



Remedial Action Plan

Demolition and Site Restoration West Calumet Housing Complex East Chicago, IN 46312

Prepared For:

**East Chicago Housing Authority
4920 Larkspur Drive
East Chicago, IN 46312**

Prepared By:

**Amereco, Inc.
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LIST OF ACRONYMS

ACM	Asbestos Containing Material
AMSP	Air Monitoring and Sampling Plan
bsg	Below Surface Grade
COC	Chemical of Concern
ECHA	East Chicago Housing Authority
ECP	Erosion Control Plan
EPA	Environmental Protection Agency
gph	Gallons Per Hour
gpm	Gallons Per Minute
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HUD	Housing and Urban Development
IDEM	Indiana Department of Environmental Management
IOSHA	Indiana Occupational Safety and Health Administration
OSHA	Occupational Safety and Health Administration
ppb	Parts Per Billion
ppm	Parts Per Million
PPE	Personal Protective Equipment
RAP	Remedial Action Plan
RCG	Remediation Closure Guide
RCRA	Resource Conservation and Recovery Act
RFI	Request for Information
SWPPP	Storm Water Pollution Prevention Plan
WMP	Waste Management Plan

1.0 INTRODUCTION

Amereco Engineering (Amereco) prepared this Remedial Action Plan (RAP) on behalf of the East Chicago Housing Authority for the environmental remedial action and demolition activities at the West Calumet Housing Complex site located in the City of East Chicago (Site). The Site is surrounded by Magnolia Lane on the north, 151st Street on the south, McCook Avenue on the east, and the Indiana Harbor Canal on the west. The Site is included as part of the US Smelter and Lead Refinery Superfund Site, described as part of Zone 1, within Operable Unit 1. Figure 1 included in Appendix A shows a location map of the Site.

The Site consists of five contiguous parcels, approximately 40-acres in size, located in East Chicago, Lake County, Indiana 46312. The Site is currently occupied by the West Calumet Housing Complex.

The RAP, provided herein, has been developed in conformance with the U.S. Environmental Protection Agency (EPA) and The U.S. Department of Housing and Urban Development (HUD) Part 58 requirements and guidelines to accomplish the following:

- Present environmental remediation objectives for asbestos containing materials (ACM), household chemicals, universal wastes and hazardous wastes;
- Present remediation objectives for the demolition of all structures and utilities at the Site; and
- Present the proposed remedial goal for the Site under this RAP.

This RAP's main objectives are to safely handle any ACMs, universal wastes household chemicals and hazardous waste necessary for demolition, and to demolish and properly remove, recycle, dispose of all structures and utilities on the Site in ways that are protective of the environment and human health. This includes detailed survey of all structures for any ACMs, universal wastes, household chemicals and hazardous wastes, proper removal and abatement of these materials, and the demolition of on-grade residential structures, administration building, community center, maintenance garage and all other improvements therein associated. The ultimate goal of this RAP is to have a cleared and stabilized Site that is ready for the EPA's Superfund remediation activities.

2.0 BACKGROUND

This section presents a description and historical background of the site obtained from information presented in the Phase I Environmental Site Assessment dated January 17, 2017 and Phase II Environmental Site Assessment dated February 15, 2017 prepared by Amereco for the subject property.

2.1 SITE DESCRIPTION

The subject site is approximately 40-acres in size located in East Chicago, Lake County, Indiana 46312. The site is occupied by the West Calumet Housing Complex. The site is supplied with underground electrical and natural gas through NIPSCO, as well as potable water, sanitary and storm sewer services through the City of East Chicago. The site consists of 107 residential structures, in addition to an administrative building, a community center, guard building, 2 storage sheds and a

maintenance building. The residential structures onsite include apartments, duplexes, townhomes and single family homes.

The main entrance to the housing complex is located on the south side of the subject site, accessible via 151st Street. An additional entrance is located on the east side of the subject site, leading in from 149th Place, north of the community building. The complex is surrounded by an aluminum security fence, which is approximately 6 feet tall. Roadways throughout the site include Gladiola Avenue to the east, Magnolia Lane to the north, Aster Avenue to the west and 151st Place to the south. Larkspur Street runs diagonally through the site (southwest to northeast) connecting Aster and Gladiola Avenues. Jonquil Lane and 150th Place form a loop with Gladiola Avenue in the southeast portion of the site.

The maintenance building is located on the east side of the property, south of 149th Place, between McCook and Gladiola Avenues. Two paved parking lots are located on the north side of the building, with a large paved drive to the east. A small fenced enclosure, located on the south side of the maintenance building, is utilized for the safekeeping of equipment and building materials.

2.2 SITE HISTORY

The subject site includes five parcels. According to EPA documents, the property is part of the former site of the U.S Smelter and Lead Refinery, Inc. (USS Lead). From 1906 to 1920, the company added a primary lead smelter to its operation. USS Lead converted to secondary smelting in 1973, recovering lead from scrap metal and old automobile batteries. All operations were discontinued in 1985. Two primary waste materials were generated as a result of the smelting operations: 1) blast furnace slag and 2) lead-containing dust emitted by the blast furnace stack. Blast-furnace slag was stockpiled south of the plant building and spread over an adjoining 21 acres of wetlands once per year. The lead-containing dust was originally trapped in bag filters and stored in a 3-acre to 5-acre area for future recycling (SulTRAC 2010).

Facilities identified onsite during the metal refining operations included a pulverizing mill, white lead storage areas, a chemical laboratory, ore bins, machine shops, a lead and silver refinery, several transformer houses and other miscellaneous operations. A slag and coal dump was also identified to the southwest of the refinery, near the center of the site (EPA 2009).

The Site was developed into the West Calumet Housing Complex in the 1970's and has been used for multi-family low-income housing to date. The surrounding sites have also been occupied by numerous industrial operations in the past, including metal refineries. The site is included as part of the US Smelter and Lead Refinery Superfund Site, described as part of Zone 1, within Operable Unit 1. Extensive sampling and removal of shallow soils within and around the West Calumet Housing Complex has been ongoing since 2003.

