thereto.

z. "Resident" shall mean a person who resides in a residence located on Affected Property. A "Resident" can be either an Owner or a Resident Lessee.

aa. "Resident Lessee" shall mean a person who resides in a residence located on Affected Property, does not own the Affected Property, but, along with the Owner of the Affected Property, has the authority to grant access to the interior of the residence.

bb. "Respondents" shall mean Atlantic Richfield Company, The Chemours Company FC, LLC, E. I. du Pont de Nemours and Company, Mueller Industries, Inc., United States Metals Refining Company, and U.S.S. Lead Refinery, Inc.

cc. "Section" shall mean a portion of this Z2&3 Interior UAO identified by a Roman numeral.

dd. "Site" or "USS Lead Site" shall mean the U.S. Smelter and Lead Refinery, Inc. Superfund Site in East Chicago, Lake County, Indiana, and depicted generally on the map included with Appendix B. The Site includes both OU1 and OU2.

ee. "State" shall mean the State of Indiana.

ff. "Supervising Contractor" shall mean the principal contractor retained by Respondents to supervise and direct the implementation of the Z2&3 Interior Sampling and Cleaning Work under this Z2&3 Interior UAO.

gg. "Transfer" shall mean to sell, assign, convey, lease, mortgage, or grant a security interest in, or where used as a noun, a sale, assignment, conveyance, or other disposition of any interest by operation of law or otherwise.

hh. "United States" shall mean the United States of America and each department, agency, and instrumentality of the United States, including EPA.

ii. "USMR" shall mean United States Metals Refining Company.

jj. "USS Lead" shall mean U.S.S. Lead Refinery, Inc.

kk. "Waste Material" shall mean: (a) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (b) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (c) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27), or under Indiana Code § 13-11-2-205; (d), any "hazardous material" under Indiana Code § 13-11-2-96(b); and (e) any "hazardous waste" under Indiana Code § 13-11-2-99(c).

ll. "Z1" or "Zone 1" shall mean the surface and subsurface soil found in an area located inside the yellow highlighted boundaries on Appendix C and labeled as "Zone 1." Zone 1 is generally bounded: (1) on the north by the northern boundary of the Carrie Gosch Elementary School and a line extending eastward from that boundary to the eastern edge of a north/south utility right of way that runs parallel to McCook Avenue north of East 149th Place; (2) on the east by: (i) the eastern-most edge of a north/south utility right of way that runs parallel to McCook Avenue until East 149th Place, and (ii) McCook Avenue between East 149th Place and 151st Street; (3) on the south by East 151st Street; and (4) on the west by the Indiana Harbor Canal.

mm. "Z2" or "Zone 2" shall mean the surface and subsurface soil found in an area located inside the yellow highlighted boundaries on Appendix C and labeled as "Zone 2." Zone 2 is generally bounded: (1) on the north by Chicago Avenue; (2) on the east, by the eastern edge of the railroad right of way that runs principally north and south and is labeled on Appendix C as "Elgin Joliet and Eastern Rlwy"; (3) on the south by East 151st Street; and (4) on the west by: (i) the Indiana Harbor Canal between Chicago Avenue and the northern boundary of the Carrie Gosch Elementary School; (ii) the eastern-most edge of a north/south utility right of way that runs parallel to McCook Avenue until East 149th Place, and (iii) McCook Avenue between East 149th Place and 151st Street.

nn. "Z3" or "Zone 3" shall mean the surface and subsurface soil found in an area located inside the yellow highlighted boundaries on Appendix C and labeled as "Zone 3." Zone 3 is generally bounded: (1) on the north by Chicago Avenue; (2) on the east by Parrish Avenue; (3) on the south by the northern edge of the railroad right of way located generally to the south of East 149th Place and labeled on Appendix C as "Elgin Joliet and Eastern Rlwy"; and (4) on the west by the eastern edge of the railroad right of way that runs principally north and south and is labeled on Appendix C as "Elgin Joliet and Eastern Rlwy." The triangular plot of land bounded by several railroad spurs in the southeastern portion of the area labeled Zone 3 on Appendix C is a part of Zone 3.

oo. "Z2&3 Interior Data Management" shall mean those activities undertaken by Respondents to develop, manage, and implement proper data management for the data generated in implementing this Z2&3 Interior UAO.

pp. "Z2&3 Interior Excluded Residences" shall mean the residences on the final list that EPA develops and provides to Respondents pursuant to Paragraph 4.14(a)(2) of the Z2&3 Interior SOW.

qq. "Z2&3 Interior Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States incurs after the Effective Date of this

Z2&3 Interior UAO in monitoring and supervising Respondents' performance of the Z2&3 Interior Work to determine whether such performance is consistent with the requirements of this Z2&3 Interior UAO, including costs incurred in reviewing deliverables submitted pursuant to this Z2&3 Interior UAO, as well as costs incurred in overseeing implementation of this Z2&3 Interior UAO, including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, and Department of Justice costs.

rr. "Z2&3 Interior Cleaning Residence" shall mean a residence in Zone 2 or Zone 3 where:

(1) The interior of the residence has not previously been cleaned; and

(2) The results of Z2&3 Interior Sampling Work in one or more areas of the residence reveal lead contamination in indoor dust in excess of 316 ppm and/or arsenic contamination in indoor dust in excess of 26 ppm.

Provided, however, that a residence that satisfies the definition of "Z2&3 Interior Cleaning Residence" may later become a "Z2&3 Interior Excluded Residence" if access for cleaning cannot be secured.

ss. "Z2&3 Interior Cleaning Work" shall mean all activities undertaken by Respondents pursuant to this Z2&3 Interior UAO to develop and implement one or more plans for the purpose of cleaning the interior of residences in Zones 2 and/or 3.

tt. "Z2&3 Interior Sampling and Cleaning Work" shall mean the Z2&3 Interior Sampling Work and the Z2&3 Interior Cleaning Work.

uu. "Z2&3 Interior Sampling Residence" shall mean a residence in Zone 2 or 3 where:

(1) The interior of the residence has not previously been sampled;

(2) Soil in one or more of the yards associated with the residence had lead and/or arsenic in concentrations that qualified the yard(s) for remediation and restoration and all such remediation and restoration (excluding the 30-day maintenance period) has been completed; and

(3) The residence is habitable.

A residence that satisfies the definition of "Z2&3 Interior Sampling Residence" may later become a "Z2&3 Interior Excluded Residence" if access for sampling cannot be secured. A residence may satisfy the definition of "Z2&3 Interior Sampling Residence" even it is uninhabited.

vv. "Z2&3 Interior Sampling Work" shall mean all activities undertaken by Respondents pursuant to this Z2&3 Interior UAO to develop and implement one or more plans for the purpose of sampling and screening the interior of residences in Zones 2 and/or 3. The sampling shall include: (i) sampling dust in the interior of a residence for lead and arsenic

contamination; (ii) screening the interior of a residence for the presence of lead-based paint; and (iii) Efficacy Sampling to ensure that cleanings are effective.

ww. "Z2&3 Interior SOW" or "Z2&3 Interior Statement of Work" shall mean the document describing the activities Respondents must perform to implement the Z2&3 Interior Sampling and Cleaning Work pursuant to this Z2&3 Interior UAO, as set forth in Appendix A, and any modifications made thereto in accordance with this Z2&3 Interior UAO.

xx. "Z2&3 Interior UAO" or "Z2&3 Interior Unilateral Administrative Order" shall mean this Unilateral Administrative Order and all appendices attached hereto. In the event of conflict between this Z2&3 Interior UAO and any appendix, this Z2&3 Interior UAO shall control.

yy. "Z2&3 Interior Work" shall mean all activities and obligations Respondents are required to perform under this Z2&3 Interior UAO, except those required by Section XIV (Retention of Records). "Z2&3 Interior Work" encompasses the definition of "Z2&3 Interior Sampling and Cleaning Work" but also includes all other requirements of this Z2 Interior UAO (*e.g.*, Access to Information) except for Retention of Records.

IV. FINDINGS OF FACT

8. EPA hereby makes the following findings of fact:

a. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Site on the National Priorities List (NPL), set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on April 9, 2009, 74 Fed. Reg. 16,126–34.

b. The Site consists of two Operable Units: OU1 and OU2, both defined above. OU1 has been further divided into three zones: Zone 1 (Z1), Zone 2 (Z2), and Zone 3 (Z3), also defined above.

c. In response to a release or a substantial threat of a release of hazardous substances at or from OU1 of the Site, EPA commenced, in June 2009, a Remedial Investigation and Feasibility Study (RI/FS) of OU1 of the Site pursuant to 40 C.F.R. § 300.430.

d. EPA completed a Remedial Investigation (RI) Report and a Feasibility Study ("FS") Report of OU1 in June 2012.

e. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617, EPA published notice of the completion of the FS for OU1 and of the proposed plan for remedial action for OU1 on July 12, 2012, in a major local newspaper of general circulation. EPA provided an opportunity for written and oral comments from the public on the proposed plan for remedial action. A copy of the transcript of the public meeting is available to the public as part of the administrative record upon which the Director of the Superfund Division, EPA Region 5, based the selection of the response action for OU1.

f. The decision by EPA on the remedial action to be implemented at OU1 of the Site is embodied in a final Record of Decision (ROD), executed on November 30, 2012, on

which the State has given its concurrence. The ROD includes a responsiveness summary to the public comments. Notice of the final plan was published in accordance with Section 117(b) of CERCLA, 42 U.S.C. § 9617(b).

g. By Consent Decree entered on October 28, 2014, EPA and certain of the Respondents reached an agreement regarding remedial design and remedial action (RD/RA) in Zones 1 and 3 of OU1 of the Site. RD/RA work under the 2014 Consent Decree commenced in November 2014. In the summer of 2016, EPA suspended RD/RA work in Zone 1 because of a possible change in the intended future use of the properties in Zone 1. EPA is undertaking an Addendum to the FS as it applies to Zone 1. EPA continues RD/RA work in Zone 3 pursuant to the 2014 Consent Decree.

h. Data results from indoor dust sampling that took place in Zone 1 in the summer and fall of 2016 revealed that 110 out of 269 residences within that Zone exceeded EPA's 316 mg/kg screening level for lead for indoor living spaces.

i. On October 28, 2016, EPA issued Action Memorandum–4th Amendment for the Site. On March 14, 2017, EPA issued Action Memorandum–5th Amendment for the Site. The Fourth and Fifth Amendments authorized, *inter alia*, certain interior removal actions in residences in Zones 2 and 3, including (i) sampling indoor dust for lead and arsenic (ii) screening indoor paint for lead, and (iii) interior cleanings to remove dust with lead above 316 mg/kg and arsenic above 26 mg/kg. In the fall of 2016, EPA undertook indoor dust sampling in Zones 2 and 3.

j. On March 16, 2017, EPA and certain of the Respondents entered into an Administrative Settlement Agreement and Order on Consent ("Z2&3 ASAOC") regarding, *inter alia*, interior removal actions at properties in Zones 2 and 3 where remediation work consistent with the ROD is substantially complete. EPA's practice is to sample and, if necessary, clean residences at a property only after any necessary remediation consistent with the ROD has been performed at that property, to ensure that if any recontamination of the interiors is identified after the cleaning, it cannot be attributed to soil contamination at the property.

k. EPA has performed interior sampling both independent of and pursuant to the Z2&3 ASAOC. As of December 8, 2017, the interior of 67 out of 118 residences sampled in Zones 2, and 60 out of 104 residences sampled in Zone 3 had results above the screening level of 316 mg/kg for lead and 26 mg/kg for arsenic.

l. As of December 1, 2017, EPA has cleaned the interior of 54 residences in Zone 2 and 36 residences in Zone 3.

m. Lead is a hazardous substance, as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14). The Agency for Toxic Substances and Disease Registry (ATSDR) has determined that exposure to lead presents human health risks. Lead exposure via inhalation and/or ingestion can have detrimental effects on almost every organ and system in the human body. Exposure may occur from direct ingestion of soil in yards, soil tracked indoors (house dust), and inhalation of fugitive dust. Lead can cause a variety of health problems to people who are exposed to it. Potential human receptors include residents, with a particular

concern for children six years of age and under and pregnant or nursing women. Children are at greatest risk from the toxic effects of lead. Initially, lead travels in the blood to the soft tissues (heart, liver, kidney, brain, etc.). Then, it gradually redistributes to the bones and teeth where it tends to remain. Children exposed to high levels of lead have exhibited nerve damage, liver damage, colic, anemia, brain damage, and death. The most serious effects associated with markedly elevated blood lead levels include neurotoxic effects such as irreversible brain damage.

n. Arsenic is a hazardous substance, as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14). ATSDR has determined that exposure to arsenic presents human health risks. Ingesting very high levels of arsenic can result in death. Exposure to lower levels can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of "pins and needles" in hands and feet. Ingesting or breathing low levels of inorganic arsenic for a long time can cause a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso. Skin contact with inorganic arsenic may cause redness and swelling. Several studies have shown that ingestion of inorganic arsenic can increase the risk of skin cancer and cancer in the liver, bladder, and lungs. Inhalation of inorganic arsenic can cause increased risk of lung cancer. The Department of Health and Human Services (DHHS) and the EPA have determined that inorganic arsenic is a known human carcinogen (ATSDR, Chemical Abstract Services [CAS] # 7440-38-2], August 2007).

V. CONCLUSIONS OF LAW AND DETERMINATIONS

9. Based on the Findings of Fact set forth above, and the administrative record, EPA has determined that:

a. The U.S. Smelter and Lead Refinery, Inc. Superfund Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

b. The Former USS Lead Facility is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9). The Former USS Lead Facility is a part of the Site.

c. The property and former manufacturing plants located at 5215 Kennedy Avenue in East Chicago, Indiana, previously owned and/or operated by Respondent E. I. du Pont de Nemours and Company ("Former DuPont Facility") and currently owned and/or operated by Respondent The Chemours Company FC, LLC, is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

d. The property and former manufacturing plants previously located in Zone 1 of OU1 of the Site ("Former Anaconda Facility") and previously owned and/or operated by predecessors of Respondent Atlantic Richfield Company is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9). The Former Anaconda Facility is a part of the Site.

e. Each Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

f. Each Respondent is a liable party under one or more provisions of Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

(1) From 1920 to the present, Respondent U.S.S. Lead Refinery, Inc. ("USS Lead") has been an "owner" and/or "operator"—as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Sections 107(a)(1) and (a)(2) of CERCLA, 42 U.S.C. § 9607(a)(1), (a)(2)—of the Former USS Lead Facility at which hazardous substances were disposed of and from which there were releases of hazardous substances.

(2) Respondent Mueller Industries, Inc. ("Mueller") is liable as a successor to two companies: (i) United States Smelting Refining and Mining Company, which later changed its name to UV Industries, Inc. ("UV/USSRAM"); and (ii) Sharon Steel Corporation ("Sharon Steel").

i. UV/USSRAM was one or more of the following:

a. From 1919 to 1920, a person who, at the time of disposal of hazardous substances, "owned" and/or "operated"—within the meaning of Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2)—the Former USS Lead Facility at which hazardous substances were disposed of and from which there were releases of hazardous substances.

b. For some or all of the time between 1920 and 1979, a person who "operated"—within the meaning of Section 101(20) of CERCLA, 42 U.S.C. §§ 9601(20), and Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2)—the Former USS Lead Facility at which hazardous substances were disposed of and from which there were releases of hazardous substances.

c. A parent company who, for some or all of the time between 1920 and 1979, is indirectly liable, under a corporate veil piercing theory, for the acts of its subsidiary, USS Lead (which is liable as described in Paragraph 9.f(1) above).

d. For some or all of the time between 1920 and 1979, a person who arranged with USS Lead for the disposal or treatment, or arranged with a transporter for transport for disposal or treatment, of hazardous substances at the Former USS Lead Facility, within the meaning of Section 107(a)(3) of CERCLA, 42 U.S.C. § 9607(a)(3).

ii. Sharon Steel, for some or all of the time between 1979 and 1985, was a person who "operated"—within the meaning of Section 101(20) of CERCLA, 42 U.S.C. §§ 9601(20),

and Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2)—the Former USS Lead Facility at which hazardous substances were disposed of and from which there were releases of hazardous substances.

(3) Respondent Atlantic Richfield Company is liable as a successor to: (i) one or more persons, including Anaconda Lead Products Company, International Lead Refining Company, and International Smelting and Refining Company, who, at the time of disposal of hazardous substances, "owned" and/or "operated"—within the meaning of Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2)—the Former Anaconda Facility at which hazardous substances were disposed of and from which there were releases of hazardous substances; and/or (ii) one or more persons, including Anaconda Lead Products Company, International Lead Refining Company, and International Smelting and Refining Company, who arranged with USS Lead for the disposal or treatment, or arranged with a transporter for transport for disposal or treatment, of hazardous substances at the Former USS Lead Facility, within the meaning of Section 107(a)(3) of CERCLA, 42 U.S.C. § 9607(a)(3).

(4) Respondent E. I. du Pont de Nemours and Company is a person who: (i) at the time of disposal of hazardous substances, "owned" and/or "operated"—within the meaning of Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2)—the Former DuPont Facility at which hazardous substances were disposed of and from which there were releases of hazardous substances to the Site; and/or (ii) arranged with USS Lead for the disposal or treatment, or arranged with a transporter for transport for disposal or treatment, of hazardous substances at the Former USS Lead Facility, within the meaning of Section 107(a)(3) of CERCLA, 42 U.S.C. § 9607(a)(3).

(5) Respondent The Chemours Chemical Company FC, LLC, is liable as a successor to E. I. du Pont de Nemours and Company (which is liable as described in Paragraph 9.f(4) above).

(6) Respondent United States Metals Refining Company is a person who at the time of disposal of hazardous substances, "owned" and/or "operated"—within the meaning of Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2)—the Former USS Lead Facility at which hazardous substances were disposed of and from which there were releases of hazardous substances.

g. The lead and arsenic contamination found in the interior of residences in Zones 2 and 3, as identified in the Findings of Fact above, includes "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), and also includes "pollutants or contaminants" that may present an imminent and substantial danger to public health or welfare under Section 104(a)(1) of CERCLA, 42 U.S.C. § 9604(a)(1).

h. The conditions described in Paragraph 8.k of the Findings of Fact above constitute an actual or threatened "release" of a hazardous substance from the facility as defined by Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

i. The conditions at the Site may constitute a threat to public health or welfare or the environment, based on the factors set forth in Section 300.415(b)(2) of the NCP. These factors include, but are not limited to, actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances; this factor is present at the Site due to the existence of lead and arsenic in the interior of residences at levels above the Interior Screening Level.

j. EPA determined in the Fourth and Fifth Amendments that the conditions described in Paragraph 8.k of the Findings of Fact may constitute an imminent and substantial endangerment to the public health or welfare or the environment because of an actual or threatened release of a hazardous substance from the facility within the meaning of Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

k. The removal actions required by this Z2&3 Interior UAO are necessary to protect the public health, welfare, or the environment.

VI. Z2&3 INTERIOR WORK ORDER

10. Based upon the Findings of Fact, Conclusions of Law and Determinations set forth above, and the administrative record, Respondents are hereby ordered to comply with all provisions of this Z2&3 Interior UAO and any modifications to this Z2&3 Interior UAO, including all appendices to this Z2&3 Interior UAO and all documents incorporated by reference into this Z2&3 Interior UAO.

VII. OPPORTUNITY TO CONFER

11. No later than 5 days after this Z2&3 Interior UAO is signed by the Regional Administrator or his/her delegatee, Respondents may, in writing, (a) request a conference with EPA to discuss this Z2&3 Interior UAO, including its applicability, the factual findings and the determinations upon which it is based, the appropriateness of any actions Respondents are ordered to take, or any other relevant and material issues or contentions that Respondents may have regarding this Z2&3 Interior UAO, or (b) notify EPA that they intend to submit written comments or a statement of position in lieu of requesting a conference.

12. If a conference is requested, Respondents may appear in person or by an attorney or other representative. Any such conference shall be held no later than 5 days after the conference is requested. Any written comments or statements of position on any matter pertinent to this Z2&3 Interior UAO must be submitted no later than 5 days after the conference or, if Respondents do not request a conference, within 15 days after this Z2&3 Interior UAO is signed. This conference is not an evidentiary hearing, does not constitute a proceeding to challenge this Z2&3 Interior UAO, and does not give Respondents a right to seek review of this Z2&3 Interior UAO. Any request for a conference or written comments or statements should be submitted to:

Steven Kaiser
Office of Regional Counsel
Region 5, US EPA
77 West Jackson Blvd. (C-14J)
Chicago, IL 60604-3590
kaiser.steven@epa.gov
(312) 353-3804

Leonardo Chingcuanco
Office of Regional Counsel
Region 5, US EPA
77 West Jackson Blvd. (C-14J)
Chicago, IL 60604-3590
chingcuanco.leonardo@epa.gov
(312) 886-7236

VIII. EFFECTIVE DATE

13. This Z2&3 Interior UAO shall be effective 5 days after the Z2&3 Interior UAO is signed by the Regional Administrator or his/her delegatee unless a conference is requested or notice is given that written materials will be submitted in lieu of a conference in accordance with Section VII (Opportunity to Confer). If a conference is requested or such notice is submitted, this Z2&3 Interior UAO shall be effective on the 10th day after the day of the conference, or if no conference is requested, on the 5th day after written materials, if any, are submitted, unless EPA determines that the Z2&3 Interior UAO should be modified based on the conference or written materials. In such event, EPA shall notify Respondents, within the applicable period between the effective date and either receipt of written materials or the day of the conference, that EPA intends to modify the Z2&3 Interior UAO. The modified Z2&3 Interior UAO shall be effective 5 days after it is signed by the Regional Administrator or his/her delegatee.

IX. NOTICE OF INTENT TO COMPLY

14. On or before the Effective Date, each Respondent shall notify EPA in writing of Respondent's irrevocable intent to comply with this Z2&3 Interior UAO. Such written notice shall be sent to EPA as provided in Paragraph 12. Each Respondent's written notice shall describe, using facts that exist on or prior to the Effective Date, any "sufficient cause" defense asserted by such Respondent under Sections 106(b) and 107(c)(3) of CERCLA, 42 U.S.C. §§ 9606(b) and 9607(c)(3). The absence of a response by EPA to the notice required by this Paragraph shall not be deemed to be acceptance of any Respondent's assertions. Failure of any Respondent to provide such notice of intent to comply within this time period shall, as of the Effective Date, be treated as a violation of this Z2&3 Interior UAO by such Respondent.

X. DESIGNATION OF PROJECT COORDINATOR, ON-SCENE COORDINATOR, AND SUPERVISING CONTRACTOR

15. **Coordination and Supervision**

a. **Project Coordinators and On-Scene Coordinators.**

(1) Respondents' Project Coordinator and Alternate Project Coordinator must have sufficient technical expertise to coordinate the Z2&3 Interior Sampling and Cleaning Work. Respondents' Project Coordinator and Alternate Project Coordinator may not be an attorney representing any Respondent in this matter and may not act as the Supervising Contractor. Respondents' Project Coordinator and Alternate Project Coordinator may assign other representatives, including other contractors, to assist in coordinating the Z2&3 Interior Sampling and Cleaning Work.

(2) EPA has designated Jacob Hassan, Daniel Haag, Timothy Drexler, and Sarah Rolfes of the Region 5 Superfund Division as its On-Scene Coordinators (OSCs). EPA will notify Respondents of a change of its designated OSCs. Communications between Respondents and EPA, and all documents concerning the activities performed pursuant to this Z2&3 Interior UAO, shall be directed to the OSCs in accordance with Section XVIII (Notices and Submissions). The OSCs shall be responsible for overseeing Respondents' implementation of this Z2&3 Interior UAO. The OSCs shall have the authority vested in a Remedial Project Manager (RPM) and OSCs by the NCP, including the authority to halt, conduct, or direct any Z2&3 Interior Work required by this Z2&3 Interior UAO, or to direct any other response action when s/he determines that conditions at the Site constitute an emergency situation or may present a threat to public health or welfare or the environment. Absence of the OSCs from the Site shall not be cause for stoppage or delay of Z2&3 Interior Work.

(3) Respondents' Project Coordinator(s) shall communicate with EPA's OSCs regularly.

(4) Communications between Respondents and EPA, and all documents concerning the activities performed pursuant to this Z2&3 Interior UAO, shall be directed to the Project Coordinator and Alternate Project Coordinator. Receipt by Respondents' Project Coordinator or Alternate Project Coordinator of any notice or communication from EPA relating to this Z2&3 Interior UAO shall constitute receipt by all Respondents.

b. **Supervising Contractor.** Respondents' proposed Supervising Contractor must have sufficient technical expertise to supervise the Z2&3 Interior Sampling and Cleaning Work and a quality assurance system that complies with ASQ/ANSI E4:2014 "Quality management systems for environmental information and technology programs – Requirements with guidance for use" (American Society for

Quality, February 2014). Respondents shall submit a copy of the proposed contractor's Quality Management Plan (QMP). The QMP should be prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01/002, Reissued May 2006) or equivalent documentation as determined by EPA.

c. **Procedures for Disapproval/Notice to Proceed**.

(1) Respondents shall designate, and notify EPA, within 10 days after the Effective Date, of the names, titles, contact information, and qualifications of the Respondents' proposed Project Coordinator, Alternate Project Coordinator, and Supervising Contractor, whose qualifications shall be subject to EPA's review for verification based on objective assessment criteria (e.g., experience, capacity, technical expertise) and that they do not have a conflict of interest with respect to the project.

(2) EPA shall issue notices of disapproval and/or authorizations to proceed regarding the proposed Project Coordinator, Alternate Project Coordinator, and Supervising Contractor, as applicable. If EPA issues a notice of disapproval, Respondents shall, within 15 days, submit to EPA a list of supplemental proposed Project and Alternate Project Coordinators and/or Supervising Contractors, as applicable, including a description of the qualifications of each. EPA shall issue a notice of disapproval or authorization to proceed regarding each supplemental proposed coordinator/alternate coordinator and/or contractor. Respondents may select any coordinator/contractor covered by an authorization to proceed and shall, within 7 days, notify EPA of Respondents' selection.

(3) Respondents may change their Project Coordinator and/or Supervising Contractor, as applicable, by following the procedures of 15.c(1) and 15.c(2).

XI. Z2&3 INTERIOR SAMPLING AND CLEANING WORK TO BE PERFORMED

16. Respondents shall perform, at a minimum, all actions necessary to implement the Z2&3 Interior Sampling and Cleaning Work consistent with the Z2&3 Interior SOW. The required Z2&3 Interior Sampling and Cleaning Work is set forth in detail in Paragraphs 4.2–4.8 of the Z2&3 Interior SOW.

17. For any regulation or guidance referenced in the Z2&3 Interior UAO or the Z2&3 Interior SOW, the reference will be read to include any subsequent modification, amendment, or replacement of such regulation or guidance. Such modifications, amendments, or replacements apply to the Z2&3 Interior Sampling and Cleaning Work only after Respondents receive notification from EPA of the modification, amendment, or replacement.

18. **Zone 2 and Zone 3 Interior Sampling and Cleaning Work Plan and Implementation**

a. Within 60 days after the EPA's Notice of Authorization to Proceed regarding the Supervising Contractor, Respondents shall submit to EPA for review and approval a draft work plan for performing the Z2&3 Interior Sampling and Cleaning Work (the "Z2&3 Interior WP") in accordance with the Z2&3 Interior SOW. The submission shall be made to EPA's OSCs pursuant to Section XVIII (Notices and Submissions). The draft Z2&3 Interior WP shall provide a description of, and an expeditious schedule for, the Z2&3 Interior Sampling and Cleaning Work required by this Z2&3 Interior UAO.

b. Any non-compliance with any EPA-approved plans, reports, specifications, schedules, or other deliverables shall be considered a violation of the requirements of this Z2&3 Interior UAO. Determinations of non-compliance shall be made by EPA. Approval of the Z2&3 Interior WP shall not limit EPA's authority under the terms of this Z2&3 Interior UAO to require Respondents to conduct activities consistent with this Z2&3 Interior UAO to accomplish the Z2&3 Interior Sampling and Cleaning Work outlined in this Section.

XII. PROPERTY REQUIREMENTS

19. **Agreements Regarding Access and Non-Interference**.

a. Substance of Agreement. Respondents shall, with respect to any Z2&3 Interior Sampling Residence and Z2&3 Interior Cleaning Residence, use "best efforts," as defined in ¶ 21, to secure an agreement, enforceable by Respondents and EPA, providing EPA, Respondents, and their representatives, contractors, and subcontractors with access at all reasonable times to such Z2&3 Interior Sampling Residence and to such Z2&3 Interior Cleaning Residence to conduct any activity regarding this Z2&3 Interior UAO, including those activities listed in Paragraph 20 (Access Requirements).

b. Signatories to Access Agreements.

(1) Single Family Homes. Respondents shall use best efforts to secure an access agreement from the Owner. If the Resident is different from the Owner, Respondents shall use best efforts to secure an access agreement from both the Owner and the Resident Lessee.

(2) Multi-Family Homes/Apartments. Respondents shall use best efforts to secure an access agreement from both the Owner and each Resident Lessee.

c. Respondents shall provide a copy of such access agreement(s) to EPA.

20. **Access Requirements.** Respondents may use an access agreement that is substantially in the form of the access agreement attached as Appendix F. Use of such an access agreement shall satisfy the requirements of this Paragraph. If Respondents do not use an access agreement substantially in the form of access agreement attached as Appendix F, the following is

a list of activities for which access is required regarding the Z2&3 Interior Sampling Residence and Z2&3 Interior Cleaning Residence:

a. Performing the Z2&3 Interior Work;

b. Monitoring the Z2&3 Interior Work;

c. Verifying any data or information submitted to EPA;

d. Conducting investigations regarding contamination at or near the Site;

e. Obtaining samples;

f. Assessing the need for, planning, implementing, or monitoring response actions;

g. Assessing implementation of quality assurance and quality control practices as defined in the approved QAPP;

h. Implementing the Z2&3 Interior Work pursuant to the conditions set forth in Section XVII (Enforcement/Work Takeover); and

i. Assessing Respondents' compliance with the Z2&3 Interior UAO.

21. **Best Efforts**. As used in this Section and the Z2&3 Interior SOW, "best efforts" means the efforts that a reasonable person in the position of Respondents would use so as to achieve the goal in a timely manner, including the cost of employing professional assistance to secure access agreements, as required by this Section. If Respondents are unable to accomplish what is required through "best efforts," they shall confer with EPA pursuant to Paragraphs 4.4(b)(3), 4.5(b)(2), and 4.7(b)(2) of the Z2&3 Interior SOW, as applicable, and include a description of the steps taken to secure access. If EPA deems it appropriate, it may assist Respondents or take independent action in obtaining such access. EPA reserves the right to seek payment from Respondents for all costs, including cost of attorneys' time, incurred by the United States in obtaining such access.

22. In the event of any Transfer of any Z2&3 Interior Sampling Residence or any Z2&3 Interior Cleaning Residence, unless EPA otherwise consents in writing, Respondents shall continue to comply with their obligations under this Z2&3 Interior UAO, including their obligation to secure access.

23. Notwithstanding any provision of this Z2&3 Interior UAO, EPA retains all of its access authorities and rights including enforcement authorities related thereto under CERCLA, RCRA, and any other applicable statute or regulations.

XIII. ACCESS TO INFORMATION

24. Respondents shall provide to EPA, upon request, copies of all records, reports, documents, and other information (including records, reports, documents, and other information

in electronic form) (hereinafter referred to as "Records") within Respondents' possession or control or that of their contractors or agents relating to Z2&3 Interior Work or to the implementation of this Z2&3 Interior UAO, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information regarding the Z2&3 Interior Work. Respondents shall also make available to EPA, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Z2&3 Interior Work.

25. **Privileged and Protected Claims**

a. Respondents may assert that all or part of a Record requested by EPA is privileged or protected as provided under federal law, in lieu of providing the Record, provided Respondents comply with Paragraph 25.b, and except as provided in Paragraph 25.c.

b. If Respondents assert a claim of privilege or protection, they shall provide EPA with the following information regarding such Record: its title; its date; the name, title, affiliation (e.g., company or firm), and address of the author, of each addressee, and of each recipient; a description of the Record's contents; and the privilege or protection asserted. If a claim of privilege or protection applies only to a portion of a Record, Respondents shall provide the Record to EPA in redacted form to mask the privileged or protected portion only. Respondents shall retain all Records that they claim to be privileged or protected until EPA or a court determines that such Record is privileged or protected.

c. Respondents may make no claim of privilege or protection regarding: (1) any data regarding the Site, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, radiological, or engineering data, or the portion of any other Record that evidences conditions at or around the Site; or (2) the portion of any Record that Respondents are required to create or generate pursuant to this Z2&3 Interior UAO.

26. **Business Confidential Claims**. Respondents may assert that all or part of a Record provided to EPA under this Section or Section XIV (Retention of Records) is business confidential to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Respondents shall segregate and clearly identify all Records or parts thereof submitted under this Z2&3 Interior UAO for which Respondents assert business confidentiality claims. Records that Respondents claim to be confidential business information will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies Records when they are submitted to EPA, or if EPA has notified Respondents that the Records are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such Records without further notice to Respondents.

27. **Personally Identifiable Information**

a. In the course of implementing this Z2&3 Interior UAO, Respondents shall receive from EPA and shall generate themselves written and/or electronic materials that contain Personally Identifiable Information. Respondents shall keep PII confidential and not disclose it

to other persons or entities except as required by law, court order or other lawful process that protects disclosure to the public of PII. Respondents shall take all necessary and appropriate measures to maintain the confidentiality of PII and to retain written or electronic materials in a secure manner.

b. Respondents may share PII with agents and contractors of theirs who are responsible for assisting in the implementation of this Z2&3 Interior UAO provided that any such person with whom such information is shared either: (i) is specifically made aware of, and, prior to receiving the information, agrees in writing with Respondents to comply with the substantive requirements of ¶ 27.a as if he/she were a Respondent; or (ii) already has executed a confidentiality agreement with the Respondent that is broad enough to cover PII.

c. PII otherwise admissible, discoverable or subject to subpoena in any proceeding shall not be rendered inadmissible, non-discoverable or not subject to subpoena because of its coverage under this Z2&3 Interior UAO.

d. In the event that Respondents conclude in good faith that applicable law, a subpoena or other lawful process, or a court order, requires disclosure of PII to a third party, Respondents shall provide, as far as is practicable, advance written notice to EPA of the intent to disclose, including a description of the applicable law or a copy of the subpoena, process or order requiring disclosure. Respondents shall not disclose any Personally Identifiable Information sooner than one day following provision of such written notice, unless required by law or order of a court.

e. Each Respondent shall promptly report to EPA breaches of PII, unauthorized disclosures or releases, and/or system vulnerability (to the extent known). Any disclosure of PII in contravention of this Z2&3 Interior UAO shall not result in a waiver of the claim of confidentiality, except as provided by law.

28. Notwithstanding any provision of this Z2&3 Interior UAO, EPA retains all of its information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

XIV. RETENTION OF RECORDS

29. During the pendency of this Z2&3 Interior UAO and for a minimum of 10 years after EPA provides Certification of the Completion of the Z2&3 Interior Sampling and Cleaning Work under ¶ 4.14 of the Z2&3 Interior SOW, each Respondent shall preserve and retain all non-identical copies of Records (including Records in electronic form) now in its possession or control, or that come into its possession or control, that relate in any manner to its liability under CERCLA with respect to the Site, provided, however, that Respondents who are potentially liable as owners or operators of the Site must retain, in addition, all Records that relate to the liability of any other person under CERCLA with respect to the Site. Each Respondent must also retain, and instruct its contractors and agents to preserve, for the same period of time specified above, all non-identical copies of the last draft or final version of any Records (including Records in electronic form) now in its possession or control or that come into its possession or control that relate in any manner to the performance of the Z2&3 Interior Work, provided,

however, that each Respondent (and its contractors and agents) must retain, in addition, copies of all data generated during performance of the Z2&3 Interior Work and not contained in the aforementioned Records required to be retained. Each of the above record retention requirements shall apply regardless of any corporate retention policy to the contrary.

30. At the conclusion of this document retention period, Respondents shall notify EPA at least 90 days prior to the destruction of any such Records, and, upon request by EPA, and except as provided in Paragraph 25, Respondents shall deliver any such Records to EPA.

31. Each Respondent certifies individually that, to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed, or otherwise disposed of any Records (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by EPA and that it has fully complied with any and all EPA requests for information regarding the Site pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927.

XV. COMPLIANCE WITH OTHER LAWS

32. Nothing in this Z2&3 Interior UAO limits Respondent's obligations to comply with the requirements of all applicable state and federal laws and regulations, except as provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), and 40 C.F.R. §§ 300.400(e) and 300.415(j). In accordance with 40 C.F.R. § 300.415(j), all on-site actions required pursuant to this Z2&3 Interior UAO shall, to the extent practicable, as determined by EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements (ARARs) under federal environmental or state environmental or facility siting laws. Respondents shall include ARARs selected by EPA in the Z2&3 Interior SOW.

33. No local, state, or federal permit shall be required for any portion of the Z2&3 Interior Work conducted entirely on-site (i.e., within the areal extent of contamination or in very close proximity to the contamination and necessary for implementation of the Z2&3 Interior Work) including studies, if the action is selected and carried out in compliance with Section 121 of CERCLA, 42 U.S.C. § 9621. Where any portion of the Z2&3 Interior Work that is not on-site requires a federal or state permit or approval, Respondents shall submit timely and complete applications and take all other actions necessary to obtain and to comply with all such permits or approvals. This Z2&3 Interior UAO is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

XVI. PAYMENT OF Z2&3 INTERIOR RESPONSE COSTS

34. On a periodic basis, EPA will send Respondents a bill requiring payment of all Z2&3 Interior Response Costs incurred by the United States regarding this Z2&3 Interior UAO that includes an Itemized Cost Summary. Respondents shall, within 30 days, make full payment of the amount billed, in accordance with ¶¶ 35 and 36.

35. Respondents shall make payment by Fedwire EFT, referencing the Site/Spill ID number. The Fedwire EFT payment must be sent as follows:

Federal Reserve Bank of New York
ABA = 021030004
Account = 68010727
SWIFT address = FRNYUS33
33 Liberty Street
New York NY 10045
Field Tag 4200 of the Fedwire message should read
"D 68010727 Environmental Protection Agency"

36. All payments must include *all* of the following references: (1) Site/Spill ID Number 053J; (2) the EPA docket number for this matter; and (3) Z2&3 Interior UAO. At the time of payment, Respondents shall send notice that payment has been made to EPA and the EPA Cincinnati Finance Office in accordance with Section XVIII (Notices and Submissions). All notices must also include *all* of the following references: (1) Site/Spill ID Number 053J; (2) the EPA docket number for this matter; and (3) Z2&3 Interior UAO.

37. **Interest**. In the event that the payments for Z2&3 Interior Response Costs are not made within 30 days after Respondents' receipt of a written demand requiring payment, Respondents shall pay Interest on the unpaid balance. The Interest on Z2&3 Interior Response Costs shall begin to accrue on the date of the written demand and shall continue to accrue until the date of payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to EPA by virtue of Respondents' failure to make timely payments under this Section. Respondents shall make all payments under this Paragraph in accordance with ¶¶ 35 and 36.

XVII. ENFORCEMENT/WORK TAKEOVER

38. Any willful violation, or failure or refusal to comply with any provision of this Z2&3 Interior UAO may subject Respondents to civil penalties of up to $53,907 per violation per day, as provided in Section 106(b)(1) of CERCLA, 42 U.S.C. § 9606(b)(1), and the Civil Monetary Penalty Inflation Adjustment Rule, 81 Fed. Reg. 43,091, 40 C.F.R. Part 19.4. In the event of such willful violation, or failure or refusal to comply, EPA may carry out the required actions unilaterally, pursuant to Section 104 of CERCLA, 42 U.S.C. § 9604, and/or may seek judicial enforcement of this Z2&3 Interior UAO pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606. Respondents may also be subject to punitive damages in an amount up to three times the amount of any costs incurred by the United States as a result of such failure to comply, as provided in Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3).

XVIII. NOTICES AND SUBMISSIONS

39. All approvals, consents, deliverables, modifications, notices, notifications, objections, proposals, reports, and requests specified in this Z2&3 Interior UAO must be in writing unless otherwise specified. Whenever, under this Z2&3 Interior UAO, notice is required to be given, or a report or other document is required to be sent, by one Party to another, it must be directed to the person(s) specified below at the address(es) specified below. Any Party may change the person and/or address applicable to it by providing notice of such change to all Parties. All notices under this Section are effective upon receipt, unless otherwise specified.