2.3 ENVIRONMENTAL CONDITIONS

As stated above, the West Calumet Housing Complex is included as part of Zone 1 of Operable Unit 1 of the USS Lead Refinery Superfund Site. Review of the documents available within the Administrative Record for the USS Lead Refinery Superfund Site was conducted during the Phase I record review. Sampling of Zone 1, Operable Unit 1 that was conducted between November 2014 and April 2015 was

reviewed. Documents from the Administrative Record indicate that lead concentrations were identified within Zone 1 of Operable Unit 1 in exceedance of 91,100 mg/Kg. Arsenic concentrations, within the same area, were detected in exceedance of 3,530 mg/Kg. Near surface soil samples (collected specifically from the West Calumet Housing Complex) exhibited lead concentrations ranging from 5,000 to 45,000 mg/Kg. Lead dust cleanup began within the West Calumet residential building interiors in August 2016, in 113 units. An action memorandum, identified on the Administrative Record for the Superfund Site, provided a summary of activities, which was dated October 24, 2016. The memorandum was submitted by Douglas Ballotti, Acting Director for the US EPA Superfund Division. There are no records of soil remedial activities occurring at the West Calumet Housing site. Activities appear to have been limited to cleanup of units and exposure prevention. The soil sampling associated with the Superfund Site has been focused on surface soils located at two feet or less below surface grade (bsg). It was focused on potential exposure by direct contact.

A Phase II ESA conducted by Amereco on February 15, 2017 focused on evaluating potential hazards associated with the proposed remedial action and demolition of the structures within the West Calumet Housing Complex. Soil and ground water samples were collected and analyzed. The analytical results for both soil and ground water along with the applicable Indiana Department of Environmental Management (IDEM) Remediation Closure Guide (RCG) Screening Levels are included in the Phase II ESA report submitted to the East Chicago Housing Authority. Table 1 below includes a summary of the soil organic contaminants identified above applicable IDEM RCG Screening Levels.

Table 1. Soil Organic Contaminants Above IDEM RCG Screening Levels

Sample Location	Contaminant Detected and Results (parts per million (ppm))			
	Sample Depth (below ground surface)	Benz(a)anthracene	Benzo(a)pyrene	Dibenzo(a,h)anthracene
WCS-006A	4 feet	1.8*	1.7	2.8*
WCS-014A	6 feet	--	0.23	--
QA/QC-S1	4 feet	--	0.47	--
<i>Residential Soil Exposure Direct Contact</i>		2.2	0.22	0.22
Migration to Groundwater SL*		0.85	4.7	2.6

Table 2 below contains a summary of the soil inorganic contaminants that were also identified above IDEM RCG Screening Levels.

Table 2. Soil Inorganic Contaminants Above IDEM RCG Screening Levels

Sample Location	Contaminant Detected and Results (parts per million (ppm))					
	Sample Depth (below surface grade)	Arsenic	Cadmium	Lead	Selenium	Silver
WCS-005A	4 feet	<u>5200</u>	17*	<u>45000</u>	11*	--
WCS-006A	4 feet	220	11*	<u>4600</u>	--	17*
WCS-007A	4 feet	99	--	<u>2400</u>	--	--
WCS-007B	12 feet	6.2*	--	--	--	--
WCS-016A	4 feet	14	--	--	--	--
WCS-017A	4 feet	14	--	--	--	--
WCS-018A	4 feet	12	--	660	--	--
WCS-022A	2 feet	47	8.3*	<u>1800</u>	--	--
WCS-028A	6 feet	38	--	<u>1000</u>	--	--
WCS-029A	4 feet	--	16*	--	--	--
WCS-034A	4 feet	10	--	350*	--	--
WCS-038A	4 feet	--	--	560	--	--
QA/QC-S1	4 feet	160	9.9*	<u>23000</u>	--	25*
<i>Residential Soil Exposure Direct Contact</i>		9.5	99	400	550	550
Industrial Soil Exposure Direct Contact		30	980	800	5800	5800
Excavation Soil Exposure Direct Contact		920	1900	1000	9800	9800
Migration to Groundwater SL*		5.9	7.5	270	5.3	16

Notes: Italic = >RDCL

* = >MTG SL

Bold = >IDCL

-- = >Below RCG SLs

Underlined = >EDCL

= >Not Analyze

Tables 3 and 4 below contain summaries of the groundwater analysis results exceeding the IDEM RCG Residential Tap Screening Levels.

Table 3. Groundwater Contaminants Above IDEM RCG Screening Levels

Sample Collection Point	Contaminant Detected and Results (parts per billion (ppb))		
	Benz(a)anthracene	Benzo(a)pyrene	Naphthalene
WCG-009	--	--	9.9
WCG-012B	0.16	--	--
WCG-014	0.26	0.40	--
WCG-017	0.23	--	--
WCG-018	0.16	--	--
Res TAP GWSL	0.12	0.2	1.7

Table 4. Groundwater RCRA Metals Above IDEM RCG Residential Tap Screening Levels

Sample Collection Point	Contaminant Detected and Results (parts per billion (ppb))				
	Arsenic	Cadmium	Chromium	Lead	Mercury
WCG-001	87	9.8	--	26	--
WCG-007	19	--	--	37	--
WCG-008	290	--	680	1900	--
WCG-009	58	--	--	160	--
WCG-012A	--	--	--	48	--
WCG-012B	--	--	--	47	--
WCG-015	--	--	--	680	--
WCG-017	180	45	360	16000	2.2
WCG-018	560	14	290	8200	--
WCG-019	61	--	410	220	--
WCG-020	60	--	350	290	--
WCG-021	32	--	--	20	--
WCG-023	20	--	--	24	--
WCG-036	80	--	150	530	--
WCG-037	120	--	850	650	--
WCG-038	88	--	200	530	--
Res TAP GWSL	10	5	100	15	2

Notes: -- = < RCG SLs

3.0 REMEDIAL ACTION OBJECTIVES

3.1 REMEDIAL OBJECTIVES

The remedial objective of this RAP is limited to demolition and removal of all improvements on the site including buildings, concrete and asphalt paved surfaces, and buried utilities as described below:

- Environmental Abatement – Removal of regulated asbestos containing building materials, mercury containing bulbs and thermostats and PCB containing ballasts.
- Building Demolition – This includes all buildings onsite, which are identified on attached Sheet 2. This includes all above and below grade improvements (i.e. foundations, footings, etc.).
- Utility Removal – All utilities onsite will be removed, which include: sanitary sewers, storm sewers, electric, phone, cable and natural gas. This does not include any pipeline related utilities, which are known to exist on the east side of the site.
- Flatwork Removal – This includes removal of all roadways, pathways and parking lots. This also includes sidewalks and curbing.
- General Grading – Limited imported material will be utilized during this project, which will consist of organic soil for vegetative growth. Grading will include utilizing limited soil around building demolition locations to create a general level grade throughout the site, eliminating falling hazards and water retention. Minimal grading may be necessary for erosion control purposes. Grading will not be site wide and vegetation disturbance will be limited.
- Site Stabilization – Vegetation growth will be utilized to stabilize soil following demolition activities. A fence will be installed to secure the property and limit access.

3.2 REMEDIAL WORK ITEMS

The work covered under this Remedial Action Plan (RAP) will be conducted in a sequential manner, with some activities being conducted concurrently with other remedial activities. Demolition and environmental remedial activities shall be performed in accordance with Indiana Occupational Safety and Health (IOSHA) regulations, the U.S. Environmental Protection Agency (EPA) requirements, the U.S. Department of Housing and Urban Development (HUD) requirements, and the City of East Chicago requirements. Depending upon site and other unknown conditions, contractor's general sequence of demolition activities may require alteration at any given time. A summary of the general sequence for the work activities is outlined as follows:

- Pre-demolition survey of each building for asbestos containing materials, universal wastes and household chemicals and hazardous materials.
- Further evaluation of waste streams
- Preparation of remedial action design plans
- Selection of remedial action/demolition contractors through procurement process
- Pre-demolition activities and site mobilization meeting(s)
- Erection of a construction site six-foot high chain-link fence covered with dust control fabric
- Verification of utility disconnects and isolations
- Removal of remaining household chemicals, universal wastes and hazardous materials

- Removal of asbestos containing materials (ACM) mitigation, as necessary
- Demolition of existing buildings
- Demolition of above and underground utilities
- Removal of demolition debris and material to appropriate offsite disposal and/or recycling facilities
- Stabilization of the demolition site

4.0 GENERAL DEMOLITION ACTIVITIES

In general, the tasks will include a variety of procedures. The most important aspect in the development of these procedures will be the safe conduct of the work. Contractors' procedures will limit the use of labor to the most controlled and safe conditions and rely upon mechanized means of removal wherever possible. Excavators equipped with concrete breakers, concrete munchers, grapples, and other modern hydraulic demolition tools and attachments will be utilized. Wherever possible, large structures will be removed to ground level using mechanized means and will be deconstructed to minimize dust creation and control debris. Wrecking balls will not be utilized for this project. Subsequent sizing of scrap materials such as steel and rebar and other material processing activities will take place at grade level, hauled offsite and recycled accordingly.

General building/structure demolition will be conducted in a manner that does not interfere with or encroach upon the existing surrounding utilities, pedestrians, and vehicular traffic outside the fenced project site perimeter during normal activities. Contractors will work within the confines of the site fencing whenever possible. However, depending upon site and structure conditions, alternative methods of demolition and alternative types of equipment may be used to ensure the safest and most efficient means of operation. This may involve modification of the site fencing from time to time in order to complete the demolition activities. This will always be coordinated with the Property owner in advance.

Requests for Information (RFIs) will be issued as needed if questions or scope issues arise during the course of the demolition activities. Field activities related to any RFIs will not occur until an appropriate answer has been provided.

4.1 STRUCTURAL DEMOLITION ACTIVITIES

The site will be divided into demolition zones. Contractors will perform salvage operations in accessible areas where the power has been isolated while the soft demolition and remaining clean-up activities are going on. When feasible, contractors will use Bobcat-type skid steer loaders and/or hand labor to remove all soft debris that is not easily separated from the structural material. This includes removal debris piles, roofing, ceilings, HVAC ducts, insulation, plaster partition walls, lights and all other building components that will not be recycled. After much of the soft debris is removed, contractors or subcontractors will commence the ACM abatement activities and removal of universal wastes. Upon completion of hazardous building material abatement, the contractors shall then resume with additional salvage and interior demolition until the building is cleaned out of all soft demolition debris.

4.2 HARDSCAPE DEMOLITION ACTIVITIES

All surface improvements on Site will ultimately require removal. This includes all asphalt and paved concrete areas. However, none of the base or subbase support materials including gravel and compacted sand under these hardscape surfaces will be removed. The demolition and removal of these surfaces will be sequenced to allow for proper traffic movement and to minimize erosion due to traffic and hauling trucks. The contractors' staging areas are to be demolished last.

4.3 UTILITIES DEMOLITION ACTIVITIES

All utilities above and below ground including features that extend into the subsurface such as groundwater monitoring wells will be demolished and removed from the Site. All monitoring wells will be closed in accordance with IDNR regulations.

4.4 DEBRIS STOCKPILING AND STAGING

Debris stockpiles will be kept to a minimum to prevent dust migration. Waste / debris stockpiling and staging will be limited to the area of waste creation (i.e. building footprint). Debris will not be transported elsewhere onsite prior to removal from the Site. All waste will be loaded into the appropriate receptacle for hauling to the location of final disposition.

4.5 HAUL ROUTES AND ESTIMATED VEHICULAR TRAFFIC

The primary entrance into the construction site will be 149th Place, as extended on the east side of the Site. Construction traffic will utilize McCook Avenue, from 151st Street, as the primary means of access to 149th Place. Construction traffic will be directed away from the residential neighborhood to the east. Emergency gates will be located at Gladiola Avenue/151st Place (southeast corner) and Gladiola Avenue/Magnolia Lane (northeast corner). The entrance and exit point at 149th Place will be equipped with erosion and sediment control areas. The exit point will also be equipped with a rinse station. It is anticipated that vehicular traffic will be routed in a clockwise (south to north to east) route through the site; however, this will be dependent on volume and specific work area. The specific number of daily truck trips will vary based on phasing and project schedule; however, it is estimated that transport truck traffic will be approximately four trucks per hour during the proposed work hours.

5. SITE MANAGEMENT PLAN OVERVIEW

The purpose of this site management plan is to comply with EPA and City of East Chicago requirements by presenting a detailed plan on how demolition and construction activities at the Site will be conducted in a manner that:

- Addresses potential worker and public exposures to potential COC that may be encountered during site remedial action/demolition activities.
- Includes routine monitoring for contaminated soil and groundwater that may be encountered and a response soil and groundwater management protocol.
- Includes routine air monitoring and a response plan to protect workers and the public.
- Includes measures to control dust.