Except as otherwise provided, notice to a Party by email (if that option is provided below) or by regular mail in accordance with this Section satisfies any notice requirement of the Z2&3 Interior UAO regarding such Party.

As to EPA:

Director, Superfund Division
Region 5, US EPA
77 W. Jackson Blvd. (SR-6J)
Chicago, IL 60604-3590

Jacob Hassan
On-Scene Coordinator
Region 5, US EPA
77 W. Jackson Blvd. (SE-5J)
Chicago, IL 60604-3590
hassan.jacob@epa.gov
(312) 886-6864

Daniel Haag
On-Scene Coordinator
Region 5, US EPA
77 W. Jackson Blvd. (SE-5J)
Chicago, IL 60604-3590
haag.daniel@epa.gov
(312) 886-6906

Timothy Drexler
On-Scene Coordinator
Region 5, US EPA
77 W. Jackson Blvd. (SR-6J)
Chicago, IL 60604-3590
drexler.timothy@epa.gov
(312) 353-4367

Sarah Rolfes
On-Scene Coordinator
Region 5, US EPA
77 W. Jackson Blvd. (SR-6J)
Chicago, IL 60604-3590
rolfes.sarah@epa.gov
(312) 886-6551

Steven Kaiser
Office of Regional Counsel
Region 5, US EPA
77 West Jackson Blvd. (C-14J)

	Chicago, IL 60604-3590 kaiser.steven@epa.gov (312) 353-3804 Leonardo Chingcuanco Office of Regional Counsel Region 5, US EPA 77 West Jackson Blvd. (C-14J) Chicago, IL 60604-3590 chingcuanco.leonardo@epa.gov (312) 886-7236
As to the Regional Financial Management Officer:	Chief, Program Accounting and Analysis Section United States Environmental Protection Agency Region 5, MF-10J 77 West Jackson Blvd. Chicago, IL 60604-3590
As to EPA Cincinnati Finance Center	EPA Cincinnati Finance Center 26 W. Martin Luther King Dr. Cincinnati, OH 45268 cinwd_acctsreceivable@epa.gov

40. Respondents shall submit all deliverables in the manner specified in Section 6 of the Z2&3 Interior SOW.

XIX. RESERVATIONS OF RIGHTS BY EPA

41. Nothing in this Z2&3 Interior UAO shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants, or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing in this Z2&3 Interior UAO shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Z2&3 Interior UAO, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Respondents in the future to perform additional activities pursuant to CERCLA or any other applicable law. EPA reserves the right to bring an action against Respondents under Section 107 of CERCLA, 42 U.S.C. § 9607, for recovery of any response costs incurred by the United States related to this Z2&3 Interior UAO or the Site and not paid by Respondents pursuant to this Z2&3 Interior UAO.

XX. OTHER CLAIMS

42. By issuance of this Z2&3 Interior UAO, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondents. The United States or EPA shall not be deemed a party to any contract entered into

by Respondents or their directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out actions pursuant to this Z2&3 Interior UAO.

43. Nothing in this Z2&3 Interior UAO constitutes a satisfaction of or release from any claim or cause of action against Respondents or any person not a party to this Z2&3 Interior UAO, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

44. Nothing in this Z2&3 Interior UAO shall be deemed to constitute preauthorization of a claim within the meaning of Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611(a)(2), or 40 C.F.R. § 300.700(d).

45. No action or decision by EPA pursuant to this Z2&3 Interior UAO shall give rise to any right to judicial review, except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XXI. INSURANCE

46. No later than 15 days before commencing any on-site Z2&3 Interior Work, Respondents shall secure, and shall maintain for the duration of this Z2&3 Interior UAO, commercial general liability with limits of liability of $1 million per occurrence, automobile liability insurance with limits of liability of $1 million per accident, and umbrella liability insurance with limits of liability of $5 million in excess of the required commercial general liability and automobile liability limits, naming EPA as an additional insured with respect to all liability arising out of the activities performed by or on behalf of Respondents pursuant to this Z2&3 Interior UAO. Within the same time period, Respondents shall provide EPA with certificates of such insurance and a copy of each insurance policy. Respondents shall submit such certificates and copies of policies each year on the anniversary of the Effective Date. In addition, for the duration of the Z2&3 Interior UAO, Respondents shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing Z2&3 Interior Work on behalf of Respondents in furtherance of this Z2&3 Interior UAO. If Respondents demonstrate by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, Respondents need provide only that portion of the insurance described above which is not maintained by such contractor or subcontractor. Respondents shall ensure that all submittals to EPA under this Paragraph identify the U.S. Smelter and Lead Refinery, Inc. Superfund Site, East Chicago, Indiana, and the EPA docket number for this action.

XXII. MODIFICATION

47. If circumstances warrant, an OSC may modify, in writing or by oral direction, the Z2&3 Interior SOW or any plan or schedule submitted pursuant to this Z2&3 Interior UAO of the Z2&3 Interior SOW. Any oral modification will be memorialized by EPA in writing within 30 days, but shall have as its effective date the date of the OSC's oral direction. Any other

requirements of this Z2&3 Interior UAO may be modified in writing by signature of the Superfund Division Director for Region 5. All modifications under this Paragraph must be consistent with the Fourth and Fifth Amendments to the Action Memorandum.

48. If Respondents seek permission to deviate from the Z2&3 Interior SOW or any approved deliverable or schedule, Respondents' Project Coordinator shall submit a written request to EPA for approval outlining the proposed modification and its basis. Respondents may not proceed with the requested deviation until receiving approval from the OSC pursuant to Paragraph 47.

49. No informal advice, guidance, suggestion, or comment by the OSCs or other EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondents shall relieve Respondents of their obligation to obtain any formal approval required by this Z2&3 Interior UAO or the Z2&3 Interior SOW, or to comply with all requirements of this Z2&3 Interior UAO and the Z2&3 Interior SOW, unless it is formally modified.

XXIII. DELAY IN PERFORMANCE

50. Respondents shall notify EPA of any delay or anticipated delay in performing any requirement of this Z2&3 Interior UAO. Such notification shall be made by telephone and email to the OSCs within 48 hours after Respondents first knew or should have known that a delay might occur. Respondents shall adopt all reasonable measures to avoid or minimize any such delay. Within 7 days after notifying EPA by telephone and email, Respondents shall provide to EPA written notification fully describing the nature of the delay, the anticipated duration of the delay, any justification for the delay, all actions taken or to be taken to prevent or minimize the delay or the effect of the delay, a schedule for implementation of any measures to be taken to mitigate the effect of the delay, and any reason why Respondents should not be held strictly accountable for failing to comply with any relevant requirements of this Z2&3 Interior UAO. Increased costs or expenses associated with implementation of the activities called for in this Z2&3 Interior UAO is not a justification for any delay in performance.

51. Any delay in performance of this Z2&3 Interior UAO that, in EPA's judgment, is not properly justified by Respondents under the terms of Paragraph 50 shall be considered a violation of this Z2&3 Interior UAO. EPA shall notify Respondents of any such violation. Any delay in performance of this Z2&3 Interior UAO shall not affect Respondents' obligations to fully perform all obligations under the terms and conditions of this Z2&3 Interior UAO. If EPA determines that a delay in performance of this Z2&3 Interior UAO is properly justified, EPA shall, in writing, inform Respondents of that determination and the revised deadline.

XXIV. ADDITIONAL REMOVAL ACTIONS

52. If EPA determines that additional removal actions not included in an approved plan are necessary to protect public health, welfare, or the environment, EPA will notify Respondents of that determination and will either modify this Z2&3 Interior UAO or issue a new order to address any additional removal actions. Any modification to this Z2&3 Interior UAO

under this Paragraph shall be consistent with the Fourth or Fifth Amendment to the Action Memorandum.

XXV. ADMINISTRATIVE RECORD

53. EPA has established an administrative record that contains the documents that form the basis for the issuance of this Z2&3 Interior UAO, including, but not limited to, the Fourth and Fifth Amendments. EPA will make the administrative record available for review at the EPA Region 5 Superfund Record Center located 77 W. Jackson Blvd., Chicago, IL 60604. A copy of the administrative record is also available for viewing at https://www.epa.gov/uss-lead-superfund-site.

XXVI. APPENDICES

54. The following appendices are attached to and incorporated into this Z2&3 Interior UAO:

a. Appendix A: Z2&3 Interior SOW

b. Appendix B: Map of USS Lead Site OU1 and OU2

c. Appendix C: Map of USS Lead Site OU1 – Zones 1, 2, and 3

d. Appendix D: Action Memorandum–Fourth Amendment

e. Appendix E: Action Memorandum–Fifth Amendment

f. Appendix F: Form of Interior Access Agreement

XXVII. SEVERABILITY

55. If a court issues an order that invalidates any provision of this Z2&3 Interior UAO or finds that Respondents have sufficient cause not to comply with one or more provisions of this Z2&3 Interior UAO, Respondents shall remain bound to comply with all provisions of this Z2&3 Interior UAO either not invalidated or not determined to be subject to a sufficient cause defense by the court's Z2&3 Interior UAO.

It is so ORDERED.

BY: _____ DATE: 10/14/2019

for Margaret M. Guerriero
Acting Division Director, Superfund Division
Region 5
U.S. Environmental Protection Agency

APPENDIX A

TO
Z2&3 INTERIOR UAO

Z2&3 INTERIOR SOW

UNILATERAL ADMINISTRATIVE ORDER

STATEMENT OF WORK FOR INTERIOR REMOVAL ACTION IN ZONE 2 AND ZONE 3 OF OPERABLE UNIT 1 OF THE USS LEAD SUPERFUND SITE

City of East Chicago, Lake County, State of Indiana

EPA Region 5

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Background and Scope of the Zone 2 and Zone 3 Interior Statement of Work

(a) Background.

(1) This Statement of Work forms a part of the Unilateral Administrative Order (Z2&3 Interior UAO) for the continued implementation of interior removal activities at Zone 2 and Zone 3 of Operable Unit 1 of the U.S. Smelter and Lead Refinery, Inc. Superfund Site (Site) in East Chicago, Indiana, consistent with both the Action Memorandum–4th Amendment (hereinafter "Fourth Amendment") and the Action Memorandum–5th Amendment (hereinafter "Fifth Amendment"), which were signed by the Assistant Administrator of the Office of Land and Emergency Management of the U.S. Environmental Protection Agency on October 28, 2016, and March 14, 2017, respectively. This document shall be referred to as the "Z2&3 Interior Statement of Work" or the "Z2&3 Interior SOW."

(2) Operable Unit 1. EPA has divided the Site into two operable units: Operable Unit 1 (OU1) and Operable Unit 2 (OU2). OU1 consists generally of a residential neighborhood in East Chicago, Indiana, commonly known as the Calumet neighborhood. OU1 has been further divided into three zones: Zone 1 (Z1), Zone 2 (Z2), and Zone 3 (Z3). The definition and boundaries of OU1 and Zones 1, 2, and 3 are set forth in Section III ("Definitions") of the Z2&3 Interior UAO.

(3) Operable Unit 2. OU2 consists a 79-acre parcel of land that formerly housed the lead refining and smelting operations of U.S. Smelter and Lead Refinery Inc. (Former USS Lead Facility), as well as the groundwater associated with both OU1 and the Former USS Lead Facility. The definition of OU2 is set forth in the Definitions Section of the Z2&3 Interior UAO.

(b) Scope. This Z2&3 Interior SOW applies to the Z2&3 Interior Sampling and Cleaning Work, as that term is defined in the Z2&3 Interior UAO.

(c) Z2&3 Interior Sampling and Cleaning Work.

(1) Authorization and Applicability. In the Fourth and Fifth Amendments, EPA authorized certain removal actions in the interior of residences in Zones 2 and 3. These actions include sampling indoor dust for lead and arsenic, screening indoor paint for lead, and cleaning the interior of homes where the lead in the dust equals or exceeds 316 ppm and/or the arsenic in the dust equals or exceeds 26 ppm. The Fourth and Fifth Amendment also authorized re-cleaning of the interior of residences where a loading rate of 25 $\mu g/ft^2$ for lead or 36 $\mu g/ft^2$ for arsenic was not met after the initial or

any subsequent cleaning, unless sampling results indicate that lead-based paint may be present in the residence.

(2) Z2&3 Interior Sampling and Cleaning Work: Responsibilities. Respondents will be responsible for implementing the Z2&3 Interior Sampling and Cleaning Work. EPA will support Respondents in implementing the Z2&3 Sampling and Interior Work consistent with ¶ 4.11.

(d) Respondents will implement their activities consistent with the Z2&3 Interior UAO; this Z2&3 Interior SOW; the applicable parts of the Fourth and Fifth Amendments; all plans approved by EPA pursuant to the Z2&3 Interior UAO and this Z2&3 Interior SOW; any additional written direction provided by EPA; the *National Contingency Plan*; the *Superfund Lead-Contaminated Residential Sites Handbook*, August 2003 ("*Lead Handbook*"); and the documents and guidance identified in Section 9 of this Z2&3 Interior SOW.

1.2 Structure of the Z2&3 Interior SOW

- Section 2 (Community Involvement) sets forth EPA's and Respondents' responsibilities for community involvement.
- Section 3 has been intentionally left blank.
- Section 4 (Z2&3 Interior Sampling and Cleaning Work) sets forth requirements regarding the implementation of the Z2&3 Interior Sampling and Cleaning Work, including primary deliverables related to completion of the Z2&3 Interior Sampling and Cleaning Work.
- Section 5 (Reporting) sets forth Respondents' reporting obligations.
- Section 6 (Deliverables) describes the content of the supporting deliverables and the general requirements regarding Respondents' submission of, and EPA's review of, approval of, comment on, and/or modification of, the deliverables.
- Section 7 (Schedules) sets forth the schedule for submitting the primary deliverables, specifies the supporting deliverables that must accompany each primary deliverable, and sets forth the schedule of milestones regarding the completion of the Z2&3 Interior Sampling and Cleaning Work.
- Section 8 (State Participation) addresses providing documents to the State.
- Section 9 (References) provides a list of references, including URLs.

1.3 The terms used in this Z2&3 Interior SOW that are defined in CERCLA, in regulations promulgated under CERCLA, or in the Z2&3 Interior UAO, have the meanings assigned to them in CERCLA, in such regulations, or in the Z2&3 Interior UAO, except that the term "Paragraph" or "¶" means a paragraph of the Z2&3 Interior SOW, and the term "Section" means a section of this Z2&3 Interior SOW, unless otherwise stated.

2. COMMUNITY INVOLVEMENT

2.1 Community Involvement Responsibilities

(a) EPA has the lead responsibility for developing and implementing community involvement activities at the Site. Previously, EPA developed a Community Involvement Plan (CIP) for the Site. Pursuant to 40 C.F.R. § 300.435(c), EPA shall review the existing CIP and determine whether it should be revised to describe further public involvement activities during the Z2&3 Interior Sampling and Cleaning Work that are not already addressed or provided for in the existing CIP.

(b) If requested by EPA, Respondents shall participate in community involvement activities, including participation in (1) the preparation of information regarding the Z2&3 Interior Sampling and Cleaning Work for dissemination to the public, and (2) public meetings that may be held or sponsored by EPA to explain activities at or relating to the Site. Respondents' support of EPA's community involvement activities may include providing initial submissions and updates of deliverables to any Community Advisory Groups or other entity to provide them with a reasonable opportunity for review and comment. EPA may describe in its CIP Respondents' responsibilities for community involvement activities. All community involvement activities conducted by Respondents at EPA's request are subject to EPA's oversight.

(c) **Respondents' CI Coordinator**. Within 30 days of the Effective Date, Respondents shall designate and notify EPA of Respondents' Community Involvement Coordinator (Respondents' CI Coordinator). Respondents may hire a contractor for this purpose. Respondents' notice must include the name, title, and qualifications of the Respondents' CI Coordinator. Respondents' CI Coordinator is responsible for providing support regarding EPA's community involvement activities, including coordinating with EPA's CI Coordinator regarding responses to the public's inquiries about the Site.

3. THIS SECTION INTENTIONALLY BLANK

4. Z2&3 INTERIOR SAMPLING AND CLEANING WORK

4.1 Z2&3 Interior Sampling and Cleaning Work Plan. Respondents shall submit a Z2&3 Interior Sampling and Cleaning Work Plan (Z2&3 Interior WP) for EPA approval that includes:

(a) A proposed Z2&3 Interior Sampling and Cleaning Work Schedule in Gantt chart format;

(b) The deliverables or a schedule for the deliverables identified in Paragraph 6.7;

(c) A list of key contractor personnel who will provide support during the Z2&3 Interior Sampling and Cleaning Work; and

(d) A schedule of deliverables to be provided during the Z2&3 Interior Sampling and Cleaning Work.

4.2 Z2&3 Interior Sampling and Cleaning Work. Respondents shall conduct the Z2&3 Sampling and Cleaning Work in accordance with the Z2&3 Interior WP. At a minimum, the Z2&3 Interior WP shall include, and Respondents shall conduct, the activities identified in Paragraphs 4.3 through 4.8 of this Z2&3 Interior SOW.

4.3 Z2&3 Interior Sampling and Cleaning Work: Access.

(a) Form of Access Agreement. As set forth in the Z2&3 Interior UAO, Respondents may use an access agreement substantially in the form attached as Appendix F to the Z2&3 Interior UAO or may develop their own access agreement. Regardless, the access agreement shall include access for interior sampling and for response actions based on sampling results.

(b) Relevant Persons for Purposes of Securing Access and Providing Notification of Sampling Results. The following are the "Relevant Persons" for purposes of securing access and providing notification of sampling results:

(1) For Single Family Homes. The Owner and, if the Resident is different from the Owner, the Resident Lessee.

(2) For Multi-Family Homes/Apartments. Both the Owner and each Resident Lessee.

(c) Access Issues Related to Residences where the Resident is different from the Owner. For those residences where the Resident is different from the Owner, Respondents shall confer with EPA if either: (i) a conflict arises between an Owner and a Resident Lessee over access for any activity required by this Z2&3 Interior SOW; or (ii) a Resident is responsive to requests for access for any activity required by this Z2&3 Interior SOW but the Owner is non-responsive.

4.4 Z2&3 Interior Sampling Work: Initial Sampling.

(a) Residences Covered. Respondents shall implement the Z2&3 Interior Sampling Work at those residences in Zones 2 and 3 that meet the definition of "Z2&3 Interior Sampling Residence" where Respondents secure access.

(b) Timing.

(1) Zone 2.

(i) At the same time as, or as soon as reasonably possible after, performing a pre-construction walkthrough for exterior soil excavation work at a property, Respondents shall contact each Relevant Person identified in Paragraph 4.34.4(b) to secure access.

(ii) As soon as reasonably possible after completing exterior restoration activities at a property (excluding the 30-day maintenance period), Respondents shall contact each Resident whose residences they have secured access to and offer to schedule and perform the initial interior sampling of the residence.

(2) Zone 3. EPA shall notify Respondents when EPA has completed restoration activities (excluding the 30-day maintenance period) at a property. As soon as reasonably possible after that notification, Respondents shall contact each Relevant Person identified in Paragraph 4.34.4(b) to secure access. At the same time as trying to secure access from each Relevant Person, Respondents shall offer to each Resident to schedule and perform the interior sampling of the residence.

(3) Best Efforts. Respondents shall use best efforts to contact each Relevant Person identified in Paragraph 4.34.4(b) to secure access. Respondents shall also use best efforts to schedule the interior sampling with each Resident. Respondents shall keep a log of those efforts. No less than once a month commencing in the first month after the first restoration (excluding the 30-day maintenance period) of a property in Zone 2 or 3 is complete, Respondents and EPA shall confer about issues relating to communications, securing access, and scheduling sampling. The frequency of these communications may be increased at the request of either the Respondents or EPA. These conferences may be held in conjunction with the conferences related to cleaning identified in ¶ 4.5(b)(2) and re-cleaning identified in ¶ 4.7(b)(2).

(c) Activities Covered. Respondents shall conduct all Z2&3 Interior Sampling Work in accordance with the approved Indoor Dust and Lead-Based Paint Sampling Plan described in ¶ 6.7(d).

(d) Results Letters to Relevant Persons. No later than 7 days after receiving the final, verified interior sampling results for a residence, Respondents shall notify each Relevant Person identified in Paragraph 4.3(b), in writing, of the results. If Respondents do not have the final, verified interior sampling results for a residence within 21 days of taking those samples, Respondents shall notify each Relevant Person identified in Paragraph 4.3(b), in writing, of the delay.

4.5 Z2&3 Interior Cleaning Work.

(a) Residences Covered. Respondents shall implement the Z2&3 Interior Cleaning Work at those residences in Zones 2 and 3 that meet the definition of "Z2&3 Interior Cleaning Residence" where the Respondents secure access. Respondents shall implement the Z2&3 Interior Cleaning Work at a Z2&3 Interior Cleaning Residence even if lead-based paint is identified during the lead-based paint screening phase of the initial interior sampling event.

(b) Timing.

(1) Respondents shall offer to schedule and perform an interior cleaning to a Resident when Respondents notify the Resident of their final, verified interior sampling results.

(2) Best Efforts. Respondents shall use best efforts to communicate directly with a Resident after sending the initial offer to clean with the sample results notification letter. Respondents shall keep a log of those efforts. No less than once a month commencing in the first month after the first interior sampling results are received by Respondents, Respondents and EPA shall confer about issues relating to communications, securing access, and scheduling cleanings. The frequency of these communications may be increased at the request of either the Respondents or EPA. These conferences may be held in conjunction with the conferences related to sampling identified in ¶ 4.4(b)(3) and re-cleaning identified in ¶ 4.7(b)(2).

(c) Activities Covered. Respondents shall conduct all Z2&3 Interior Cleaning Work in accordance with the approved the Indoor Cleaning Plan described in ¶ 6.7(c).

4.6 Z2&3 Interior Sampling Work: Efficacy Sampling.

(a) Standard. Interior cleanings and re-cleanings are effective if the loading rate for floors after the cleaning is below 25 $\mu g/ft^2$ for lead and below 36 $\mu g/ft^2$ for arsenic.

(b) Residences Covered. Respondents shall implement Efficacy Sampling at all residences in Zone 2 and Zone 3 that have undergone interior cleaning or re-cleaning.

(c) Timing. Respondents shall conduct Efficacy Sampling as soon as they complete the interior cleaning of a residence. If Respondents are not able to complete Efficacy Sampling within 14 days of completing the cleaning, Respondents shall confer with EPA.

(d) Activities Covered. Respondents shall conduct all Efficacy Sampling in accordance with the approved Indoor Dust and Lead-Based Paint Sampling Plan described in ¶ 6.7(d).

(e) Results Letters to Relevant Persons. No later than 7 days after receiving all final, verified Efficacy Sampling results for a residence, Respondents shall notify each Relevant Person identified in Paragraph 4.3(b), in writing, of the results. If Respondents do not have the final, verified Efficacy Sampling results for a residence within 21 days of taking those samples, Respondents shall notify each Relevant Person identified in Paragraph 4.3(b), in writing, of the delay.

4.7 Z2&3 Interior Cleaning Work: Re-Cleanings.

(a) Residences Covered. Respondents shall re-clean the interior of a residence if the results of the Efficacy Sampling after the interior cleaning or re-cleaning shows a loading rate for floors at or above 25 µg/ft^2 for lead or 36 µg/ft^2 for arsenic; provided however, that Respondents are not required to re-clean any residence where the initial sampling indicated that lead-based paint may be present.

(b) Timing.

(1) Respondents shall offer to schedule and perform an interior re-cleaning to a Resident when Respondents notify a Resident in writing of their final, verified Efficacy Sampling results.

(2) Best Efforts. Respondents shall use best efforts to communicate directly with a Resident after sending the initial offer to re-clean with the Efficacy Sampling results. Respondents shall keep a log of those efforts. No less than once a month commencing in the first month after the first re-cleaning becomes necessary, Respondents and EPA shall confer about issues relating to communications, securing access, and scheduling cleanings and re-cleanings. The frequency of these communications may be increased at the request of either the Respondents or EPA. These conferences may be held in conjunction with the conferences related to sampling identified in ¶ 4.4(b)(3) and cleaning identified in ¶ 4.5(b)(2).

(c) Activities Covered. Respondents shall conduct all interior re-cleanings in accordance with the approved Indoor Cleaning Plan described in ¶ 6.7(c). Pursuant to that Indoor Cleaning Plan, Respondents shall be required to re-clean only those areas and associated areas of the residence where the loading rate for floors exceeded 25 µg/ft^2 for lead or 36 µg/ft^2 for arsenic. Respondents are not required to re-clean any residence where the initial sampling indicated that lead-based paint may be present.

4.8 Transport and Disposal. Respondents shall transport and dispose of any Waste Material generated by the Z2&3 Interior Sampling and Cleaning Work consistent with ¶ 4.13 of this Z2&3 Interior SOW.

4.9 Independent Quality Assurance Team. Respondents shall notify EPA of Respondents' designated Independent Quality Assurance Team (IQAT). The Supervising Contractor may perform this function or Respondents may hire a third party for this purpose. Respondents' notice must include the names, titles, contact information, and qualifications of the members of the IQAT. The IQAT will have the responsibility to determine whether Z2&3 Interior Sampling and Cleaning Work are of expected quality and conforms to applicable plans and specifications.

4.10 Meetings and Inspections

(a) **Pre-implementation Conference**. Respondents shall hold a conference with EPA and others as directed by EPA, prior to beginning any Z2&3 Interior Sampling

Work. Respondents shall prepare minutes of that meeting and shall distribute the minutes to all Parties.

(b) **Periodic Meetings**. During the Z2&3 Interior Sampling and Cleaning Work, Respondents shall conduct regular progress meetings to which EPA, and others as directed or determined by EPA, will be invited to discuss performance issues. Respondents shall distribute an agenda and list of attendees to all Parties prior to each meeting. Respondents shall prepare minutes of the meetings and shall distribute the minutes to all Parties. The meetings required by ¶¶ 4.3(c)(3), 4.4(b)(2), and 4.6(b)(2) may be integrated into these meetings.

(c) **Inspections**

(1) EPA or its representative shall conduct periodic inspections of the Z2&3 Interior Sampling and Cleaning Work. At EPA's request, the Supervising Contractor or other designee shall accompany EPA or its representative during inspections.

(2) Upon notification by EPA of any deficiencies in the Z2&3 Interior Sampling and Cleaning Work, Respondents shall take all necessary steps to correct the deficiencies and/or bring the Z2&3 Interior Sampling and Cleaning Work into compliance with the approved Z2&3 Interior WP. If applicable, Respondents shall comply with any schedule provided by EPA in its notice of deficiency.

4.11 EPA Support

(a) Respondents may refer any questions or comments from the public regarding the Site to the EPA's On-Scene Coordinator, the EPA CI Coordinator, or any other person designated by EPA.

(b) Upon request by Respondents' Project Coordinator or Supervising Contractor, an EPA On-Scene Coordinator will:

(1) Conduct pre-cleaning walkthroughs of individual properties with Respondents' employees and/or contractors;

(2) Conduct post-cleaning walkthroughs of individual properties with Respondents' employees and/or contractors; and

(3) Conduct additional walkthroughs of individual properties with Respondents' employees and/or contractors, as practicable.

4.12 Emergency Response and Reporting

(a) **Emergency Response and Reporting**. If any event occurs during performance of the Z2&3 Interior Sampling and Cleaning Work that causes or threatens to cause a release of Waste Material on, at, or from the Site and that either constitutes an

emergency situation or that may present an immediate threat to public health or welfare or the environment, Respondents shall: (1) immediately take all appropriate action to prevent, abate, or minimize such release or threat of release; (2) immediately notify the authorized EPA officer (as specified in ¶ 4.12(c)) orally; and (3) take such actions in consultation with the authorized EPA officers and in accordance with all applicable provisions of the Health and Safety Plan, the Emergency Response Plan, and any other deliverable approved by EPA under the Z2&3 Interior SOW. In the event that Respondents fail to take appropriate response action as required by this Paragraph, and EPA takes such action instead, EPA reserves the right to pursue cost recovery.

(b) **Release Reporting**. Upon the occurrence of any event during performance of the Z2&3 Interior Sampling and Cleaning Work that Respondents are required to report pursuant to Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), 42 U.S.C. § 11004, Respondents shall immediately notify the authorized EPA officer orally.

(c) The "authorized EPA officers" for purposes of immediate oral notifications and consultations under ¶ 4.12(a) and ¶ 4.12(b) are the designated OSCs or the Emergency Response Section, Region 5, U.S. Environmental Protection Agency (if none of the OSCs are available), which is at (312) 353-2318.

(d) For any event covered by ¶ 4.12(a) and ¶ 4.12(b), Respondents shall: (1) within 14 days after the onset of such event, submit a report to EPA describing the actions or events that occurred and the measures taken, and to be taken, in response thereto; and (2) within 30 days after the conclusion of such event, submit a report to EPA describing all actions taken in response to such event.

(e) The reporting requirements under ¶ 4.12 are in addition to the reporting required by CERCLA § 103 or EPCRA § 304.

4.13 Off-Site Shipments

(a) Respondents may ship hazardous substances, pollutants, and contaminants from the Site to an off-Site facility only if they comply with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Respondents will be deemed to be in compliance with CERCLA § 121(d)(3) and 40 C.F.R. § 300.440 regarding a shipment if Respondents obtain a prior determination from EPA that the proposed receiving facility for such shipment is acceptable under the criteria of 40 C.F.R. § 300.440(b).

(b) Respondents may ship Waste Material from the Site to an out-of-state waste management facility only if, prior to any shipment, they provide notice to the appropriate state environmental official in the receiving facility's state and to the EPA Project Coordinator. This notice requirement will not apply to any off-Site shipments when the total quantity of all such shipments does not exceed 10 cubic yards. The notice must include the following information, if available: (1) the

name and location of the receiving facility; (2) the type and quantity of Waste Material to be shipped; (3) the schedule for the shipment; and (4) the method of transportation. Respondents also shall notify the state environmental official referenced above and the EPA Project Coordinator of any major changes in the shipment plan, such as a decision to ship the Waste Material to a different out-of-state facility. Respondents shall provide the notice after the award of the contract for the Z2&3 Interior Sampling and Cleaning Work and before the Waste Material is shipped.

(c) Respondents may ship Investigation Derived Waste (IDW) from the Site to an off-Site facility only if they comply with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), 40 C.F.R. § 300.440, EPA's *Guide to Management of Investigation Derived Waste*, OSWER 9345.3-03FS (Jan. 1992), and any IDW-specific requirements contained in the ROD. Wastes shipped off-Site to a laboratory for characterization, and RCRA hazardous wastes that meet the requirements for an exemption from RCRA under 40 CFR § 261.4(e) shipped off-site for treatability studies, are not subject to 40 C.F.R. § 300.440.

4.14 Certification of Completion of Z2&3 Interior Sampling and Cleaning Work

(a) Definitions.

(1) The "Cleanup Standards" for the Z2&3 Interior Sampling and Cleaning Work are:

(i) For residences where interior cleaning has not been performed, Interior Screening Levels below 316 mg/kg and 26 mg/kg for lead and arsenic, respectively.

(ii) For residences where interior cleaning has been performed, a loading rate for floors below 25 $\mu g/ft^2$ for lead and 36 $\mu g/ft^2$ for arsenic.

(2) "Z2&3 Interior Excluded Residences."

(i) Prior to scheduling a Z2&3 Interior Sampling and Cleaning Work Completion Meeting pursuant to Paragraph 4.14(b) of this Z2&3 Interior SOW, Respondents must secure a final list of the Z2&3 Interior Excluded Residences from EPA. The development of the list of Z2&3 Interior Excluded Residences shall take place as follows.

(ii) **No Access.** If, after the exercise of best efforts, Respondents cannot gain access to a residence to take interior samples or perform an interior cleaning, Respondents shall confer with EPA pursuant to ¶¶ 4.4(b)(3), 4.5(b)(2), and 4.7(b)(2), as applicable. If EPA agrees that Respondents shall not be required to undertake further efforts, EPA may undertake efforts to secure access. If EPA

secures the necessary access, Respondents shall thereafter perform the Z2&3 Interior Sampling Work and/or the Z2&3 Interior Cleaning Work, as applicable. If EPA does not secure access, this residence shall be placed on the preliminary list of Z2&3 Interior Excluded Residences.

(iii) **Lead Based Paint Present.** If, after conducting interior sampling at a residence, Respondents determine that lead-based paint may be present in the residence, Respondents shall keep a log of such residences and periodically provide that log to EPA.

(iv) **Cleanup Standards Cannot Be Met.** If, after conducting an interior cleaning at a residence, Respondents determine that the Cleanup Standard in ¶ 4.14(a)(1)(ii) cannot be met at a particular residence, Respondents shall notify EPA. EPA may elect to conduct sampling or screenings and/or perform cleanings at any residence to determine that either the Cleanup Standards cannot be met or that lead-based paint may be present in the residence. EPA reserves the right to seek cost recovery for any costs incurred by EPA under this ¶ 4.14(a)(2)(iv). If neither EPA nor Respondents can achieve the Cleanup Standard, then the residence shall be placed on the preliminary list of Z2&3 Interior Excluded Residences.

(v) No later than six months prior to Respondents' expected date of final demobilization of the Z2&3 Interior Cleaning Work, Respondents shall notify EPA of their expected date of final demobilization and will regularly update that expected date in the monthly Progress Reports submitted pursuant to ¶ 5.1.

(vi) By no later than 30 days after the notification in ¶ 4.14(a)(2)(v), EPA will finalize the preliminary list of Z2&3 Interior Excluded Residences and provide it to the Respondents. Thereafter, EPA and Respondents will informally discuss the list. By no later than 30 days prior to Respondents' expected date of final demobilization of the Z2&3 Interior Cleaning Work, EPA will provide to Respondents a final list of the "Z2&3 Interior Excluded Residences." The residences on this list shall constitute the "Z2 Interior Excluded Residences."

(vii) At such time as EPA provides Respondents with the final list of Z2&3 Interior Excluded Residences, Respondents' obligations to perform Z2&3 Interior Sampling and Cleaning Work at the Z2&3 Interior Excluded Residences shall cease under the Z2&3 Interior UAO and this Z2&3 Interior SOW. After Respondents complete any remaining Z2&3 Interior Sampling and Cleaning Work at any non-Z2&3 Interior Excluded Residences (if any), Respondents

may schedule a Z2&3 Interior Sampling and Cleaning Work Completion Meeting.

(b) **Z2&3 Interior Sampling and Cleaning Work Completion Meeting**. The Z2&3 Interior Sampling and Cleaning Work is "Complete" for purposes of this ¶ 4.14 when it has been fully performed and the Cleanup Standards have been achieved at all Z2&3 Interior Sampling Residences and all Z2&3 Interior Cleaning Residences, except the Z2&3 Interior Excluded Residences. Respondents shall schedule a meeting for the purpose of obtaining EPA's Certification of Completion of Z2&3 Interior Sampling and Cleaning Work. The meeting must be attended by Respondents and EPA and/or their representatives.

(c) **Z2&3 Interior Sampling and Cleaning Work Completion Report.** Following the meeting, Respondents shall submit a Z2&3 Interior Sampling and Cleaning Work Report to EPA requesting EPA's Certification of the Completion of the Z2&3 Interior Sampling and Cleaning Work. The report must: (1) include a certification by Respondents' Project Coordinator that the Z2&3 Interior Sampling and Cleaning Work are complete; (2) contain initial interior sampling results and Efficacy Sampling results to demonstrate that the Cleanup Standards have been achieved at all Z2&3 Interior Sampling Residences and Z2&3 Interior Cleaning Residences that are not included on the final list of Z2&3 Interior Excluded Residences; and (3) be certified in accordance with ¶ 6.5 (Certification).

(d) **EPA Notice of Deficiencies.** If EPA concludes that the Z2&3 Interior Sampling and Cleaning Work is not Complete, EPA shall so notify Respondents. EPA's notice must include a description of any deficiencies. EPA's notice may include a schedule for addressing such deficiencies or may require Respondents to submit a schedule for EPA approval. Respondents shall perform all activities described in the notice in accordance with the schedule.

(e) If EPA concludes, based on the initial or any subsequent Z2&3 Interior Sampling and Cleaning Work Completion Report requesting Certification of Z2&3 Interior Sampling and Cleaning Work Completion, that the Z2&3 Interior Sampling and Cleaning Work is Complete, EPA shall so certify to the Respondents. This certification will constitute the Certification of the Completion of the Z2&3 Interior Sampling and Cleaning Work for purposes of the Z2&3 Interior UAO. Issuance of the Certification of the Completion of the Z2&3 Interior Sampling and Cleaning Work will not affect Respondents' remaining obligations under the Z2&3 Interior UAO.

5. REPORTING

5.1 Progress Reports. Commencing with the month following the Effective Date of the Z2&3 Interior UAO and until EPA certifies the Z2&3 Interior Sampling and Cleaning Work Completion, Respondents shall submit progress reports to EPA on a monthly basis, or as otherwise requested by EPA. The reports must cover all activities that took place during the prior reporting period, including:

(a) The actions that have been taken toward achieving compliance with the Z2&3 Interior UAO;

(b) A summary of all results of sampling, tests, and all other data received or generated by Respondents;

(c) A description of all deliverables that Respondents submitted to EPA;

(d) A description of all activities relating to Z2&3 Interior Sampling and Cleaning Work that are scheduled for the next six weeks;

(e) An updated Z2&3 Interior Sampling and Cleaning Work Schedule (if that schedule has been modified), together with information regarding percentage of completion, delays encountered or anticipated that may affect the future schedule for implementation of the Z2&3 Interior Sampling and Cleaning Work, and a description of efforts made to mitigate those delays or anticipated delays;

(f) A description of any modifications to the work plans or other schedules that Respondents have proposed or that have been approved by EPA; and

(g) A description of all activities undertaken in support of the Community Involvement Plan during the reporting period and those to be undertaken in the next six weeks.

5.2 Notice of Progress Report Schedule Changes. If the schedule for any activity described in the Progress Reports, including activities required to be described under ¶ 5.1(d), changes, Respondents shall notify EPA of such change at least 7 days before performance of the activity.

6. DELIVERABLES

6.1 Applicability. Respondents shall submit deliverables for EPA approval or for EPA comment as specified in this Z2&3 Interior SOW. If neither is specified, the deliverable does not require EPA's approval or comment. Paragraphs 6.2 (In Writing) through 6.4 (Technical Specifications) apply to all deliverables. Paragraph 6.5 (Certification) applies to any deliverable that is required to be certified. Paragraph 6.6 (Approval of Deliverables) applies to any deliverable that is required to be submitted for EPA approval.

6.2 In Writing. All deliverables under this Z2&3 Interior SOW must be in writing unless otherwise specified.

6.3 General Requirements for Deliverables. All deliverables must be submitted by the deadlines in the Z2&3 Interior Sampling and Cleaning Work Schedule. Respondents shall submit all deliverables in electronic form. Technical specifications for sampling and monitoring data and spatial data are addressed in ¶ 6.4. All other deliverables shall be submitted to EPA in the electronic form specified by the EPA OSC. If any deliverable

includes maps, drawings, or other exhibits that are larger than 8.5" by 11", Respondents shall also provide EPA with paper copies of such exhibits.

6.4 Technical Specifications

(a) Sampling and monitoring data should be submitted in standard Regional Electronic Data Deliverable (EDD) format. Respondents shall consult with one or more of the OSCs prior to transmitting sampling and monitoring data in order to be advised of the EDD format that the data should be transmitted in. Other delivery methods may be allowed if electronic direct submission presents a significant burden or as technology changes.

(b) Spatial data, including spatially-referenced data and geospatial data, should be submitted: (1) in the ESRI File Geodatabase format; and (2) as unprojected geographic coordinates in decimal degree format using North American Datum 1983 (NAD83) or World Geodetic System 1984 (WGS84) as the datum. If applicable, submissions should include the collection method(s). Projected coordinates may optionally be included but must be documented. Spatial data should be accompanied by metadata, and such metadata should be compliant with the Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata and its EPA profile, the EPA Geospatial Metadata Technical Specification. An add-on metadata editor for ESRI software, the EPA Metadata Editor (EME), complies with these FGDC and EPA metadata requirements and is available at https://edg.epa.gov/EME/.

(c) Each file must include an attribute name for each site unit or sub-unit submitted. Consult http://www.epa.gov/geospatial/geospatial-policies-and-standards for any further available guidance on attribute identification and naming.