5.1 SEQUENCE OF WORK

The sequence of work at the Site is expected to be generally as follows:

- Abatement of ACM.
- Demolition of existing above-ground structures that does not require soil disturbance.
- Demolition of at-grade and below-grade features that requires soil disturbance, such as foundations, building slabs, utilities, and pavement.
- Stabilize site.

5.2 CONTRACTORS STAGING AREAS

Contractors' field trailers, vehicles, and equipment staging and parking will initially be located in the eastern paved area within the fenced property; however, staging and parking may be moved to other areas of the site during the course of demolition activities. Consideration is also being given to utilizing the Maintenance Building as the field office until demolition is scheduled for this area of the site.

5.3 CONTRACTORS INFORMATION

This section information to be updated as information becomes available. The East Chicago Housing Authority intends to contract with a single demolition contractor to conduct the demolition activities.

5.3.1 WORK HOURS AND SCHEDULES

Demolition activity shall be conducted between 7:00 a.m. and 6:00 p.m. on weekdays and 9:00 a.m. to 5:00 p.m. on weekends and holidays. Demolition work is expected to take approximately eight months.

5.3.3 DESIGNATED PARKING AREAS

The paved south east area of the site between 149th Place on the north and 151st Street on the south and McCook Avenue on the east is designated as the contractors' staging and parking area. The designated parking area(s) will be clearly defined during the demolition design and have sufficient marking. The designated parking areas will be outside the work area, exclusion zone and contamination reduction zone.

5.4 HEALTH AND SAFETY

For this specific Superfund Site, the U.S. Environmental Protection Agency (the federal agency overseeing remedial cleanup of this Superfund site) requires that all personnel at the site shall have current 40-hour HAZWOPER OSHA certification. To prepare the local workforce for the anticipated remedial action at the site, the EPA will be offering a free, two-week training program to prepare area residents for the anticipated environmental jobs and obtain their 40-hour HAZWOPER OSHA certification.

The contractors shall consider safety and the prevention of accidents an integral part of their operations. Under Federal, State and local laws, contractors are responsible to provide a safe working environment, and to protect life, health, and safety of their employees and subcontractor's personnel. Although providing safe working conditions is primarily a management responsibility, safety and accident

prevention can be accomplished through coordinated efforts of all employees and subcontractor personnel. If the task or service being undertaken cannot be done safely, the contractor shall discontinue work until proper controls can be established.

Contractors will be required to hold daily tailgate meetings for their employees prior to work commencement. Additionally, contractors will require that subcontractors be required to hold similar daily tailgate meetings covering their respective portion of the work. These meetings are designed to discuss the projected work schedule and prepare each worker for any potential hazards associated with the work activities. A copy of the daily or weekly safety meeting logs will be maintained onsite at all times. All personnel attending the safety meeting will be required to sign the safety-meeting log upon completion of the tailgate safety meeting. During the tailgate meetings, personnel will be reminded of site conditions and are encouraged to participate with health and safety concerns.

At the conclusion of the project, copies of all daily activities will be presented in a final report to the Property owner for distribution to relevant parties.

A Site Specific Health and Safety Plan (HASP) has been developed for this project (Appendix B).

5.4.1 PRE-DEMOLITION SURVEY AND HAZARDOUS MATERIAL ABATEMENT

Prior to commencement of the demolition, a thorough walkthrough and evaluation of the buildings will be conducted to confirm that all appropriate measures have been completed to ensure that the area is ready for commencement of demolition activities. A copy of the Asbestos Survey performed by Amereco, dated February 16, 2017, is included in Appendix C. However, a complete Pre-Demolition Asbestos Inspection will be conducted by an Indiana licensed Asbestos Inspector prior to demolition of the structure. A copy of the Pre-Demolition Asbestos Inspection Report will be provided to the contractors for as-needed distribution to the construction team. Contractors or subcontractors shall prepare an asbestos abatement plan, addressing all items identified in the Pre-Demolition Asbestos Inspection Report.

5.4.2 REAL-TIME SCREENING AND EXPOSURE MONITORING OF WORKERS

An Air Monitoring and Sampling Plan (AMSP) has been developed for this project (Appendix D). In summary, real-time perimeter and downwind monitors will be utilized to evaluate airborne dust. Real-time screening will be conducted to ensure that work practices and engineering controls are providing sufficient dust suppression. Worker monitoring will be the responsibility of the contractor; however, at a minimum weekly air sampling will be conducted to ensure that engineering controls and PPE are sufficient for worker protection.

6.0 DUST CONTROL MEASURES AND AIR MONITORING

6.1 DUST SUPPRESSION

Fugitive dust suppression will be the primary engineering control implemented throughout the demolition project to prevent worker exposure and fugitive dust leaving the Site. Water truck(s) and/or fire hose(s) attached to a local hydrant will be the primary means of dust suppression during demolition operations. A

localized water spray will be directed to the source of the demolition activities, thereby reducing airborne dust particles. To minimize the run-off of water, water will be used only when necessary. Two sources of water will be utilized for the project: a) collected and treated groundwater encountered during dewatering activities, or b) municipal water from fire hydrants. Treated groundwater will be used as often as feasible. A proper backflow device will be utilized, per City of East Chicago requirements. All other additional City requirements will be adhered to while utilizing hydrant water.

The main mechanism for the control of fugitive dust emissions from demolition activities and wind erosion is watering, which leads to the formation of a surface crust to reduce the available reservoir of dust. The effectiveness of wet suppression is dependent on the type of activities occurring, the frequency of watering, and the meteorological conditions. These control measures are intended to comply with local, state and federal regulatory requirements.

Dust Suppression will be conducted to achieve the following goals: a) Prevent visible and overall dust from extending beyond the property boundary of the Site or outside the construction boundaries; b) prevent dust emissions with opacity greater than 20 percent; and, c) limit the track-out of dust.

The following dust control measures will be utilized to ensure that these goals are achieved:

- Water will be used during all demolition activities to prevent visible dust emission, except when rain or onsite conditions provide adequate moisture content to prevent visible dust emission.
- Utilize water to keep active areas of soil disturbance damp at all times.
- Cover all hauling trucks or maintain at least one foot of freeboard.
- Wet-sweep at least twice daily paved access roads, parking areas or staging areas.
- Wet-sweep daily public streets if visible soil material is carried from the Site.
- The public paved roadways surrounding the Site will be checked for any material possibly tracked out, despite mitigation efforts. The Contractors will take all reasonable measures to clean the roadways of this material within an hour of observation.
- Hydroseed leveled areas that remain inactive for ten or more days.
- Limit traffic speeds on unpaved surfaces to 15 miles per hour.
- Install and maintain wind screen along the perimeter of the site to reduce wind speeds, act as a privacy screen, prevent debris and garbage from leaving the site, and overall dust control.
- Cover and protect all loose stockpiled construction materials (including soil) that are not being actively used. Active use is defined as materials that are not scheduled for use or handling within five days.
- Site runoff will be minimized and controlled as established by the project's Storm Water Pollution Prevention Plan (SWPPP) and Erosion Control Plan (ECP).
- Suspend demolition, grading or other dust creating activities due to excessive winds, which are defined as wind gusts in exceedance of 25 mph.
- All vehicles that enter the site will require decontamination prior to leaving the site.
- Post a publicly visible sign with the project contact name and telephone number for dust complaints, who will be designated as the air quality coordinator for this project. This person shall respond and take corrective action within 48 hours. The ECHA phone number shall also be visible. A log shall be maintained of all complaints and response actions.

6.2 PERIMETER AMBIENT AIR MONITORING

An Air Monitoring and Sampling Plan has been developed for this project (Appendix D). This plan includes information regarding sampling equipment, location, frequency and analysis. In summary, stationary air monitoring stations will be located along the perimeter of the Site, with approximately 500-feet between each monitor.

7.0 NOISE MITIGATION

The following measures will be undertaken to minimize noise intrusion during site activities:

- Demolition activities will be limited to the hours of 7 a.m. to 6 p.m. on weekdays, and 9 a.m. to 5 p.m. on Saturdays, Sundays, or legal holidays.
- All equipment driven by internal combustion engines will be equipped with appropriate mufflers in good operating condition.
- When feasible, “quiet” models of stationary equipment such as air compressors, generators and other noise sources will be used.
- Stationary noise-generating equipment will be located as far as possible from residential areas and sensitive receptors.
- No unnecessary idling of internal combustion engines will occur onsite.
- A designated “noise disturbance coordinator” will be identified who will be responsible for responding to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaints and, as practicable, institute measures to correct the problem.

8.0 WASTE MANAGEMENT

A Waste Management Plan has been developed for this project (Appendix E). The following sections summarize information contained within this plan.

8.1 MATERIAL RECYCLING

Contractors will be encouraged to recycle all salvageable demolition materials to reduce the amount of landfill-bound waste. All demolition debris that will not be recycled by the Contractors will be loaded into dump trucks and hauled to a disposal facility for further recycling or landfill.

Any material resulting from above grade level demolition will be assumed to be clean (uncontaminated) and suitable for recycling and/or crushing. Any material resulting from below grade level demolition will be sampled and analyzed for the COCs to determine final disposition.

8.2 DEMOLITION DEBRIS DISPOSAL

It is anticipated that the majority of the demolition debris will not be classified as special or hazardous waste. Based on sampling and laboratory testing, if certain loads are classified as special or hazardous waste, they will be transported and disposed in accordance with all applicable State and Federal regulations.

Demolition activities and debris loading will occur on the Site between 7:00 a.m. and 6:00 p.m. during weekdays. Loading will be conducted onsite using demolition equipment and excavators. A minimum of one foot of freeboard will be maintained for transport trucks. All loads will be covered prior to trucks exiting the Site. This will prevent potential spillage and control dust generation from the transport trucks. The specific disposal sites will be selected by the remediation/demolition contractors.

8.3 CONTAMINATED SOIL MANAGEMENT

There is no anticipated or proposed soil removal from the Site as part of this RAP.

8.4 GROUNDWATER MANAGEMENT

The groundwater analytical results for testing performed as part of the Phase II ESA conducted by Amereco on February 15, 2017 showed that groundwater at the Site is contaminated by organic and RCRA metals at levels exceeding the IDEM RCG Residential Tap Screening Levels. Soil borings also conducted as part of the Phase II investigation showed that the dominant soil types at the Site are brown sand and silty sand with groundwater elevations between three feet to five feet below ground surface. Utility maps of the Site show that utilities, including sanitary and storm sewers and water mains, are buried between three feet to nine feet below ground surface.

Therefore, it is anticipated that groundwater seepage will be significant during the demolition of the utilities at the Site. Based on the proposed demolition sequence in which only 50-feet of excavated trench area will be open at any time for no more than one hour, it is estimated that groundwater seepage will be approximately 100-gallons per minute (gpm). Temporary trench stops will be used to capture the groundwater seepage. The excavated areas will be continually dewatered during the excavation process. The extracted groundwater will be temporarily stored in 21,000-gallon aboveground storage frac tanks.

Using published EPA's proven aboveground treatment alternatives for arsenic and lead (inorganics) in groundwater (EPA-542-S-02-002, EPA-542-R-02-004, and EPA-542-B-93-005 as updated on the Internet in 2007 at https://frtr.gov/matrix2/section3/table3_2.pdf), a co-precipitation, coagulation, and flocculation treatment system was selected and designed to treat the contaminated groundwater at this Site. The treatment system will consist of the following components and processes:

- **Transfer Pump:** A 100 gpm electric centrifugal dewatering pump with a control panel and on/off/auto controls from float switches placed in the 21,000-gallon influent tank.
- **Chemical Injection Pumps:** Two injection pumps rated at 4-gallons per hour (gph) will be used to inject ferric chloride (FeCl_3) and LBP-2101 polymer into the contaminated groundwater influent stream. The ferric chloride solution (40% by weight) and LBP polymer will initially be injected at dosages of 10 ppm and 1 ppm and a flow rate of 0.11 gph and 0.6 gph, respectively. Thereafter, injection rates will be calibrated based on floc formation.
- **Reaction and Settling Tank:** An 18,000-gallon rectangular weir tank will be used for flocculation and sedimentation of the flocs with a retention time of 10-minutes.
- **Filtration:** The effluent from the settling tank will be passed through two 36-inch diameter sand filters in parallel each filled with 800 pounds of silica sand and 240 pounds of gravel. The filters effluent will then be passed through a two stage 10-micron bag filters in parallel followed by

another two 0.5-micron bag filters. Each sand filter will be backwashed daily with treated water from the other filters at 100 gpm for 10-minutes.