(d) Spatial data submitted by Respondents does not, and is not intended to, define the boundaries of the Site.

6.5 Certification. All deliverables that require compliance with this ¶ 6.5 must be signed by the Respondents' Project Coordinator, or other responsible official of Respondents, and must contain the following statement:

> I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

6.6 Approval of Deliverables

(a) **Initial Submissions**

(1) After review of any deliverable that is required to be submitted for EPA approval under the Z2&3 Interior UAO or this Z2&3 Interior SOW, EPA shall: (i) approve, in whole or in part, the submission; (ii) approve the submission upon specified conditions; (iii) disapprove, in whole or in part, the submission; or (iv) any combination of the foregoing.

(2) EPA also may modify the initial submission to cure deficiencies in the submission if: (i) EPA determines that disapproving the submission and awaiting a resubmission would cause substantial disruption to the Z2&3 Interior Sampling and Cleaning Work; or (ii) previous submission(s) have been disapproved due to material defects and the deficiencies in the initial submission under consideration indicate a bad faith lack of effort to submit an acceptable deliverable.

(b) **Resubmissions**. Upon receipt of a notice of disapproval under ¶ 6.6(a) (Initial Submissions), or if required by a notice of approval upon specified conditions under ¶ 6.6(a), Respondents shall, within 14 days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the deliverable for approval. After review of the resubmitted deliverable, EPA may: (1) approve, in whole or in part, the resubmission; (2) approve the resubmission upon specified conditions; (3) modify the resubmission; (4) disapprove, in whole or in part, the resubmission, requiring Respondents to correct the deficiencies; or (5) any combination of the foregoing.

(c) **Implementation**. Upon approval, approval upon conditions, or modification by EPA under ¶ 6.6(a) (Initial Submissions) or ¶ 6.6(b) (Resubmissions), of any deliverable, or any portion thereof: (1) such deliverable, or portion thereof, will be incorporated into and enforceable under the Z2&3 Interior UAO; and (2) Respondents shall take any action required by such deliverable, or portion thereof.

6.7 Supporting Deliverables. Respondents shall submit each of the following supporting deliverables for EPA approval as part of the Z2&3 Interior WP, except as specifically provided. Respondents shall develop the deliverables in accordance with all applicable regulations, guidances, and policies (see Section 9 (References)). Respondents shall update each of these supporting deliverables as necessary or appropriate during the course of the Z2&3 Interior Sampling and Cleaning Work, and/or as requested by EPA. For those documents which EPA will make available to Respondents, EPA will separately provide instructions to Respondents on how to access a secure website which has those documents.

(a) **Health and Safety Plan**. The Health and Safety Plan (HASP) describes all activities to be performed to protect on site personnel and area residents from physical, chemical, and all other hazards posed by the Z2&3 Interior Sampling and Cleaning Work. Respondents shall develop the HASP in accordance with EPA's Emergency Responder Health and Safety and Occupational Safety and

Health Administration (OSHA) requirements under 29 C.F.R. §§ 1910 and 1926. The HASP should cover activities during the Z2&3 Interior Sampling and Cleaning Work and be updated to cover activities after completion of the Z2&3 Interior Sampling and Cleaning Work. EPA does not approve the HASP, but will review it to ensure that all necessary elements are included and that the plan provides for the protection of human health and the environment. EPA shall make an example HASP that EPA developed for the residential areas of the USS Lead Site available to Respondents**.**

(b) **Emergency Response Plan**. The Emergency Response Plan (ERP) must describe procedures to be used in the event of an accident or emergency at the Site (for example, power outages, water impoundment failure, treatment plant failure, slope failure). The ERP must include:

(1) Name of the person or entity responsible for responding in the event of an emergency incident;

(2) Plan and date(s) for meeting(s) with the local community, including local, State, and federal agencies involved in the cleanup, as well as local emergency squads and hospitals;

(3) Spill Prevention, Control, and Countermeasures (SPCC) Plan (if applicable), consistent with the regulations under 40 C.F.R. Part 112, describing measures to prevent, and contingency plans for, spills and discharges;

(4) Notification activities in accordance with ¶ 4.12(b) (Release Reporting) in the event of a release of hazardous substances requiring reporting under Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), 42 U.S.C. § 11004; and

(5) A description of all necessary actions to ensure compliance with ¶ 4.12 in the event of an occurrence during the performance of the Z2&3 Interior Sampling and Cleaning Work that causes or threatens a release of Waste Material from the Site that constitutes an emergency or may present an immediate threat to public health or welfare or the environment.

EPA shall make an example ERP that EPA developed for the residential areas of the USS Lead Site available at to Respondents.

(c) **Indoor Cleaning Plan**. The Indoor Cleaning Plan (ICP) addresses all interior cleaning and re-cleaning activities. The ICP must be written so that a cleaning team unfamiliar with the project would be able to perform the interior cleanings. The ICP must include:

(1) Procedures for documenting the conditions of residences both immediately before and immediately after any interior cleaning;

(2) Description of security measures to prevent unauthorized access to any residences being cleaned; and

(3) Procedures for managing waste.

The ICP must be substantially similar to EPA's *Site Work Plan: Interior Remedial Cleaning – Zone 2*, which EPA shall make available to Respondents, unless otherwise directed by EPA.

(d) **Indoor Dust and Lead-Based Paint Sampling Plan**. The Indoor Dust and Lead-Based Paint Sampling Plan (ISP) addresses all sample collection activities, including Efficacy Sampling. The ISP must be written so that a field sampling team unfamiliar with the project would be able to gather the samples and field information required. The ISP must include:

(1) Procedures for assessing the concentration of lead and arsenic present in indoor dust in a residence;

(2) Procedures for assessing by XRF whether lead-based paint may be a source of recontamination; and

(3) Procedures for assessing the effectiveness of any interior cleaning, including visual inspection, and for determining whether the loading rate for floors after any interior cleaning is below 25 $\mu g/ft^2$ for lead and 36 $\mu g/ft^2$ for arsenic.

The ISP must be substantially similar to EPA's *Abbreviated Sampling and Analysis Plan for the USS Lead Site*, which EPA shall make available to Respondents, unless otherwise directed by EPA.

(e) **Quality Assurance Project Plan**. The Quality Assurance Project Plan (QAPP) augments the ISP and addresses sample analysis and data handling regarding the Z2&3 Interior Sampling and Cleaning Work. The QAPP must include a detailed explanation of Respondents' quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance, and monitoring samples. Respondents shall develop the QAPP in accordance with *EPA Requirements for Quality Assurance Project Plans*, QA/R-5, EPA/240/B-01/003 (Mar. 2001, reissued May 2006); *Guidance for Quality Assurance Project Plans*, QA/G-5, EPA/240/R 02/009 (Dec. 2002); and *Uniform Federal Policy for Quality Assurance Project Plans*, Parts 1-3, EPA/505/B-04/900A though 900C (Mar. 2005). The QAPP also must include procedures:

(1) To ensure that EPA and its authorized representative have reasonable access to laboratories used by Respondents in implementing the Z2&3 Interior Sampling and Cleaning Work (Respondents' Labs);

(2) To ensure that Respondents' Labs analyze all samples submitted by EPA pursuant to the QAPP for quality assurance monitoring;

(3) To ensure that Respondents' Labs perform all analyses using EPA-accepted methods (i.e., the methods documented in *USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis*, ILM05.4 (Dec. 2006); *USEPA Contract Laboratory Program Statement of Work for Organic Analysis*, SOM01.2 (amended Apr. 2007); and *USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration)*, ISM01.2 (Jan. 2010)) or other methods acceptable to EPA;

(4) To ensure that Respondents' Labs participate in an EPA-accepted QA/QC program or other program QA/QC acceptable to EPA;

(5) For Respondents to provide split samples and/or duplicate samples to EPA upon request;

(6) For EPA to take any additional samples that it deems necessary;

(7) For EPA to provide to Respondents, upon request, split samples and/or duplicate samples in connection with EPA's oversight sampling; and

(8) For Respondents to submit to EPA all sampling and tests results and other data in connection with the implementation of the Z2&3 Interior Sampling and Cleaning Work.

EPA shall make an example QAPP that EPA developed for interior sampling and cleaning work at the USS Lead Site available to Respondents**.**

(f) **Resident Communication Plan.** The Resident Communication Plan (RCP) addresses outreach to residents by Respondents and their employees, contractors, and representatives. The RCP must include:

(1) Procedures for securing access agreements for the Z2&3 IRA;

(2) Procedures for scheduling interior sampling and interior cleaning activities with residents;

(3) Procedures for notifying owners and residents, in writing, of the final interior sampling results and their meanings; and

(4) Description of materials to be provided to owners and residents whose residences may contain lead-based paint, based on final interior sampling results. EPA shall provide those materials to Respondents.

EPA shall make an example RCP that EPA developed for interior sampling and cleaning work at the USS Lead Site available to Respondents**.**

(g) **Addendum to the Data Management Plan.** EPA shall make EPA's current Data Management Plan for residential areas of the USS Lead Site available to

Respondents. Respondents shall prepare an Addendum to the Data Management Plan (ADMP) that shall describe the information that Respondents shall collect during the Z2&3 Interior Sampling and Cleaning Work and how Respondents shall collect and manage that information so that it is compatible with EPA's data management practices.

(1) For field activities, the ADMP must include requirements to use the appropriate iForm (or equivalent) to record dust sampling information for initial sampling and Efficacy Sampling.

(2) The flow chart on Page 4 of the current Data Management Plan identifies data that must be exported to Scribe (which is a software program for managing environmental data). For data that must be exported to Scribe, the ADMP must include requirements to:

(i) Re-create digital forms for field data entry (i.e., using iForms or equivalent);

(ii) Ensure that export data from digital forms can be imported to Scribe without adjustments to Scribe (stated otherwise, ensure that comma-separated values (CSV) files are able to be imported to Scribe without adjustments to Scribe);

(iii) QA/QC CSV exports for iForms (or equivalent) to ensure information entered is correct/valid;

(iv) Update the field version of Scribe by subscribing to the updated version of Scribe.NET;

(v) Upload CSV files into field version of Scribe for creation of chain of custody (COC) for submission of samples;

(vi) Export the COC XML files from Scribe;

(vii) Email the CSV files from the digital forms and the COC XML files to the database administrator; and

(viii) Backup all CSV and COC XML files submitted to the database administrator.

EPA will work with Respondents during their development of the ADMP and the necessary digital forms.

7. SCHEDULES

7.1 Applicability and Revisions. All deliverables and tasks required under this Z2&3 Interior SOW must be submitted or completed by the deadlines or within the time durations listed in the Z2&3 Interior Sampling and Cleaning Work Schedule set forth

below. Respondents may submit proposed revised Z2&3 Interior Sampling and Cleaning Work Schedules for EPA approval. Upon EPA's approval, the revised Z2&3 Interior Sampling and Cleaning Work Schedules supersede the Z2&3 Interior Sampling and Cleaning Work Schedule set forth below, and any previously-approved Z2&3 Interior Sampling and Cleaning Work Schedules.

7.2 Z2&3 Interior Sampling and Cleaning Work Schedule

	Description of Deliverable / Task	**¶ Ref.**	**Deadline (the dates are "not later than") ("days" is calendar days)**
1	Z2&3 Interior WP	4.1	60 days after EPA's Notice of Authorization to Proceed regarding the Supervising Contractor under ¶ 15(c)(2) of the Z2&3 Interior UAO
2	Designate IQAT (either a third party or the Supervising Contractor)	4.9	30 days after EPA's Notice of Authorization to Proceed regarding the Supervising Contractor under ¶ 15(c)(2) of the Z2&3 Interior UAO
3	Pre-Implementation Conference	4.10(a)	60 days after EPA's Notice of Authorization to Proceed regarding the Supervising Contractor under ¶ 15(c)(2) of the Z2&3 Interior UAO
4	Start of Z2&3 Interior Sampling and Cleaning Work Implementation		Per approved Z2&3 Interior Sampling and Cleaning Work Schedule and consistent with the timing requirements of ¶¶ 4.4(b)(1) (interior sampling for residences in Zone 2); 4.4(b)(2) (interior sampling for residences in Zone 3); 4.5(b)(2) (interior cleaning); 4.6(c) (Efficacy Sampling); and 4.7(b) (re-cleaning)
5	Completion of Z2&3 Interior Sampling and Cleaning Work		Per approved Z2&3 Interior Sampling and Cleaning Work Schedule
6	Z2&3 Interior Sampling and Cleaning Work Completion Meeting	4.14(b)	60 days after Completion of Z2&3 Interior Sampling and Cleaning Work
7	Z2&3 Interior Sampling and Cleaning Work Completion Report	4.14(c)	60 days after the Z2&3 Interior Sampling and Cleaning Work Completion Meeting

8. STATE PARTICIPATION

8.1 Respondents shall, at any time they send a deliverable to EPA, send a copy of such deliverable to the State in care of:

Doug Petroff
Project Manager, Federal Programs
Indiana Dep't of Environmental Management

100 North Senate Ave.
IGCN – 11th Floor
Indianapolis, IN 46204

EPA shall, at any time it sends a notice, authorization, approval, disapproval, or certification to Respondents, send a copy of such document to the State.

9. REFERENCES

9.1 The following regulations and guidance documents, among others, apply to the Z2&3 Interior Sampling and Cleaning Work. Any item for which a specific URL is not provided below is available on one of the two EPA Web pages listed in ¶ 9.2:

(a) A Compendium of Superfund Field Operations Methods, OSWER 9355.0-14, EPA/540/P-87/001a (Aug. 1987).

(b) CERCLA Compliance with Other Laws Manual, Part I: Interim Final, OSWER 9234.1-01, EPA/540/G-89/006 (Aug. 1988).

(c) CERCLA Compliance with Other Laws Manual, Part II, OSWER 9234.1-02, EPA/540/G-89/009 (Aug. 1989).

(d) Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, OSWER 9355.5-01, EPA/540/G-90/001 (Apr.1990).

(e) Guidance on Expediting Remedial Design and Remedial Actions, OSWER 9355.5-02, EPA/540/G-90/006 (Aug. 1990).

(f) Guide to Management of Investigation-Derived Wastes, OSWER 9345.3-03FS (Jan. 1992).

(g) Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, OSWER 9355.7-03 (Feb. 1992).

(h) National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, 40 C.F.R. Part 300 (Oct. 1994).

(i) Guidance for Scoping the Remedial Design, OSWER 9355.0-43, EPA/540/R-95/025 (Mar. 1995).

(j) Remedial Design/Remedial Action Handbook, OSWER 9355.0-04B, EPA/540/R-95/059 (June 1995).

(k) EPA Guidance for Data Quality Assessment, Practical Methods for Data Analysis, QA/G-9, EPA/600/R-96/084 (July 2000).

(l) Comprehensive Five-year Review Guidance, OSWER 9355.7-03B-P, 540-R-01-007 (June 2001).

(m) Guidance for Quality Assurance Project Plans, QA/G-5, EPA/240/R-02/009 (Dec. 2002).

(n) Superfund Lead-Contaminated Residential Sites Handbook, OSWER 9285.7-50 (Aug. 2003).

(o) Institutional Controls: Third Party Beneficiary Rights in Proprietary Controls (Apr. 2004).

(p) Quality management systems for environmental information and technology programs - Requirements with guidance for use, ASQ/ANSI E4:2014 (American Society for Quality, February 2014).

(q) Uniform Federal Policy for Quality Assurance Project Plans, Parts 1-3, EPA/505/B-04/900A though 900C (Mar. 2005).

(r) Superfund Community Involvement Handbook, SEMS 100000070 (January 2016), http://www.epa.gov/superfund/community-involvement-tools-and-resources.

(s) EPA Guidance on Systematic Planning Using the Data Quality Objectives Process, QA/G-4, EPA/240/B-06/001 (Feb. 2006).

(t) EPA Requirements for Quality Assurance Project Plans, QA/R-5, EPA/240/B-01/003 (Mar. 2001, reissued May 2006).

(u) EPA Requirements for Quality Management Plans, QA/R-2, EPA/240/B-01/002 (Mar. 2001, reissued May 2006).

(v) USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, ILM05.4 (Dec. 2006).

(w) USEPA Contract Laboratory Program Statement of Work for Organic Analysis, SOM01.2 (amended Apr. 2007).

(x) EPA National Geospatial Data Policy, CIO Policy Transmittal 05-002 (Aug. 2008), http://www.epa.gov/geospatial/geospatial-policies-and-standards and http://www.epa.gov/geospatial/epa-national-geospatial-data-policy.

(y) Principles for Greener Cleanups (Aug. 2009), http://www.epa.gov/greenercleanups/epa-principles-greener-cleanups.

(z) USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration), ISM01.2 (Jan. 2010).

(aa) Close Out Procedures for National Priorities List Sites, OSWER 9320.2-22 (May 2011).

(bb) Recommended Evaluation of Institutional Controls: Supplement to the "Comprehensive Five-Year Review Guidance," OSWER 9355.7-18 (Sep. 2011).

(cc) Construction Specifications Institute's MasterFormat 2012, available from the Construction Specifications Institute, http://www.csinet.org/masterformat.

(dd) Updated Superfund Response and Settlement Approach for Sites Using the Superfund Alternative Approach, OSWER 9200.2-125 (Sep. 2012)

(ee) Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites, OSWER 9355.0-89, EPA/540/R-09/001 (Dec. 2012).

(ff) Institutional Controls: A Guide to Preparing Institutional Controls Implementation and Assurance Plans at Contaminated Sites, OSWER 9200.0-77, EPA/540/R-09/02 (Dec. 2012).

(gg) EPA's Emergency Responder Health and Safety Manual, OSWER 9285.3-12 (July 2005 and updates), http://www.epaosc.org/_HealthSafetyManual/manual-index.htm

(hh) Broader Application of Remedial Design and Remedial Action Pilot Project Lessons Learned, OSWER 9200.2-129 (Feb. 2013).

(ii) Groundwater Remedy Completion Strategy: Moving Forward with the End in Mind, OSWER 9200.2-144 (May 2014).

(jj) Guidance for Management of Superfund Remedies in Post Construction, OLEM 9200.3-105 (Feb. 2017), https://www.epa.gov/superfund/superfund-post-construction-completion.

9.2 A more complete list may be found on the following EPA Web pages:

Laws, Policy, and Guidance: http://www.epa.gov/superfund/superfund-policy-guidance-and-laws

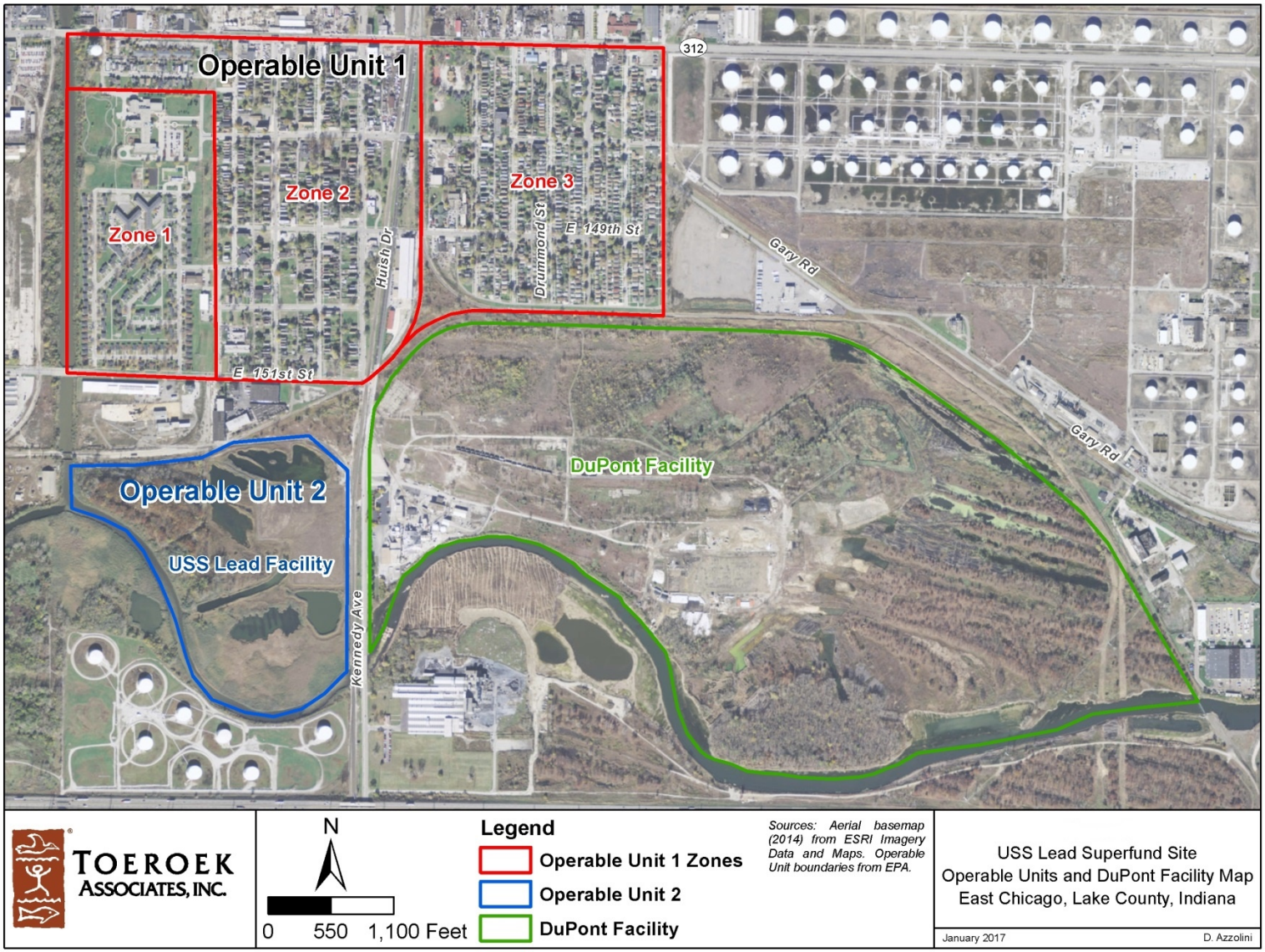
Test Methods Collections: http://www.epa.gov/measurements/collection-methods

9.3 For any regulation or guidance referenced in the Z2&3 Interior UAO or Z2&3 Interior SOW, the reference will be read to include any subsequent modification, amendment, or replacement of such regulation or guidance. Such modifications, amendments, or replacements apply to the Z2&3 Interior Sampling and Cleaning Work only after Respondents receive notification from EPA of the modification, amendment, or replacement.

APPENDIX B

TO
Z2&3 INTERIOR UAO

MAP OF USS LEAD SITE OU1 AND OU2

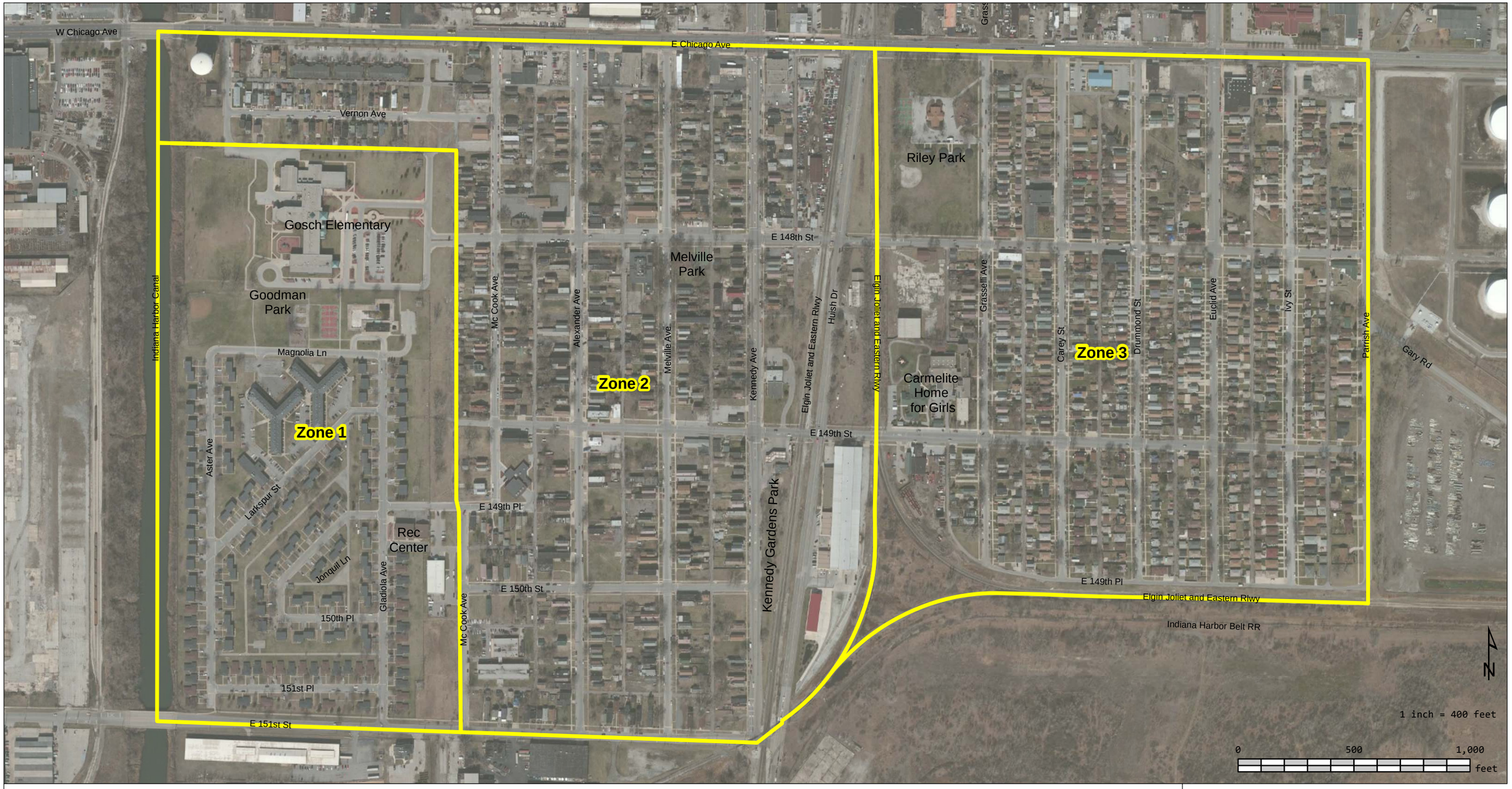


APPENDIX B: USS Lead Superfund Site Operable Units 1 and 2

APPENDIX C

TO
Z2&3 INTERIOR UAO

MAP OF USS LEAD SITE
OU1 – ZONES 1, 2, AND 3



Zone

Basemap source: Esri

US SMELTER & LEAD REFINERY
LAKE COUNTY, EAST CHICAGO, INDIANA

APPENDIX C

OU1 ZONES

EPA REGION 5 RAC 2 | REVISION 0 | JULY 2014

SulTRAC

APPENDIX D

TO
Z2&3 INTERIOR UAO

ACTION MEMORANDUM
FOURTH AMENDMENT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

OCT 24 2016

REPLY TO THE ATTENTION OF:

MEMORANDUM

SUBJECT: **ACTION MEMORANDUM – 4th AMENDMENT:** Request for a Change in Scope and Ceiling Increase for the Time-Critical Removal Action at the U.S. Smelter and Lead Refinery Site, East Chicago, Lake County, Indiana (Site ID # 053J)

FROM: Douglas Ballotti, Acting Director
Superfund Division

THRU: Reggie Cheatham, Office Director
Office of Emergency Management (OEM)

TO: Mathy Stanislaus, Assistant Administrator
Office of Land and Emergency Management

I. PURPOSE

The purpose of this Action Memorandum Amendment is to request and document your approval, consistent with Section 104(c)(1)(A) of CERCLA, 42 U.S.C. Section 9604 (c)(1)(A), to Change the Scope of the Response and for a Ceiling Increase for the time-critical removal action at portions of the U.S. Smelter and Lead Refinery Site (the Site) residential area defined as Zone 2 of Operable Unit 1 (OU1), in East Chicago, Lake County, Indiana (see Figure 2). The sought increase of $13,870,506 would raise the project ceiling for the time-critical removal action from $26,397,542 to $40,268,048

The Change of Scope of the Response and Ceiling Increase is necessary as the previous Action Memoranda approved on January 22, 2008, August 13, 2008, September 12, 2011, and October 13, 2016 (Attachments IX, X, XI, XII), were for the excavation and proper disposal of lead-contaminated soils from residential parcels in OU1, Zones 1, 2 and 3, indoor cleanup of lead contaminated dust inside of residences in Zone 1, and temporary relocation of residents in the West Calumet Housing Complex (WCHC) in Zone 1. Subsequent soil data collected in Zone 2 during the remedial design (RD) phase in order to implement EPA's Remedial Action as set forth in the Record of Decision (November 2012), found lead and arsenic concentrations in surface soils (0-6") in a number of residential yards above EPA screening criteria.

Response actions are necessary in Zone 2 of OU1 to mitigate threats to public health, welfare, and the environment posed by the release and/or threatened release of uncontrolled hazardous substances at the Site. This removal involves (1) the excavation and proper disposal of lead

and/or arsenic contaminated soils from residential parcels in Zone 2, and (2) testing for lead and/or arsenic contaminated dust in residential homes if requested by the home owner and, if necessary, removal of the contaminated dust.

Conditions existing at the Site present a threat to public health and the environment and meet the criteria for initiating a removal action under 40 CFR § 300.415(b) of the National Contingency Plan (NCP). The U.S. Environmental Protection Agency (EPA or the Agency) documented elevated levels of lead and arsenic in surface soil in residential parcels at the Site. Lead and arsenic are hazardous substances as defined by Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

There are no nationally significant or precedent setting issues associated with the Change of Scope sought in this Action Memorandum to the extent it seeks approval for the excavation of soils. Testing at the owner's request and the removal of lead and/or arsenic contaminated dust in residential homes may set a precedent. The Site is on the National Priorities List (NPL).

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID: IND047030226
RCRA ID: IND047030226
STATE ID: None
Category: Time-Critical Removal

A. Site Description

1. Removal Site Evaluation

The Indiana Department of Environmental Management (IDEM) sampled some of the residential parcels to the north of the U.S. Smelter and Lead Refinery, Inc. (U.S.S. Lead) facility in 1985. This area is now known as Operable Unit 1 of the Site. IDEM found elevated lead levels in these residential yards. In September of 1985, the Indiana State Board of Health found the U.S.S. Lead facility in violation of state law and stated that the lead-contaminated soils within the facility boundaries may pose a risk to human health and the environment. IDEM referred the U.S.S. Lead facility, but not the area now known as Operable Unit 1, to EPA for cleanup.

From 1993 through 2006, EPA's Resource Conservation and Recovery Act (RCRA) Corrective Action program oversaw the remediation and management of lead-contaminated soils within the boundaries of the U.S.S. Lead facility, currently referred to as Operable Unit 2 (OU2). On November 18, 1993, EPA and U.S.S. Lead entered into an Administrative Order on Consent (AOC) pursuant to Section 3008(h) of RCRA. The AOC required U.S.S. Lead to implement interim measures, including site stabilization and construction of a corrective action management unit (CAMU) to contain contaminated soils and slag and to conduct a Modified RCRA Facility Investigation at the U.S.S. Lead facility, OU2. The CAMU covers approximately 10 acres and is surrounded by a subsurface slurry wall. Excavation and construction of the CAMU was conducted in two phases and completed between August and September 2002. Slag generated from the blast-furnace operations was routinely placed by U.S.S. Lead in piles on the southern

portion of the property near the banks of the Grand Calumet River. The cleanup of slag was described in the Interim Stabilization Measures Work Plan prepared by ENTACT, LLC and was completed during the third quarter of 2002.

As part of a RCRA Corrective Action in 2003 and 2006, EPA conducted soil sampling in the residential neighborhood to the north located in OU1 of the U.S.S. Lead Site. In the investigation of late July and early August 2003, 83 residential parcels within OU1 were sampled and analyzed for lead using a Niton X-ray fluorescence (XRF) instrument. Soils from 43 locations (52 percent) exceeded the 400 milligrams per kilogram (mg/kg) residential soil screening criterion for lead. In 2006, EPA's Field Environmental Decision Support (FIELDS) team supplemented the work performed in 2003 by collecting additional data from 14 parcels sampled in 2003 to (1) assess whether the top-most soils (zero to one inch below ground surface (bgs)) had elevated lead concentrations relative to deeper soils (one to six inches bgs), (2) collect and compare composite samples to individual samples to assess whether composite samples accurately represented the concentrations in residential yards and parks, and (3) compare lead concentrations in the fine and coarse fractions of sieved samples to evaluate whether lead was preferentially distributed in the fine-grain sizes. These sampling results showed some yards in OU1 to have high levels of lead contamination with the highest sample containing lead at 3,000 mg/kg. The RCRA Corrective Action program looked at the possible source of the lead contamination and determined it was from various industrial sources. The RCRA Corrective Action program referred OU1—the off-site contamination from the U.S.S. Lead facility—and other industrial sources to the Superfund Program in 2004; the remainder of OU2—the on-site contamination—was referred in 2006.

Consistent with the OSWER Publication 9285.7-50 *Superfund Lead-Contaminated Residential Sites Handbook* (Handbook) (2003), the Superfund Program used a tiered approach to prioritize which homes needed to be cleaned up first. Residential parcels with lead concentrations in surface soil at or greater than 1,200 mg/kg were the highest priority for immediate action under a time-critical removal action. Residential parcels with lead concentrations in surface soil below 1,200 mg/kg, but above 400 mg/kg would be addressed through remedial actions. EPA does not consider the 1,200 mg/kg concentration as an action level for removal actions, but this level does provide an alternative to running the Integrated Exposure Uptake Biokinetic (IEUBK) model with limited data to determine if the site poses an urgent threat. On January 22, 2008, EPA signed the original action memorandum to conduct a time-critical removal action in OU1 to address known parcels with lead levels in surface soil exceeding 1,200 mg/kg. These parcels had been identified as part of the RCRA Corrective Action residential investigation. The EPA identified 15 private parcels that contained soil with lead concentrations exceeding 1,200 mg/kg in the top six inches of soil. On June 9, 2008, the EPA initiated the time-critical removal action to address the 15 residential parcels with lead levels exceeding 1,200 mg/kg. On August 13, 2008, the EPA amended the original action memorandum to increase the project ceiling by $511,950 for a total of $984,060. The EPA was able to obtain access agreements and remediate only 13 of the 15 parcels. The removal action was completed on November 18, 2008. In total, 1,838 tons of lead-contaminated soil were removed and disposed of at an approved landfill.

A Remedial Investigation (RI) was conducted from 2009 through 2010 to collect additional soil data in OU 1 which consists of Zone 1, Zone 2, and Zone 3. As a result of the sampling, EPA

discovered an additional 14 areas within OU1 with lead levels exceeding the removal action level of 1,200 mg/kg. On September 11, 2011, EPA signed the second amendment to the original action memorandum which increased the total project ceiling to $1,928,460. On October 11, 2011, EPA started the time-critical removal action involving lead-contaminated soil removals at five West Calumet Housing Complex (WCHC) addresses (located in Zone 1) and nine other residential parcels outside the WCHC. In addition, two parcels that were not remediated during the previous removal action in 2008 because of access issues were remediated during this removal action. The removal action was completed on December 9, 2011. In total, 1,913 additional tons of lead-contaminated soil were removed and disposed of at an approved landfill as a result of the 2011 removal activities.

In November 2012, EPA issued a Record of Decision (ROD) for Operable Unit 1 (OU1) of the Site. OU1 has been divided into 3 separate zones for implementation of the remedy (Zones 1, 2, and 3). OU1 contains residential yards contaminated with lead and arsenic at levels that pose a threat to human health through ingestion, inhalation and direct contact. EPA's selected remedy for OU1 addresses these risks from exposure to contaminated soils through the excavation and off-site disposal of lead or arsenic contaminated soils. The remedial action levels (RALs) for OU1 are 400 mg/kg for lead at residential parcels, 800 mg/kg for lead at industrial/commercial parcels, and 26 mg/kg for arsenic at both residential and industrial/commercial parcels.

From November 2014 through April 2015, EPA conducted more extensive soil sampling within Zone 1 as part of the remedial design process for OU1 and completed remedial designs for Zone 1 in October 2015. Zone 1 includes approximately 118 separate "parcels," including 111 parcels in the WCHC, three right-of-way parcels, and a school, park, recreation center, and maintenance facilities. EPA sampled all parcels in Zone 1 except a narrow strip of land on the east bank of the Indiana Harbor Canal. In May 2016, EPA received validated sampling results which revealed lead concentrations in soil up to 24 inches in depth ranged from non-detect (ND) to 91,100 mg/kg for lead. Arsenic concentrations ranged from ND to 3,530 mg/kg (See Attachment V – Summary of OU1 RD Soil Sampling Results). Within Zone 1, a total of 117 parcels exceeded the removal management level (RML) for lead of 400 mg/kg for residential soil and 61 parcels exceeded the RML for arsenic of 68 mg/kg. Each of the parcels that exceeded the RML for arsenic also exceeded the RML for lead. Sample results from surface soils (0-6") indicated that lead concentrations at 13 parcels in the WCHC exceed 5,000 mg/kg with concentrations up to 45,000 mg/kg.

Beginning in July 2016, EPA began conducting more extensive soil sampling within Zone 2 as part of the RD process for OU1. Zone 2 includes approximately 590 separate "parcels." Most of these parcels are residential parcels, though there are some commercial/industrial parcels. In September 2016, EPA received validated sampling results from 48 parcels which revealed lead concentrations in surface soil (0-6 inches below ground surface) at values ranging from 38.3 to 2,120 mg/kg. Arsenic concentrations ranged from 4.3 to 111 mg/kg (See Attachment V – Summary of OU1 RD Soil Sampling Results). Ten sampled parcels had surface soil lead concentrations above 1,200 mg/kg and 40 of 48 parcels exceed the RML for lead of 400 mg/kg for residential surface soil. Two parcels exceeded the 68 mg/kg RML for arsenic (111 and 78.1 mg/kg in surface soil). One parcel that exceeded the RML for arsenic also exceeded the RML for lead in soil.

On July 29, 2016, EPA initiated in-house sampling for dust collection in Zone 1 to determine lead concentrations in homes given the elevated levels of lead in surface soils within the WCHC and the likelihood that lead contaminated soil/dust was being tracked or blown into the housing units. EPA prioritized homes for sampling based on the likelihood that they would have elevated lead levels in indoor dust, based on elevated lead concentrations in yards and elevated blood lead level (BLL) records associated with those residences. As of September 28, 2016, EPA has received validated results from 154 residences. Concentrations ranged from 3.9 to 32,000 mg/kg for lead fines and 0.12J (J means the associated value is the approximate concentration) to 880 mg/kg for arsenic fines. Results from indoor dust from the first 154 homes indicate 69 parcels exceed the EPA screening level of 316 mg/kg for lead for indoor living spaces (See Attachment VII – Indoor Dust Screening Criteria for Lead).

On August 12, 2016, EPA began cleaning the inside of residences in the WCHC to remove lead contaminated dust. A combination of HEPA vacuums and wet cleaning are used to remove lead dust from ceilings, floors, carpets, walls, drapes, accessible ductwork, furnace, and furniture. As of October 3, 2016, EPA has cleaned approximately 113 out of 334 occupied units. Residents were temporarily relocated during the cleaning process and clearance sampling conducted as necessary to document efficacy of cleaning.

The Indiana State Department of Health (ISDH) accompanied EPA into 14 of the initial 42 residences in Zone 1 and conducted a separate inspection for compliance with lead paint abatement policies. Wipe samples were collected from floors, interior window sills, and window troughs and compared to HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (2012 Edition)(40 $\mu g/ft^2$-floors, 250 $\mu g/ft^2$- window sills, and 400 $\mu g/ft^2$– window trough). Wipe samples from six of the 14 units sampled were above the respective lead dust clearance standards (see Attachment VIII - Indiana State Department of Health Wipe Sample Results). Lead based paint was not found by ISDH in any of the inspected units.

The Agency for Toxic Substances and Disease Registry (ATSDR) is working with the East Chicago Health Department (ECHD), which is conducting an ongoing exposure investigation of blood lead in the WCHC. The following is a summary of the findings from screenings of children living in the WCHC, which is derived both from historical data and from the on-going blood lead testing campaign being conducted by ECHD:

- From the most recent ECHD testing in summer 2016, 18 out of 94 (19%) tested children from the WCHC under age six were identified with elevated blood lead (EBL) levels (> 5 µg/dL) based on capillary (finger stick) measurements.