- Zeolite Adsorbers: Two adsorption units each filled with 2,500-pounds of zeolite with a bulk density of 52 lbs/ft³ will be used in series to remove the residual dissolved lead.
- Activated Alumina Adsorber: One adsorption unit filled with 50 ft³ of granular activated alumina with a bulk density of 40 lbs/ft³ will be used to remove the residual dissolved arsenic.
- Post-Filtration: Two 1-micron high efficiency bag filters will be used in parallel for the removal of fine particulates that may be associated with metals.
- Storage tanks: The treated water will be stored in frac tank(s) to be used for dust control. The stored water will be weekly sampled and analyzed for arsenic and lead. Based on the analytical results, the treatment system will be calibrated and/or modified to yield permissible arsenic and lead concentrations. Excess treated groundwater not used for dust control will be discharged to the sanitary sewer system, under a wastewater discharge permit from the City of East Chicago.

9. STORMWATER MANAGEMENT AND EROSION CONTROL

Contractors will follow requirements for stormwater management and erosion control as required by the City of East Chicago. A Stormwater Pollution Prevention Plan and Erosion Control Plan will be required.

10. DOCUMENTATION REQUIREMENTS

Throughout the demolition/remediation phase, there will be documentation required that will be maintained and/or deliverable to the client. Documentation that will be prepared in conjunction with this project is included in the following sections.

10.1 MEETINGS AND COMMUNICATIONS

The construction/demolition general contractor will facilitate coordination among all necessary parties by pre-demolition meetings, daily and/or weekly progress meetings, and special meetings as may be required. In all cases, the general contractor or Site representative shall maintain sufficient documentation as to the planned discussion and outcomes of the meetings. As necessary, the Owner and appropriate regulatory agencies will be contacted.

10.2 FIELD DOCUMENTATION

Prior to the daily commencement of work, the general construction/demolition contractor will participate in a tailgate safety meeting with the demolition/remediation contractors and other pertinent personnel to discuss safety considerations for the day, planned work activities for the day and summarize work activities from the previous day with discussion, comments and solutions regarding any issues/concerns from the previous day. Any recently received analytical data will be discussed. In addition, a job safety analysis checklist will be prepared each day to identify job Site hazards. The tailgate meeting form is presented in the HASP in Appendix C.

Throughout the remediation phase, the general construction/demolition contractor will maintain a field notebook to record project information as it occurs. Project discussions, visitors arriving to or leaving the

Site, sketches of excavation areas, samples collected and related information, weather observations and any other pertinent information will be recorded in the field book.

10.3 PROGRESS REPORTS

Progress reports for the Owner will be prepared during the course of the cleanup action that summarizes project activities.

10.4 MANIFESTING AND WASTE DISPOSAL TRACKING

Copies of all debris and groundwater (if any) disposal manifests and weight tickets will be signed and maintained by the on-Site general contractor field representative during the course of the project. Copies of the manifests and weight tickets will go into the final report. The number of dump truck loads will be recorded each day in the field notebook.

11. REPORTING

Upon completion of demolition activities, a final Remedial Action Completion Report will be prepared documenting field activities, sampling, stockpile management, debris recycling and disposal, asbestos abatement, household chemical and hazardous waste handling and disposal, dust monitoring, groundwater management activities, and health and safety. The Report will also include a summary of all pre-demolition screening and monitoring.

12. CONTINGENCY ACTION PLAN

This section outlines the steps to be taken in the event unexpected contamination and hazardous materials are discovered during the remedial action/demolition activities. The procedures outlined below provide the general contractor with protocols to identify potential contamination and take appropriate action to avoid the dispersion of contaminants into the surrounding environment.

Contamination indicators or hazardous materials may include but are not limited to the following:

- Intact or broken drums and containers.
- Unusual odors.
- Discolored or stained water seepage and soils.
- Petroleum hydrocarbon contaminated soil and/or free product.
- Liquid waste, putrescible waste, household refuse and any material that normally would be sent to a licensed landfill.
- Gas bubbles in standing/pooled water.
- Broken ACM sheets, pipes or fragments.

During the demolition activities, the general contractor shall actively monitor for the conditions and materials specified above. In the event that one of these is identified, the general contractor should take the following actions:

- Stop all demolition activities within a 50-foot radius of the area where the suspect material, emission, or discharge has been recorded.
- Immediately notify the Site Owner or its environmental consultant/representative.

- Cordon off the area as practicable with a suitable barrier.
- Work shall not resume or commence within a 50-foot radius of the area unless authorized by the Owner or its environmental consultant/representative.

The general contractor shall contact the Owner's environmental representative who will advise on the appropriate course of action in consultation with the Owner. The environmental consultant shall:

- Notify the appropriate regulatory authority, if required, that contamination has been discovered and contingency action is being implemented.
- Characterize the contamination by collecting samples for chemical laboratory analysis.
- Advise construction/demolition work to proceed to an area clear of contamination indicators until material testing, as necessary, defines the material characteristics.
- When the material characteristics have been established, advise the general contractor as to whether the materials may remain on-Site or whether materials should be removed for disposal at a licensed landfill, assuming it can be accepted without prior stabilization.
- Instruct relevant staff of all appropriate information such as location and quantity of material.
- Record all details on an incident form, including GPS coordinates of location.

13. REFERENCES

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U.S. EPA. 2009. "Statement of Work for USS Lead Superfund Site, East Chicago, Lake County, Indiana." June 19.

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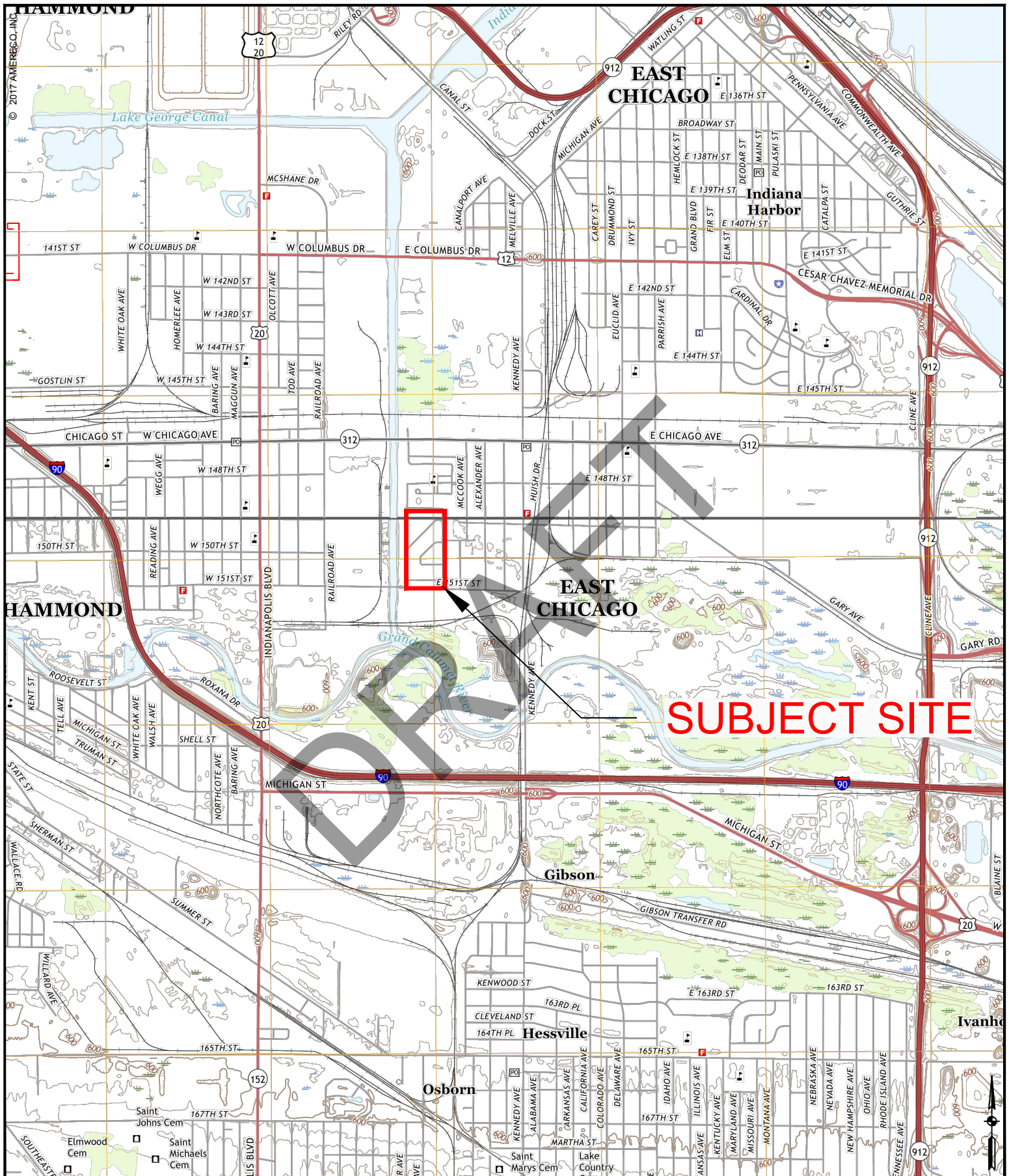
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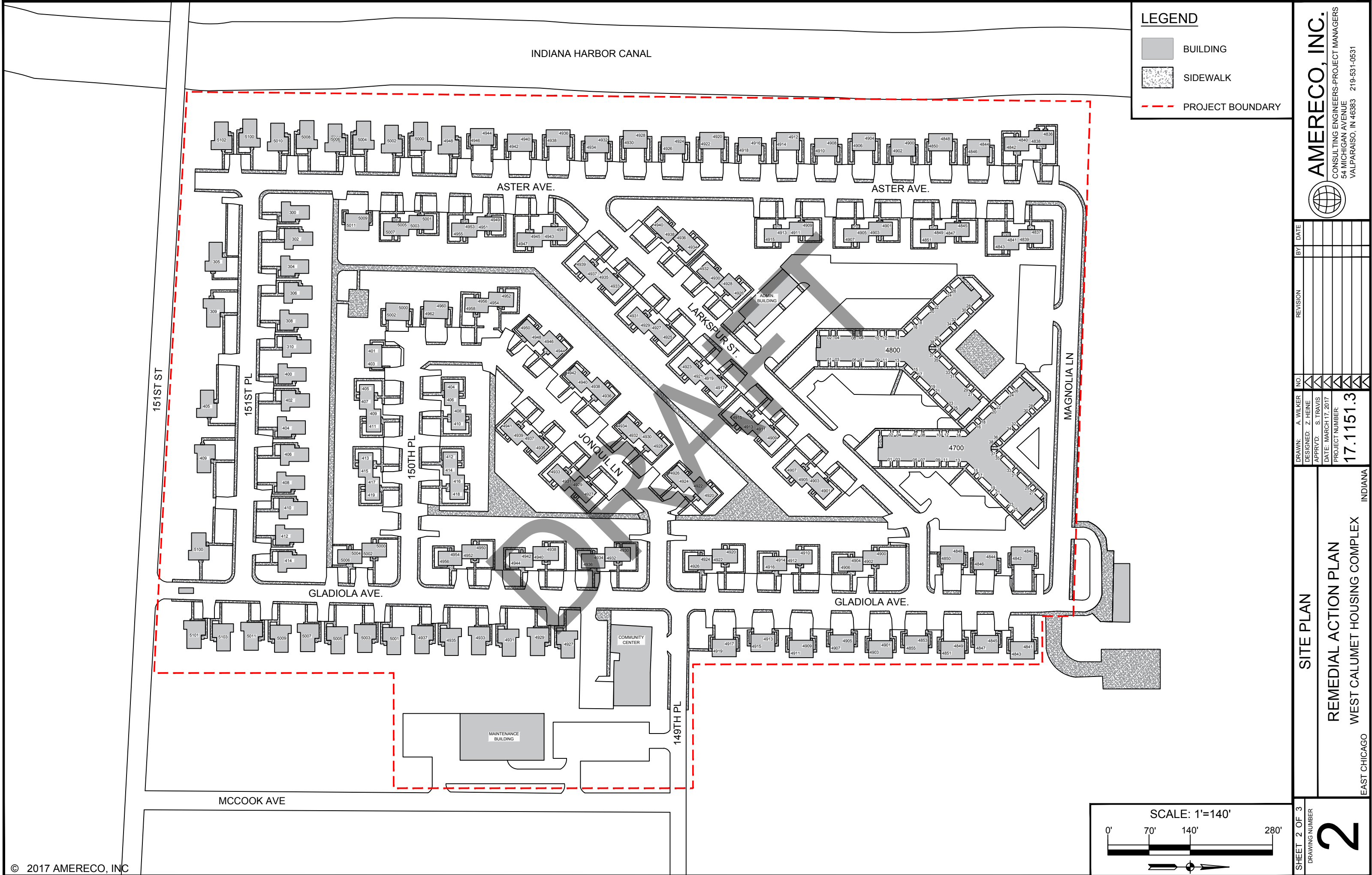
U.S. EPA. Arsenic Treatment Technology Design Manual for Small Systems. June 2002.
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U.S. EPA Office of Solid Waste and Emergency Response. Remediation Technologies Screening Matrix and Reference Guide. EPA-542-B-93-005. Updated 2007.
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APPENDIX A

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AMERECO, INC.