- From 2014 through 2015, 26% of children under age seven tested at the WCHC were identified with EBL levels, with the highest measurement at 33 µg/dL in a one-year-old child. Within the same period, the census tract that includes all of the children from the WCHC (Zone 1) and part of Zone 2 had an EBL incidence rate of 22%. By comparison, the EBL rates for the two adjacent census tracts were 9% and 11%.

- The ATSDR Exposure Investigation conducted in the West Calumet neighborhood in 1997 showed a 35% EBL incidence rate, which was defined at that time as greater than 10 µg/dL.

These observations by ATSDR across almost 20 years demonstrate a consistent pattern of elevated blood lead levels in young children living in OU1. Given that the ISDH Lead Inspectors found no lead-based paint in recently sampled units within the WCHC, it is likely that exposure to soil-based lead contamination in the WCHC and portions of Zone 2 is a primary cause of elevated blood lead levels in children there.

2. Physical Location

The U.S.S. Lead Site lies approximately 18 miles southeast of Chicago, Illinois, in East Chicago, Indiana (Figure 1). The Site consists of the former U.S.S. Lead facility located at 5300 Kennedy Avenue, East Chicago, Indiana (designated as Operable Unit 2 (OU2)) and the residential area to the north and northeast (defined as OU1). OU1 is bound by East Chicago Avenue on the north, East 151st Street/149th Place on the south, the Indiana Harbor Canal on the west, and Parrish Avenue on the east. OU1 includes about 1200 homes, a small number of parks, open space as a part of the railroad right-of-way, schools, and public buildings. For the purpose of implementing the remedial action (RA) in OU1, EPA has divided OU1 into three distinct geographic areas (Zones 1, 2, and 3). This removal action is taking place in OU1 Zone 2. Zone 2 is adjacent to and directly east of Zone 1 and is generally bordered: (1) on the north by East Chicago Avenue; (2) on the east by Joliet, Elgin Railroad; (3) on the south by East 151st Street; and (4) on the west by the East Chicago Public Housing Complex, the Carrie Gosch Elementary School, and the Harbor Canal.

The EPA conducted an EJ analysis for the Site (see Attachment I). Screening of the surrounding area was conducted using Region 5's EJ Screen Tool. Region 5 has reviewed environmental and demographic data for the area surrounding the U.S.S. Lead Site and has determined there is high potential for EJ concerns at this location.

3. Site Characteristics

OU1 includes about 1,200 homes, a small number of parks, open space as a part of the railroad right-of-way, schools, and public buildings. OU1 is primarily a residential area, which includes commercial and light industrial areas. Some parcels in the residential area in Zones 1, 2 and 3 have levels of lead above EPA's RML of 400 mg/kg and arsenic above the RML of 68 mg/kg.

United States Geological Survey (USGS) historical aerial photographs from 1939, 1951, 1959, and 2005 show OU1 over time. Review of these aerial photographs indicates that most of the residential neighborhoods within the Site west of the railroad tracks were built before 1939. By 1951, approximately 75 to 80 percent of the homes were built; by 1959, most of the homes east of the railroad tracks had also been built. These photographs also show that the International Smelting and Refining Company, a subsidiary of the Anaconda Copper Company (whose successor in interest is now the Atlantic Richfield Company [ARC]) occupied the area where the WCHC is currently located (Zone 1 in the southwest portion of OU1) prior to 1946. Title records indicate that the East Chicago Housing Authority constructed the WCHC on the former Anaconda Copper Mining Company/International Smelting and Refining Company site between 1970 and 1973.

The U.S.S. Lead facility was a primary and secondary smelter of lead in the East Chicago, Indiana area. It began operations around 1906 and ended operations in 1985. From about 1920 until 1973, the facility was a primary smelter of lead. This included a refining process to create high quality lead free of bismuth. From 1973 until its closure in 1985, the facility was a secondary smelter and a reprocessor of car batteries. The secondary refinery operations included: battery breaking with tank treatment of spent battery acid at a rate of 16,000 gallons per day; baghouse dust collection with storage in on-site waste piles of up to 8,000 tons of flue dust; and blast furnace slag disposal, which was deposited in the wetland adjacent to and along the southern boundary of the facility. The blast-furnace baghouse collected approximately 300 tons of baghouse flue dust per month during maximum operating conditions. Some of the flue dust escaped the baghouse capture system and was deposited by the wind within the boundaries of OU1. Secondary lead recovery operations ceased in 1985.

In addition to the U.S.S. Lead facility operation, other industrial operations have managed or processed lead and other metals and are sources of contamination in OU1. Immediately east of the U.S.S. Lead facility and south of Zone 3 is the former DuPont site (currently leased and operated by W.R. Grace & Co., Grace Davison). One of the processes that historically took place at the DuPont site was the manufacturing of a lead arsenate pesticide. In 2015, DuPont spun off certain assets and liabilities to a newly created company, The Chemours Company FC, LLC (Chemours). Chemours is now the owner of the former DuPont facility.

North of the former U.S.S. Lead facility stood two smelter operations, which processed lead and other metals. A 1930 Sanborn map identifies the operations as Anaconda Lead Products and International Lead Refining Company (referred to as the former Anaconda facility). Anaconda Lead Products was a manufacturer of white lead and zinc oxide and the International Lead Refining Company was a metal refining facility. These facilities consisted of a pulverizing mill, white lead storage areas, a chemical laboratory, a machine shop, a zinc oxide experimental unit building and plant, a silver refinery, a lead refinery, a baghouse, and other miscellaneous buildings and processing areas. The International Lead Refining Company was a subsidiary of the Anaconda Copper Mining Company. Title to the property in Zone 1 was held between 1934 and 1946 by International Lead Smelting and Refinery Company. International Lead Smelting and Refinery Company acquired titled to the property in Zone 1 in 1934 from International Lead Refining Company, which had acquired title in 1912.

The residential area that comprises Zone 2 has been contaminated by aerial deposition of windblown contaminants from the U.S.S. Lead facility, the Anaconda Copper Mining Company/International Lead Smelting and Refinery Company facility, and the DuPont/Chemours facility. The focus of this time-critical removal action is Zone 2, which has approximately 590 residential parcels.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

The threat is presented by the presence of lead and arsenic-contaminated soil in residential yards and potential lead and arsenic contaminated dust within the residences in Zone 2. The presence of lead and arsenic in outdoor soils and potentially in indoor dust at concentrations above health

screening values provides a constant source of exposure for individuals both outside and while in the home. Lead and arsenic are hazardous substances as defined by section 101(14) of CERCLA. *See* 40 C.F.R. § 302.4. Nearby lead processing operations caused extensive lead and arsenic contamination in soils throughout the Site. The removal is responding to actual and potential outdoor lead and arsenic contamination, as well as potential indoor contamination caused by the migration of lead and arsenic contaminated soil from outdoors to indoors (like the source of contamination found in Zone 1). The presence of elevated lead and arsenic levels in surface soils and potential presence of lead and arsenic in indoor dust in Zone 2 makes this a time-critical removal action.

Exposure may occur from direct ingestion of soil in yards, soil tracked indoors, or house dust; and inhalation of fugitive dust. Potential human receptors include residents, including children six years of age and under, and pregnant or nursing women.

Lead exposure via inhalation and/or ingestion can have detrimental effects on almost every organ and system in the human body. Exposure may occur from direct ingestion of soil in yards, soil tracked indoors, or house dust; and inhalation of fugitive dust. Lead can cause a variety of health problems to people who are exposed to it. Potential human receptors include residents, including children six years of age and under, and pregnant or nursing women. Children are at greatest risk from the toxic effects of lead. Initially, lead travels in the blood to the soft tissues (heart, liver, kidney, brain, etc.). Then, it gradually redistributes to the bones and teeth where it tends to remain. Children exposed to high levels of lead have exhibited nerve damage, liver damage, colic, anemia, brain damage, and death. The most serious effects associated with markedly elevated blood lead levels include neurotoxic effects such as irreversible brain damage.

Ingesting very high levels of arsenic can result in death. Exposure to lower levels can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of "pins and needles" in hands and feet. Ingesting or breathing low levels of inorganic arsenic for a long time can cause a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso. Skin contact with inorganic arsenic may cause redness and swelling. Several studies have shown that ingestion of inorganic arsenic can increase the risk of skin cancer and cancer in the liver, bladder, and lungs. Inhalation of inorganic arsenic can cause increased risk of lung cancer. The Department of Health and Human Services (DHHS) and the EPA have determined that inorganic arsenic is a known human carcinogen (ATSDR, Chemical Abstract Services [CAS] # 7440-38-2], August 2007).

5. NPL status

The U.S.S. Lead Site consisting of both the former U.S.S. Lead facility (OU2) and the West Calumet neighborhood to the north (OU1) was listed as a Superfund site on the national priorities list (NPL) on April 8, 2009. EPA began the RI for OU1 on June 26, 2009. During December 2009 and August 2010, EPA contractors sampled yards in residential areas and background locations. In June 2012, EPA completed a preliminary investigation and study to determine the level and extent of lead and arsenic contamination within OU1 and proposed a remedy. In November 2012, after considering comments received from the City and IDEM,

EPA outlined the long-term permanent cleanup plan in a Record of Decision for OU1. The EPA has completed the remedial designs for work in Zone 1 and Zone 3 and is in the process of completing the remedial design for Zone 2.

6. Maps, pictures and other graphic representations

Maps include:

Figure 1 – USS Lead and Lead Refinery, E. Chicago, IN. Location Map
Figure 2 – OU1 Zones 1, 2, and 3– Location Map

B. Other Actions to Date

1. Previous actions

On January 22, 2008, EPA signed the original action memorandum to conduct a time-critical removal action in OU1 to address known parcels with lead levels exceeding the removal action limit of 1,200 mg/kg. These parcels were identified based on sampling data collected during the RCRA Corrective Action investigation. That removal action began on June 9, 2008, and involved the excavation and off-site disposal of lead contaminated soil from 13 residential parcels. On August 13, 2008, EPA amended the original action memorandum to increase the project ceiling in order to complete the ongoing, time-critical removal action. In total, 1,838 tons of lead-contaminated soil were removed and disposed of at an approved landfill. Excavated areas were backfilled with clean fill and seeded. This removal action was completed on September 25, 2008, and the final Pollution Report was issued on November 18, 2008.

On September 12, 2011, EPA signed an action memorandum to conduct a time-critical removal action in Zones 1, 2, and 3 of OU1 to address 16 parcels (including the 2 that were missed in 2008) with lead levels exceeding the removal action limit of 1,200 mg/kg. These parcels were identified based on sampling data collected during the RI. This removal action began on October 24, 2011, and involved the excavation and off-site disposal of lead contaminated soil from 16 residential parcels. In total, 1,913 tons of lead-contaminated soil were removed and disposed of at an approved landfill. Excavated areas were backfilled with clean fill and seeded. This removal action was completed on December 9, 2011, and the final Pollution Report was issued on December 15, 2011.

2. Current actions

On July 11, 2016, EPA started remedial action activities to cover bare soils with wood mulch within the WCHC to minimize fugitive dust, direct contact and potential migration of soil with elevated lead levels. The mulching work was completed on July 22, 2016, although maintenance of the mulch cover is ongoing as part of the remedial work associated with the implementation of the ROD for OU1.

On July 29, 2016, EPA initiated in-house sampling for dust collection in Zone 1 to determine lead concentrations in homes. As of September 28, 2016, EPA has received validated results

from 154 residences. Concentrations ranged from 3.9 to 32,000 mg/kg for lead fines and 0.12J (J means value is estimate) to 880 mg/kg for arsenic fines (See Attachment VI – Summary of Indoor Dust Sampling Results). Data results from indoor dust from the first 154 homes indicate 69 parcels exceed the EPA screening level of 316 mg/kg for lead for indoor living spaces (See Attachment VII – Indoor Dust Screening Criteria).

ISDH conducted a separate inspection of fourteen of the identified residential units for compliance with lead paint abatement policies. Lead-based paint was not found in any of the inspected units. On August 12, 2016, EPA began cleaning (under October 13, 2016 USS Lead action memo for Zone 1) the inside of all occupied (approximately 334) units within the WCHC, all of which are or have the potential to be contaminated with lead contaminated dust above the risk-based screening criteria for indoor dust from industrial activities. A combination of HEPA vacuums and wet cleaning are used to remove lead dust from ceilings, floors, carpets, walls, drapes, accessible ductwork, furnace, and furniture. As of October 3, 2016, approximately 113 out of 334 occupied units have been cleaned. Residents were temporarily relocated during the indoor cleaning period.

C. State and Local Authorities' Roles

1. State and Local Actions to Date

On August 24, 2016, Rex Osborn, Federal Programs Section Chief with IDEM, sent an email indicating the State of Indiana does not have the financial resources to eliminate the threat posed by lead-contaminated soil in yards and dust within the residences or to fund temporary relocations. Neither the State of Indiana nor the City of East Chicago have taken or have the capacity to take action to abate the immediate threat.

2. Potential for Continued State/Local Response

The EPA is working with ATSDR, the East Chicago Health Department, the Indiana State Department of Health, and City of East Chicago elected officials to provide information to the public. EPA is coordinating discussions with stakeholders regarding the elevated levels of lead and arsenic in soil and EPA's plans to address this issue. Neither the state nor local officials have the resources to conduct the necessary cleanup of the indoor dust contamination or to provide for the temporary relocation of residents.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions at Zone 2 of the U.S.S. Lead Site present a threat to the public health or welfare and the environment and meet the criteria for a time-critical removal action as provided for in the NCP, 40 C.F.R. § 300.415(b)(1), based on the factors in 40 C.F.R. § 300.415(b)(2). These factors include, but are not limited to, the following:

§ 300.415(b)(2)(i) - Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

Beginning in July 2016, EPA began conducting more extensive soil sampling within Zone 2 as part of the RD process for OU1. Zone 2 includes approximately 590 separate parcels. Most of these parcels are residential parcels, though there are some commercial/industrial parcels. In September 2016, EPA received validated sampling results from 48 parcels in Zone 2 which revealed lead concentrations in surface soil (0-6 inches below ground surface) at values ranging from 38.3 to 2,120 mg/kg. Arsenic concentrations ranged from 4.3 to 111 mg/kg (See Attachment V – Summary of OU1 RD Soil Sampling Results). Ten sampled parcels had surface soil lead concentrations above 1,200 mg/kg and 40 of 48 parcels exceed the RML for lead of 400 mg/kg for residential surface soil. Two parcels exceeded the 68 mg/kg RML for arsenic (111 and 78.1 mg/kg in surface soil). One parcel that exceeded the RML for arsenic also exceeded the RML for lead in soil.

Data results from indoor dust from the first 154 homes sampled in Zone 1 indicate 69 properties exceed the EPA screening level of 316 mg/kg for lead for indoor living spaces. EPA is currently addressing exposure to lead contaminated soil in yards and indoor dust in Zone 1. High lead concentrations in indoor dust are a risk to human health, particularly for children under the age of six (i.e., inhalation, ingestion). A recent blood lead study conducted by ECHD found that children in the WCHC and part of Zone 2 are at an increased risk for lead exposure (22% at or above 5 µg/dL compared to the national average of 2.5%).

Lead is a hazardous substance, as defined by Section 101(14) of CERCLA. The effects of lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in the body. The main target for lead toxicity is the nervous system, both in adults and children. Long-term exposure of adults can result in decreased performance in some tests that measure functions of the nervous system. It may also cause weakness in fingers, wrists, or ankles. Lead exposure also causes small increases in blood pressure, particularly in middle-aged and older people and can cause anemia. Exposure to high lead levels can severely damage the brain and kidneys in adults or children and ultimately cause death. In pregnant women, high levels of exposure to lead may cause miscarriage. High-level exposure in men can damage the organs responsible for sperm production.

Arsenic is a hazardous substance under CERCLA and may be ingested or inhaled by residents living at the Site. Acute (short-term) high-level inhalation exposure to arsenic dust or fumes has resulted in gastrointestinal effects (nausea, diarrhea, abdominal pain); central and peripheral nervous system disorders have occurred in workers acutely exposed to inorganic arsenic. Chronic (long-term) inhalation exposure to inorganic arsenic in humans is associated with irritation of the skin and mucous membranes and effects in the brain and nervous system. Chronic oral exposure to elevated levels of inorganic arsenic has resulted in gastrointestinal effects, anemia, peripheral neuropathy, in humans. Chronic exposure by the inhalation route, has been shown to cause a form of skin cancer and also to cause bladder, liver, and lung cancer. EPA has classified inorganic arsenic as a human carcinogen.

§ 300.415(b)(2)(iv) - High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;

As stated in the previous paragraphs, surface soils in Zone 2 where found to be contaminated with lead and arsenic above the EPA screening levels.

Residents living in Zone 2 may cause the high levels of lead and arsenic to migrate into other areas including inside the home by walking through and tracking in, gardening, play, and other residential activities, especially in areas where the soil does not have any cover. Other means of migration may include routine construction activities.

§ 300.415(b)(2)(v) - Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;

There is a threat of release from high winds dispersing surface particulate matter containing lead, resulting in exposure to children and adults who reside within the Site. Grass cover is generally lighter in the early spring and fall, allowing more potential of tracking contaminated soil into the home. Rain or thundershowers may cause the outdoor lead to migrate via surface runoff. The use of an air conditioner during the hot summer months or the running of a furnace during the winter would also result in the migration of indoor dust.

§ 300.415(b)(2)(vii) - The availability of other appropriate federal or state response mechanisms to respond to the release;

At this time, no local or state agency has the resources to respond to the immediate threat.

IV. EXEMPTION FROM STATUTORY LIMITS

Section 104(c) of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), limits a Federal response action to 12 months and $2 million unless response actions meet emergency and/or consistency exemptions. Documentation for the aforementioned exemptions are provided in the U.S.S. Lead Action Memorandum-Third Amendment approved on October 13, 2016.

V. ENDANGERMENT DETERMINATION

Given the Site conditions, the nature of the known and suspected hazardous substances on-site, and the potential exposure pathways described in Sections II and III above, actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response actions selected in this Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

VI. PROPOSED ACTIONS

The response actions described in this memorandum directly address actual or potential releases of hazardous substances on Site, which may pose an imminent and substantial endangerment to public health, or welfare, or the environment.

The proposed action involves excavation and removal of lead and arsenic-contaminated soil at residential parcels within Zone 2 with surficial soil concentrations at or above 1,200 mg/kg for lead and/or the removal management level (RML) of 68 mg/kg for arsenic, and indoor dust sampling and cleaning upon the request of residents and owners. The response actions are consistent with the (OSWER) Publication 9285.7-50 *Superfund Lead-Contaminated Residential Sites Handbook* (Handbook) (2003), where the Superfund Program uses a tiered approach to prioritize which homes needed to be cleaned up first. Residential parcels with lead concentrations in surface soil at or greater than 1,200 mg/kg would be the highest priority for immediate action under a time-critical removal action. Excavated areas will be backfilled to original grade with clean soil and the yards restored as closely as practicable to its pre-removal condition.

Approximately 590 Zone 2 parcels will be sampled during the remedial design process. For cost accounting purposes, EPA anticipates the scope of this removal action in Zone 2 to include approximately 132 residential parcels that are at or greater than 1,200 mg/kg for lead and/or 68 mg/kg for arsenic based on historical and the latest remedial design validated data from Zone 2.

Removal activities associated with the excavation of lead and arsenic contaminated soil from residential yards in Zone 2 will include:

1. Development of site plans, including a Work Plan, Sampling Plan/QAPP, site-specific HASP, and Emergency Contingency Plan;

2. Development of an air monitoring plan and conduct dust control measures to ensure worker and public health protection;

3. Provision for site security measures as necessary;

4. Excavation of soil at residential parcels where lead is equal to or exceeds 1,200 mg/kg and/or arsenic exceeds 68 mg/kg as determined by EPA's RD sampling. Soil will be excavated to a depth of approximately two feet bgs, to eliminate any direct contact and inhalation threats. Excavated material that fails toxicity characteristic leaching procedure (TCLP) for lead may be treated with a fixation agent prior to disposal. Excavation will cease if lead and/or average arsenic concentrations are less than 400 mg/kg for lead and 26 mg/kg for arsenic.

5. Collection and analysis of confirmation samples from the bottom of each excavation. If lead levels below 400 mg/kg or arsenic levels below 26 mg/kg cannot be achieved at an excavation depth of approximately two feet bgs, excavation will cease and a visible barrier will be placed at the bottom of the excavation to alert the property owner of the existence of high levels of lead and/or arsenic. In such instances and consistent with the record of

decision, institutional controls (ICs) will be implemented as part of the remedial action to ensure the users of the property are not exposed to the contaminants of concern in soil;

6. Replacement of excavated soil with clean soil, including 6 inches of top soil to maintain the original grade. Each yard will be restored as close as practicable to its pre-removal condition. Once the parcels are sodded or seeded, removal site control of the sod or seed, including, watering, fertilizing, and cutting, will be conducted for 30 days. After the initial 30 day period, property owners will be responsible for the maintenance of their own yards. The aforementioned work shall be documented in a Work Plan;

7. Transportation and disposal off-site of any hazardous substances, pollutants and contaminants at a CERCLA-approved disposal facility in accordance with EPA's Off-Site Rule (40 CFR § 300.440);

8. Performance of any other response actions to address any release or threatened release of a hazardous substance, pollutant or contaminant that the EPA On-Scene Coordinator (OSC) determines may pose an imminent and substantial endangerment to the public health or the environment; and

9. Conduct an evaluation to determine if soil excavation activities result in a release of lead scale particles from lead service lines into the drinking water supply. This sampling will be conducted from parcels being excavated in the fall of 2016. Data will be evaluated prior to the 2017 construction season to determine if construction activities impact drinking water quality. Bottled water and water filters will be provided during and after the soil excavation activities as necessary during the evaluation period. Based on findings from the 2016 evaluation, a determination will be made on whether the provision of bottled water and water filters should continue beyond the evaluation period. (Note: This evaluation is being conducted at the request of the Agency for Toxic Substances and Disease Registry, see memo from Mark Johnson to Doug Ballotti dated October 24, 2016.)

Data results in Zone 1 from indoor dust from the first 154 homes sampled indicate 69 parcels exceed the EPA screening level of 316 mg/kg for lead for indoor living spaces. Given the significant number of indoor samples that indicated action is needed and the threat posed by high concentrations of lead in soil in adjacent outdoor areas, and the consistent pattern of EBL levels in children less than 6 years of age living in WCHC and portions of Zone 2, EPA, at the request of the residents and homeowners, will vacuum sample indoor dust for lead and arsenic. EPA will clean the inside of residences that are above the risk-based screening criteria of 316 mg/kg for lead and 100 mg/kg arsenic for indoor dust from industrial-related activities. In general, the indoor cleanup process will involve four basic steps: (1) collection of indoor dust vacuum samples (in homes previously not sampled), (2) possible temporary relocation of residents, (3) removal of contaminated indoor dust from floors and carpeting, and cleaning of accessible HVAC systems and filter replacement (4) Post cleaning clearance sampling; and (5) the return of occupants to their residence if temporarily relocated. A combination of HEPA vacuums and/or wet cleaning will be used to remove contaminated dust from floors, carpeting and HVAC systems. Replacement of carpets/mats may be considered on a case by case basis if cleaning mechanisms fail to remove lead and arsenic dust below cleanup criteria.

Removal activities associated with indoor sampling, evaluation, and removal of contaminated dust in homes in Zone 2 will include:

1. Development of a Work Plan and Site Specific Health and Safety Plan;

2. Development and implementation of an air monitoring/sampling plan for the work zone and Site;

3. Continuation of indoor dust and other sampling as determined necessary;

4. Provision for Site security, as directed by the OSC;

5. Development of a relocation plan to address, if necessary, the temporary relocation of residents during the cleaning process;

6. Performance of interior dust cleanup activities as specified in the Site Work Plan;

7. Transportation and disposal off-site of any hazardous substances, pollutants and contaminants at a CERCLA-approved disposal facility in accordance with EPA's Off-Site Rule (40 CFR § 300.440); and

8. Performance of any other response actions to address any release or threatened release of a hazardous substance, pollutant or contaminant that the EPA On-Scene Coordinator (OSC) determines may pose an imminent and substantial endangerment to the public health or the environment.

The Action Memorandum and supporting documentation follow the April 2002 Superfund Response Actions: Temporary Relocations Implementation Guidance, particularly in considering residents' needs, property security, dealing with resident's stress and disruptions, and explaining benefits. Consistent with EPA's guidance on temporary relocations (2002), Sec. IV.A ("Making the Relocation Decision"), temporary relocation at the Site is justified during the cleaning process by the following factor:

- Efficiency of response action: temporary relocation minimizes concerns about noise, property access, and other restrictions on the hours or types of response activities that may be conducted at the Site.

The removal actions will be conducted in a manner not inconsistent with the NCP.

The threats posed by uncontrolled substances considered hazardous meet the NCP criteria listed at § 300.415(b), and the response actions proposed herein are consistent with any long-term remedial actions which may be required.

Off-Site Rule

All hazardous substances, pollutants, or contaminants removed off-site pursuant to this removal action for treatment, storage, and disposal shall be treated, stored, or disposed of at a facility in compliance, as determined by EPA, with the EPA Off-Site Rule, 40 C.F.R. § 300.440.

1. Contribution to remedial performance

The proposed action should not impede future remedial performance.

2. Engineering Evaluation/Cost Analysis (EE/CA)

Not Applicable

3. Applicable or relevant and appropriate requirements (ARARs)

All applicable or relevant and appropriate requirements (ARARs) will be complied with to the extent practicable. On August 18, 2016, EPA sent an e-mail to Rex Osborn of IDEM asking for any State of Indiana ARARs that may apply. IDEM provided both Action and Chemical specific state ARARs in a letter dated August 26, 2016. EPA will consider and implement the submitted ARARs as appropriate.

Project Schedule

The time-critical removal actions will require approximately 528 working days to complete.

B. Removal Project Ceiling Estimate – Extramural Costs:

The detailed cleanup contractor cost is presented in Attachment 1 and the Independent Government Cost Estimate is presented in Attachment IV. Estimated project costs are summarized below:

REMOVAL ACTION PROJECT CEILING ESTIMATE

Extramural Costs	**Current Ceiling**	**Proposed Increase**	**Proposed Ceiling**
Regional Removal Allowance Costs:			
Total Cleanup Contractor Costs (This cost category includes estimates for ERRS, subcontractors, Notices to Proceed, and Interagency Agreements with Other Federal Agencies and 20% Contingency)	$18,875,702	$10,133,755	$29,009,457
Other Extramural Costs Not Funded from the Regional Allowance:			
Total START, including multiplier costs	$3,122,250	$1,425,000	$4,547,250
. Subtotal	.	.	.
Subtotal Extramural Costs	$21,997,952	$11,558,755	$33,556,707
Extramural Costs Contingency (20% of Subtotal, Extramural Costs rounded to nearest thousand for Proposed Increase)	$4,399,590	$2,311,751	.
TOTAL REMOVAL ACTION PROJECT CEILING	**$26,397,542**	**$13,870,506**	**$40,268,048**

The response actions described in this memorandum directly address the actual or threatened release of hazardous substances, pollutants, or contaminants at the Site which may pose an imminent and substantial endangerment to public health or welfare or to the environment. These response actions do not impose a burden on affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the Site conditions, the nature of the hazardous substances and pollutants or contaminants documented in Zone 2 of OU1, and the potential exposure pathways to nearby populations described in Section II and Section III, above, actual or threatened releases of hazardous substances and pollutants or contaminants from this Site, if not addressed by implementing the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

VIII. OUTSTANDING POLICY ISSUES

None

IX. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this Site is contained in the Confidential Enforcement Addendum.

The total EPA costs of this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be $68,457,330[1].

($40,268,048+ $2,000,000) + (61.96% x $42,268,048) = $68,457,330

[1] Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgement interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States right to cost recovery.

X. RECOMMENDATION

This decision document, along with the Action Memorandum signed on January 22, 2008, and the Action Memorandum Amendments signed on August 13, 2008, September 12, 2011, and October 13, 2016 represents the selected removal action for the U.S. Smelter and Lead Refinery Site, Zone 2, OU1, East Chicago, Lake County, Indiana. It was developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for the Site (Attachment II). Conditions at OU1, Zone 2 meet the NCP Section 300.415(b) criteria for a removal action and the CERCLA Section 104(c) emergency exemption from the $2 million and 12-month limitation. The total removal action project ceiling, if approved, will be $40,268,048 of which as much as $33,770,398 may be used from the removal allowance. I recommend your approval of the proposed removal action. You may indicate your decision by signing below.

APPROVE _____ DATE: 10/28/16
Assistant Administrator Office of Land and Emergency Management

DISAPPROVE _____ DATE: _____
Assistant Administrator Office of Office of Land and Emergency Management

Enforcement Addendum

Figures:

Figure 1 – USS Lead and Lead Refinery, E. Chicago, IN. Location Map
Figure 2 – OU1 Zones 1, 2, and 3– Location Map

Attachments:

I. Environmental Justice Analysis
II. Administrative Record Index
III. Detailed Cleanup Contractor Estimate
IV. Independent Government Cost Estimate
V. Summary of OU1 RD Soil Sampling Results
VI. Indoor Dust Screening Criteria for Lead
VII. Indoor Dust Screening Criteria for Arsenic
VIII. Third Amended Action Memorandum dated October 13, 2016

cc: Brian Schlieger, U.S. EPA, 5104A/B517F **(Schlieger.Brian@epa.gov)**
Lindy Nelson, U.S. DOI, **w/o Enf. Addendum (Lindy_Nelson@ios.doi.gov)**
Rex Osborn, IDEM **w/o Enf. Addendum (rosborn@idem.in.gov)**

BCC PAGE HAS BEEN REDACTED

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

ENFORCEMENT ADDENDUM

HAS BEEN REDACTED – TWO PAGES

ENFORCEMENT CONFIDENTIAL

NOT SUBJECT TO DISCOVERY

FOIA EXEMPT

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

Figure 1
Site Location
USS Smelter and Lead Refinery , East Chicago, IN

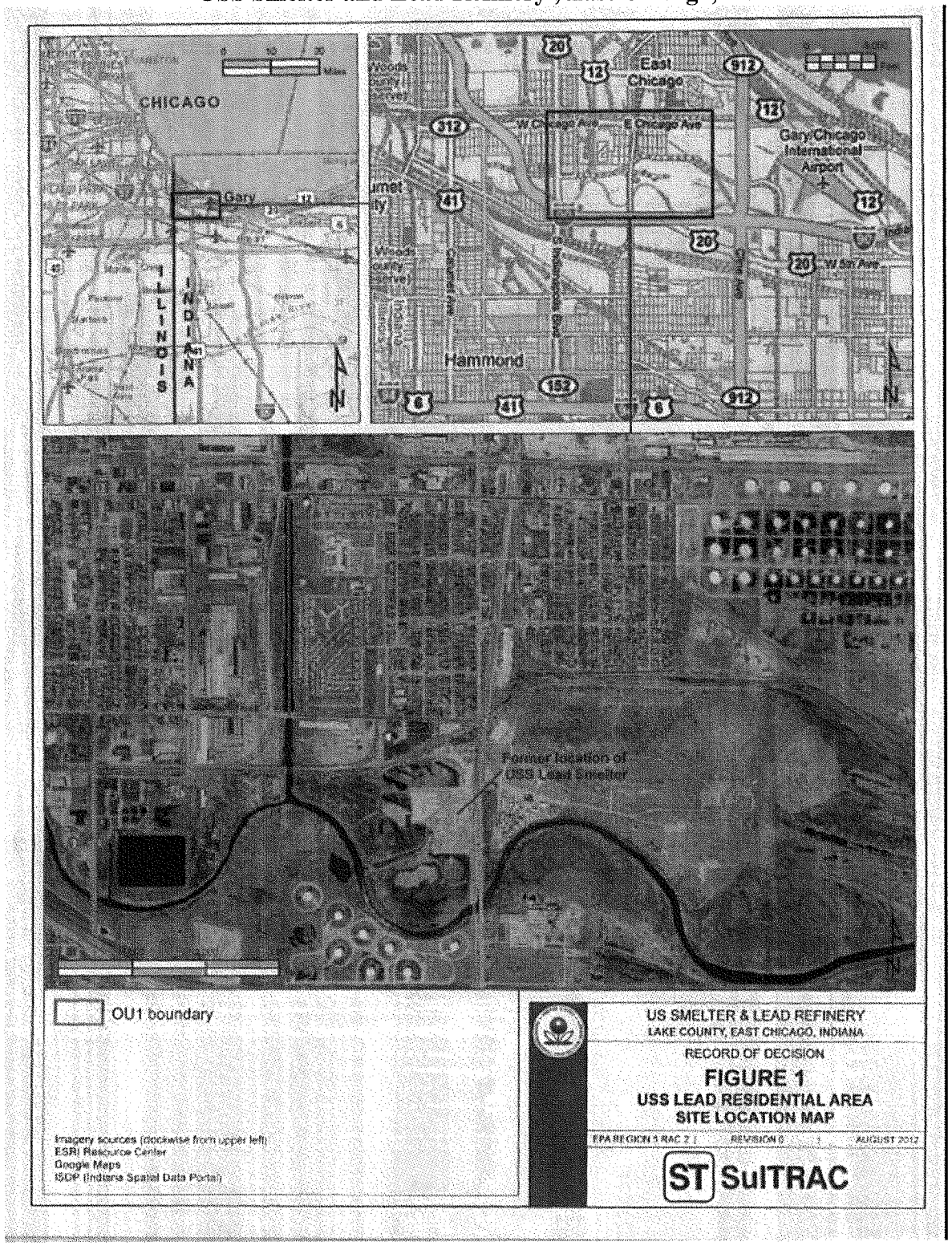
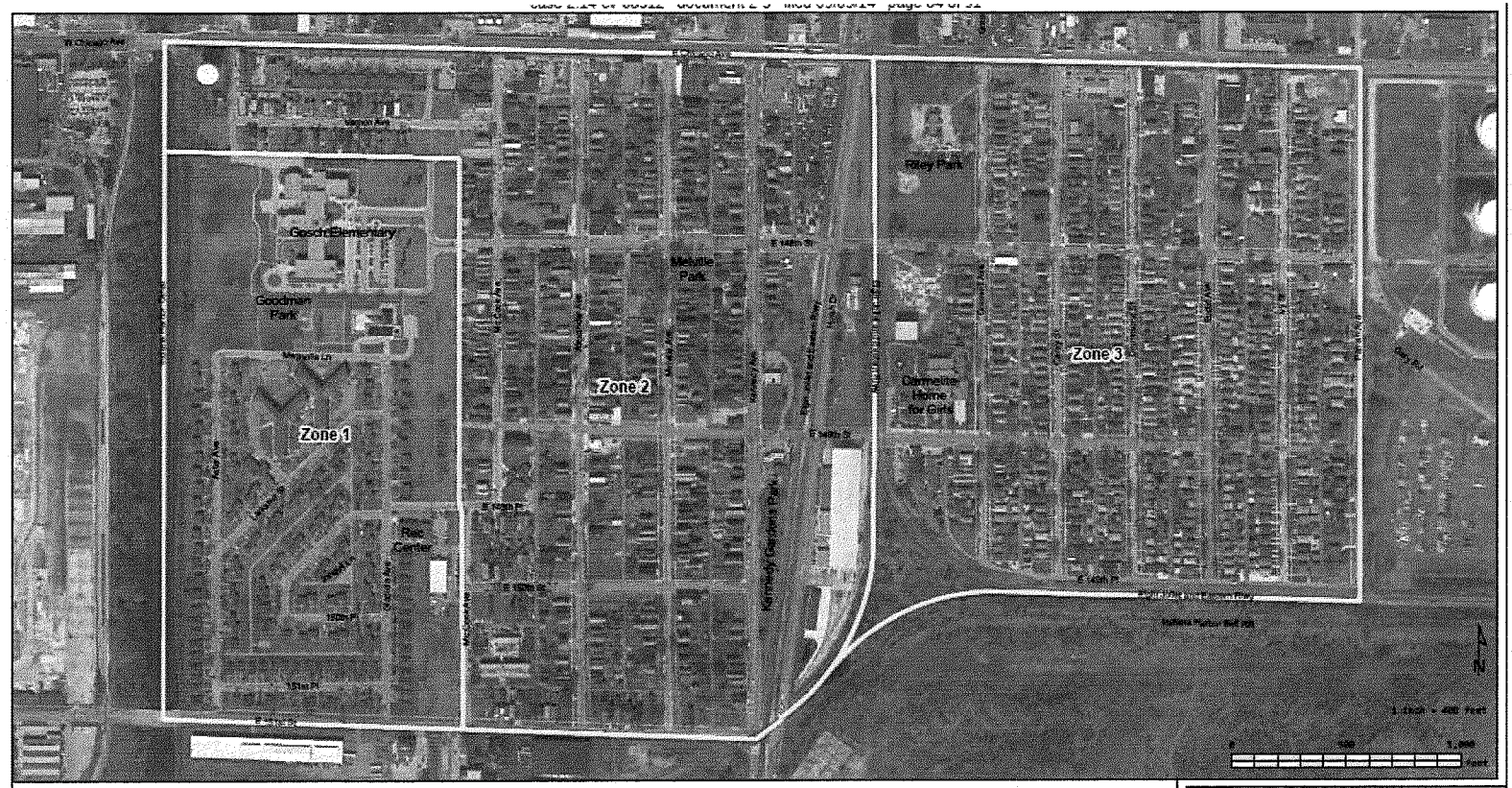


FIGURE 2
Zone 2/OU1 MAP
U.S. Smelter and Lead Refinery Site, East Chicago, Lake County, Indiana



ATTACHMENT I

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ENVIRONMENTAL JUSTICE ANALYSIS
FOR
U.S. SMELTER AND LEAD REFINERY SITE, EAST CHICAGO, LAKE COUNTY, INDIANA

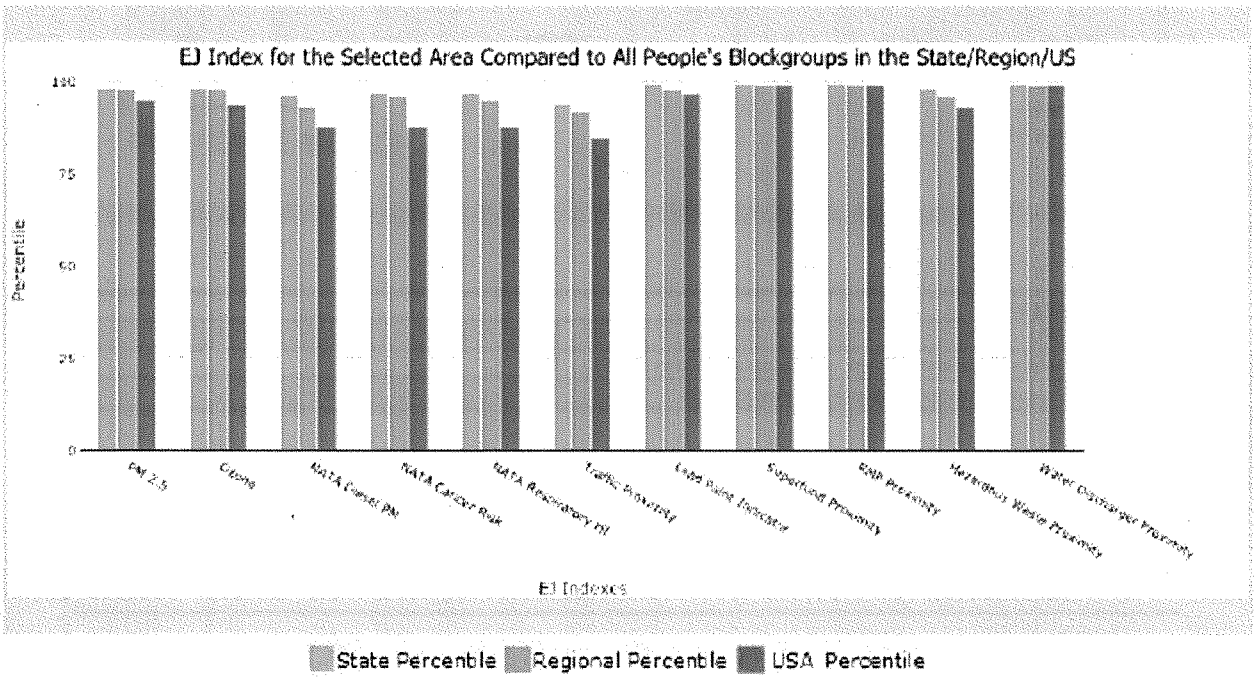
EJSCREEN Report (Version 2016)