CONSULTING ENGINEERS-PROJECT MANAGERS

54 MICHIGAN AVENUE

VALPARAISO, IN 46383

219-531-0531

BY

DATE

REVISION

NO

DRAWN: A. WILKER

DESIGNED: Z. HEINE

APPRVD: S. TRAVIS

DATE: MARCH 17, 2017

PROJECT NUMBER:

17.1151.3

SITE PLAN

REMEDIAL ACTION PLAN

WEST CALUMET HOUSING COMPLEX

EAST CHICAGO

INDIANA

SHEET 2 OF 3

DRAWING NUMBER

2

INDIANA HARBOR CANAL

LEGEND

- EXCLUSION ZONE
- CONTAMINATION REDUCTION ZONE
- SUPPORT ZONE
- BUILDING
- SIDEWALK
- CONSTRUCTION FENCE
- TRAFFIC ROUTE

NOTE:

- POTENTIAL CONSTRUCTION ENTRANCES
- POTENTIAL EMERGENCY ESCAPE ENTRANCE

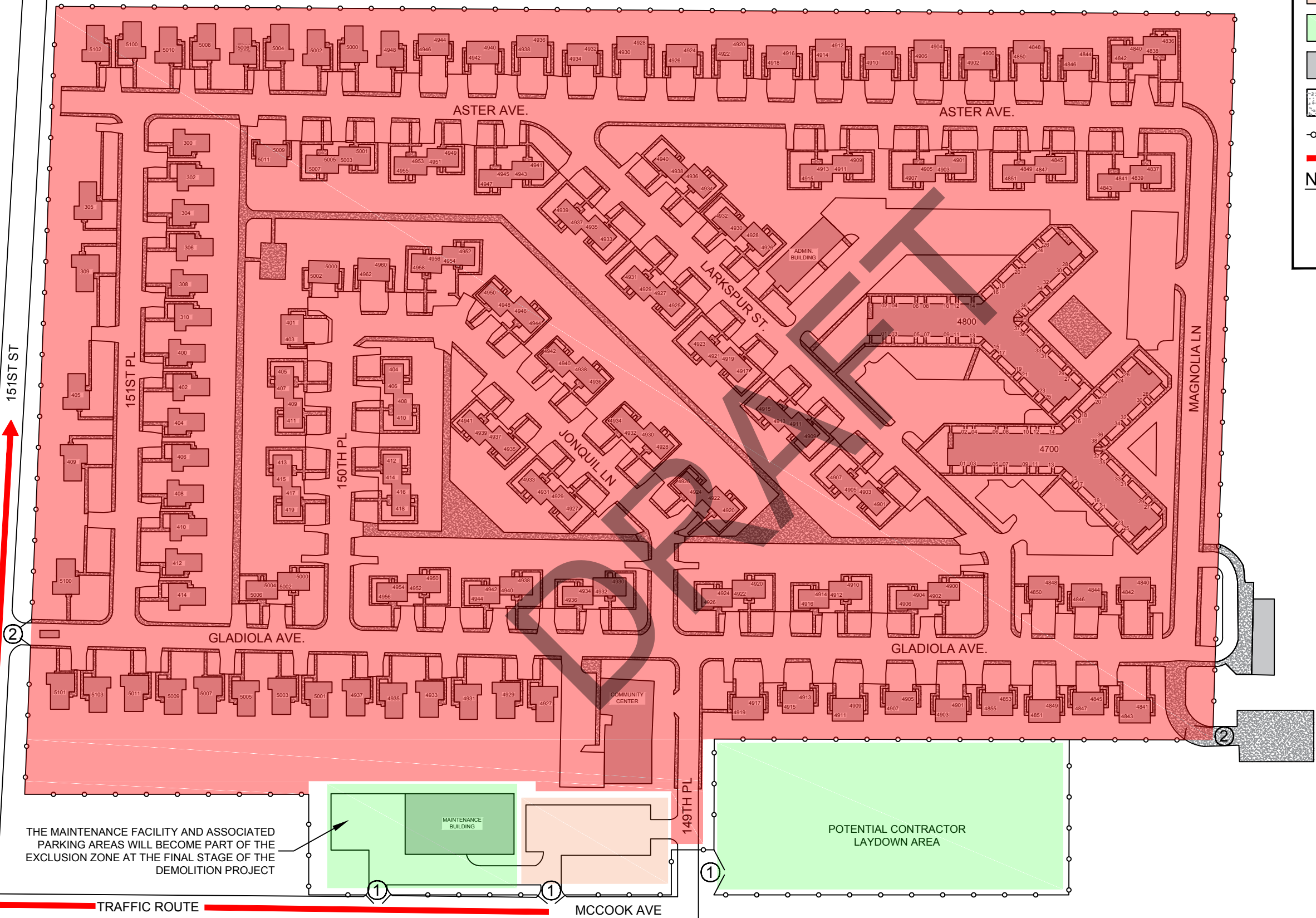
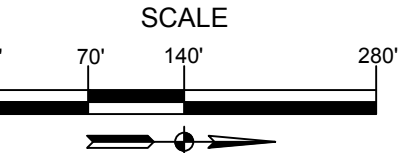
AMERECO, INC.
CONSULTING ENGINEERS-PROJECT MANAGERS
54 MICHIGAN AVENUE
VALPARAISO, IN 46383 219-531-0531



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TRAFFIC ROUTES & ENTRANCES	INDIANA
REMEDIAL ACTION PLAN	
WEST CALUMET HOUSING COMPLEX	
EAST CHICAGO	

SHEET 3 OF 3	DRAWING NUMBER
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APPENDIX B

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APPENDIX C

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APPENDIX D

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APPENDIX E

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