0.5 mile Ring Centered at 41.623974,-87.469228, INDIANA, EPA Region 5

Approximate Population: 2,455

Input Area (sq. miles): 0.79

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	98	98	95
EJ Index for Ozone	98	98	94
EJ Index for NATA* Diesel PM	96	93	88
EJ Index for NATA* Air Toxics Cancer Risk	97	96	88
EJ Index for NATA* Respiratory Hazard Index	97	95	88
EJ Index for Traffic Proximity and Volume	94	92	85
EJ Index for Lead Paint Indicator	99	98	97
EJ Index for Superfund Proximity	99	99	99
EJ Index for RMP Proximity	99	99	99
EJ Index for Hazardous Waste Proximity	98	96	93
EJ Index for Water Discharger Proximity	99	99	99

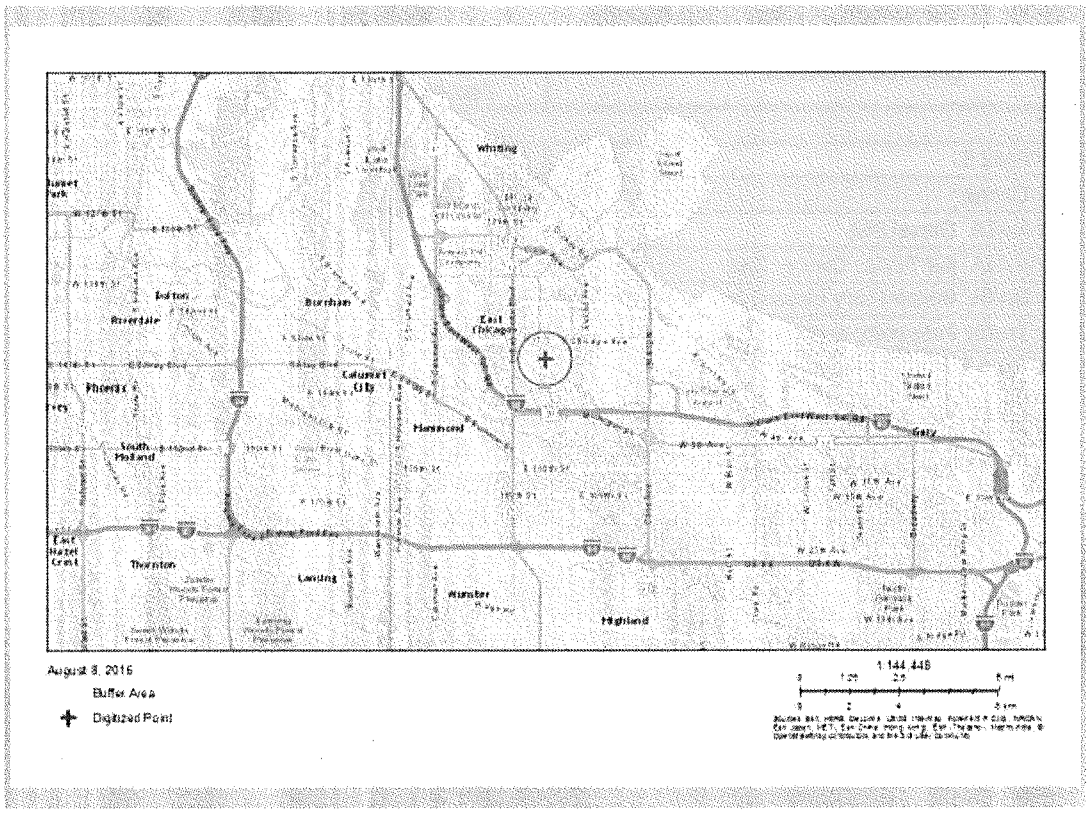


This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

EJSCREEN Report (Version 2016)

0.5 mile Ring Centered at 41.623974,-87.469228, INDIANA, EPA Region 5

Approximate Population: 2,455
Input Area (sq. miles): 0.79



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0
National Pollutant Discharge Elimination System (NPDES)	0

EJSCREEN Report (Version 2016)

0.5 mile Ring Centered at 41.623974,-87.469228, INDIANA, EPA Region 5

Approximate Population: 2,455

Input Area (sq. miles): 0.79

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m³)	11.7	11	98	10.6	86	9.32	93
Ozone (ppb)	48.8	51.2	11	50.3	21	47.4	52
NATA* Diesel PM (µg/m³)	0.86	0.835	57	0.931	50-60th	0.937	50-60th
NATA* Cancer Risk (lifetime risk per million)	32	34	38	34	<50th	40	<50th
NATA* Respiratory Hazard Index	1.5	1.4	61	1.7	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	240	250	73	370	70	590	65
Lead Paint Indicator (% Pre-1960 Housing)	0.65	0.36	82	0.39	77	0.3	84
Superfund Proximity (site count/km distance)	1.5	0.16	99	0.12	99	0.13	99
RMP Proximity (facility count/km distance)	4.3	0.52	99	0.51	99	0.43	99
Hazardous Waste Proximity (facility count/km distance)	0.09	0.044	91	0.069	78	0.072	77
Water Discharger Proximity (facility count/km distance)	2.9	0.34	99	0.31	99	0.31	99
Demographic Indicators							
Demographic Index	84%	27%	99	29%	97	36%	96
Minority Population	92%	19%	98	24%	94	37%	91
Low Income Population	77%	35%	95	33%	95	35%	95
Linguistically Isolated Population	5%	2%	87	2%	83	5%	70
Population With Less Than High School Education	22%	12%	84	11%	87	14%	78
Population Under 5 years of age	10%	6%	81	6%	83	6%	81
Population over 64 years of age	8%	14%	23	14%	23	14%	27

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

For additional information, see: www.epa.gov/environmentaljustice

ATTACHMENT II

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR THE
U.S. SMELTER AND LEAD SITE
EAST CHICAGO, LAKE COUNTY, INDIANA

UPDATE 4
OCTOBER 2016
SEMS ID:

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	424362	8/1/03	U.S. EPA	File	Superfund Lead Contaminated Residential Sites Handbook	124
2	424349	3/1/04	Geochemical Solutions	USS Lead	Final USS Lead Modified RCRA Facility Investigation (MRFI) Report (Draft: Text Only)	46
3	308202	3/1/04	Geochemical Solutions	USS Lead	Final USS Lead Modified RCRA Facility Investigation (MRFI) Report (Draft)	878
4	315595	11/18/08	Micke, F., U.S. EPA	Distribution List	Pollution Report (POLREP) #3 - Final	3
5	424390	8/31/09	Weston Solutions	U.S. EPA	Federal OSC Report, Revision 1, CERCLA Removal Action	44
6	413853	11/1/11	Micke, F., U.S. EPA	Distribution List	Pollution Report (POLREP) #1 - Initial - USS Lead-2	5
7	418177	11/16/11	Micke, F., U.S. EPA	Distribution List	Pollution Report (POLREP) #2 - USS Lead-2	6
8	418526	12/15/11	Micke, F., U.S. EPA	Distribution List	Pollution Report (POLREP) #3 - USS Lead-2	6

9	424434-424435	6/1/12	SulTRAC	U.S. EPA	Remedial Investigation Report (Final) for the U.S. Smelter and Lead Refinery Superfund Site w/ Appendices A-D (***Portions of this document have been redacted***)	9086
10	928966	7/1/12	U.S. Dept. of Housing and Urban Development	File	Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing	874
11	929468	7/23/13	Del Toral, M., Porter, A., and Schock, M., U.S. EPA	File	Journal Article: "Detection and Evaluation of Elevated Lead Release from ServiceLines: A Field Study"	8
12	928964	7/1/16	SulTRAC	U.S. EPA	Data Evaluation Report for Sampling Conducted During 2014-2015 - USS Lead Residential Area (Text, Figures, and Tables)	101
13	928955	8/8/16	Johnston, M., U.S. EPA	Ribordy, M., U.S. EPA	Email re: Blood Lead Level Summary for Action Memo	2
14	928958	8/10/16	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Report - USS Lead Indoor Dust Samples from July 29 - August 4, 2016	35
15	928957	8/11/16	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Report - USS Lead Indoor Dust Samples from August 5, 2016	11
16	928959	8/12/16	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Report - USS Lead Indoor Dust Samples from August 8, 2016	10
17	928960	8/16/16	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Report - USS Lead Indoor Dust Samples from August 9, 2016	9
18	928969	8/16/16	King, J., Indiana State Department of Health	File	Lead Risk Assessment Reports for 14 Properties (***Portions of this document have been redacted***)	382
19	928968	8/18/16	Johnson, M., ATSDR	Ribordy, M., U.S. EPA	Email re: USS Lead - Updated Summary Table (***Portions of this document have been redacted***)	4
20	928961	8/24/16	Osborn, R., IDEM	Ribordy, M., U.S. EPA	Email re: Lack of State Resources to Conduct Removal	2

21	928962	8/26/16	Petroff, D., IDEM	Ribordy, M., U.S. EPA	Letter re: Applicable or Relevant and Appropriate Requirements (ARARs)	3
22	929439	9/14/16	Caudill, M., ATSDR	Ribordy, M., U.S. EPA	Email re: Blood Lead Level Statements for Your Records	1
23	929469	10/7/16	Johnson, M., ATSDR	Ballotti, D., U.S. EPA	Memo re: Evaluation of Release of Lead from Water Service Lines and Temporary Use of Water Filters	2
24	-	-	Ballotti, D., U.S. EPA	Stanislaus, M., U.S. EPA	Action Memorandum re: Request for an Exemption from the $2 Million and 12-month Statutory Limits, Change in Scope of the Response and Ceiling Increase for the Time-Critical Removal Action at the U.S. Smelter and Lead Refinery Site (***PENDING***)	-

ATTACHMENT III

DETAILED CLEANUP CONTRACTOR ESTIMATE

HAS BEEN REDACTED – TWO PAGES

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

ATTACHMENT IV

INDEPENDENT GOVERNMENT COST ESTIMATE

HAS BEEN REDACTED – FOUR PAGES

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

ATTACHMENT V

SUMMARY OF OU1 RD SOIL SAMPLING RESULTS FOR ZONE 2

HAS BEEN REDACTED – TWELVE PAGES

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

ATTACHMENT VI

US Smelter and Lead Refinery Site Dust Screening Level for Lead

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
9311 GROH ROAD
GROSSE ILE, MI 48138

MEMORANDUM

SUBJECT: Development of an Indoor Dust Screening Criteria for the USS Lead Site

FROM: Keith Fusinski, PhD Toxicologist US EPA
Superfund Division, Remedial Response Branch #1, Remedial Response Section #1

TO: Jim Mitchell, On-Scene Coordinator US EPA
Superfund Division, Emergency Response Branch #2, Emergency Response Section #4

AND

Kristina Behnke, On-Scene Coordinator US EPA
Superfund Division, Emergency Response Branch #2, Emergency Response Section #3

DATE: 8/10/2016

The Integrated Exposure Uptake Biokinetic (IEUBK) model used by the US Environmental Protection Agency (USEPA) uses the concentration of indoor dust as a key parameter to evaluate risks to children from lead in soil. EPA separates dust into fine (≤150 µm) and coarse (>150 µm) fractions. It has been shown that the fine particle size is the fraction that is most likely to adhere to children's hands and be ingested. In addition, more recent information also indicates that there is a potential for enrichment of lead in smaller sized particles and increased bioavailability (USEPA 2016). Using only the fine particle size concentration for screening can improve the accuracy of exposure and risk calculations in lead risk assessments.

The IEUBK model (version 1.1 Build 11) was used to determine an indoor dust screening level for lead. The default assumption in the model is that the concentration of lead in indoor dust is 70% of the concentration of lead in outdoor soil (Brattin and Griffin - 2011). US EPA recommends that lead concentrations in residential soil do not exceed 400 parts per million (ppm) in soil.

The modeling was performed using default inputs from the IEUBK model for diet, drinking water, air concentration and bioavailability. The IEUBK model was run using 400 ppm for lead in soil and modeled children 0 to 84 months of age. The calculated screening level to protect this population from a current US EPA acceptable blood lead level of 10 µg/dL is **316 ppm** of lead in

dust. This concentration should be used when evaluating the fine particle size fraction of lead dust contamination.

REFERENCES

Brattin and Griffin - 2011 - William Brittin. Susan Griffin. Evaluation of the Contribution of Lead in Soil to Lead in Dust at Superfund Sites. Human and Ecological Risk Assessment: An International journal Vol. 17, Iss. 1, 2011.

USEPA 2016 - OLEM Directive 9200.1-128. Recommendations for Sieving Soil and Dust Samples at Lead Sites for Assessment of Incidental Ingestion.

Attachment VII

US Smelter and Lead Refinery Site Dust Screening Level for Arsenic

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
9311 GROH ROAD
GROSSE ILE, MI 48138

MEMORANDUM

SUBJECT: Development of an Indoor Dust Arsenic Screening Criteria for the USS Lead Site

FROM: Keith Fusinski, PhD Toxicologist US EPA
Superfund Division, Remedial Response Branch #1, Remedial Response Section #1

TO: Jim Mitchell, On-Scene Coordinator US EPA
Superfund Division, Emergency Response Branch #2, Emergency Response Section #4

AND

Kristina Behnke, On-Scene Coordinator US EPA
Superfund Division, Emergency Response Branch #2, Emergency Response Section #3

DATE: 9/20/2016

The US EPA determines probability of a non-cancer detrimental health effect to occur by calculating a hazard quotient (HQ). The HQ is a ratio of a single substance exposure level over a specified period of time to a reference dose of the same substance derived from a similar exposure period. It is recommended that the HQ of an exposure to a chemical of concern be below or equal to 1 which is the level at which no adverse human health effects are expected to occur. For cancer risk, the U.S. EPA recommends a screening level that would equate to a one in a million ($1x10^{-6}$) or greater lifetime risk of developing cancer from exposure to a contaminated site. However, rates up to 1 in 10,000 ($1x10^{-4}$) can be considered acceptable. The Office of Land and Emergency Management (OLEM) recommends removal management levels (RMLs) be set at an excess lifetime cancer risk (ELCR) of 1 in 10,000 or a non-cancer HQ of 3, whichever is most protective.

Per the direction of the EPA Lead Technical Review Workgroup, the Regional Screening Level (RSL) calculator was used to determine the "clearance" level for arsenic in dust at the USS Lead site. The calculator was set to determine arsenic concentrations based upon RMLs over a lifetime exposure of 24 hours a day, for 350 days per year, for 26 years (6 as child/20 as adult). With the ingestion rate of 100 mg/day of dust for all receptors (General Population Upper Percentile -EPA Exposure Factors Handbook 2011).

This results in a "clearance" level of **100 mg of arsenic/kg of dust**. Any concentrations of arsenic below this level is within our acceptable risk range or below it.

ATTACHMENT VIII

THIRD AMENDEDACTION MEMORANDUM
DATED OCTOBER 13, 2016

APPENDIX E

TO
Z2&3 INTERIOR UAO

ACTION MEMORANDUM
FIFTH AMENDMET

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MAR 06 2017

REPLY TO THE ATTENTION OF:

MEMORANDUM

SUBJECT: **ACTION MEMORANDUM – 5th AMENDMENT:** Request for a Change in Scope and Ceiling Increase for the Time-Critical Removal Action at the U.S. Smelter and Lead Refinery Site, East Chicago, Lake County, Indiana (Site ID # 053J)

FROM: Margaret M. Guerriero, Acting Director
Superfund Division

THRU: Reggie Cheatham, Office Director
Office of Emergency Management (OEM)

TO: Barry Breen, Acting Assistant Administrator
Office of Land and Emergency Management

I. PURPOSE

The purpose of this Action Memorandum Amendment is to request and document your approval, consistent with Section 104(c)(1)(A) of CERCLA, 42 U.S.C. Section 9604 (c)(1)(A), to change the scope of the response and for a ceiling increase for the time-critical removal action at portions of the U.S. Smelter and Lead Refinery Site (the Site) residential area defined as Zone 2 and Zone 3 of Operable Unit 1 (OU1), in East Chicago, Lake County, Indiana (see Figure 2). The sought increase of $2,983,985 would raise the project ceiling for the time-critical removal action from $40,268,048 to $43,252,033.

Indoor data collected as a part of cleanup actions in Zones 2 and 3 found lead and arsenic concentrations in indoor dust samples above the screening criteria established for the Site. Response actions are necessary in Zones 2 and 3 to mitigate threats to public health, welfare, and the environment posed by the release and/or threatened release of uncontrolled hazardous substances at the Site. This removal action is twofold. It involves testing for lead and/or arsenic contaminated dust in residential homes located within Zones 2 and 3 where excavation of lead- or arsenic-contaminated soils has already taken place, or where EPA has been specifically requested to perform sampling by a resident. If dust in homes contains concentrations of lead or arsenic above the site-specific screening levels, and those homes had exterior soils that required remediation, contaminated dust will be removed from those homes. It also involves excavating soils in properties in Zone 2 that are eligible for time-critical removal actions based on criteria outlined in OSWER Publication 9285.7-50 *Superfund Lead-Contaminated Residential Sites*

Handbook (Lead Handbook) (2003) that were not previously considered in the fourth amendment to the action memorandum.

A change of scope of the response and ceiling increase is necessary as the previous Action Memoranda approved on January 22, 2008, August 13, 2008, September 12, 2011, October 13, 2016, and October 28, 2016 (Attachments IX, X, XI, XII, XIII), were for the excavation and proper disposal of lead-contaminated soils from residential parcels in OU1, Zones 1, 2 and 3; indoor cleanup of lead contaminated dust inside of residences in Zones 1 and 2; and temporary relocation of residents in the West Calumet Housing Complex (WCHC) in Zone 1 and residents in Zone 2. They did not address indoor cleanup of lead contaminated dust inside of residences in Zone 3. Further, for residences in Zones 2 and 3, the site-specific interior dust screening level for arsenic has been revised downward from 100 mg/kg to 26 mg/kg.

A change of scope is also necessary to further define the prioritization of Zone 2 properties for time-critical removal actions for the excavation of exterior soil to include properties with lead concentrations in surface soils at or greater than 400 mg/kg where a member of a sensitive population resides (children up to age 7 and/or pregnant women) and properties with lead concentrations at or greater than 400 mg/kg at any depth down to 24 inches bgs where a child with blood lead levels at or greater than 10 µg/dL lives.

Conditions existing at the Site in Zone 2 and Zone 3 present a threat to public health and the environment and meet the criteria for initiating a removal action under 40 CFR § 300.415(b) of the National Contingency Plan (NCP). The U.S. Environmental Protection Agency (EPA or the Agency) documented elevated levels of lead and arsenic in surface soil in residential parcels at the Site in Zones 1, 2 and 3. Lead and arsenic are hazardous substances as defined by CERCLA § 101(14). The EPA has also documented elevated levels of lead and arsenic in dust found within residences located within Zones 1, 2 and 3 of the Site.

There are no nationally significant or precedent setting issues associated with the Change of Scope sought in this Action Memorandum as it seeks approval only for the sampling and removal of lead and/or arsenic contaminated dust in residential homes in Zone 3 and for the inclusion of soil removals in Zone 2 where sensitive populations live. EPA has previously issued Action Memoranda for the sampling and removal of lead and/or arsenic contaminated dust in residential homes in Zone 1 and Zone 2, and performing time-critical removal actions at contaminated properties with sensitive populations is consistent with OSWER Publication 9285.7-50 *Superfund Lead-Contaminated Residential Sites Handbook* (Lead Handbook) (2003). The Site is on the National Priorities List (NPL) and has been since April of 2009.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID: IND047030226
RCRA ID: IND047030226
STATE ID: None
Category: Time-Critical Removal

A. Site Description

1. Removal Site Evaluation

The Indiana Department of Environmental Management (IDEM) sampled some of the residential parcels to the north of the U.S. Smelter and Lead Refinery, Inc. (U.S.S. Lead) facility in 1985. This area, known locally as the Calumet neighborhood, is now known as Operable Unit 1 of the Site. IDEM found elevated lead levels in these residential yards. In September of 1985, the Indiana State Board of Health found the U.S.S. Lead facility in violation of state law and stated that the lead-contaminated soils within the facility boundaries may pose a risk to human health and the environment. IDEM referred the U.S.S. Lead facility, now known as Operable Unit 2 or OU2, to EPA for cleanup but did not refer for cleanup the area now known as Operable Unit 1.

From 1993 through 2006, EPA's Resource Conservation and Recovery Act (RCRA) Corrective Action program oversaw the remediation and management of lead-contaminated soils within the boundaries of OU2, the U.S.S. Lead facility. On November 18, 1993, EPA and U.S.S. Lead entered into an Administrative Order on Consent (AOC) pursuant to Section 3008(h) of RCRA. The AOC required U.S.S. Lead to implement interim measures, including site stabilization and construction of a corrective action management unit (CAMU) to contain contaminated soils and slag and to conduct a Modified RCRA Facility Investigation at the U.S.S. Lead facility, OU2. The CAMU now covers approximately 10 acres and is surrounded by a subsurface slurry wall. Excavation and construction of the CAMU was conducted in two phases and completed between August and September 2002. Slag generated from the U.S.S. Lead facility's blast-furnace operations was routinely placed in piles on the southern portion of OU2 near the banks of the Grand Calumet River. The cleanup of slag was described in the Interim Stabilization Measures Work Plan prepared by ENTACT, LLC and was completed during the third quarter of 2002.

As part of a RCRA Corrective Action in 2003 and 2006, EPA conducted soil sampling in the residential neighborhood to the north located in what is now referred to as OU1 of the U.S.S. Lead Site. In the investigation of late July and early August 2003, 83 residential parcels within OU1 were sampled and analyzed for lead using a Niton X-ray fluorescence (XRF) instrument. Soils from 43 locations (52 percent) exceeded the 400 milligrams per kilogram (mg/kg) residential soil screening criterion for lead. In 2006, EPA's Field Environmental Decision Support (FIELDS) team supplemented the work performed in 2003 by collecting additional data from 14 parcels sampled in 2003 to (1) assess whether the top-most soils (zero to one inch below ground surface (bgs)) had elevated lead concentrations relative to deeper soils (one to six inches bgs), (2) collect and compare composite samples to individual samples to assess whether composite samples accurately represented the concentrations in residential yards and parks, and (3) compare lead concentrations in the fine and coarse fractions of sieved samples to evaluate whether lead was preferentially distributed in the fine-grain sizes. These sampling results showed some yards in OU1 to have high levels of lead contamination with the highest sample containing lead at a concentration of 3,000 mg/kg. The RCRA Corrective Action program looked at the possible source of the lead contamination and determined it was from various industrial sources. The RCRA Corrective Action program referred OU1—the off-site contamination from the U.S.S. Lead facility and other industrial sources - to the Superfund Program in 2004; the remainder of OU2—the on-site contamination—was referred in 2006.

Consistent with the Lead Handbook, the Superfund Program prioritized which homes needed to be cleaned up first based on the above-referenced sampling results. Specifically, residential parcels with lead concentrations in surface soils (0-6 inches) at or above 1,200 mg/kg were given priority. EPA does not consider the 1,200 mg/kg concentration as an action level for removal actions but this level does provide an alternative to running the Integrated Exposure Uptake Biokinetic (IEUBK) model with limited data to determine if the site poses an urgent threat.

On January 22, 2008, EPA signed the original action memorandum to conduct a time-critical removal action in OU1 to address known parcels with lead levels in surface soil that exceeded 1,200 mg/kg. These parcels had been identified as part of the RCRA Corrective Action residential investigation. The EPA identified 15 private parcels that contained soil with lead concentrations that exceeded 1,200 mg/kg in the top six inches of soil. On June 9, 2008, the EPA initiated the time-critical removal action to address the 15 residential parcels with lead levels that exceeded 1,200 mg/kg. On August 13, 2008, the EPA amended the original action memorandum to increase the project ceiling by $511,950 for a total of $984,060. The EPA was able to obtain access agreements and remediate 13 of the 15 parcels; two parcels were not remediated. The removal action was completed on November 18, 2008. In total, 1,838 tons of lead-contaminated soil were removed and disposed of at an approved landfill.

A Remedial Investigation (RI) was conducted from 2009 through 2010 to collect additional soil data in OU1, which EPA later divided for implementation of the remedy into Zone 1, Zone 2, and Zone 3. As a result of the sampling, EPA discovered an additional 14 areas within OU1 with lead levels that exceeded the removal action level of 1,200 mg/kg. On September 11, 2011, EPA signed the second amendment to the original action memorandum, which increased the total project ceiling to $1,928,460. On October 11, 2011, EPA started the time-critical removal action involving lead-contaminated soil removals at five West Calumet Housing Complex (WCHC) addresses (located in Zone 1) and nine other residential parcels outside the WCHC. In addition, two parcels that were not remediated during the previous removal action in 2008 because of access issues were remediated during this removal action. The removal action was completed on December 9, 2011. In total, 1,913 additional tons of lead-contaminated soil were removed and disposed of at an approved landfill as a result of the 2011 removal activities.

In November 2012, EPA issued a Record of Decision (ROD) for Operable Unit 1 (OU1) of the Site. EPA has divided OU1 into 3 separate zones for implementation of the remedy (Zones 1, 2, and 3). Residential yards within OU1 are contaminated with lead and arsenic at levels that pose a threat to human health through ingestion, inhalation and direct contact. EPA's selected remedy for OU1 addresses these risks from exposure to contaminated soils through the excavation and off-site disposal of lead or arsenic contaminated soils. The remedial action levels (RALs) for OU1 are 400 mg/kg for lead at residential parcels, 800 mg/kg for lead at industrial/commercial parcels, and 26 mg/kg for arsenic at both residential and industrial/commercial parcels.

ZONE 1 ACTIONS

From November 2014 through April 2015, EPA conducted more extensive soil sampling within Zone 1 as part of the remedial design process for OU1. EPA completed remedial designs for Zone 1, the WCHC, in the summer of 2016 Zone 1 includes approximately 118 separate

"parcels," including 111 parcels in the WCHC, three right-of-way parcels, and a school, park, recreation center, and maintenance facilities. EPA sampled all parcels in Zone 1 except a narrow strip of land on the east bank of the Indiana Harbor Canal. In May 2016, EPA received validated sampling results, which revealed lead concentrations in soil up to 24 inches in depth ranged from non-detect (ND) to 91,100 mg/kg for lead. Arsenic concentrations ranged from ND to 3,530 mg/kg (See Attachment V – Summary of OU1 RD Soil Sampling Results). Within Zone 1, a total of 117 parcels exceeded the removal management level (RML) for lead of 400 mg/kg for residential soil and 61 parcels exceeded the RML for arsenic of 68 mg/kg. Each of the parcels that exceeded the RML for arsenic also exceeded the RML for lead. Sample results from surface soils (0-6") indicated that lead concentrations at 13 parcels in the WCHC exceed 5,000 mg/kg with concentrations up to 45,000 mg/kg.

On July 29, 2016, EPA initiated in-house sampling for dust collection in the WCHC in Zone 1 to determine lead concentrations in homes. EPA was concerned about the elevated levels of lead in surface soils within the WCHC and the likelihood that lead contaminated soil/dust was being tracked or blown into the housing units. EPA prioritized homes for sampling based on residency of sensitive populations and the lead concentration in the soils of the yard. The prioritization process included homes occupied by a child with an elevated blood lead level (EBLL) as determined by reference to records from Indiana State Department of Health (ISDH), and homes with elevated soil lead concentrations in their yards. As of January 9, 2017, EPA had received validated results from 269 residences. Concentrations ranged from 3.9 to 32,000 mg/kg for lead fines and 0.077J (J means the associated value is the approximate concentration) to 880 mg/kg for arsenic fines. Indoor dust results from 110 out of the 269 sampled residences exceeded the EPA screening level of 316 mg/kg for lead for indoor living spaces (See Attachment VII – Indoor Dust Screening Criteria for Lead).

Lead Inspectors from the Indiana State Department of Health (ISDH) accompanied EPA into 28 of the initial 42 residences in Zone 1 and conducted a separate inspection for compliance with lead paint abatement policies. Wipe samples were collected from floors, interior window sills, and window troughs and compared to HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (2012 Edition) (40 $\mu g/ft^2$ - floors, 250 $\mu g/ft^2$ - window sills, and 400 $\mu g/ft^2$ - window trough). Wipe samples from six of the initial 14 units sampled were above the respective lead dust clearance standards (see Attachment VIII - Indiana State Department of Health Wipe Sample Results). Evidence of lead based paint was not found by ISDH in any of the Zone 1 inspected units based on X-Ray fluorescence (XRF) screening of painted surfaces. EPA contractors performed side by side XRF screening of painted surfaces and compared their results with the ISDH's findings; EPA's findings were consistent with the findings of ISDH. Following this comparison, EPA contractors continued screening properties with an XRF.

On August 12, 2016, EPA began to clean the inside of residences in the WCHC to remove lead contaminated dust. A combination of HEPA vacuums and wet cleaning were used to remove lead dust from ceilings, floors, carpets, walls, drapes, accessible ductwork, furnace, and furniture. As of November 7, 2016, EPA had cleaned approximately 270 out of 334 occupied units. Residents were temporarily relocated during the cleaning process and clearance sampling was conducted as necessary to document the efficacy of the cleaning.

The Agency for Toxic Substances and Disease Registry (ATSDR) is working with the East Chicago Health Department (ECHD), which is conducting an ongoing exposure investigation of blood lead levels of residents in the WCHC. The following is a summary of the findings from screenings of children living in the WCHC, which is derived from both historical data and the on-going blood lead testing campaign being conducted by ECHD:

- From the most recent ECHD testing in summer 2016, 18 out of 94 (19%) tested children from the WCHC under age six were identified with elevated blood lead (EBL) levels (> 5 µg/dL) based on capillary (finger stick) measurements.

- From 2014 through 2015, 26% of children under age seven tested at the WCHC were identified with EBL levels, with the highest measurement at 33 µg/dL in a one-year-old child. Within the same period, the census tract that includes all of the children from the WCHC (Zone 1) and part of Zone 2 had an EBL incidence rate of 22%. By comparison, the EBL rates for the two adjacent census tracts were 9% and 11%.

- The ATSDR Exposure Investigation conducted in the West Calumet neighborhood in 1997 showed a 35% EBLL incidence rate, which was defined at that time as greater than 10 µg/dL.

These observations by ATSDR, ISDH, and ECHD across almost 20 years demonstrate a consistent pattern of elevated blood lead levels in young children living in OU1. Given that the ISDH Lead Inspectors found no lead-based paint in recently sampled units within the WCHC, it is likely that exposure to soil-based lead contamination in the WCHC and portions of Zone 2 is a principle cause of elevated blood lead levels in children there.

ZONE 2 ACTIONS

Beginning in July 2016, EPA began conducting more extensive soil sampling within Zone 2 as part of the RD process for OU1. Zone 2 includes approximately 590 separate "parcels." Most of these parcels are residential parcels, though there are some commercial/industrial parcels and some of the residential parcels contain multi-family residences. As of February 7, 2017, EPA has sampled 499 properties in Zone 2, of which 404 properties have results that exceed the RALs for lead (400 mg/kg) and/or arsenic (26 mg/kg). The concentrations in surface soils range from 13 to 17,500 mg/kg for lead and 2.2 to 210 mg/kg arsenic.

In the fourth amendment to the action memorandum, EPA defined priority properties as those with surface (0 – 6 inches) soil values for lead at or above 1,200 mg/kg or arsenic at or above 68 mg/kg. Of the properties that exceeded the RMLs, 47 properties were deemed priorities.

Beginning on November 1, 2016, EPA performed removal actions to excavate and dispose of contaminated soil from those properties where lead and/or arsenic contamination in the top six inches exceeded 1,200 mg/kg or 68 kg/mg, respectively. During the fall 2016 construction season, EPA performed removal actions at 17 properties in Zone 2, including the 10 properties initially identified when the fourth amendment to the action memorandum was signed.

As a part of the larger USS Lead Site response and in conjunction with the 17 soil removal actions performed in the fall of 2016, EPA conducted interior dust sampling in residences at those properties (some properties are multiunit residences) to determine whether contaminated dust was present at concentrations that exceed screening levels established for arsenic and lead based on the August 10, 2016 (lead) and December 13, 2016 (arsenic) recommendations of the EPA-Region 5 toxicologist and in consultation with ATSDR. Dust sampling was conducted in high traffic areas of the interior of a residence to evaluate if contamination has been tracked into the home and whether it may pose a potential health risk. The lead based paint screening procedures, conducted by EPA contractors, were also used at a few homes in Zones 2 and 3 as a part of the interior dust sampling process.

Indoor dust sampling was offered to all Zone 2 priority properties where EPA had performed exterior soil remediation. EPA sampled 30 residences in Zone 2 for dust and identified 15 residences with lead or arsenic levels above the site specific screening values. Interior cleanings were conducted at 14 of those residences (one property owner deferred cleaning to Spring 2017).

ZONE 3 ACTIONS

On October 2, 2016, EPA initiated excavation activities in Zone 3. The excavation activities were performed consistent with the terms of a Consent Decree entered into in 2014 by the federal government, State of Indiana and certain private entities. Property specific design drawings prescribed dig depths for each property based on sampling data generated during the remedial design process. As of December 14, 2016, EPA had completed excavations at 37 priority properties and 1 park (Riley Park) in Zone 3. The work included excavation of the contaminated soil and its replacement with clean dirt fill, topsoil, and sod.

As in Zone 2, EPA offered to perform indoor sampling at all properties in Zone 3 that had their soil remediated. The lead based paint screening procedures, conducted by EPA contractors, were also used at a few homes in Zone 3 as a part of the interior dust sampling process. As of January 9, 2017, 36 priority residences in Zone 3 have had interior dust sampling completed and have validated data. Laboratory results indicated 17 residences exceed the interior dust screening levels of 316 mg/kg for lead and/or 26 mg/kg for arsenic (See Attachment V – Summary of OU1 Interior Dust Sampling Results for Zone 3). This exceedance rate is consistent with the exceedance rates in both Zones 1 and 2. To date, EPA has identified one residence in Zone 3 as having lead based paint inside the structure. EPA intends to perform additional lead based paint screenings during future sampling events.

2. Physical Location

The U.S.S. Lead Site lies approximately 18 miles southeast of Chicago, Illinois, in East Chicago, Indiana (Figure 1). The Site consists of the former U.S.S. Lead facility located at 5300 Kennedy Avenue, East Chicago, Indiana (designated as Operable Unit 2 (OU2)) and the residential area to the north and northeast (defined as OU1). OU1 is bound by East Chicago Avenue on the north, East 151st Street/149th Place on the south, the Indiana Harbor Canal on the west, and Parrish Avenue on the east. OU1 includes about 1200 homes, a small number of parks, open space as a part of the railroad right-of-way, schools, and public buildings. For the purpose of implementing

the remedial action (RA) in OU1, EPA has divided OU1 into three distinct geographic areas (Zones 1, 2, and 3). The actions authorized by this fifth amendment are taking place in OU1, Zones 2 and 3. Zone 2 is generally bordered: (1) on the north by Chicago Avenue; (2) on the east, by Elgin, Joliet Railroad; (3) on the south by East 151st Street; and (4) on the west by: (i) the Indiana Harbor Canal between Chicago Avenue and the northern boundary of the Carrie Gosch Elementary School; (ii) the eastern-most edge of a north/south utility right of way that runs parallel to McCook Avenue until East 149th Place, and (iii) McCook Avenue between East 149th Place and 151st Street. Zone 3 is adjacent to and directly east of Zone 2 and is generally bordered: (1) on the north by East Chicago Avenue; (2) on the east by Parrish Ave; (3) on the south by East 149st Street; and (4) on the west by the Elgin, Joliet Railroad.

The EPA conducted an EJ analysis for the Site (see Attachment I). Screening of the surrounding area was conducted using Region 5's EJ Screen Tool. Region 5 has reviewed environmental and demographic data for the area surrounding the U.S.S. Lead Site and has determined there is high potential for EJ concerns at this location.

3. Site Characteristics

OU1 includes about 1,200 homes, a small number of parks, open space as a part of the railroad right-of-way, schools, and public buildings. OU1 is primarily a residential area, which includes commercial and light industrial areas. Some parcels in the residential area in Zones 1, 2 and 3 have levels of lead in soils above EPA's RML of 400 mg/kg and arsenic above the RML of 68 mg/kg. Indoor dust sampling of residential properties in OU1 has lead and arsenic dust values above the site specific screening level.

United States Geological Survey (USGS) historical aerial photographs from 1939, 1951, 1959, and 2005 show OU1 over time. Review of these aerial photographs indicates that most of the residential neighborhoods within the Site west of the railroad tracks were built before 1939. By 1951, approximately 75 to 80 percent of the homes were built; by 1959, most of the homes east of the railroad tracks had also been built. These photographs also show that the International Smelting and Refining Company, a subsidiary of the Anaconda Copper Company (whose successor in interest is now the Atlantic Richfield Company [ARC]) occupied the area where the WCHC is currently located (Zone 1 in the southwest portion of OU1) prior to 1946. Title records indicate that the East Chicago Housing Authority constructed the WCHC on the former Anaconda Copper Mining Company/International Smelting and Refining Company site between 1970 and 1973.

The U.S.S. Lead facility was a primary and secondary smelter of lead. It began operations around 1906 and ended operations in 1985. From about 1920 until 1973, the facility was a primary smelter of lead but also conducted secondary smelting operations. The primary smelting operations included a refining process to create high quality lead free of bismuth. From 1973 until its closure in 1985, the facility was exclusively a secondary smelter. The secondary refinery operations included: battery breaking with tank treatment of spent battery acid at a rate of 16,000 gallons per day; baghouse dust collection with storage in on-site waste piles of up to 8,000 tons of flue dust; and blast furnace slag disposal, which was deposited in the wetland adjacent to and along the southern boundary of the facility (OU2). The blast-furnace baghouse

collected approximately 300 tons of baghouse flue dust per month during maximum operating conditions. Some of the flue dust escaped the baghouse capture system and was deposited by the wind within the boundaries of OU1. Secondary lead recovery operations ceased in 1985.

In addition to the U.S.S. Lead facility operation, other industrial operations have managed or processed lead and other metals and are likely sources of contamination in OU1. Immediately east of the U.S.S. Lead facility and south of Zone 3 is the former DuPont site (currently leased and operated by W.R. Grace & Co., Grace Davison). One of the processes that historically took place at the DuPont site was the manufacturing of a lead arsenate pesticide. In 2015, DuPont spun off certain assets and liabilities to a newly created company, The Chemours Company FC, LLC (Chemours). Chemours is now the owner of the former DuPont facility.

North of the former U.S.S. Lead facility stood two lead processing operations, which processed lead and other metals. A 1930 Sanborn map identifies the operations as Anaconda Lead Products and International Lead Refining Company (referred to as the former Anaconda facility). Anaconda Lead Products was a manufacturer of white lead and zinc oxide and the International Lead Refining Company was a metal refining facility. These facilities consisted of a pulverizing mill, white lead storage areas, a chemical laboratory, a machine shop, a zinc oxide experimental unit building and plant, a silver refinery, a lead refinery, a baghouse, and other miscellaneous buildings and processing areas. The International Lead Refining Company was a subsidiary of the Anaconda Copper Mining Company. Title to the property in Zone 1 was held between 1934 and 1946 by International Lead Smelting and Refinery Company. International Lead Smelting and Refinery Company acquired titled to the property in Zone 1 in 1934 from International Lead Refining Company, which had acquired title in 1912.

The residential area that comprises Zones 2 and 3 has been contaminated by the deposition of contaminants from the U.S.S. Lead facility, Anaconda Copper Mining Company/International Lead Smelting and Refinery Company facility, and DuPont/Chemours facility. The focus of this time-critical removal action is two-fold: The first focus is the removal of exterior lead and/or arsenic contaminated soils from two additional categories of priority properties: (1) residences where sensitive populations (i.e., pregnant women and/or children 6 years of age and under) live *and* the top six inches of soil associated with the residence has lead in excess of 400 mg/kg; (2) residences where a child has a blood lead level above 10 ug/dL and the top 24 inches of soil associated with the residence has lead in excess of 400 mg/kg. The second focus is the interior sampling and cleaning of residences in Zones 2 and 3 that have associated soils which require or required remediation. Approximately 81% of the properties in Zone 2 and 51% of the properties in Zone 3 require or required soil remediation. Based on data generated during work performed during the 2016 construction season, EPA anticipates that 50% of residences in both Zones 2 and 3 which require exterior soil remediation will also require interior cleaning.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

The threat is presented by the presence of lead and arsenic-contaminated soil in residential yards and lead and arsenic contaminated dust within some of the residences in Zones 2 and 3. The presence of lead and arsenic in outdoor soils and in indoor dust at concentrations above health

screening values provides a constant source of exposure for individuals both outside and while in the home. Lead and arsenic are hazardous substances as defined by section 101(14) of CERCLA. *See* 40 C.F.R. § 302.4. Nearby lead processing operations caused extensive lead and arsenic contamination in soils throughout the Site. This removal is responding to actual and potential outdoor lead and arsenic contamination, as well as potential indoor contamination caused by the migration of lead and arsenic contaminated soil from outdoors to indoors (like the source of contamination found in Zone 1). The presence of elevated lead and arsenic levels in surface soils and potential presence of lead and arsenic in indoor dust in Zones 2 and 3 makes this a time-critical removal action.

Exposure may occur from direct ingestion of soil in yards, soil tracked indoors, or house dust; and inhalation of fugitive dust. Potential human receptors include residents, including children six years of age and under, and pregnant or nursing women.

Lead exposure via inhalation and/or ingestion can have detrimental effects on almost every organ and system in the human body. Exposure may occur from direct ingestion of soil in yards, soil tracked indoors (house dust), and inhalation of fugitive dust. Lead can cause a variety of health problems to people who are exposed to it. Potential human receptors include residents, with a particular concern for children six years of age and under and pregnant or nursing women. Children are at greatest risk from the toxic effects of lead. Initially, lead travels in the blood to the soft tissues (heart, liver, kidney, brain, etc.). Then, it gradually redistributes to the bones and teeth where it tends to remain. Children exposed to high levels of lead have exhibited nerve damage, liver damage, colic, anemia, brain damage, and death. The most serious effects associated with markedly elevated blood lead levels include neurotoxic effects such as irreversible brain damage.

Ingesting very high levels of arsenic can result in death. Exposure to lower levels can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of "pins and needles" in hands and feet. Ingesting or breathing low levels of inorganic arsenic for a long time can cause a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso. Skin contact with inorganic arsenic may cause redness and swelling. Several studies have shown that ingestion of inorganic arsenic can increase the risk of skin cancer and cancer in the liver, bladder, and lungs. Inhalation of inorganic arsenic can cause increased risk of lung cancer. The Department of Health and Human Services (DHHS) and the EPA have determined that inorganic arsenic is a known human carcinogen (ATSDR, Chemical Abstract Services [CAS] # 7440-38-2], August 2007).

5. NPL status

The U.S.S. Lead Site consisting of both the former U.S.S. Lead facility (OU2) and the Calumet neighborhood to the north (OU1) was listed as a Superfund site on the National Priorities List (NPL) on April 8, 2009. EPA began the RI for OU1 on June 26, 2009. During December 2009 and August 2010, EPA contractors sampled yards in residential areas and background locations. In June 2012, EPA completed a preliminary remedial investigation and feasibility study to determine the level and extent of lead and arsenic contamination within OU1 and proposed a

remedy. In November 2012, after considering comments received from the City and IDEM, EPA outlined the long-term permanent cleanup plan in a Record of Decision for OU1. EPA has completed the remedial designs for work in Zone 1 and most of Zone 3. EPA is in the process of completing the remedial designs for Zone 2.

6. Maps, pictures and other graphic representations

Maps include:

Figure 1 – USS Lead and Lead Refinery, E. Chicago, IN. Location Map
Figure 2 – OU1 Zones 1, 2, and 3 – Location Map

B. Other Actions to Date

On January 22, 2008, EPA signed the original action memorandum to conduct a time-critical removal action in OU1 to address known parcels with lead levels that exceeded the removal action limit of 1,200 mg/kg. These parcels were identified based on sampling data collected during the RCRA Corrective Action investigation. That removal action began on June 9, 2008, and involved the excavation and off-site disposal of lead contaminated soil from 13 residential parcels. On August 13, 2008, EPA amended the original action memorandum to increase the project ceiling in order to complete the ongoing, time-critical removal action. In total, 1,838 tons of lead-contaminated soil were removed and disposed of at an approved landfill. Excavated areas were backfilled with clean fill and seeded. This removal action was completed on September 25, 2008, and the final Pollution Report was issued on November 18, 2008.

On September 12, 2011, EPA signed a second amendment to the action memorandum – which is an extension of the original memorandum - to conduct a time-critical removal action in Zones 1, 2, and 3 of OU1 to address 16 parcels (including the 2 that were missed in 2008) with lead levels exceeding the removal action limit of 1,200 mg/kg. These parcels were identified based on sampling data collected during the RI. This removal action began on October 24, 2011, and involved the excavation and off-site disposal of lead contaminated soil from 16 residential parcels. In total, 1,913 tons of lead-contaminated soil were removed and disposed of at an approved landfill. Excavated areas were backfilled with clean fill and seeded. This removal action was completed on December 9, 2011, and the final Pollution Report was issued on December 15, 2011.

On August 2, 2016, and continuing throughout the month of August, verbal authorizations were provided for emergency removal actions within the West Calumet Housing Complex for the purpose of conducting indoor home cleanings and the temporary relocation of residents during the cleanings. On September 20, 2016, EPA approved a third amendment to the action memorandum. The third amendment authorized the continuation of the activities within the WCHC.

On October 2, 2016, pursuant to the Consent Decree referenced above, EPA started excavation activities at 38 high priority properties in Zone 3 of OU1. As of December 14, 2016, 31 properties in Zone 3 have been excavated, backfilled and fully restored. An additional 7

properties in Zone 3 have been excavated and backfilled, but will require sod placement in the Spring of 2017.

On October 28, 2016, EPA signed a fourth amendment to the action memorandum to conduct a time-critical soil removal actions in Zone 2 for priority properties. On November 1, 2016, soil excavations commenced in Zone 2 on 17 properties. By December 14, 2016, all 17 properties in Zone 2 were excavated, backfilled and fully restored

As a part of the soil removal work in Zones 2 and 3, EPA conducted interior dust sampling to determine whether contaminated dust is present at concentrations that exceed screening levels established for arsenic and lead based on the August 10, 2016 (lead), and December 13, 2016 (arsenic) recommendations of EPA's toxicologist. In Zone 2, 15 of the 30 residences that were sampled had results that exceed the screening levels. Pursuant to the fourth amendment, EPA completed cleaning 14 of these 15 by the end of 2016 (one property owner deferred cleaning to Spring 2017). As of January 9, 2017, 17 of the 36 sampled residences in Zone 3 have results that exceed the screening levels (3 residences exceeded for arsenic only and 14 residences for lead or both lead and arsenic).

C. State and Local Authorities' Roles

1. State and Local Actions to Date

On August 24, 2016, Rex Osborn, Federal Programs Section Chief with IDEM, sent an email that indicated the State of Indiana does not have the financial resources to eliminate the threat posed by lead-contaminated soil in yards and lead-contaminated dust within the residences, or to fund temporary relocations. Neither the State of Indiana nor the City of East Chicago have taken or have the capacity to take action to abate the immediate threat.

2. Potential for Continued State/Local Response

The EPA is working with ATSDR, the East Chicago Health Department, the Indiana State Department of Health, and City of East Chicago elected officials to provide information to the public. EPA is coordinating discussions with stakeholders regarding the elevated levels of lead and arsenic in soil and dust, as well as EPA's plans to address these issues. Neither the state nor local officials have the resources to conduct the necessary cleanup of the indoor dust contamination or to provide for the temporary relocation of residents.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions at Zones 2 and 3 of the U.S.S. Lead Site present a threat to the public health or welfare and the environment and meet the criteria for a time-critical removal action as provided for in the NCP, 40 C.F.R. § 300.415(b)(1), based on the factors in 40 C.F.R. § 300.415(b)(2). These factors include, but are not limited to, the following:

§ 300.415(b)(2)(i) - Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

On October 2, 2016, EPA commenced excavation activities in Zone 3 to remove contaminated soil from high priority properties. To date, EPA has identified 250 properties above the remedial action level in Zone 3. In 2016, EPA remediated the soil in 38 high priority properties in Zone 3 (37 residential and 1 park). EPA conducted indoor dust sampling in conjunction with the yard excavations to fully evaluate the extent of contamination and to determine if exterior soils have migrated into homes. As of January 9, 2017, EPA has validated dust samples at 36 residential properties in Zone 3. Of the 36 residences, EPA has determined that 17 have levels above the established screening values (316 mg/kg for lead [fine fraction dust] and 26 mg/kg for arsenic [fine fraction]). Three residences had only arsenic values above the screening level with values ranging from 33 to 310 mg/kg. Fifteen residences exceeded the screening levels for lead or both lead and arsenic with lead values ranging from 330 to 1,200 mg/kg (attachment V).

Similarly, in 2016 EPA performed removal actions at 17 properties in Zone 2 and sampled 30 residences at those properties for lead and/or arsenic contaminated dust. EPA identified 15 residences with lead or arsenic levels above the site specific screening values. Interior cleanings were conducted at 14 of those residences (one property owner deferred cleaning to Spring 2017).

EPA expects to find similar exceedance rates in the interior of the remaining properties that still require outdoor soil remediation. High lead or arsenic concentrations in indoor dust are a risk to human health, particularly for children under the age of seven, because the contaminated dust may be ingested or an occupant or visitor may come into direct contact with the contaminated dust.

Pursuant to this fifth amendment, EPA is defining priority properties for the purposes of time-critical removal action as those with one or more of the following present: (1) surface soil (0-6 inches) with lead concentrations at or above 1,200 mg/kg and/or arsenic concentrations at or above 68 mg/kg, (2) residences with sensitive populations (children under 7 years of age and/or pregnant women) and surface soils (0-6 inches) with lead concentrations in excess of 400 mg/kg, and (3) children residing at a residence with blood lead levels at or above 10 µg/dL. Of the 404 Zone 2 properties with soil results that exceed the RALs, 72 have been identified as priority properties under this fifth amendment. 34 properties in Zone 2 have surface soils at 1,200 mg/kg or greater for lead and/or 68 mg/kg for arsenic, and 38 residential properties in Zone 2 have surface soils at 400 mg/kg or greater for lead and with sensitive populations present.

Lead is a hazardous substance, as defined by Section 101(14) of CERCLA. The effects of lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in the body. The main target for lead toxicity is the nervous system, both in adults and children. Long-term exposure of adults can result in decreased performance in some tests that measure functions of the nervous system. It may also cause weakness in fingers, wrists, or ankles. Lead exposure also causes small increases in blood pressure, particularly in middle-aged and older people and can cause anemia. Exposure to high lead levels can severely damage the brain and kidneys in adults or children and ultimately cause death. In pregnant

women, high levels of exposure to lead may cause miscarriage. High-level exposure in men can damage the organs responsible for sperm production.

Arsenic is a hazardous substance under CERCLA and may be ingested or inhaled by residents living at the Site. Acute (short-term) high-level inhalation exposure to arsenic dust or fumes has resulted in gastrointestinal effects (nausea, diarrhea, abdominal pain); central and peripheral nervous system disorders have occurred in workers acutely exposed to inorganic arsenic. Chronic (long-term) inhalation exposure to inorganic arsenic in humans is associated with irritation of the skin and mucous membranes and effects in the brain and nervous system. Chronic oral exposure to elevated levels of inorganic arsenic has resulted in gastrointestinal effects, anemia, peripheral neuropathy, in humans. Chronic exposure by the inhalation route has been shown to cause a form of skin cancer and also to cause bladder, liver, and lung cancer. EPA has classified inorganic arsenic as a human carcinogen.

§ 300.415(b)(2)(vii) - The availability of other appropriate federal or state response mechanisms to respond to the release;

At this time, no local or state agency has the resources to respond to the immediate threat.

IV. EXEMPTION FROM STATUTORY LIMITS

Section 104(c) of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), limits a removal action to 12 months and $2 million unless continued response actions are immediately required to prevent, limit or mitigate an emergency (i.e., the emergency exemption) or is appropriate and consistent with the remedial action to be taken (i.e., the consistency exemption). This removal action continues to meet the exemption criteria stated in the Fourth Action Memorandum Amendment transmitted from Region 5 to EPA Headquarters on October 24, 2016, and signed by the Assistant Administrator of the Office of Land and Emergency Management on October 28, 2016: there is an immediate risk to public health or welfare or the environment; continued response actions are immediately required to prevent, limit, or mitigate an emergency; and assistance will not otherwise be provided on a timely basis.

V. ENDANGERMENT DETERMINATION

Given the Site conditions, the nature of the known and suspected hazardous substances on-site, and the potential exposure pathways described in Sections II. and III. above, actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response actions selected in this Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

VI. PROPOSED ACTIONS

The response actions described in this memorandum directly address actual or potential releases of hazardous substances on Site that pose an imminent and substantial endangerment to public health, welfare, or the environment.

The actions proposed for authorization in this memo are twofold. The first is to authorize indoor actions including indoor sampling and indoor cleaning in Zones 2 and 3. These indoor actions are consistent with interior work currently approved in the Fourth Amendment except that: (1) the interior screening level for arsenic has been lowered from 100 mg/kg to 26 mg/kg; and (2) based on the knowledge that EPA gained in the fall 2016 cleaning, temporary relocation as an option during interior cleanings can be more carefully circumscribed. While the fourth amendment authorized EPA to temporarily relocate residents to undertake cleaning, EPA did not in fact have to do so. Thus, EPA has determined that temporary relocation of residents during cleanings in either Zone 2 or Zone 3 should be considered only on a case-by-case basis and only where compelling circumstances justify the need to relocate the resident(s) during the cleaning and the cleaning cannot be effectuated without the temporary relocation.

The second action proposed for authorization is soil removal actions at properties in Zone 2 beyond those authorized in the Fourth Amendment.

EPA may seek an additional ceiling request if the cost estimate provided in this action memorandum proves to be inaccurate.

Exterior Soil Removal Actions

The fourth amendment to the action memorandum authorized the excavation and removal of lead and arsenic-contaminated soils at residential parcels within Zone 2 with surficial soil concentrations at or above 1,200 mg/kg for lead and/or at or above 68 mg/kg for arsenic. This fifth amendment to the action memorandum expands the definition of priority property to include properties within Zone 2 with (1) surficial soil concentrations at or above 400 mg/kg for lead if a member of a sensitive population (e.g., pregnant women, children under the age of 7) resides at that property; and (2) lead soil concentrations in the first 24 inches bgs at or above 400 mg/kg if a child residing at the property has a blood lead level at or above 10 ug/dL. The response actions are consistent with the (OSWER) Publication 9285.7-50 *Superfund Lead-Contaminated Residential Sites Handbook* (Handbook) (2003), where the Superfund Program uses a tiered approach to prioritize which soils need to be cleaned up first. The two categories added by this Fifth Amendment are prioritized for immediate action under a time-critical removal action in the same manner as residential parcels with lead concentrations in surface soil at or greater than 1,200 mg/kg.

For cost accounting purposes, EPA has identified a total of 72 properties in Zone 2 which require time-critical removal action: 34 properties have surficial soils with lead concentrations at or greater than 1,200 mg/kg and/or arsenic concentrations at or greater than 68 mg/kg, and 38 residential properties have surficial soils with lead concentrations at or greater than 400 mg/kg where a sensitive population also resides. (EPA is not aware at this time of any properties where a child with blood lead levels at or above 10 µg/dL resides where lead soil concentrations exist in the top 24 inches bgs at or above 400 mg/kg.) These properties were identified based on the latest validated remedial design data for Zone 2 and information collected when securing access agreements. The actual number of properties subject to removal action may change due to additional properties being sampled, or more information being gathered about where sensitive

populations or children with elevated blood lead levels currently live, or additional sensitive populations/children with elevated blood lead levels moving into a Zone 2 residence.

Removal activities associated with the excavation of lead and/or arsenic contaminated soil from properties in Zone 2 will include:

1. Development of site plans, including a Work Plan, Sampling Plan/QAPP, site-specific HASP, and Emergency Contingency Plan;

2. Development of an air monitoring plan and conduct dust control measures to ensure worker and public health protection;

3. Provision for site security measures as necessary;

4. Excavation of soil at parcels where lead in the top six inches of soil is equal to or exceeds 1,200 mg/kg and/or arsenic is equal to or exceeds 68 mg/kg, as determined by EPA's RD sampling. Soil will be excavated to a depth of approximately two feet bgs, to eliminate any direct contact and inhalation threats. Excavated material that fails toxicity characteristic leaching procedure (TCLP) for lead may be treated with a fixation agent prior to disposal. Excavation will cease if lead and/or arsenic concentrations are less than 400 mg/kg for lead and 26 mg/kg for arsenic;

5. Excavation of soil at residential parcels where lead in the top six inches is equal to or exceeds 400 mg/kg, as determined by EPA's RD sampling, and where a member of a sensitive population resides (children 6 years old and under or a pregnant woman). Soil will be excavated to a depth of approximately two feet bgs, to eliminate any direct contact and inhalation threats. Excavated material that fails toxicity characteristic leaching procedure (TCLP) for lead may be treated with a fixation agent prior to disposal. Excavation will cease if lead and/or arsenic concentrations are less than 400 mg/kg for lead and 26 mg/kg for arsenic;

6. Excavation of soil at residential parcels where lead in the top twenty-four inches is equal to or exceeds 400 mg/kg, as determined by EPA's RD sampling, and where a child with a blood lead level of 10 ug/dL or greater resides. Soil will be excavated to a depth of approximately two feet bgs, to eliminate any direct contact and inhalation threats. Excavated material that fails toxicity characteristic leaching procedure (TCLP) for lead may be treated with a fixation agent prior to disposal. Excavation will cease if lead and/or arsenic concentrations are less than 400 mg/kg for lead and 26 mg/kg for arsenic;

7. Collection and analysis of confirmation samples from the bottom of each excavation. If lead levels below 400 mg/kg or arsenic levels below 26 mg/kg cannot be achieved at an excavation depth of approximately two feet bgs, excavation will cease and a visible barrier will be placed at the bottom of the excavation to alert the property owner of the existence of high levels of lead and/or arsenic. In such instances and consistent with the Record of Decision, institutional controls (ICs) will be implemented as part of the

remedial action to ensure the users of the property are not exposed to the contaminants of concern in soil;

8. Replacement of excavated soil with clean soil, including 6 inches of top soil to maintain the original grade. Each yard will be restored as close as practicable to its pre-removal condition. Once the parcels are sodded or seeded, removal site control of the sod or seed, including, watering, fertilizing, and cutting, will be conducted for 30 days. After the initial 30-day period, property owners will be responsible for the maintenance of their own yards. The aforementioned work shall be documented in a Work Plan;

9. Transportation and disposal off-site of any hazardous substances, pollutants and contaminants at a CERCLA-approved disposal facility in accordance with EPA's Off-Site Rule (40 CFR § 300.440); and

10. Performance of any other response actions to address any release or threatened release of a hazardous substance, pollutant or contaminant that the EPA On-Scene Coordinator (OSC) determines may pose an imminent and substantial endangerment to the public health or the environment.

These removal activities prioritize imminent risks associated with high levels of soil lead contamination and are consistent with the *Superfund Lead-Contaminated Residential Sites Handbook* (2003), with current Removal Management Levels, and with Office of Land and Emergency Management Directive 9200.2-167. EPA will continue to review the protectiveness of any actions performed consistent with the remedy selected in the Record of Decision, in a manner consistent with EPA policies and guidance and EPA's obligations under 42 U.S.C. § 9621(c).

Interior Dust Removal Actions

Data results from the first 30 residences in Zone 2 sampled for indoor dust indicate that 15 of those residences exceed the EPA screening level of 316 mg/kg for lead and/or 26 mg/kg for arsenic. Similarly, data results from the first 36 residences in Zone 3 sampled for indoor dust indicate that 17 residences of those residences exceed the EPA screening level of 316 mg/kg for lead and/or 26 mg/kg for arsenic. These exceedance rates are consistent with the exceedance rate for residences in Zone 1, where it was determined that lead-based paint was not a contributing source to indoor dust contamination. Given the significant number of indoor dust samples from Zones 2 and 3 that exceed the screening levels, given the threat posed by high concentrations of lead or arsenic in soil in adjacent outdoor areas, and given the consistent pattern of EBL levels in children less than 6 years of age living in WCHC and portions of Zone 2, action is needed.

At all residences where soil remediation is required, EPA will offer to test indoor dust for lead and arsenic. EPA will also screen the residence for lead-based paint using an XRF. Indoor sampling/screening (and any necessary follow-up cleaning, as described below) will be offered after soil excavations to prevent potential recontamination to the dwelling. For residences that qualify for indoor cleaning by EPA, EPA will also take post-cleaning samples and compare these to World Trade Center (WTC) dust loading values to determine the efficacy of the cleaning.

(World Trade Center Indoor Environment Assessment: Selecting Contaminants of Potential Concern and Setting Health-Based Benchmarks; May 2003.)

EPA will offer to clean the inside of residences where indoor sampling results exceed the risk-based screening criteria if soils associated with those residences exceeded the remedial actions levels and have been remediated. A combination of HEPA vacuums and/or wet cleaning will be used to remove contaminated dust from floors, carpeting, upholstery, surfaces, and readily accessible elements of HVAC systems. EPA may also clean and/or replace HVAC and AC unit filters. Replacement of carpets/mats may be considered on a case-by-case basis if cleaning mechanisms fail to result in or, based on experience, will likely fail to result in, lead and arsenic loading numbers that are below the WTC cleanup efficacy criteria. EPA may re-clean a residence if post-cleaning samples are above the WTC dust loading values. However, EPA will not re-clean any residence where indoor sampling/screening indicates the presence of lead-based paint.

EPA will not temporarily relocate any residents during interior cleanings in Zones 2 or 3 unless, on a case-by-case basis, compelling circumstances justify the need to relocate the resident during the cleaning and the cleaning cannot be effectuated without the temporary relocation.

Given the risk of tracking and cross contamination from lead or arsenic contaminated soils identified at private properties and commonly used public properties, including Riley Park and Kennedy Gardens Park, EPA will also perform indoor dust sampling/lead paint screening at other Zone 2 and Zone 3 residences when specifically requested by residents. If indoor sampling results exceed the risk-based screening criteria, EPA will offer the resident the use of a HEPA vacuum for cleaning.

For cost accounting purposes, EPA anticipates the scope of these indoor removal actions in Zones 2 and 3 to include (1) approximately 700 to 800 residences for indoor sampling; and (2) approximately 350 to 400 residences for indoor cleaning. The interior sampling figures are based on an approximation of the number of residences associated with approximately 600 properties in Zones 2 and 3 that have exterior soil contamination that exceeds the RALs. The interior cleaning figures are 50% of the interior sampling figures based on past history. The past history is a relatively small data set, and the actual number of residences that require indoor cleaning may increase as more data is collected. This may result in additional ceiling increase requests.

Removal activities associated with indoor sampling, evaluation, and removal of contaminated dust in Zone 2 and Zone 3 homes will include:

1. Development and implementation of an indoor sampling/screening plan;

2. Development of a Work Plan and Site Specific Health and Safety Plan, including plans for indoor cleaning;

3. Provision for Site security, as directed by the OSC or RPM;

4. Performance of indoor cleaning as specified in the Site Work Plan;

5. On a case-by-case basis and only upon a showing of a compelling circumstances where the cleaning cannot otherwise be effectuated, temporary relocation of a resident(s) during the indoor cleaning; and

6. Transportation and disposal off-site of any hazardous substances, pollutants and contaminants at a CERCLA-approved disposal facility in accordance with EPA's Off-Site Rule (40 CFR § 300.440).

The Action Memorandum and supporting documentation follow the April 2002 Superfund Response Actions: Temporary Relocations Implementation Guidance, particularly in considering residents' needs, property security, dealing with residents' stress and disruptions, and explaining benefits. Consistent with EPA's guidance on temporary relocations (2002), Sec. IV.A ("Making the Relocation Decision"), temporary relocation at the Site is justified during the cleaning process by the following factor:

- Efficiency of response action: temporary relocation minimizes concerns about noise, property access, and other restrictions on the hours or types of response activities that may be conducted at the Site.

Both the exterior and interior removal actions will be conducted in a manner not inconsistent with the NCP.

The threats posed by uncontrolled substances considered hazardous meet the NCP criteria listed at § 300.415(b), and the response actions proposed herein are consistent with the remedial action to be taken.

Off-Site Rule

All hazardous substances, pollutants, or contaminants removed off-site pursuant to this removal action for treatment, storage, and disposal shall be treated, stored, or disposed of at a facility in compliance, as determined by EPA, with the EPA Off-Site Rule, 40 C.F.R. § 300.440.

1. Contribution to remedial performance

The proposed action should not impede future remedial performance.

2. Engineering Evaluation/Cost Analysis (EE/CA)

Not Applicable

3. Applicable or relevant and appropriate requirements (ARARs)

All applicable or relevant and appropriate requirements (ARARs) will be complied with to the extent practicable. On August 18, 2016, EPA sent an e-mail to Rex Osborn of IDEM asking for any State of Indiana ARARs that may apply. IDEM provided both Action and Chemical specific

state ARARs in a letter dated August 26, 2016. EPA will consider and implement the submitted ARARs as appropriate.

Project Schedule

The time-critical removal actions will require approximately 528 working days to complete.

B. Removal Project Ceiling Estimate – Extramural Costs:

The detailed cleanup contractor cost is presented in Attachment 1 and the Independent Government Cost Estimate is presented in Attachment IV. Estimated project costs are summarized below:

REMOVAL ACTION PROJECT CEILING ESTIMATE

Extramural Costs	**Current Ceiling**	**Proposed Increase**	**Proposed Ceiling**
Regional Removal Allowance Costs			
Total Cleanup Contractor Costs (This costs category includes estimates for ERRS, subcontractors, Notices to Proceed, and Interagency Agreements with Other Federal Agencies and 20% Contingency)	$29,009,457	$1,359,154	$30,368,611
Other Extramural Costs Not funded from the Regional Allowance			
Total START including multiplier costs	$4,547,250	$1,127,500	$5,674,750
Subtotal			
Subtotal Extramural Costs	$33,556,707	$2,486,654	$36,043,361
Extramural Costs Contingency (20% of Subtotal, Extramural Costs rounded to nearest thousand for Proposed Increase)	$6,711,341	$497,331	$7,208,672
TOTAL REMOVAL ACTION PROJECT CEILING	**$40,268,048**	**$2,983,985**	**$43,252,033**

The response actions described in this memorandum directly address the actual or threatened release of hazardous substances, pollutants, or contaminants at the Site, which may pose an imminent and substantial endangerment to public health or welfare or to the environment. These response actions do not impose a burden on affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the Site conditions, the nature of the hazardous substances and pollutants or contaminants documented in Zones 2 and 3 of OU1, and the potential exposure pathways to nearby populations described in Section II. and Section III., above, actual or threatened releases of hazardous substances and pollutants or contaminants from this Site, if not addressed by implementing the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

VIII. OUTSTANDING POLICY ISSUES

None.

IX. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this Site is contained in the Confidential Enforcement Addendum.

The total EPA costs of this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be $71,929,729[1].

($43,252,033+ $2,000,000) + (61.96% x $45,252,033) = $73,290,193

[1] Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgement interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States right to cost recovery.

X. RECOMMENDATION

This decision document, along with the Action Memorandum signed on January 22, 2008, and the Action Memorandum Amendments signed on August 13, 2008, September 12, 2011, October 13, 2016, and October 28, 2016, represents the selected removal action for the U.S. Smelter and Lead Refinery Site, Zone 3, OU1, East Chicago, Lake County, Indiana. This removal action is developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for the Site (Attachment II). Conditions at OU1, Zones 2 and 3 meet the NCP Section 300.415(b) criteria for a removal action and the CERCLA Section 104(c) emergency exemption from the $2 million and 12-month statutory limitations. The total removal action project ceiling, if approved, will be $43,252,033 of which as much as $35,343,361 may be used from the removal allowance. I recommend your approval of the proposed removal action. You may indicate your decision by signing below.

APPROVE _____ DATE: 3/14/2017
Barry N. Breen, Acting Assistant Administrator
Office of Land and Emergency Management

DISAPPROVE _____ DATE: _____
Barry N. Breen, Acting Assistant Administrator
Office of Land and Emergency Management

Enforcement Addendum

Figures:

Figure 1 – USS Lead and Lead Refinery, E. Chicago, IN. Location Map
Figure 2 – OU1 Zones 1, 2, and 3– Location Map

Attachments:

I. Environmental Justice Analysis
II. Administrative Record Index
III. Detailed Cleanup Contractor Estimate
IV. Independent Government Cost Estimate
V. Summary of OU1 RD Soil Sampling Results
VI. Indoor Dust Screening Criteria for Lead
VII. Indoor Dust Screening Criteria for Arsenic
VIII. Fourth Amended Action Memorandum dated October 13, 2016

cc: Brian Schlieger, U.S. EPA, 5104A/B517F **(Schlieger.Brian@epa.gov)**
Lindy Nelson, U.S. DOI, **w/o Enf. Addendum (Lindy_Nelson@ios.doi.gov)**
Rex Osborn, IDEM **w/o Enf. Addendum (rosborn@idem.in.gov)**

BCC PAGE HAS BEEN REDACTED

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

ENFORCEMENT ADDENDUM

HAS BEEN REDACTED – FOUR PAGES

ENFORCEMENT CONFIDENTIAL

NOT SUBJECT TO DISCOVERY

FOIA EXEMPT

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

Figure 1
Site Location
USS Smelter and Lead Refinery, East Chicago, IN

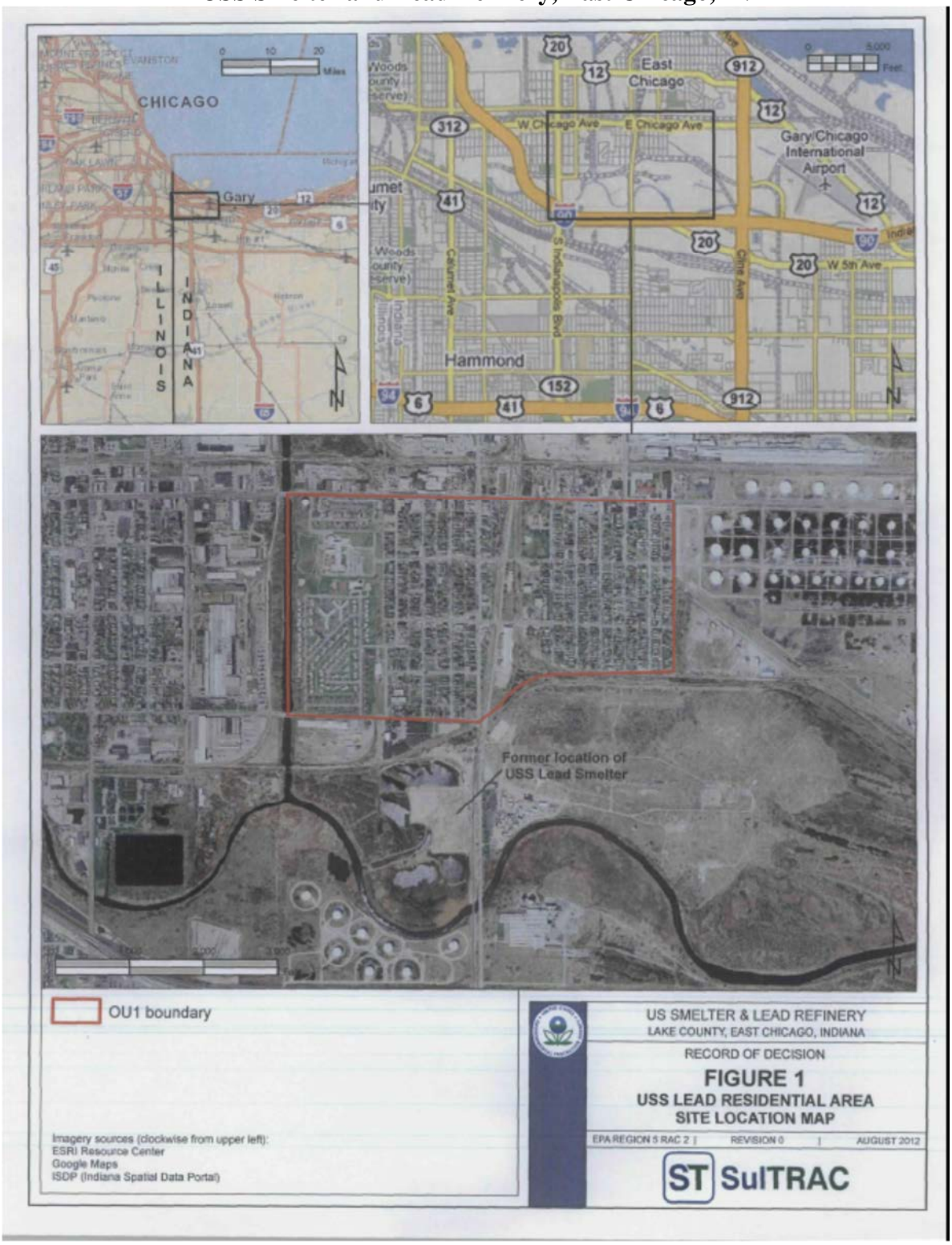
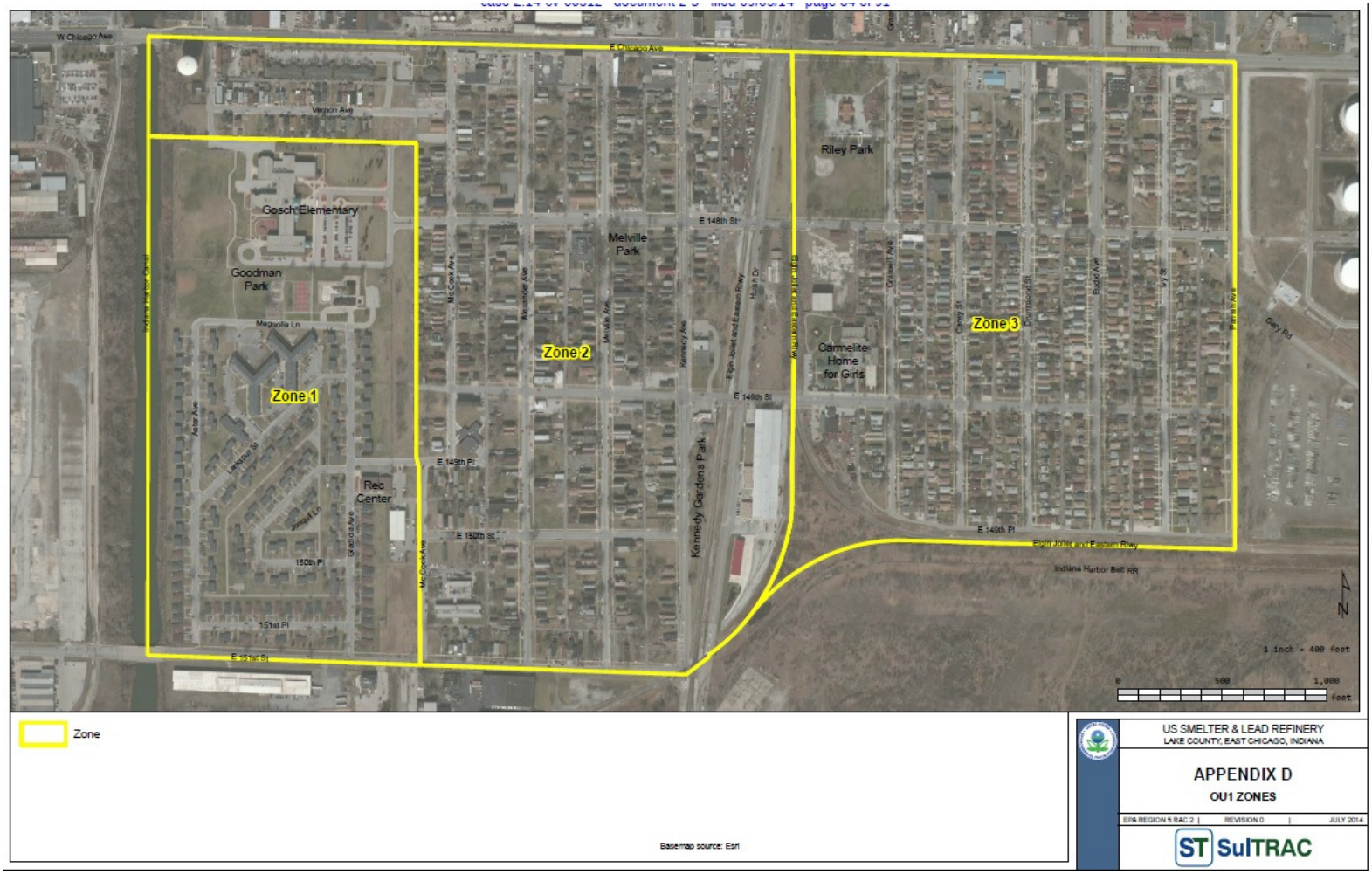


FIGURE 2
Zone 3/OU1 MAP
U.S. Smelter and Lead Refinery Site, East Chicago, Lake County, Indiana



ATTACHMENT I

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ENVIRONMENTAL JUSTICE ANALYSIS FOR U.S. SMELTER AND LEAD REFINERY SITE, EAST CHICAGO, LAKE COUNTY, INDIANA

EJSCREEN Report (Version 2016)

0.5 mile Ring Centered at 41.623974,-87.469228, INDIANA, EPA Region 5

Approximate Population: 2,455
Input Area (sq. miles): 0.79

Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0
National Pollutant Discharge Elimination System (NPDES)	0

EJSCREEN Report (Version 2016)

0.5 mile Ring Centered at 41.623974,-87.469228, INDIANA, EPA Region 5

Approximate Population: 2,455

Input Area (sq. miles): 0.79

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m³)	11.7	11	98	10.6	86	9.32	93
Ozone (ppb)	48.8	51.2	11	50.3	21	47.4	52
NATA* Diesel PM (µg/m³)	0.86	0.835	57	0.931	50-60th	0.937	50-60th
NATA* Cancer Risk (lifetime risk per million)	32	34	38	34	<50th	40	<50th
NATA* Respiratory Hazard Index	1.5	1.4	61	1.7	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	240	250	73	370	70	590	65
Lead Paint Indicator (% Pre-1960 Housing)	0.65	0.36	82	0.39	77	0.3	84
Superfund Proximity (site count/km distance)	1.5	0.16	99	0.12	99	0.13	99
RMP Proximity (facility count/km distance)	4.3	0.52	99	0.51	99	0.43	99
Hazardous Waste Proximity (facility count/km distance)	0.09	0.044	91	0.069	78	0.072	77
Water Discharger Proximity (facility count/km distance)	2.9	0.34	99	0.31	99	0.31	99
Demographic Indicators							
Demographic Index	84%	27%	99	29%	97	36%	96
Minority Population	92%	19%	98	24%	94	37%	91
Low Income Population	77%	35%	95	33%	95	35%	95
Linguistically Isolated Population	5%	2%	87	2%	83	5%	70
Population With Less Than High School Education	22%	12%	84	11%	87	14%	78
Population Under 5 years of age	10%	6%	81	6%	83	6%	81
Population over 64 years of age	8%	14%	23	14%	23	14%	27

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

For additional information, see: www.epa.gov/environmentaljustice

ATTACHMENT II

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR THE
U.S. SMELTER AND LEAD SITE
EAST CHICAGO, LAKE COUNTY, INDIANA

UPDATE 5
FEBRUARY, 2017
SEMS ID:

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	930087	5/1/03	World Trade Center Indoor Air Task Force Working Group	File	World Trade Center Indoor Environment Assessment: Selecting Contaminants of Potential Concern and Setting Health-Based Benchmarks	78
2	929996	8/10/16	Fusinski, K., U.S. EPA	Behnke, K., and Mitchell, J., U.S. EPA	Memorandum re: Development of an Indoor Dust Screening Criteria for the USS Lead Site	2
3	929997	9/20/16	Fusinski, K., U.S. EPA	Behnke, K., and Mitchell, J., U.S. EPA	Memorandum re: Development of an Indoor Dust Arsenic Screening Criteria for the USS Lead Site	1
4	931126	10/27/16	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Report for USS Lead Indoor Dust	11
5	931127	11/4/16	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Report for USS Lead Zone 3 Indoor Sampling	9
6	931128	11/9/16	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Report for USS Lead Zone 3 Indoor Sampling	11
7	931129	11/10/16	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Report for USS Lead Zone 3 Indoor Sampling	10

8	931130	11/18/16	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Report for USS Lead Zone 3 Indoor Sampling	30
9	931131	11/22/16	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Report for USS Lead Zone 3 Indoor Sampling	16
10	931245	11/30/16	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Report for USS Lead Zone 3 Indoor Sampling	44
11	931125	12/13/16	Fusinski, K., U.S. EPA	Behnke, K., and Mitchell, J., U.S. EPA	Memo re: Justification for Using Site-Specific Arsenic Background Concentration in Soil for Indoor Dust Screening Concentration for the USS Lead Site	2
12	932276	1/9/17	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Reports for Indoor Dust Sampling (Combined) - August 11, 2016 - January 9, 2017	838
13	932290	1/27/16	Snyder, R., U.S. EPA	File	Lab Data and Data Validation Reports for 18 Soil Samples - December 8-16, 2016 (**Redacted**)	29
14	932291	3/24/10	Griffin, S., U.S. EPA	File	Data Validation Report for 20 Soil Samples - December 7-10, 2009	55
15	932292	9/7/10	Griffin, S., U.S. EPA	File	Data Validation Report for 20 Soil Samples - August 12-13, 2010	68
16	-	-	Guerriero M., U.S. EPA	Breen, B., U.S. EPA	Action Memorandum re: Request for Approval and Funding for a Time-Critical Removal Action at the U.S. Smelter and Lead Refinery Site (***PENDING***)	-

ATTACHMENT III

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

DETAILED CLEANUP & OVERSIGHT CONTRACTOR COST ESTIMATE
U.S. Smelter and Lead Refinery Site (Zone 3)
East Chicago, Indiana
January 2017

Indoor Dust Mitigation		
ERRS Removal contractor		**Funding Allocation**
Personnel	**$895,256**	Removal
Equipment	**$100,322**	Removal
Miscellaneous	**$136,900**	Removal
T&D	**$150**	Removal
Total	**$1,132,628**	
Plus 20% Contingency	**$226,525.69**	
Total ERRS Contractor Costs	**$1,359,154**	

Indoor Dust Mitigation		
START contractor		**Funding Allocation**
Personnel	**$375,000**	Removal
Dust Sampling	**600,000**	Removal
Equipment/Vehicle	**$40,000**	Removal
Data Management	**$100,000**	Removal
Report Writing	**$12,500**	Removal
Total START Contractor Costs	**$1,127,500**	

ATTACHMENT IV

January 2016
INDEPENDENT GOVERNMENT COST ESTIMATE
Indoor Dust Mitigation Zone 3
U.S. Smelter and Lead Refinery Site
East Chicago, Indiana (based on latest information from January 9, 2017)

Note: As of January 2017, Zone 3 indoor dust sampling is summarized as follows:

- 468 parcels in Zone
- Validated dust sampling results available from 36 residential homes scheduled for a 2016 cleanup.
- 17 of the 36 sampled residences have levels above the lead and/or arsenic indoor screening value(s) (Validated Results)
- Currently, 247 properties in Zone 3 have been identified as needing soil remediation
- Approximately 50% of 247 identified properties = 124 (rounded up) properties may need indoor dust mitigating actions.
- Indoor sampling cost about $2,000 per event. A home would require at least 2 sampling events

Based on the aforementioned information the IGCE is estimated for approximately **124 homes** in Zone 3, 1.5 days per home. Estimated **188 working days (includes 2 days for mobilization and demobilization)** Working Days for total of **1880 hours** at 10 hours per day or 15 hours per home.
(see IGCE below)

ESTIMATED DAYS TO COMPLETE WORK

Activity	*Days*
Mob/Demob	2
Sampling	0
Removal Action	186
TOTAL	188

ERRS TRANSPORTATION AND DISPOSAL

Matrix	*Quantity*	*Unit*	*Unit Price*	*Subtotal*	*Trans*	*Samples*	*Total*
Non-Haz Waste	1	ton	50	50		$100	$150
					T&D TOTAL		**$150**

Personnel & Equipment

Personnel	*Units*	*Reg Rate*	*OT Rate*	*Reg Hours*	*OT Hours*	*Labor Cost*	*PerDiem*	*Lodging*	*PerDiem/ Lodging Cost*	*Total*
Response Manager	1	66	66	1504	376	$124,080	$59	$104	$30,644	$154,724
FCA	1	35	52	1504	376	$72,192	$59	$104	$30,644	$102,836
Foreman	1	55	77	1504	376	$111,672	$59	$104	$30,644	$142,316
Equipment Operator	0	56	73	1504	376	$0	$59	$104	$0	$0
Laborer	5	35	42	1504	376	$342,160	$59	$104	$153,220	$495,380
T&D Coordinator	0	65	65	1504	376	$0	$59	$104	$0	$0
Industrial Hygienist	0	65	65	1504	376	$0	$59	$104	$0	$0
Chemist	0	45	45	1504	376	$0	$59	$104	$0	$0
Truck Driver	0	50	63	1504	376	$0	$59	$104	$0	$0
							PERSONNEL SUB TOTAL			**$895,256**

Equipment	*Units*	*Daily Rate*	*Weekly Rate*	*Monthly Rate*	*Length*	*Lump Sum*	*Total*
1/2 ton pickup truck	3	$49			188		$27,771
1 ton stakebed truck	1	$74			188		$13,895
HEPA Vacuum	2	$18			188		$6,768
Negative air machine	2	$30			188		$11,280
PPE	6	$36			188		$40,608
				EQUIPMENT SUB TOTAL			**$100,322**

Materials & Miscellaneous	*Quantity*	*Costs*	*Daily Cost*	*Lump Sum*	*Length*	*Subtotal*	*Misc*	
Miscellaneous cleaning materials						$1,000		$1,000
Carpet Replacement	124	$1,000				$125,000		$125,000
Vehicle (fuel)		$25			188	$4,700		$4,700
Utility Usage	124	$50				$6,200		$6,200
							MISC. TOTAL	**$136,900**

ERRS 20% Contingency		$226,525.69
ERRS SUBTOTAL		**$1,359,154**

START

	Units	*Rate*	*Hours*	*Labor Cost/Unit Cost*	*PerDiem*	*Lodging*	*Cost*	*Total*
START-on site	2	$125	1,500					$375,000
Sampling	300			2,000				600,000
Equipment: vehicle, air monitoring, supplies	2	$125	200					$40,000
Data Management		100	1,000					100,000
Report Writing	1	$125	100					$12,500
							START TOTAL	**$1,127,500**

ATTACHMENT V

Summary of OU1 Interior Dust Sampling Results for Zone 3
U.S. Smelter and Lead Refinery Site East Chicago, Lake County, Indiana

Final validated data from USS Lead OU1 Zone 3 Indoor Dust Sampling) (as of 11/29/2016). Pb > 316 and As > 26

EDD Status	Location	Samp_No	Sub_Location	Analyte	Result	Result_ Qualifier	Lab_Result_ Qualifier	Result_Units
Level4	USSL-3023	USSL-3023-BR-101116	Bedroom	Arsenic (fine fraction)	1.1	J	J	mg/Kg-dry
Level4	USSL-3023	USSL-3023-BR-101116	Bedroom	Lead (fine fraction)	21	J		mg/Kg-dry
Level4	USSL-3023	USSL-3023-FE-101116	Front Entrance	Arsenic (fine fraction)	3.9	J	J	mg/Kg-dry
Level4	USSL-3023	USSL-3023-FE-101116	Front Entrance	Lead (fine fraction)	180			mg/Kg-dry
Level4	USSL-3037	USSL-3037-BM-112216	Basement	Arsenic (fine fraction)	11			mg/Kg-dry
Level4	USSL-3037	USSL-3037-BM-112216	Basement	Lead (fine fraction)	920			mg/Kg-dry
Level4	USSL-3037	USSL-3037-BR-110216	Bedroom	Arsenic (fine fraction)	2.6	J	J	mg/Kg-dry
Level4	USSL-3037	USSL-3037-BR-110216	Bedroom	Lead (fine fraction)	58			mg/Kg-dry
Level4	USSL-3037	USSL-3037-FE-110216	Front Entrance	Arsenic (fine fraction)	12			mg/Kg-dry
Level4	USSL-3037	USSL-3037-FE-110216	Front Entrance	Lead (fine fraction)	360			mg/Kg-dry
Level4	USSL-3039	USSL-3039-BR-110916	Bedroom	Arsenic (fine fraction)	3.3	J	J	mg/Kg-dry
Level4	USSL-3039	USSL-3039-BR-110916	Bedroom	Lead (fine fraction)	58			mg/Kg-dry
Level4	USSL-3039	USSL-3039-FE-110916	Front Entrance	Arsenic (fine fraction)	12	J	J	mg/Kg-dry
Level4	USSL-3039	USSL-3039-FE-110916	Front Entrance	Lead (fine fraction)	350			mg/Kg-dry

Level4	USSL-3043	USSL-3043-BM-101116	Basement	Arsenic (fine fraction)	310			mg/Kg-dry
Level4	USSL-3043	USSL-3043-BM-101116	Basement	Lead (fine fraction)	53			mg/Kg-dry
Level4	USSL-3043	USSL-3043-BR-101116	Bedroom	Arsenic (fine fraction)	37			mg/Kg-dry
Level4	USSL-3043	USSL-3043-BR-101116	Bedroom	Lead (fine fraction)	56			mg/Kg-dry
Level4	USSL-3043	USSL-3043-FE-101116	Front Entrance	Arsenic (fine fraction)	18			mg/Kg-dry
Level4	USSL-3043	USSL-3043-FE-101116	Front Entrance	Lead (fine fraction)	56			mg/Kg-dry
Level4	USSL-3046	USSL-3046-BR-101216	Bedroom	Arsenic (fine fraction)	3.8	J-		mg/Kg-dry
Level4	USSL-3046	USSL-3046-BR-101216	Bedroom	Lead (fine fraction)	350			mg/Kg-dry
Level4	USSL-3046	USSL-3046-FE-101216	Front Entrance	Arsenic (fine fraction)	26	J-		mg/Kg-dry
Level4	USSL-3046	USSL-3046-FE-101216	Front Entrance	Lead (fine fraction)	210			mg/Kg-dry
Level4	USSL-3047	USSL-3047-BM-101116	Basement	Arsenic (fine fraction)	38			mg/Kg-dry
Level4	USSL-3047	USSL-3047-BM-101116	Basement	Lead (fine fraction)	150			mg/Kg-dry
Level4	USSL-3047	USSL-3047-BR-101116	Bedroom	Arsenic (fine fraction)	17			mg/Kg-dry
Level4	USSL-3047	USSL-3047-BR-101116	Bedroom	Lead (fine fraction)	220			mg/Kg-dry
Level4	USSL-3047	USSL-3047-FE-101116	Front Entrance	Arsenic (fine fraction)	11			mg/Kg-dry
Level4	USSL-3047	USSL-3047-FE-101116	Front Entrance	Lead (fine fraction)	170			mg/Kg-dry

Level4	USSL-3055	USSL-3055-BM-101716	Basement	Arsenic (fine fraction)	3.6	J	J	mg/Kg-dry
Level4	USSL-3055	USSL-3055-BM-101716	Basement	Lead (fine fraction)	61			mg/Kg-dry
Level4	USSL-3055	USSL-3055-BR-092316	Bedroom	Arsenic (fine fraction)	3.5	J	J	mg/Kg-dry
Level4	USSL-3055	USSL-3055-BR-092316	Bedroom	Lead (fine fraction)	60			mg/Kg-dry
Level4	USSL-3055	USSL-3055-FE-092316	Front Entrance	Arsenic (fine fraction)	4.5			mg/Kg-dry
Level4	USSL-3055	USSL-3055-FE-092316	Front Entrance	Lead (fine fraction)	120			mg/Kg-dry
Level4	USSL-3070	USSL-3070-BR-102516	Bedroom	Arsenic (fine fraction)	1.8	J-	J	mg/Kg-dry
Level4	USSL-3070	USSL-3070-BR-102516	Bedroom	Lead (fine fraction)	80			mg/Kg-dry
Level4	USSL-3070	USSL-3070-RE-102516	Rear Entrance	Arsenic (fine fraction)	7.5	J-	J	mg/Kg-dry
Level4	USSL-3070	USSL-3070-RE-102516	Rear Entrance	Lead (fine fraction)	890			mg/Kg-dry
Level4	USSL-3071	USSL-3071-BM-111516	Basement	Arsenic (fine fraction)	13			mg/Kg-dry
Level4	USSL-3071	USSL-3071-BM-111516	Basement	Lead (fine fraction)	83	J-		mg/Kg-dry
Level4	USSL-3071	USSL-3071-FE-110416	Front Entrance	Arsenic (fine fraction)	9			mg/Kg-dry
Level4	USSL-3071	USSL-3071-FE-110416	Front Entrance	Lead (fine fraction)	87	J+		mg/Kg-dry
Level4	USSL-3071	USSL-3071-LR-110416	Living Room	Arsenic (fine fraction)	6.4			mg/Kg-dry
Level4	USSL-3071	USSL-3071-LR-110416	Living Room	Lead (fine fraction)	86			mg/Kg-dry

Level4	USSL-3072	USSL-3072-BR-101716	Bedroom	Arsenic (fine fraction)	2.4	J+	J	mg/Kg-dry
Level4	USSL-3072	USSL-3072-BR-101716	Bedroom	Lead (fine fraction)	120			mg/Kg-dry
Level4	USSL-3072	USSL-3072-FE-101716	Front Entrance	Arsenic (fine fraction)	2.7	J+	J	mg/Kg-dry
Level4	USSL-3072	USSL-3072-FE-101716	Front Entrance	Lead (fine fraction)	64			mg/Kg-dry
Level4	USSL-3075	USSL-3075-BR-102816	Bedroom	Arsenic (fine fraction)	8.1	J		mg/Kg-dry
Level4	USSL-3075	USSL-3075-BR-102816	Bedroom	Lead (fine fraction)	29	J		mg/Kg-dry
Level4	USSL-3075	USSL-3075-RE-102816	Rear Entrance	Arsenic (fine fraction)	33	J	J	mg/Kg-dry
Level4	USSL-3075	USSL-3075-RE-102816	Rear Entrance	Lead (fine fraction)	85	J	J	mg/Kg-dry
Level4	USSL-3087	USSL-3087-BM-101416	Basement	Arsenic (fine fraction)	48	J		mg/Kg-dry
Level4	USSL-3087	USSL-3087-BM-101416	Basement	Lead (fine fraction)	500			mg/Kg-dry
Level4	USSL-3087	USSL-3087-BR-101416	Bedroom	Arsenic (fine fraction)	14	J	J	mg/Kg-dry
Level4	USSL-3087	USSL-3087-BR-101416	Bedroom	Lead (fine fraction)	110			mg/Kg-dry
Level4	USSL-3087	USSL-3087-FE-101416	Front Entrance	Arsenic (fine fraction)	26			mg/Kg-dry
Level4	USSL-3087	USSL-3087-FE-101416	Front Entrance	Lead (fine fraction)	190			mg/Kg-dry
Level4	USSL-3088	USSL-3088-BM-101216	Basement	Arsenic (fine fraction)	1.6	J-	J	mg/Kg-dry
Level4	USSL-3088	USSL-3088-BM-101216	Basement	Lead (fine fraction)	110			mg/Kg-dry

Level4	USSL-3088	USSL-3088-BR-101216	Bedroom	Arsenic (fine fraction)	3	J-	J	mg/Kg-dry
Level4	USSL-3088	USSL-3088-BR-101216	Bedroom	Lead (fine fraction)	50			mg/Kg-dry
Level4	USSL-3088	USSL-3088-FE-101216	Front Entrance	Arsenic (fine fraction)	7.3	J-	J	mg/Kg-dry
Level4	USSL-3088	USSL-3088-FE-101216	Front Entrance	Lead (fine fraction)	330			mg/Kg-dry
Level4	USSL-3091	USSL-3091-BR/KI-111116	Bedroom, Kitchen	Arsenic (fine fraction)	20	J+	J	mg/Kg-dry
Level4	USSL-3091	USSL-3091-BR/KI-111116	Bedroom, Kitchen	Lead (fine fraction)	140	J	J	mg/Kg-dry
Level4	USSL-3091	USSL-3091-FE-111116	Front Entrance	Arsenic (fine fraction)	6.6	J	J	mg/Kg-dry
Level4	USSL-3091	USSL-3091-FE-111116	Front Entrance	Lead (fine fraction)	62			mg/Kg-dry
Level4	USSL-3092	USSL-3092-BR-101716	Bedroom	Arsenic (fine fraction)	4.5			mg/Kg-dry
Level4	USSL-3092	USSL-3092-BR-101716	Bedroom	Lead (fine fraction)	71			mg/Kg-dry
Level4	USSL-3092	USSL-3092-FE-101716	Front Entrance	Arsenic (fine fraction)	7.2	J	J	mg/Kg-dry
Level4	USSL-3092	USSL-3092-FE-101716	Front Entrance	Lead (fine fraction)	190			mg/Kg-dry
Level4	USSL-3097	USSL-3097-BR-102916	Bedroom	Arsenic (fine fraction)	5.2			mg/Kg-dry
Level4	USSL-3097	USSL-3097-BR-102916	Bedroom	Lead (fine fraction)	57			mg/Kg-dry
Level4	USSL-3097	USSL-3097-FE-102916	Front Entrance	Arsenic (fine fraction)	6.2			mg/Kg-dry
Level4	USSL-3097	USSL-3097-FE-102916	Front Entrance	Lead (fine fraction)	74			mg/Kg-dry

Level4	USSL-3106	USSL-3106-FE/RE-111016	Front Entrance, Rear Entrance	Arsenic (fine fraction)	3.3	J+	J	mg/Kg-dry
Level4	USSL-3106	USSL-3106-FE/RE-111016	Front Entrance, Rear Entrance	Lead (fine fraction)	18			mg/Kg-dry
Level4	USSL-3106	USSL-3106-LR-111016	Living Room	Arsenic (fine fraction)	22	J	J	mg/Kg-dry
Level4	USSL-3106	USSL-3106-LR-111016	Living Room	Lead (fine fraction)	81			mg/Kg-dry
Level4	USSL-3119	USSL-3119-BR-091516	Bedroom	Arsenic (fine fraction)	75	U	U	mg/Kg-dry
Level4	USSL-3119	USSL-3119-BR-091516	Bedroom	Lead (fine fraction)	160			mg/Kg-dry
Level4	USSL-3119	USSL-3119-LR-091516	Living Room	Arsenic (fine fraction)	75	U	U	mg/Kg-dry
Level4	USSL-3119	USSL-3119-LR-091516	Living Room	Lead (fine fraction)	73	J	J	mg/Kg-dry
Level4	USSL-3119	USSL-3119-RE-091516	Rear Entrance	Arsenic (fine fraction)	8	J	J	mg/Kg-dry
Level4	USSL-3119	USSL-3119-RE-091516	Rear Entrance	Lead (fine fraction)	110			mg/Kg-dry
Level4	USSL-3185	USSL-3185-FE-110216	Front Entrance	Arsenic (fine fraction)	4.9	J	J	mg/Kg-dry
Level4	USSL-3185	USSL-3185-FE-110216	Front Entrance	Lead (fine fraction)	210			mg/Kg-dry
Level4	USSL-3185	USSL-3185-LR-110216	Living Room	Arsenic (fine fraction)	12	J	J	mg/Kg-dry
Level4	USSL-3185	USSL-3185-LR-110216	Living Room	Lead (fine fraction)	140			mg/Kg-dry
Level4	USSL-3206	USSL-3206-BR-101416	Bedroom	Arsenic (fine fraction)	4.1	J	J	mg/Kg-dry
Level4	USSL-3206	USSL-3206-BR-101416	Bedroom	Lead (fine fraction)	410			mg/Kg-dry

Level4	USSL-3206	USSL-3206-FE-101416	Front Entrance	Arsenic (fine fraction)	12	J+	J	mg/Kg-dry
Level4	USSL-3206	USSL-3206-FE-101416	Front Entrance	Lead (fine fraction)	1200			mg/Kg-dry
Level4	USSL-3226	USSL-3226-BR-102616	Bedroom	Arsenic (fine fraction)	1.1	J	J	mg/Kg-dry
Level4	USSL-3226	USSL-3226-BR-102616	Bedroom	Lead (fine fraction)	44			mg/Kg-dry
Level4	USSL-3226	USSL-3226-FE-102616	Front Entrance	Arsenic (fine fraction)	8.9			mg/Kg-dry
Level4	USSL-3226	USSL-3226-FE-102616	Front Entrance	Lead (fine fraction)	190			mg/Kg-dry
Level4	USSL-3277	USSL-3277-BR-101116	Bedroom	Arsenic (fine fraction)	5.7			mg/Kg-dry
Level4	USSL-3277	USSL-3277-BR-101116	Bedroom	Lead (fine fraction)	84			mg/Kg-dry
Level4	USSL-3277	USSL-3277-FE-101116	Front Entrance	Arsenic (fine fraction)	7	J	J	mg/Kg-dry
Level4	USSL-3277	USSL-3277-FE-101116	Front Entrance	Lead (fine fraction)	520			mg/Kg-dry
Level4	USSL-3277	USSL-3277-RE-101116	Rear Entrance	Arsenic (fine fraction)	34			mg/Kg-dry
Level4	USSL-3277	USSL-3277-RE-101116	Rear Entrance	Lead (fine fraction)	740			mg/Kg-dry
Level4	USSL-3282	USSL-3282-BR-102616	Bedroom	Arsenic (fine fraction)	2.5	J	J	mg/Kg-dry
Level4	USSL-3282	USSL-3282-BR-102616	Bedroom	Lead (fine fraction)	75			mg/Kg-dry
Level4	USSL-3282	USSL-3282-SE-102616	Side Entrance	Arsenic (fine fraction)	4	J	J	mg/Kg-dry
Level4	USSL-3282	USSL-3282-SE-102616	Side Entrance	Lead (fine fraction)	100			mg/Kg-dry
Level4	USSL-3301	USSL-3301-BR-110116	Bedroom	Arsenic (fine fraction)	2.1	J	J	mg/Kg-dry

Level4	USSL-3301	USSL-3301-BR-110116	Bedroom	Lead (fine fraction)	120	J		mg/Kg-dry
Level4	USSL-3301	USSL-3301-FE/RE-110116	Front Entrance, Rear Entrance	Arsenic (fine fraction)	16			mg/Kg-dry
Level4	USSL-3301	USSL-3301-FE/RE-110116	Front Entrance, Rear Entrance	Lead (fine fraction)	280			mg/Kg-dry
Level4	USSL-3302	USSL-3302-BR-102716A	Bedroom	Arsenic (fine fraction)	2.8	J	J	mg/Kg-dry
Level4	USSL-3302	USSL-3302-BR-102716A	Bedroom	Lead (fine fraction)	160			mg/Kg-dry
Level4	USSL-3302	USSL-3302-BR-102716B	Bedroom	Arsenic (fine fraction)	4.4	J	J	mg/Kg-dry
Level4	USSL-3302	USSL-3302-BR-102716B	Bedroom	Lead (fine fraction)	220			mg/Kg-dry
Level4	USSL-3302	USSL-3302-BR-102716C	Bedroom	Arsenic (fine fraction)	3.4	J	J	mg/Kg-dry
Level4	USSL-3302	USSL-3302-BR-102716C	Bedroom	Lead (fine fraction)	150			mg/Kg-dry
Level4	USSL-3302	USSL-3302-FE-102716B	Front Entrance	Arsenic (fine fraction)	6.3	J	J	mg/Kg-dry
Level4	USSL-3302	USSL-3302-FE-102716B	Front Entrance	Lead (fine fraction)	430			mg/Kg-dry
Level4	USSL-3302	USSL-3302-FE-102716C	Front Entrance	Arsenic (fine fraction)	120	U	U	mg/Kg-dry
Level4	USSL-3302	USSL-3302-FE-102716C	Front Entrance	Lead (fine fraction)	110	J	J	mg/Kg-dry
Level4	USSL-3302	USSL-3302-RE-102716A	Rear Entrance	Arsenic (fine fraction)	5.6	J	J	mg/Kg-dry
Level4	USSL-3302	USSL-3302-RE-102716A	Rear Entrance	Lead (fine fraction)	400			mg/Kg-dry
Level4	USSL-3310	USSL-3310-BR-101116	Bedroom	Arsenic (fine fraction)	5.9	J	J	mg/Kg-dry

Level4	USSL-3310	USSL-3310-BR-101116	Bedroom	Lead (fine fraction)	110			mg/Kg-dry
Level4	USSL-3310	USSL-3310-FE-101116	Front Entrance	Arsenic (fine fraction)	16	J	J	mg/Kg-dry
Level4	USSL-3310	USSL-3310-FE-101116	Front Entrance	Lead (fine fraction)	170	J	J	mg/Kg-dry
Level4	USSL-3319	USSL-3319-BR-101816	Bedroom	Arsenic (fine fraction)	75	U	U	mg/Kg-dry
Level4	USSL-3319	USSL-3319-BR-101816	Bedroom	Lead (fine fraction)	69	J	J	mg/Kg-dry
Level4	USSL-3319	USSL-3319-FE-101816	Front Entrance	Arsenic (fine fraction)	4.8	J	J	mg/Kg-dry
Level4	USSL-3319	USSL-3319-FE-101816	Front Entrance	Lead (fine fraction)	460			mg/Kg-dry
Level4	USSL-3338	USSL-3338-BR-101116	Bedroom	Arsenic (fine fraction)	3.3	J	J	mg/Kg-dry
Level4	USSL-3338	USSL-3338-BR-101116	Bedroom	Lead (fine fraction)	91			mg/Kg-dry
Level4	USSL-3338	USSL-3338-FE-101116	Front Entrance	Arsenic (fine fraction)	8.5	J	J	mg/Kg-dry
Level4	USSL-3338	USSL-3338-FE-101116	Front Entrance	Lead (fine fraction)	170			mg/Kg-dry
Level4	USSL-3338	USSL-3338-RE-101116	Rear Entrance	Arsenic (fine fraction)	6.7	J	J	mg/Kg-dry
Level4	USSL-3338	USSL-3338-RE-101116	Rear Entrance	Lead (fine fraction)	210			mg/Kg-dry
Level4	USSL-3345	USSL-3345-BR-101116	Bedroom	Arsenic (fine fraction)	2.7	J	J	mg/Kg-dry
Level4	USSL-3345	USSL-3345-BR-101116	Bedroom	Lead (fine fraction)	130			mg/Kg-dry
Level4	USSL-3345	USSL-3345-FE-101116	Front Entrance	Arsenic (fine fraction)	7.1			mg/Kg-dry
Level4	USSL-3345	USSL-3345-FE-101116	Front Entrance	Lead (fine fraction)	190			mg/Kg-dry

Level4	USSL-3383	USSL-3383-BR-110316	Bedroom	Arsenic (fine fraction)	1.4	J	J	mg/Kg-dry
Level4	USSL-3383	USSL-3383-BR-110316	Bedroom	Lead (fine fraction)	76			mg/Kg-dry
Level4	USSL-3383	USSL-3383-FE/RE-110316	Front Entrance, Rear Entrance	Arsenic (fine fraction)	10			mg/Kg-dry
Level4	USSL-3383	USSL-3383-FE/RE-110316	Front Entrance, Rear Entrance	Lead (fine fraction)	560			mg/Kg-dry
Level4	USSL-3406	USSL-3406-BR-101716	Bedroom	Arsenic (fine fraction)	1.9	J	J	mg/Kg-dry
Level4	USSL-3406	USSL-3406-BR-101716	Bedroom	Lead (fine fraction)	110			mg/Kg-dry
Level4	USSL-3406	USSL-3406-RE-101716	Rear Entrance	Arsenic (fine fraction)	6.2			mg/Kg-dry
Level4	USSL-3406	USSL-3406-RE-101716	Rear Entrance	Lead (fine fraction)	920			mg/Kg-dry
Level4	USSL-3434	USSL-3434-BR-101416	Bedroom	Arsenic (fine fraction)	380	U	U	mg/Kg-dry
Level4	USSL-3434	USSL-3434-BR-101416	Bedroom	Lead (fine fraction)	110	J+	J	mg/Kg-dry
Level4	USSL-3434	USSL-3434-FE-101416	Front Entrance	Arsenic (fine fraction)	9			mg/Kg-dry
Level4	USSL-3434	USSL-3434-FE-101416	Front Entrance	Lead (fine fraction)	500			mg/Kg-dry
Level4	USSL-3437	USSL-3437-BR-110316	Bedroom	Arsenic (fine fraction)	1.8	J	J	mg/Kg-dry
Level4	USSL-3437	USSL-3437-BR-110316	Bedroom	Lead (fine fraction)	67			mg/Kg-dry
Level4	USSL-3437	USSL-3437-FE-110316	Front Entrance	Arsenic (fine fraction)	4.8	J	J	mg/Kg-dry
Level4	USSL-3437	USSL-3437-FE-110316	Front Entrance	Lead (fine fraction)	230			mg/Kg-dry

Level4	USSL-3443	USSL-3443-BR-110416	Bedroom	Arsenic (fine fraction)	4.7	J	J	mg/Kg-dry
Level4	USSL-3443	USSL-3443-BR-110416	Bedroom	Lead (fine fraction)	57	J+	J	mg/Kg-dry
Level4	USSL-3443	USSL-3443-FE-110416	Front Entrance	Arsenic (fine fraction)	7			mg/Kg-dry
Level4	USSL-3443	USSL-3443-FE-110416	Front Entrance	Lead (fine fraction)	220			mg/Kg-dry

Lead screening level exceedance (316 ppm)

Arsenic screening level exceedance (26 ppm) and not U qualified

Arsenic screening level exceedance (26 ppm) but U qualified= not detected above reporting limit

ATTACHMENT VI

US Smelter and Lead Refinery Site Dust Screening Level for Lead

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
9311 GROH ROAD
GROSSE ILE, MI 48138

MEMORANDUM

SUBJECT: Development of an Indoor Dust Screening Criteria for the USS Lead Site

FROM: Keith Fusinski, PhD Toxicologist US EPA
Superfund Division, Remedial Response Branch #1, Remedial Response Section #1

TO: Jim Mitchell, On-Scene Coordinator US EPA
Superfund Division, Emergency Response Branch #2, Emergency Response Section #4

AND

Kristina Behnke, On-Scene Coordinator US EPA
Superfund Division, Emergency Response Branch #2, Emergency Response Section #3

DATE: 8/10/2016

The Integrated Exposure Uptake Biokinetic (IEUBK) model used by the US Environmental Protection Agency (USEPA) uses the concentration of indoor dust as a key parameter to evaluate risks to children from lead in soil. EPA separates dust into fine (<150 µm) and coarse (>150 µm) fractions. It has been shown that the fine particle size is the fraction that is most likely to adhere to children's hands and be ingested. In addition, more recent information also indicates that there is a potential for enrichment of lead in smaller sized particles and increased bioavailability (USEPA 2016). Using only the fine particle size concentration for screening can improve the accuracy of exposure and risk calculations in lead risk assessments.

The IEUBK model (version 1.1 Build 11) was used to determine an indoor dust screening level for lead. The default assumption in the model is that the concentration of lead in indoor dust is 70% of the concentration of lead in outdoor soil (Brattin and Griffin - 2011). US EPA recommends that lead concentrations in residential soil do not exceed 400 parts per million (ppm) in soil.

The modeling was performed using default inputs from the IEUBK model for diet, drinking water, air concentration and bioavailability. The IEUBK model was run using 400 ppm for lead in soil and modeled children 0 to 84 months of age. The calculated screening level to protect this population from a current US EPA acceptable blood lead level of 10 µg/dL is **316 ppm** of lead in

dust. This concentration should be used when evaluating the fine particle size fraction of lead dust contamination.

REFERENCES

Brattin and Griffin - 2011 - William Brittin, Susan Griffin. Evaluation of the Contribution of Lead in Soil to Lead in Dust at Superfund Sites. Human and Ecological Risk Assessment: An International journal Vol. 17, Iss. 1, 2011.

USEPA 2016 - OLEM Directive 9200.1-128. Recommendations for Sieving Soil and Dust Samples at Lead Sites for Assessment of Incidental Ingestion.

Attachment VII

US Smelter and Lead Refinery Site Dust Screening Level for Arsenic

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
9311 GROH ROAD
GROSSE ILE, MI 48138

MEMORANDUM

SUBJECT: Justification for Using Site-Specific Arsenic Background Concentration in Soil for Indoor Dust Screening Concentration for the USS Lead Site.

FROM: Keith Fusinski, PhD Toxicologist US EPA
Superfund Division, Remedial Response Branch #1, Science and Quality Assurance Section

TO: Jim Mitchell, On-Scene Coordinator US EPA
Superfund Division, Emergency Response Branch #2, Emergency Response Section #4

AND

Kristina Behnke, On-Scene Coordinator US EPA
Superfund Division, Emergency Response Branch #2, Emergency Response Section #3

DATE: 12/13/2016

The US EPA looks at both cancer and non-cancer detrimental effects of exposure to contaminants. For non-cancer, EPA determines probability of a detrimental health effect to occur by calculating a hazard quotient (HQ). The HQ is a ratio of a single substance exposure level over a specified period of time to a reference dose of the same substance derived from a similar exposure period. It is recommended that the HQ of an exposure to a chemical of concern be below or equal to 1 which is the level at which no adverse human health effects are expected to occur. For cancer risk, the U.S. EPA recommends a screening level that would equate to a one in a million ($1x10^{-6}$) or greater lifetime risk of developing cancer from exposure to a contaminated site. However, rates up to 1 in 10,000 ($1x10^{-4}$) can be considered acceptable. Regional screening levels (RSLs) are based upon an excess lifetime cancer risk (ELCR) of $1x10^{-6}$ or an HQ of 1, whichever is most protective. The Office of Land and Emergency Management (OLEM) recommends removal management levels (RMLs) be set at an excess lifetime cancer risk of 1 in 10,000 or a non-cancer HQ of 3, whichever is most protective. Risks found between the RSLs and RMLs are remediated at the discretion of EPA risk managers. Risks greater than the RML, typically require remediation.

The residential RSL for arsenic in soil is 0.68 mg/kg. The residential RML for soil is 68 mg/kg. These values are highly protective and are based upon an individual working or playing in the soil for 24 hours a day, for 350 days per year for 26 years. This includes the first 6 years of life, where children are most susceptible to developmental effects of contaminant exposure. Routes of exposure in these calculations include ingestion, inhalation, and dermal contact. Any concentration

of arsenic in soil less than 68 mg/kg is considered within EPA's acceptable risk range and protective of human health.

House dust is composed of small amounts of plant pollen, human and animal hairs and skin cells, textile fibers, paper fibers, outdoor soil, and many other materials which may be found in the local environment. It is important to note that only a fraction of house dust actually comes from exterior soils. However, in order to be protective of human health, US EPA will assume that 100 percent of house dust at the USS Lead Site comes directly from exterior soil degradation.

Arsenic is a naturally occurring substance and can be found in soils all across the US at some concentration. This is considered naturally occurring background. The site specific background concentration for arsenic in soils at the USS Lead site has been determined to be 26 milligrams of arsenic per kilogram of soil (mg/kg). This value is well below the residential soil RML of 68 mg/kg. As US EPA is assuming that 100 percent of house dust comes from exterior soils, then it can be considered that 26 mg/kg is not only the background in exterior soils, but also residential house dust.

When evaluating homes for remediation, or to review the effects of remediation, any home with concentrations of arsenic below 26 mg/kg should be considered below background concentrations and safe for unrestricted residential use.

ATTACHMENT VIII
FOURTH AMENDED ACTION MEMORANDUM
DATED OCTOBER 13, 2016

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

OCT 24 2016

REPLY TO THE ATTENTION OF:

MEMORANDUM

SUBJECT: **ACTION MEMORANDUM – 4th AMENDMENT:** Request for a Change in Scope and Ceiling Increase for the Time-Critical Removal Action at the U.S. Smelter and Lead Refinery Site, East Chicago, Lake County, Indiana (Site ID # 053J)

FROM: Douglas Ballotti, Acting Director
Superfund Division

THRU: Reggie Cheatham, Office Director
Office of Emergency Management (OEM)

TO: Mathy Stanislaus, Assistant Administrator
Office of Land and Emergency Management

I. PURPOSE

The purpose of this Action Memorandum Amendment is to request and document your approval, consistent with Section 104(c)(1)(A) of CERCLA, 42 U.S.C. Section 9604 (c)(1)(A), to Change the Scope of the Response and for a Ceiling Increase for the time-critical removal action at portions of the U.S. Smelter and Lead Refinery Site (the Site) residential area defined as Zone 2 of Operable Unit 1 (OU1), in East Chicago, Lake County, Indiana (see Figure 2). The sought increase of $13,870,506 would raise the project ceiling for the time-critical removal action from $26,397,542 to $40,268,048

The Change of Scope of the Response and Ceiling Increase is necessary as the previous Action Memoranda approved on January 22, 2008, August 13, 2008, September 12, 2011, and October 13, 2016 (Attachments IX, X, XI, XII), were for the excavation and proper disposal of lead-contaminated soils from residential parcels in OU1, Zones 1, 2 and 3, indoor cleanup of lead contaminated dust inside of residences in Zone 1, and temporary relocation of residents in the West Calumet Housing Complex (WCHC) in Zone 1. Subsequent soil data collected in Zone 2 during the remedial design (RD) phase in order to implement EPA's Remedial Action as set forth in the Record of Decision (November 2012), found lead and arsenic concentrations in surface soils (0-6") in a number of residential yards above EPA screening criteria.

Response actions are necessary in Zone 2 of OU1 to mitigate threats to public health, welfare, and the environment posed by the release and/or threatened release of uncontrolled hazardous substances at the Site. This removal involves (1) the excavation and proper disposal of lead

and/or arsenic contaminated soils from residential parcels in Zone 2, and (2) testing for lead and/or arsenic contaminated dust in residential homes if requested by the home owner and, if necessary, removal of the contaminated dust.

Conditions existing at the Site present a threat to public health and the environment and meet the criteria for initiating a removal action under 40 CFR § 300.415(b) of the National Contingency Plan (NCP). The U.S. Environmental Protection Agency (EPA or the Agency) documented elevated levels of lead and arsenic in surface soil in residential parcels at the Site. Lead and arsenic are hazardous substances as defined by Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

There are no nationally significant or precedent setting issues associated with the Change of Scope sought in this Action Memorandum to the extent it seeks approval for the excavation of soils. Testing at the owner's request and the removal of lead and/or arsenic contaminated dust in residential homes may set a precedent. The Site is on the National Priorities List (NPL).

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID:	IND047030226
RCRA ID:	IND047030226
STATE ID:	None
Category:	Time-Critical Removal

A. Site Description

1. Removal Site Evaluation

The Indiana Department of Environmental Management (IDEM) sampled some of the residential parcels to the north of the U.S. Smelter and Lead Refinery, Inc. (U.S.S. Lead) facility in 1985. This area is now known as Operable Unit 1 of the Site. IDEM found elevated lead levels in these residential yards. In September of 1985, the Indiana State Board of Health found the U.S.S. Lead facility in violation of state law and stated that the lead-contaminated soils within the facility boundaries may pose a risk to human health and the environment. IDEM referred the U.S.S. Lead facility, but not the area now known as Operable Unit 1, to EPA for cleanup.

From 1993 through 2006, EPA's Resource Conservation and Recovery Act (RCRA) Corrective Action program oversaw the remediation and management of lead-contaminated soils within the boundaries of the U.S.S. Lead facility, currently referred to as Operable Unit 2 (OU2). On November 18, 1993, EPA and U.S.S. Lead entered into an Administrative Order on Consent (AOC) pursuant to Section 3008(h) of RCRA. The AOC required U.S.S. Lead to implement interim measures, including site stabilization and construction of a corrective action management unit (CAMU) to contain contaminated soils and slag and to conduct a Modified RCRA Facility Investigation at the U.S.S. Lead facility, OU2. The CAMU covers approximately 10 acres and is surrounded by a subsurface slurry wall. Excavation and construction of the CAMU was conducted in two phases and completed between August and September 2002. Slag generated from the blast-furnace operations was routinely placed by U.S.S. Lead in piles on the southern

portion of the property near the banks of the Grand Calumet River. The cleanup of slag was described in the Interim Stabilization Measures Work Plan prepared by ENTACT, LLC and was completed during the third quarter of 2002.

As part of a RCRA Corrective Action in 2003 and 2006, EPA conducted soil sampling in the residential neighborhood to the north located in OU1 of the U.S.S. Lead Site. In the investigation of late July and early August 2003, 83 residential parcels within OU1 were sampled and analyzed for lead using a Niton X-ray fluorescence (XRF) instrument. Soils from 43 locations (52 percent) exceeded the 400 milligrams per kilogram (mg/kg) residential soil screening criterion for lead. In 2006, EPA's Field Environmental Decision Support (FIELDS) team supplemented the work performed in 2003 by collecting additional data from 14 parcels sampled in 2003 to (1) assess whether the top-most soils (zero to one inch below ground surface (bgs)) had elevated lead concentrations relative to deeper soils (one to six inches bgs), (2) collect and compare composite samples to individual samples to assess whether composite samples accurately represented the concentrations in residential yards and parks, and (3) compare lead concentrations in the fine and coarse fractions of sieved samples to evaluate whether lead was preferentially distributed in the fine-grain sizes. These sampling results showed some yards in OU1 to have high levels of lead contamination with the highest sample containing lead at 3,000 mg/kg. The RCRA Corrective Action program looked at the possible source of the lead contamination and determined it was from various industrial sources. The RCRA Corrective Action program referred OU1—the off-site contamination from the U.S.S. Lead facility—and other industrial sources to the Superfund Program in 2004; the remainder of OU2—the on-site contamination—was referred in 2006.

Consistent with the OSWER Publication 9285.7-50 *Superfund Lead-Contaminated Residential Sites Handbook* (Handbook) (2003), the Superfund Program used a tiered approach to prioritize which homes needed to be cleaned up first. Residential parcels with lead concentrations in surface soil at or greater than 1,200 mg/kg were the highest priority for immediate action under a time-critical removal action. Residential parcels with lead concentrations in surface soil below 1,200 mg/kg, but above 400 mg/kg would be addressed through remedial actions. EPA does not consider the 1,200 mg/kg concentration as an action level for removal actions, but this level does provide an alternative to running the Integrated Exposure Uptake Biokinetic (IEUBK) model with limited data to determine if the site poses an urgent threat. On January 22, 2008, EPA signed the original action memorandum to conduct a time-critical removal action in OU1 to address known parcels with lead levels in surface soil exceeding 1,200 mg/kg. These parcels had been identified as part of the RCRA Corrective Action residential investigation. The EPA identified 15 private parcels that contained soil with lead concentrations exceeding 1,200 mg/kg in the top six inches of soil. On June 9, 2008, the EPA initiated the time-critical removal action to address the 15 residential parcels with lead levels exceeding 1,200 mg/kg. On August 13, 2008, the EPA amended the original action memorandum to increase the project ceiling by $511,950 for a total of $984,060. The EPA was able to obtain access agreements and remediate only 13 of the 15 parcels. The removal action was completed on November 18, 2008. In total, 1,838 tons of lead-contaminated soil were removed and disposed of at an approved landfill.

A Remedial Investigation (RI) was conducted from 2009 through 2010 to collect additional soil data in OU 1 which consists of Zone 1, Zone 2, and Zone 3. As a result of the sampling, EPA

discovered an additional 14 areas within OU1 with lead levels exceeding the removal action level of 1,200 mg/kg. On September 11, 2011, EPA signed the second amendment to the original action memorandum which increased the total project ceiling to $1,928,460. On October 11, 2011, EPA started the time-critical removal action involving lead-contaminated soil removals at five West Calumet Housing Complex (WCHC) addresses (located in Zone 1) and nine other residential parcels outside the WCHC. In addition, two parcels that were not remediated during the previous removal action in 2008 because of access issues were remediated during this removal action. The removal action was completed on December 9, 2011. In total, 1,913 additional tons of lead-contaminated soil were removed and disposed of at an approved landfill as a result of the 2011 removal activities.

In November 2012, EPA issued a Record of Decision (ROD) for Operable Unit 1 (OU1) of the Site. OU1 has been divided into 3 separate zones for implementation of the remedy (Zones 1, 2, and 3). OU1 contains residential yards contaminated with lead and arsenic at levels that pose a threat to human health through ingestion, inhalation and direct contact. EPA's selected remedy for OU1 addresses these risks from exposure to contaminated soils through the excavation and off-site disposal of lead or arsenic contaminated soils. The remedial action levels (RALs) for OU1 are 400 mg/kg for lead at residential parcels, 800 mg/kg for lead at industrial/commercial parcels, and 26 mg/kg for arsenic at both residential and industrial/commercial parcels.

From November 2014 through April 2015, EPA conducted more extensive soil sampling within Zone 1 as part of the remedial design process for OU1 and completed remedial designs for Zone 1 in October 2015. Zone 1 includes approximately 118 separate "parcels," including 111 parcels in the WCHC, three right-of-way parcels, and a school, park, recreation center, and maintenance facilities. EPA sampled all parcels in Zone 1 except a narrow strip of land on the east bank of the Indiana Harbor Canal. In May 2016, EPA received validated sampling results which revealed lead concentrations in soil up to 24 inches in depth ranged from non-detect (ND) to 91,100 mg/kg for lead. Arsenic concentrations ranged from ND to 3,530 mg/kg (See Attachment V – Summary of OU1 RD Soil Sampling Results). Within Zone 1, a total of 117 parcels exceeded the removal management level (RML) for lead of 400 mg/kg for residential soil and 61 parcels exceeded the RML for arsenic of 68 mg/kg. Each of the parcels that exceeded the RML for arsenic also exceeded the RML for lead. Sample results from surface soils (0-6") indicated that lead concentrations at 13 parcels in the WCHC exceed 5,000 mg/kg with concentrations up to 45,000 mg/kg.

Beginning in July 2016, EPA began conducting more extensive soil sampling within Zone 2 as part of the RD process for OU1. Zone 2 includes approximately 590 separate "parcels." Most of these parcels are residential parcels, though there are some commercial/industrial parcels. In September 2016, EPA received validated sampling results from 48 parcels which revealed lead concentrations in surface soil (0-6 inches below ground surface) at values ranging from 38.3 to 2,120 mg/kg. Arsenic concentrations ranged from 4.3 to 111 mg/kg (See Attachment V – Summary of OU1 RD Soil Sampling Results). Ten sampled parcels had surface soil lead concentrations above 1,200 mg/kg and 40 of 48 parcels exceed the RML for lead of 400 mg/kg for residential surface soil. Two parcels exceeded the 68 mg/kg RML for arsenic (111 and 78.1 mg/kg in surface soil). One parcel that exceeded the RML for arsenic also exceeded the RML for lead in soil.

On July 29, 2016, EPA initiated in-house sampling for dust collection in Zone 1 to determine lead concentrations in homes given the elevated levels of lead in surface soils within the WCHC and the likelihood that lead contaminated soil/dust was being tracked or blown into the housing units. EPA prioritized homes for sampling based on the likelihood that they would have elevated lead levels in indoor dust, based on elevated lead concentrations in yards and elevated blood lead level (BLL) records associated with those residences. As of September 28, 2016, EPA has received validated results from 154 residences. Concentrations ranged from 3.9 to 32,000 mg/kg for lead fines and 0.12J (J means the associated value is the approximate concentration) to 880 mg/kg for arsenic fines. Results from indoor dust from the first 154 homes indicate 69 parcels exceed the EPA screening level of 316 mg/kg for lead for indoor living spaces (See Attachment VII – Indoor Dust Screening Criteria for Lead).

On August 12, 2016, EPA began cleaning the inside of residences in the WCHC to remove lead contaminated dust. A combination of HEPA vacuums and wet cleaning are used to remove lead dust from ceilings, floors, carpets, walls, drapes, accessible ductwork, furnace, and furniture. As of October 3, 2016, EPA has cleaned approximately 113 out of 334 occupied units. Residents were temporarily relocated during the cleaning process and clearance sampling conducted as necessary to document efficacy of cleaning.

The Indiana State Department of Health (ISDH) accompanied EPA into 14 of the initial 42 residences in Zone 1 and conducted a separate inspection for compliance with lead paint abatement policies. Wipe samples were collected from floors, interior window sills, and window troughs and compared to HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (2012 Edition)(40 $\mu g/ft^2$-floors, 250 $\mu g/ft^2$- window sills, and 400 $\mu g/ft^2$– window trough). Wipe samples from six of the 14 units sampled were above the respective lead dust clearance standards (see Attachment VIII - Indiana State Department of Health Wipe Sample Results). Lead based paint was not found by ISDH in any of the inspected units.

The Agency for Toxic Substances and Disease Registry (ATSDR) is working with the East Chicago Health Department (ECHD), which is conducting an ongoing exposure investigation of blood lead in the WCHC. The following is a summary of the findings from screenings of children living in the WCHC, which is derived both from historical data and from the on-going blood lead testing campaign being conducted by ECHD:

- From the most recent ECHD testing in summer 2016, 18 out of 94 (19%) tested children from the WCHC under age six were identified with elevated blood lead (EBL) levels (> 5 µg/dL) based on capillary (finger stick) measurements.

- From 2014 through 2015, 26% of children under age seven tested at the WCHC were identified with EBL levels, with the highest measurement at 33 µg/dL in a one-year-old child. Within the same period, the census tract that includes all of the children from the WCHC (Zone 1) and part of Zone 2 had an EBL incidence rate of 22%. By comparison, the EBL rates for the two adjacent census tracts were 9% and 11%.

- The ATSDR Exposure Investigation conducted in the West Calumet neighborhood in 1997 showed a 35% EBL incidence rate, which was defined at that time as greater than 10 µg/dL.

These observations by ATSDR across almost 20 years demonstrate a consistent pattern of elevated blood lead levels in young children living in OU1. Given that the ISDH Lead Inspectors found no lead-based paint in recently sampled units within the WCHC, it is likely that exposure to soil-based lead contamination in the WCHC and portions of Zone 2 is a primary cause of elevated blood lead levels in children there.

2. Physical Location

The U.S.S. Lead Site lies approximately 18 miles southeast of Chicago, Illinois, in East Chicago, Indiana (Figure 1). The Site consists of the former U.S.S. Lead facility located at 5300 Kennedy Avenue, East Chicago, Indiana (designated as Operable Unit 2 (OU2)) and the residential area to the north and northeast (defined as OU1). OU1 is bound by East Chicago Avenue on the north, East 151st Street/149th Place on the south, the Indiana Harbor Canal on the west, and Parrish Avenue on the east. OU1 includes about 1200 homes, a small number of parks, open space as a part of the railroad right-of-way, schools, and public buildings. For the purpose of implementing the remedial action (RA) in OU1, EPA has divided OU1 into three distinct geographic areas (Zones 1, 2, and 3). This removal action is taking place in OU1 Zone 2. Zone 2 is adjacent to and directly east of Zone 1 and is generally bordered: (1) on the north by East Chicago Avenue; (2) on the east by Joliet, Elgin Railroad; (3) on the south by East 151st Street; and (4) on the west by the East Chicago Public Housing Complex, the Carrie Gosch Elementary School, and the Harbor Canal.

The EPA conducted an EJ analysis for the Site (see Attachment I). Screening of the surrounding area was conducted using Region 5's EJ Screen Tool. Region 5 has reviewed environmental and demographic data for the area surrounding the U.S.S. Lead Site and has determined there is high potential for EJ concerns at this location.

3. Site Characteristics

OU1 includes about 1,200 homes, a small number of parks, open space as a part of the railroad right-of-way, schools, and public buildings. OU1 is primarily a residential area, which includes commercial and light industrial areas. Some parcels in the residential area in Zones 1, 2 and 3 have levels of lead above EPA's RML of 400 mg/kg and arsenic above the RML of 68 mg/kg.

United States Geological Survey (USGS) historical aerial photographs from 1939, 1951, 1959, and 2005 show OU1 over time. Review of these aerial photographs indicates that most of the residential neighborhoods within the Site west of the railroad tracks were built before 1939. By 1951, approximately 75 to 80 percent of the homes were built; by 1959, most of the homes east of the railroad tracks had also been built. These photographs also show that the International Smelting and Refining Company, a subsidiary of the Anaconda Copper Company (whose successor in interest is now the Atlantic Richfield Company [ARC]) occupied the area where the WCHC is currently located (Zone 1 in the southwest portion of OU1) prior to 1946. Title records indicate that the East Chicago Housing Authority constructed the WCHC on the former Anaconda Copper Mining Company/International Smelting and Refining Company site between 1970 and 1973.

The U.S.S. Lead facility was a primary and secondary smelter of lead in the East Chicago, Indiana area. It began operations around 1906 and ended operations in 1985. From about 1920 until 1973, the facility was a primary smelter of lead. This included a refining process to create high quality lead free of bismuth. From 1973 until its closure in 1985, the facility was a secondary smelter and a reprocessor of car batteries. The secondary refinery operations included: battery breaking with tank treatment of spent battery acid at a rate of 16,000 gallons per day; baghouse dust collection with storage in on-site waste piles of up to 8,000 tons of flue dust; and blast furnace slag disposal, which was deposited in the wetland adjacent to and along the southern boundary of the facility. The blast-furnace baghouse collected approximately 300 tons of baghouse flue dust per month during maximum operating conditions. Some of the flue dust escaped the baghouse capture system and was deposited by the wind within the boundaries of OU1. Secondary lead recovery operations ceased in 1985.

In addition to the U.S.S. Lead facility operation, other industrial operations have managed or processed lead and other metals and are sources of contamination in OU1. Immediately east of the U.S.S. Lead facility and south of Zone 3 is the former DuPont site (currently leased and operated by W.R. Grace & Co., Grace Davison). One of the processes that historically took place at the DuPont site was the manufacturing of a lead arsenate pesticide. In 2015, DuPont spun off certain assets and liabilities to a newly created company, The Chemours Company FC, LLC (Chemours). Chemours is now the owner of the former DuPont facility.

North of the former U.S.S. Lead facility stood two smelter operations, which processed lead and other metals. A 1930 Sanborn map identifies the operations as Anaconda Lead Products and International Lead Refining Company (referred to as the former Anaconda facility). Anaconda Lead Products was a manufacturer of white lead and zinc oxide and the International Lead Refining Company was a metal refining facility. These facilities consisted of a pulverizing mill, white lead storage areas, a chemical laboratory, a machine shop, a zinc oxide experimental unit building and plant, a silver refinery, a lead refinery, a baghouse, and other miscellaneous buildings and processing areas. The International Lead Refining Company was a subsidiary of the Anaconda Copper Mining Company. Title to the property in Zone 1 was held between 1934 and 1946 by International Lead Smelting and Refinery Company. International Lead Smelting and Refinery Company acquired titled to the property in Zone 1 in 1934 from International Lead Refining Company, which had acquired title in 1912.

The residential area that comprises Zone 2 has been contaminated by aerial deposition of windblown contaminants from the U.S.S. Lead facility, the Anaconda Copper Mining Company/International Lead Smelting and Refinery Company facility, and the DuPont/Chemours facility. The focus of this time-critical removal action is Zone 2, which has approximately 590 residential parcels.

4. **Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant**

The threat is presented by the presence of lead and arsenic-contaminated soil in residential yards and potential lead and arsenic contaminated dust within the residences in Zone 2. The presence of lead and arsenic in outdoor soils and potentially in indoor dust at concentrations above health

screening values provides a constant source of exposure for individuals both outside and while in the home. Lead and arsenic are hazardous substances as defined by section 101(14) of CERCLA. *See* 40 C.F.R. § 302.4. Nearby lead processing operations caused extensive lead and arsenic contamination in soils throughout the Site. The removal is responding to actual and potential outdoor lead and arsenic contamination, as well as potential indoor contamination caused by the migration of lead and arsenic contaminated soil from outdoors to indoors (like the source of contamination found in Zone 1). The presence of elevated lead and arsenic levels in surface soils and potential presence of lead and arsenic in indoor dust in Zone 2 makes this a time-critical removal action.

Exposure may occur from direct ingestion of soil in yards, soil tracked indoors, or house dust; and inhalation of fugitive dust. Potential human receptors include residents, including children six years of age and under, and pregnant or nursing women.

Lead exposure via inhalation and/or ingestion can have detrimental effects on almost every organ and system in the human body. Exposure may occur from direct ingestion of soil in yards, soil tracked indoors, or house dust; and inhalation of fugitive dust. Lead can cause a variety of health problems to people who are exposed to it. Potential human receptors include residents, including children six years of age and under, and pregnant or nursing women. Children are at greatest risk from the toxic effects of lead. Initially, lead travels in the blood to the soft tissues (heart, liver, kidney, brain, etc.). Then, it gradually redistributes to the bones and teeth where it tends to remain. Children exposed to high levels of lead have exhibited nerve damage, liver damage, colic, anemia, brain damage, and death. The most serious effects associated with markedly elevated blood lead levels include neurotoxic effects such as irreversible brain damage.

Ingesting very high levels of arsenic can result in death. Exposure to lower levels can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of "pins and needles" in hands and feet. Ingesting or breathing low levels of inorganic arsenic for a long time can cause a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso. Skin contact with inorganic arsenic may cause redness and swelling. Several studies have shown that ingestion of inorganic arsenic can increase the risk of skin cancer and cancer in the liver, bladder, and lungs. Inhalation of inorganic arsenic can cause increased risk of lung cancer. The Department of Health and Human Services (DHHS) and the EPA have determined that inorganic arsenic is a known human carcinogen (ATSDR, Chemical Abstract Services [CAS] # 7440-38-2], August 2007).

5. NPL status

The U.S.S. Lead Site consisting of both the former U.S.S. Lead facility (OU2) and the West Calumet neighborhood to the north (OU1) was listed as a Superfund site on the national priorities list (NPL) on April 8, 2009. EPA began the RI for OU1 on June 26, 2009. During December 2009 and August 2010, EPA contractors sampled yards in residential areas and background locations. In June 2012, EPA completed a preliminary investigation and study to determine the level and extent of lead and arsenic contamination within OU1 and proposed a remedy. In November 2012, after considering comments received from the City and IDEM,

EPA outlined the long-term permanent cleanup plan in a Record of Decision for OU1. The EPA has completed the remedial designs for work in Zone 1 and Zone 3 and is in the process of completing the remedial design for Zone 2.

6. Maps, pictures and other graphic representations

Maps include:

Figure 1 – USS Lead and Lead Refinery, E. Chicago, IN. Location Map
Figure 2 – OU1 Zones 1, 2, and 3– Location Map

B. Other Actions to Date

1. Previous actions

On January 22, 2008, EPA signed the original action memorandum to conduct a time-critical removal action in OU1 to address known parcels with lead levels exceeding the removal action limit of 1,200 mg/kg. These parcels were identified based on sampling data collected during the RCRA Corrective Action investigation. That removal action began on June 9, 2008, and involved the excavation and off-site disposal of lead contaminated soil from 13 residential parcels. On August 13, 2008, EPA amended the original action memorandum to increase the project ceiling in order to complete the ongoing, time-critical removal action. In total, 1,838 tons of lead-contaminated soil were removed and disposed of at an approved landfill. Excavated areas were backfilled with clean fill and seeded. This removal action was completed on September 25, 2008, and the final Pollution Report was issued on November 18, 2008.

On September 12, 2011, EPA signed an action memorandum to conduct a time-critical removal action in Zones 1, 2, and 3 of OU1 to address 16 parcels (including the 2 that were missed in 2008) with lead levels exceeding the removal action limit of 1,200 mg/kg. These parcels were identified based on sampling data collected during the RI. This removal action began on October 24, 2011, and involved the excavation and off-site disposal of lead contaminated soil from 16 residential parcels. In total, 1,913 tons of lead-contaminated soil were removed and disposed of at an approved landfill. Excavated areas were backfilled with clean fill and seeded. This removal action was completed on December 9, 2011, and the final Pollution Report was issued on December 15, 2011.

2. Current actions

On July 11, 2016, EPA started remedial action activities to cover bare soils with wood mulch within the WCHC to minimize fugitive dust, direct contact and potential migration of soil with elevated lead levels. The mulching work was completed on July 22, 2016, although maintenance of the mulch cover is ongoing as part of the remedial work associated with the implementation of the ROD for OU1.

On July 29, 2016, EPA initiated in-house sampling for dust collection in Zone 1 to determine lead concentrations in homes. As of September 28, 2016, EPA has received validated results

from 154 residences. Concentrations ranged from 3.9 to 32,000 mg/kg for lead fines and 0.12J (J means value is estimate) to 880 mg/kg for arsenic fines (See Attachment VI – Summary of Indoor Dust Sampling Results). Data results from indoor dust from the first 154 homes indicate 69 parcels exceed the EPA screening level of 316 mg/kg for lead for indoor living spaces (See Attachment VII – Indoor Dust Screening Criteria).

ISDH conducted a separate inspection of fourteen of the identified residential units for compliance with lead paint abatement policies. Lead-based paint was not found in any of the inspected units. On August 12, 2016, EPA began cleaning (under October 13, 2016 USS Lead action memo for Zone 1) the inside of all occupied (approximately 334) units within the WCHC, all of which are or have the potential to be contaminated with lead contaminated dust above the risk-based screening criteria for indoor dust from industrial activities. A combination of HEPA vacuums and wet cleaning are used to remove lead dust from ceilings, floors, carpets, walls, drapes, accessible ductwork, furnace, and furniture. As of October 3, 2016, approximately 113 out of 334 occupied units have been cleaned. Residents were temporarily relocated during the indoor cleaning period.

C. State and Local Authorities' Roles

1. State and Local Actions to Date

On August 24, 2016, Rex Osborn, Federal Programs Section Chief with IDEM, sent an email indicating the State of Indiana does not have the financial resources to eliminate the threat posed by lead-contaminated soil in yards and dust within the residences or to fund temporary relocations. Neither the State of Indiana nor the City of East Chicago have taken or have the capacity to take action to abate the immediate threat.

2. Potential for Continued State/Local Response

The EPA is working with ATSDR, the East Chicago Health Department, the Indiana State Department of Health, and City of East Chicago elected officials to provide information to the public. EPA is coordinating discussions with stakeholders regarding the elevated levels of lead and arsenic in soil and EPA's plans to address this issue. Neither the state nor local officials have the resources to conduct the necessary cleanup of the indoor dust contamination or to provide for the temporary relocation of residents.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES.

The conditions at Zone 2 of the U.S.S. Lead Site present a threat to the public health or welfare and the environment and meet the criteria for a time-critical removal action as provided for in the NCP, 40 C.F.R. § 300.415(b)(1), based on the factors in 40 C.F.R. § 300.415(b)(2). These factors include, but are not limited to, the following:

§ 300.415(b)(2)(i) - Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

Beginning in July 2016, EPA began conducting more extensive soil sampling within Zone 2 as part of the RD process for OU1. Zone 2 includes approximately 590 separate parcels. Most of these parcels are residential parcels, though there are some commercial/industrial parcels. In September 2016, EPA received validated sampling results from 48 parcels in Zone 2 which revealed lead concentrations in surface soil (0-6 inches below ground surface) at values ranging from 38.3 to 2,120 mg/kg. Arsenic concentrations ranged from 4.3 to 111 mg/kg (See Attachment V – Summary of OU1 RD Soil Sampling Results). Ten sampled parcels had surface soil lead concentrations above 1,200 mg/kg and 40 of 48 parcels exceed the RML for lead of 400 mg/kg for residential surface soil. Two parcels exceeded the 68 mg/kg RML for arsenic (111 and 78.1 mg/kg in surface soil). One parcel that exceeded the RML for arsenic also exceeded the RML for lead in soil.

Data results from indoor dust from the first 154 homes sampled in Zone 1 indicate 69 properties exceed the EPA screening level of 316 mg/kg for lead for indoor living spaces. EPA is currently addressing exposure to lead contaminated soil in yards and indoor dust in Zone 1. High lead concentrations in indoor dust are a risk to human health, particularly for children under the age of six (i.e., inhalation, ingestion). A recent blood lead study conducted by ECHD found that children in the WCHC and part of Zone 2 are at an increased risk for lead exposure (22% at or above 5 µg/dL compared to the national average of 2.5%).

Lead is a hazardous substance, as defined by Section 101(14) of CERCLA. The effects of lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in the body. The main target for lead toxicity is the nervous system, both in adults and children. Long-term exposure of adults can result in decreased performance in some tests that measure functions of the nervous system. It may also cause weakness in fingers, wrists, or ankles. Lead exposure also causes small increases in blood pressure, particularly in middle-aged and older people and can cause anemia. Exposure to high lead levels can severely damage the brain and kidneys in adults or children and ultimately cause death. In pregnant women, high levels of exposure to lead may cause miscarriage. High-level exposure in men can damage the organs responsible for sperm production.

Arsenic is a hazardous substance under CERCLA and may be ingested or inhaled by residents living at the Site. Acute (short-term) high-level inhalation exposure to arsenic dust or fumes has resulted in gastrointestinal effects (nausea, diarrhea, abdominal pain); central and peripheral nervous system disorders have occurred in workers acutely exposed to inorganic arsenic. Chronic (long-term) inhalation exposure to inorganic arsenic in humans is associated with irritation of the skin and mucous membranes and effects in the brain and nervous system. Chronic oral exposure to elevated levels of inorganic arsenic has resulted in gastrointestinal effects, anemia, peripheral neuropathy, in humans. Chronic exposure by the inhalation route, has been shown to cause a form of skin cancer and also to cause bladder, liver, and lung cancer. EPA has classified inorganic arsenic as a human carcinogen.

§ 300.415(b)(2)(iv) - High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;

As stated in the previous paragraphs, surface soils in Zone 2 where found to be contaminated with lead and arsenic above the EPA screening levels.

Residents living in Zone 2 may cause the high levels of lead and arsenic to migrate into other areas including inside the home by walking through and tracking in, gardening, play, and other residential activities, especially in areas where the soil does not have any cover. Other means of migration may include routine construction activities.

§ 300.415(b)(2)(v) - Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;

There is a threat of release from high winds dispersing surface particulate matter containing lead, resulting in exposure to children and adults who reside within the Site. Grass cover is generally lighter in the early spring and fall, allowing more potential of tracking contaminated soil into the home. Rain or thundershowers may cause the outdoor lead to migrate via surface runoff. The use of an air conditioner during the hot summer months or the running of a furnace during the winter would also result in the migration of indoor dust.

§ 300.415(b)(2)(vii) - The availability of other appropriate federal or state response mechanisms to respond to the release;

At this time, no local or state agency has the resources to respond to the immediate threat.

IV. EXEMPTION FROM STATUTORY LIMITS

Section 104(c) of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), limits a Federal response action to 12 months and $2 million unless response actions meet emergency and/or consistency exemptions. Documentation for the aforementioned exemptions are provided in the U.S.S. Lead Action Memorandum-Third Amendment approved on October 13, 2016.

V. ENDANGERMENT DETERMINATION

Given the Site conditions, the nature of the known and suspected hazardous substances on-site, and the potential exposure pathways described in Sections II and III above, actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response actions selected in this Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

VI. PROPOSED ACTIONS

The response actions described in this memorandum directly address actual or potential releases of hazardous substances on Site, which may pose an imminent and substantial endangerment to public health, or welfare, or the environment.

The proposed action involves excavation and removal of lead and arsenic-contaminated soil at residential parcels within Zone 2 with surficial soil concentrations at or above 1,200 mg/kg for lead and/or the removal management level (RML) of 68 mg/kg for arsenic, and indoor dust sampling and cleaning upon the request of residents and owners. The response actions are consistent with the (OSWER) Publication 9285.7-50 *Superfund Lead-Contaminated Residential Sites Handbook* (Handbook) (2003), where the Superfund Program uses a tiered approach to prioritize which homes needed to be cleaned up first. Residential parcels with lead concentrations in surface soil at or greater than 1,200 mg/kg would be the highest priority for immediate action under a time-critical removal action. Excavated areas will be backfilled to original grade with clean soil and the yards restored as closely as practicable to its pre-removal condition.

Approximately 590 Zone 2 parcels will be sampled during the remedial design process. For cost accounting purposes, EPA anticipates the scope of this removal action in Zone 2 to include approximately 132 residential parcels that are at or greater than 1,200 mg/kg for lead and/or 68 mg/kg for arsenic based on historical and the latest remedial design validated data from Zone 2.

Removal activities associated with the excavation of lead and arsenic contaminated soil from residential yards in Zone 2 will include:

1. Development of site plans, including a Work Plan, Sampling Plan/QAPP, site-specific HASP, and Emergency Contingency Plan;

2. Development of an air monitoring plan and conduct dust control measures to ensure worker and public health protection;

3. Provision for site security measures as necessary;

4. Excavation of soil at residential parcels where lead is equal to or exceeds 1,200 mg/kg and/or arsenic exceeds 68 mg/kg as determined by EPA's RD sampling. Soil will be excavated to a depth of approximately two feet bgs, to eliminate any direct contact and inhalation threats. Excavated material that fails toxicity characteristic leaching procedure (TCLP) for lead may be treated with a fixation agent prior to disposal. Excavation will cease if lead and/or average arsenic concentrations are less than 400 mg/kg for lead and 26 mg/kg for arsenic.

5. Collection and analysis of confirmation samples from the bottom of each excavation. If lead levels below 400 mg/kg or arsenic levels below 26 mg/kg cannot be achieved at an excavation depth of approximately two feet bgs, excavation will cease and a visible barrier will be placed at the bottom of the excavation to alert the property owner of the existence of high levels of lead and/or arsenic. In such instances and consistent with the record of

decision, institutional controls (ICs) will be implemented as part of the remedial action to ensure the users of the property are not exposed to the contaminants of concern in soil;

6. Replacement of excavated soil with clean soil, including 6 inches of top soil to maintain the original grade. Each yard will be restored as close as practicable to its pre-removal condition. Once the parcels are sodded or seeded, removal site control of the sod or seed, including, watering, fertilizing, and cutting, will be conducted for 30 days. After the initial 30 day period, property owners will be responsible for the maintenance of their own yards. The aforementioned work shall be documented in a Work Plan;

7. Transportation and disposal off-site of any hazardous substances, pollutants and contaminants at a CERCLA-approved disposal facility in accordance with EPA's Off-Site Rule (40 CFR § 300.440);

8. Performance of any other response actions to address any release or threatened release of a hazardous substance, pollutant or contaminant that the EPA On-Scene Coordinator (OSC) determines may pose an imminent and substantial endangerment to the public health or the environment; and

9. Conduct an evaluation to determine if soil excavation activities result in a release of lead scale particles from lead service lines into the drinking water supply. This sampling will be conducted from parcels being excavated in the fall of 2016. Data will be evaluated prior to the 2017 construction season to determine if construction activities impact drinking water quality. Bottled water and water filters will be provided during and after the soil excavation activities as necessary during the evaluation period. Based on findings from the 2016 evaluation, a determination will be made on whether the provision of bottled water and water filters should continue beyond the evaluation period. (Note: This evaluation is being conducted at the request of the Agency for Toxic Substances and Disease Registry, see memo from Mark Johnson to Doug Ballotti dated October 24, 2016.)

Data results in Zone 1 from indoor dust from the first 154 homes sampled indicate 69 parcels exceed the EPA screening level of 316 mg/kg for lead for indoor living spaces. Given the significant number of indoor samples that indicated action is needed and the threat posed by high concentrations of lead in soil in adjacent outdoor areas, and the consistent pattern of EBL levels in children less than 6 years of age living in WCHC and portions of Zone 2, EPA, at the request of the residents and homeowners, will vacuum sample indoor dust for lead and arsenic. EPA will clean the inside of residences that are above the risk-based screening criteria of 316 mg/kg for lead and 100 mg/kg arsenic for indoor dust from industrial-related activities. In general, the indoor cleanup process will involve four basic steps: (1) collection of indoor dust vacuum samples (in homes previously not sampled), (2) possible temporary relocation of residents, (3) removal of contaminated indoor dust from floors and carpeting, and cleaning of accessible HVAC systems and filter replacement (4) Post cleaning clearance sampling; and (5) the return of occupants to their residence if temporarily relocated. A combination of HEPA vacuums and/or wet cleaning will be used to remove contaminated dust from floors, carpeting and HVAC systems. Replacement of carpets/mats may be considered on a case by case basis if cleaning mechanisms fail to remove lead and arsenic dust below cleanup criteria.

Removal activities associated with indoor sampling, evaluation, and removal of contaminated dust in homes in Zone 2 will include:

1. Development of a Work Plan and Site Specific Health and Safety Plan;
2. Development and implementation of an air monitoring/sampling plan for the work zone and Site;
3. Continuation of indoor dust and other sampling as determined necessary;
4. Provision for Site security, as directed by the OSC;
5. Development of a relocation plan to address, if necessary, the temporary relocation of residents during the cleaning process;
6. Performance of interior dust cleanup activities as specified in the Site Work Plan;
7. Transportation and disposal off-site of any hazardous substances, pollutants and contaminants at a CERCLA-approved disposal facility in accordance with EPA's Off-Site Rule (40 CFR § 300.440); and
8. Performance of any other response actions to address any release or threatened release of a hazardous substance, pollutant or contaminant that the EPA On-Scene Coordinator (OSC) determines may pose an imminent and substantial endangerment to the public health or the environment.

The Action Memorandum and supporting documentation follow the April 2002 Superfund Response Actions: Temporary Relocations Implementation Guidance, particularly in considering residents' needs, property security, dealing with resident's stress and disruptions, and explaining benefits. Consistent with EPA's guidance on temporary relocations (2002), Sec. IV.A ("Making the Relocation Decision"), temporary relocation at the Site is justified during the cleaning process by the following factor:

- Efficiency of response action: temporary relocation minimizes concerns about noise, property access, and other restrictions on the hours or types of response activities that may be conducted at the Site.

The removal actions will be conducted in a manner not inconsistent with the NCP.

The threats posed by uncontrolled substances considered hazardous meet the NCP criteria listed at § 300.415(b), and the response actions proposed herein are consistent with any long-term remedial actions which may be required.

Off-Site Rule

All hazardous substances, pollutants, or contaminants removed off-site pursuant to this removal action for treatment, storage, and disposal shall be treated, stored, or disposed of at a facility in compliance, as determined by EPA, with the EPA Off-Site Rule, 40 C.F.R. § 300.440.

1. Contribution to remedial performance

The proposed action should not impede future remedial performance.

2. Engineering Evaluation/Cost Analysis (EE/CA)

Not Applicable

3. Applicable or relevant and appropriate requirements (ARARs)

All applicable or relevant and appropriate requirements (ARARs) will be complied with to the extent practicable. On August 18, 2016, EPA sent an e-mail to Rex Osborn of IDEM asking for any State of Indiana ARARs that may apply. IDEM provided both Action and Chemical specific state ARARs in a letter dated August 26, 2016. EPA will consider and implement the submitted ARARs as appropriate.

Project Schedule

The time-critical removal actions will require approximately 528 working days to complete.

B. Removal Project Ceiling Estimate – Extramural Costs:

The detailed cleanup contractor cost is presented in Attachment 1 and the Independent Government Cost Estimate is presented in Attachment IV. Estimated project costs are summarized below:

REMOVAL ACTION PROJECT CEILING ESTIMATE

Extramural Costs	**Current Ceiling**	**Proposed Increase**	**Proposed Ceiling**
Regional Removal Allowance Costs:			
Total Cleanup Contractor Costs (This cost category includes estimates for ERRS, subcontractors, Notices to Proceed, and Interagency Agreements with Other Federal Agencies and 20% Contingency)	$18,875,702	$10,133,755	$29,009,457
Other Extramural Costs Not Funded from the Regional Allowance:			
Total START, including multiplier costs	$3,122,250	$1,425,000	$4,547,250
Subtotal			
Subtotal Extramural Costs	$21,997,952	$11,558,755	$33,556,707
Extramural Costs Contingency (20% of Subtotal, Extramural Costs rounded to nearest thousand for Proposed Increase)	$4,399,590	$2,311,751	
TOTAL REMOVAL ACTION PROJECT CEILING	**$26,397,542**	**$13,870,506**	**$40,268,048**

The response actions described in this memorandum directly address the actual or threatened release of hazardous substances, pollutants, or contaminants at the Site which may pose an imminent and substantial endangerment to public health or welfare or to the environment. These response actions do not impose a burden on affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the Site conditions, the nature of the hazardous substances and pollutants or contaminants documented in Zone 2 of OU1, and the potential exposure pathways to nearby populations described in Section II and Section III, above, actual or threatened releases of hazardous substances and pollutants or contaminants from this Site, if not addressed by implementing the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

VIII. OUTSTANDING POLICY ISSUES

None

IX. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this Site is contained in the Confidential Enforcement Addendum.

The total EPA costs of this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be $68,457,330[1].

($40,268,048+ $2,000,000) + (61.96% x $42,268,048) = $68,457,330

[1] Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgement interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States right to cost recovery.

X. RECOMMENDATION

This decision document, along with the Action Memorandum signed on January 22, 2008, and the Action Memorandum Amendments signed on August 13, 2008, September 12, 2011, and October 13, 2016 represents the selected removal action for the U.S. Smelter and Lead Refinery Site, Zone 2, OU1, East Chicago, Lake County, Indiana. It was developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for the Site (Attachment II). Conditions at OU1, Zone 2 meet the NCP Section 300.415(b) criteria for a removal action and the CERCLA Section 104(c) emergency exemption from the $2 million and 12-month limitation. The total removal action project ceiling, if approved, will be $40,268,048 of which as much as $33,770,398 may be used from the removal allowance. I recommend your approval of the proposed removal action. You may indicate your decision by signing below.

APPROVE _____ DATE: 10/28/16
Assistant Administrator Office of Land and Emergency Management

DISAPPROVE _____ DATE: _____
Assistant Administrator Office of Office of Land and Emergency Management

Enforcement Addendum

Figures:

Figure 1 – USS Lead and Lead Refinery, E. Chicago, IN. Location Map
Figure 2 – OU1 Zones 1, 2, and 3– Location Map

Attachments:

I. Environmental Justice Analysis
II. Administrative Record Index
III. Detailed Cleanup Contractor Estimate
IV. Independent Government Cost Estimate
V. Summary of OU1 RD Soil Sampling Results
VI. Indoor Dust Screening Criteria for Lead
VII. Indoor Dust Screening Criteria for Arsenic
VIII. Third Amended Action Memorandum dated October 13, 2016

cc: Brian Schlieger, U.S. EPA, 5104A/B517F **(Schlieger.Brian@epa.gov)**
Lindy Nelson, U.S. DOI, **w/o Enf. Addendum (Lindy_Nelson@ios.doi.gov)**
Rex Osborn, IDEM **w/o Enf. Addendum (rosborn@idem.in.gov)**

APPENDIX F

TO
Z2&3 INTERIOR UAO

FORM OF INTERIOR ACCESS AGREEMENT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

CONSENT FOR ACCESS TO PROPERTY FOR SAMPLING AND TO TAKE RESPONSE ACTION

Name: _____ Daytime Phone Number: _____
(Print)

Evening Phone Number: _____

Title (e.g., tenant, owner): _____

Address of Property: _____

I consent to officers, employees, contractors and authorized representatives of the U.S. Environmental Protection Agency entering and having continued access to the property described above (the Property), including the interior of residences located within the Property, to perform the following actions: (1) to conduct sampling and lead-based paint screenings as deemed necessary by EPA; and (2) to perform response actions within the residences to address risks to human health and the environment as deemed necessary by EPA.

I understand that these actions taken by EPA are undertaken pursuant to its response and enforcement responsibilities under the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C. Section 9601 et seq., and that these activities are necessary to protect human health and the environment. I also understand that I may be required to share the results of the lead-based paint screenings with current and potential future residents of the property, and that I must comply with all relevant and applicable laws and regulations regarding lead-based paint.

I give this written permission voluntarily on behalf of myself and all other residents of the Property, with knowledge of my right to refuse and without threats or promises of any kind. I understand that EPA or authorized representatives of EPA will use best efforts to contact me before the sampling begins.

This document can only be signed by a resident of the property who is over 18 years of age.

PLEASE CHECK ONLY ONE BOX AND SIGN BELOW

_____
Date

☐ I grant access to the Property for the purposes stated above.

☐ I do not grant access to the Property.

_____
Signature

_____
Signature

Please provide the month and year in which you moved to this residence: _____

Please provide the age of each child under the age of 18 living at this residence:

_____

Are there any pregnant women living at this residence? _____